Abstract Reviewers

12.100 General Surgery

Non Parasitic Hepatic Cysts (NPHC) and Polycystic Liver Disease (PCLD): Laparoscopic Approach. Ten Years of Experience in a Single Center

Vincenzo Neri, Prof Dr Med
University of Foggia

Background/Aim: The therapeutic approach for NPHC and PCLD is very variable and debatable. The aim of this study is to value the postoperative results and relapse incidence in the laparoscopic treatment of NPHC and PCLD

Patients and methods: During the period 2001-2010 we have treated 17 patients with NPHC and 3 with PCLD: 12 females 8 males; median age 56 years (range 34-77 years). All patients symptomatic, have been submitted to preoperative morphological study, echinococcus serology, tumor markers and then laparoscopic fenestration with derufing and resection of superficial wall. Postoperative morbidity was evaluated and prolonged follow-up (mean 20 months) with clinical observation and abdominal US examination was performed.

Results: The mean operative time was 55' for the simple cysts and 120' for the polycystic disease, with no conversions. Postoperative morbidity was low: 2 bronchopneumonic infiltrations in NPHC and ascites resolved spontaneously in two weeks, in 1 PCLD and 1 NPHC. No mortality. The mean hospital stay was 6 days (range 4-14 days). In all patients the histology confirms non-parasitic, benign simple hepatic cysts and there was the resolution of the symptomatology. Follow-up was performed (range 12-48 months) (median 20 months) with clinical observation and abdominal ultrasound examinations: no resumption of the symptomatology. Recurrence in 2 patients (10% - 1 NPHC / 1 PCLD) asymptomatic because of small diameter of recurrent cysts.

Conclusions: The preoperative selection is fundamental for the results. Laparoscopic fenestration and derufing is safe and efficacious for NPHC and PCLD with great and superficial cysts (Type 1).

12.102 General Surgery

Laparoscopic Cholecystectomy for Acalculous Cholecystopathy (Gall Bladder Dyskinesia)

Dr. P A Yavalkar, Asst. Prof of Surgery, Dept. of Surgery
Dr. D P Pande, Prof. of Surgery & Head of Unit.
SKN Medical College & General Hospital, Maharashtra, India.

Gall bladder dyskinesia is a clinical entity with symptoms of biliary colic but without objective evidence of gallstone. The hallmark is recurrent right upper quadrant pain in absence of gallstones. It is also called acalculous cholecystopathy or gall bladder dyskinesia. Patients with gall bladder dyskinesia have biliary colic, a normal ultrasound, and a gall bladder ejection fraction typically less than 40%. Cholecystectomy offers symptom relief in the majority with high level of patient satisfaction. 25 cases (of biliary colic with normal ultrasound) presenting randomly in the surgical OPD were investigated, 20 cases had an ejection fraction (EF) of less than 40% were included in the study. Two patients refused surgery and are on medical line of treatment, and eighteen underwent surgery. All cases were followed up in the surgical OPD, 12 patients (66.6%) had symptomatic relief after two weeks and 5 patients (27.7%) had relief after three weeks. One patient (5.5%) is under follow up with symptom of pain which is decreased but still persists. Symptom relief has been seen in 94.5% of patients. Laparoscopic cholecystectomy is recommended for gall bladder dyskinesia after other causes have been excluded. Gall bladder ejection fraction should be done in patients presenting with biliary pain without evidence of gallstones to diagnose gall bladder dyskinesia.
Transumbilical Multi-Mini Port Clipless Cholecystectomy Without Using Triport

Nadeem MBBS, Muhammad, Nishtar Medical College, Multan Punjab, Pakistan
Kamal Pasha MBBS FRCS, Mustfa, Nishtar Medical College & Hospital, Multan, Punjab, Pakistan

Transumbilical multi-mini port clipless laparoscopic cholecystectomy is a novel laparoscopic surgical technique for cholecystectomy utilizing only a transumbilical incision, which eliminates any visible abdominal scars and improves cosmesis. This pilot study was conducted to assess the safety, feasibility, and short-term outcomes of transumbilical multi-mini port clipless laparoscopic cholecystectomy using conventional laparoscopic equipment. Transumbilical multi-mini port clipless cholecystectomy without using the triport technique takes about 55 minutes less time. After the initial expense of buying a Harmonic scalpel, it is economical for patients in poor countries that cannot afford the expensive triport. Fifteen patients (14 females average age 40 years and 1 male age 45 years) underwent laparoscopic cholecystectomy. To reduce the cost, an innovative technique was used in which 3 small incisions were made along the edge of the umbilicus in a “J” fashion. The duration of surgery was 55±20 minutes. Blood loss, patient recovery, and outcomes were comparable to those of using the triport technique, so this single-port technique is feasible for performing routine laparoscopic procedures.

Response at Six Months After Splenectomy in Idiopathic Thrombocytopenic Purpura: Laparoscopic versus Open Splenectomy

Rosario Vecchio (MD, FACS), 1 Eva Intagliata (MD), 1 Salvatore Marchese (MD), 1 Francesco Ferla 1 and Emma Cacciola (MD);

1 Department of Surgery, Laparoscopic Surgery Unit, University of Catania, Policlinico-Vittorio Emanuele Hospital, Catania, Italy
2 Department of Hematology, University of Catania, Policlinico-Vittorio Emanuele Hospital, Catania, Italy

Splenectomy is the treatment of choice in adult patients with chronic idiopathic thrombocytopenic purpura (ITP) refractory to medical therapy. Laparoscopic splenectomy has become the gold standard for surgical removal of the spleen in several centers and ITP represents in most reported series the main indication for the laparoscopic approach. So far, only few studies have compared long-term results between laparoscopic and open technique.

In this study we retrospectively evaluated results of splenectomy, in terms of postoperative platelet counts, comparing two homogeneous groups of patients with ITP treated respectively with laparoscopic and open approach for removal of the spleen.

Two groups of 20 patients each, operated on respectively with laparoscopic and open splenectomy, have been retrospectively analyzed. Platelet count at six months after surgery have been compared in relation to age, sex, preoperative platelet count, length of preoperative steroid therapy and interval between diagnosis and surgical treatment. Comparison of the two groups for each above indicated parameters did not show any significant statistical difference between laparoscopic and open group. But when preoperative length of corticosteroid therapy and diagnosis-to-splenectomy interval were related to response to splenectomy we observed a significant difference in term of postoperative platelet count increase in a sub-groups treated with the laparoscopic approach.

We discuss these results emphasizing the importance of the length of preoperative steroid therapy and diagnosis-to-treatment interval to achieve the best postoperative medical results.

Laparoscopic Single Trocar Appendectomy

Mohamed A Sharaan (MD), Alaa H Abdel-Razek (MD,FRCS), Samer S Bessa (MD)
Department of General Surgery, Faculty of Medicine, Alexandria University, Egypt
Background and objective:

Single port surgery is a new surgical technique with more promising advantages of minimal access laparoscopy. The present study was to assess the feasibility of the single trocar appendectomy, its morbidities and satisfaction for both patients and surgeons.

Methods:

Consecutive patients presenting with acute appendicitis were treated by single port appendectomy. Through an umbilical incision, the single port was inserted. A 5mm 30o lens was used. The mesoappendix was coagulated and divided by Ligasure, Harmonic scalpel or diathermy. Absorbable endoloops were used to ligate the base of the appendix. Assessment included operative time, complications, patient satisfaction and surgeon satisfaction.

Results:

The study included 34 patients, 19 (55.9%) females and 15 (44.1%) males with a mean age of 27.3 ± 5.4 years. The procedure was completed in 32 patients. Complications occurred in 5 patients (14 %). The mean hospital stay was 1.1 days+ 1. The procedure achieved accepted cosmetic outcome with minimal or hidden scar. The patients were satisfied as good or very good procedure. The surgeons found it satisfactory in 67.6% of operations as regards technical difficulties and outcome.

Conclusion:

The procedure is feasible and safe. Neither mortality nor visceral injury occurred in this study. Rate of complications 14 %. Accepted rate of satisfaction for both patients and surgeons. Relatively expensive but achieved accepted cosmetic results with minimal or hidden scar. Complications are expected to decrease by improvement in the learning curve.

12.109 Multispecialty

Laparoscopic Vaginoplasty Using Segment of Sigmoid Colon

Martynas Sokolovas, Dr., Virginijus Diržauskas Dr.

Klaipeda Seamen's Hospital, Department of Abdominal Surgery, Department of Gynecology and Endoscopic Gynecology.

Objective of the study: Introduction case of Mayer Rokitansky Kuster Hauser syndrome or uterovaginal aplasia.

Methods:

Videopresentation of laparoscopic operation with multidisciplinary surgical team.

Results:

Patient K.G. 21 years old., I type Mayer Rokitansky Kuster Hauser syndrome – full uterovaginal aplasia. In genetic analyses 46xx female karyotype was found. Pelvic CT scan and endorectal ultrasound scan – aplasia of uterus and vagina. Echostructure of ovaries is normal. Laparoscopic vaginoplasty using segment of sigmoid colon was performed.

Conclusions: Operational results exceed expectations, patient feels very well.

12.111 Gynecology

Is Advanced Laparoscopic Surgery the Only Answer?

Professor Mark Erian, MD, DM (University of Queensland), Grad Certificate Clinical Education (UQ), FRCOG, FRANZCOG, CAGE (USA), A/Professor Queensland University/Senior Consultant Obstetrician and Gynaecologist, Royal Brisbane and Women’s Hospital, Herston, Queensland, Australia; Dr. Glenda McLaren, MD, FRCOG, FRANZCOG, Grad Diploma Legal Studies (Brisbane), Senior Consultant Obstetrician and Gynaecologist

Advanced laparoscopic gynaecological surgery is a cornerstone of contemporary clinical gynaecology. Nevertheless, many of our trainees lack competence at hysteroscopic and difficult conventional gynaecological surgical procedures.

Objective: To test the above theory

Setting: Royal Brisbane and Women’s Hospital, the main teaching and tertiary referral centre, Queensland, Australia, for 22 years, between 1990-2011 (inclusive).

Method: A retrospective observation study examining the performance of trainees (registrars and senior
Obstetricians and Gynaecologists. In our hospital about 2500 gynaecological operations are performed annually and 20% (500 operations) as major hysteroscopic, laparotomic or vaginal procedures. As an integral part of training, many consultants allow trainees to carry out major operations under the direct supervision of the consultant-in-charge of the patient. The performance of the trainees is monitored and evaluated.

**Result:** In 40% of cases, the supervising consultant has to take over either partly or completely to ascertain safety of the patient and satisfactory completion of difficult hysteroscopic, laparotomic or vaginal operations.

**Conclusion:** Current junior doctors’ training in complex hysteroscopic, laparotomic and vaginal surgery seem to be hampered by the ramification of “safe working hours” widely applied in the Western world, and the subsequent decrease in clinical surgical exposure for medical trainees coupled with the escalation of related lawsuits against medical professionals.

### 12.112 Gynecology

**Robotic Excision of Peri-Ureteral Endometriosis**

Toni Sylvester, MD; Vadim Morozov, MD

Department of Obstetrics, Gynecology & Reproductive Sciences

University of Maryland School of Medicine

Baltimore, MD

This is an instructional video for surgeons who encounter deeply infiltrating endometriosis during minimally-invasive gynecologic procedures. The video demonstrates specific techniques and use of Endowrist® instruments of the da Vinci robotic system® in a step-wise dissection of fibrotic endometriosis involving the ureter. Anatomic landmarks are illustrated throughout the video. It is intended to equip the robotic surgeon with knowledge for safe excision of endometriosis when it densely involves vital structures, such as the ureter. Deeply embedded lesions may be safely excised through systematic dissection and identification of anatomic structures.

### 12.113 Urology

**Endoscopic Treatment of Fibroepithelial Polyp of the Ureter**

Dario Garcia-Rojo, Edmundo Tremps, Mercedes Ramon.

Urology Department. Hospital Sant Rafael. Barcelona. Spain

**Objectives:** Fibroepithelial polyps are benign mesenchymal tumors with a morphology and clinical presentation very similar to transitional cell carcinomas, so that differential diagnosis is of paramount importance.

**Results:** We present the case of a 72-year-old female patient, with history of breast cancer, which came to the office reporting irritative voiding syndrome. Ultrasound showed an exophytic bladder lesion. Intravenous urography showed a filling defect in the ureter and bladder. In view of the findings, and with the suspicion of fibroepithelial polyp, an endoscopic exploration was performed, confirming the diagnosis, followed by ureteroscopic exeresis of the neoplasm.

**Discussion:** A differential diagnosis between fibroepithelial polyp and transitional cell carcinoma cannot be made with imaging tests alone. The suspicion must be established, and endoscopic exploration indicated, by means of ureterorenoscopy or percutaneous nephroureteroscopy, whatever is a better indication, with biopsy or definitive endoscopic treatment of the tumor.

**Conclusions:** Endoscopic exploration is currently the procedure of choice for the diagnostic confirmation of this condition and its definitive treatment.

### 12.114 Gynecology
This is an instructional video for surgeons who encounter dense fibrosis associated with advanced endometriosis during minimally-invasive procedures. The video demonstrates the use of Endowrist® instruments of the da Vinci® robotic system assisting the surgeon with difficult dissections in the cul-de-sac and peri-rectal fossa. Tissue interfaces are identified throughout the video, and the fibrotic lesion is undermined without compromise to the rectum. Deeply embedded lesions may be safely excised robotically through systematic dissection and identification of tissue planes.

12.115 Multispecialty

Laparoscopy Transportation Using Magnets and Tramways
Daniele A. Tsin, MD (1), Guillermo Domínguez, MD (2), Fausto Davila, MD (3), Andrea Tinelli, MD (4), Martha R. Davila, MD (5), Marcelo Martinez Ferro, MD (2)

The Mount Sinai Hospital of Queens; Long Island City, New York, USA.
Fundación Hospitalaria; Buenos Aires, Argentina.
Universidad Autonoma de Mexico, Facultad de Estudios Superiores; Iztacala, Mexico.
Vito Fazzi Hospital, Department of Obstetrics & Gynecology, Division of Experimental Endoscopic Surgery, Imaging, Technology and Minimally Invasive Therapy; Lecce, Italy.
Universidad Nacional Autonoma de Mexico (UNAM), GEA Gonzalez Hospital, DF, México.

Background: This paper presents a means of intra-abdominal transportation without additional laparoscopy ports.

Methods: We performed a single incision laparoscopy cholecystectomy using an operative laparoscope with an operative channel. An alligator clip in tandem with a neodymium magnet was introduced in the abdomen and placed on the target. A double tether alligator (Secured Independent Tool) was introduced using two 18 gauge IV catheters strategically placed under laparoscopic surveillance. A suture was threaded through the IV catheter and identified with the endoscope as it entered the cavity. The suture was grasped and withdrawn until exiting via the operative port; this maneuver was done twice. Outside the port, the sutures were tied to the Secured Independent Tool. The Secure Independent Tool was introduced and placed on the target.

Results: The magnet was used to hold the fundus of the gallbladder and transport the endobag. The Secured Independent Tool was used for exposure, mobilization and transportation of the gallbladder. No perforation of the gallbladder occurred and all functions were done successfully.

Conclusions: Magnet transportation in the anterior peritoneum was unlimited in this case. The strategically placed IV catheters allow for an aerial type of tramway transportation of a target between two points inside the abdomen.

12.116 General Surgery

Hybrid Transvaginal Cholecystectomy: In Everyone’s Reach
Daniel Tsin MD Mount Sinai Hospital Queens, NY, USA.
Fausto Davila MD Hospital Regional SESVER, Poza Rica, Veracruz, México.
Martha R Davila MD Hospital General Dr Manuel GEA González, DF, México.
Jose Lemus MD Hospital Regional de Pemex, Poza Rica, Veracruz, México.
Andrea Tinelli MD Vito Fazzi Hospital, Lecce, Italy
To present an easy to perform transvaginal cholecystectomy within the reach of expert laparoscopists working at small and large general hospitals, after approval by the respective local hospital’s ethical committees or institutional review board.

**Method:** The procedures were done using a 5 mm umbilical port for visualization and surveillance of the vaginal port entrance in the cul-de-sac, as well as to place instruments. A vaginal port, 13 mm in diameter and 33 cm in length, was used to place a 10 mm, 30 degree angle, 42 cm in length laparoscope, and for specimen extraction. The port allows for the introduction of instruments and cleansing of the laparoscope without changing a Trendelenburg position back and forth.

**Results:** We performed 15 cases, no conversion occurred and no complications were found. We achieved good cosmetics results and used less pain medication than in 3 ports laparoscopy.

**Conclusions:** Laparoscopists surgeons trained in the transvaginal approach of Hybrid (Culdolaparoscopic) cholecystectomy could do this procedure using a 33 cm vaginal port that facilitates this approach, with the use of available laparoscopic instruments in most hospitals.

**12.119 General Surgery**

**Bile Duct Injuries During Laparoscopic and Open Cholecystectomies**


1 Department of Surgery, General Hospital “Polykliniki”, Athens, Greece.
2 Department of Anaesthesiology, General Hospital “Polykliniki”, Athens, Greece.

**Objectives:** To report, classify and compare the incidence of bile duct injury in laparoscopic and open cholecystectomies, as well as to present treatment options and outcome of those bile duct injuries.

**Methods:** From Dec 2005 to Dec 2011 945 cholecystectomies were performed, 841 (89.5%) laparoscopic with 1.52% (13 cases) conversion rate and 104 (10.5%) open. Acute cholecystitis accounted for 219 (23.1%) cases, 170 (77.62%) of which were managed laparoscopically and 49 openly. Female to male ratio was 2:1. Bile duct injuries (BDI) were recorded and classified according to Strasberg classification. BDI was also compared between elective and emergency cases either open or laparoscopic. Treatment options included conservative and interventional approaches.

**Results:** BDI occurred in 12 patients (1.27%) and their Strasberg classification was as follows: Type A 8 cases (66.67%) Type B 1 case (8.33%) and Type D 3 cases (25%). No BDI was noted in open cases either elective or emergency, nevertheless there was no statistically significant difference (P=0.38 and P=0.204 respectively). Four of 12 cases were encountered conservatively; the remainder 8 cases were submitted to endoscopic retrograde cholangiopancreatography (ERCP) and stent insertion. However enterobiliary anastomosis followed in 3 cases (1 early and 2 delayed). Follow up (6 months to 6 years) of all patients showed a favorable result in 5 of them, 3 developed strictures treated surgically and 4 presented minor further complications so far.

**Conclusions:** BDI incidence seems to be higher in laparoscopic cholecystectomy compared to open. Long term morbidity is not negligible despite appropriate undertaken intervention.

**12.120 General Surgery**

**Necrotizing Serositis Complicating Appendicitis: Implications for the Laparoscopic Surgeon.**

Kerry B. Buser, MD; Nirmal Bastola, MD

Lexington Regional Health Center

**Objective:** This case report of necrotizing serositis documents a rare condition, not typically seen in association with appendicitis. Laparoscopic surgeons must be aware of this entity and available treatment options, should the condition
Methods: A 13 year old, previously healthy male presented to a small, rural hospital with clinical features of a possibly ruptured appendicitis. Atypical operative findings prompted conversion from laparoscopic appendectomy to an open operation. Acute, non-gangrenous appendicitis was found accompanied by necrotizing serositis involving multiple areas of the proximal ileum, remote from the diseased appendix.

In an effort to salvage the large amount of at-risk small bowel, abdominal cavity lavage and a second-look laparotomy with repeat intra-abdominal lavage was planned and carried out with immediate transfer to a tertiary care facility.

Results: The patient required vigorous resuscitation, IV antibiotics, and mechanical ventilation for the first post-op day. Other than transient renal insufficiency, and a transient post-operative ileus; he had an uneventful, complete recovery. Serology was negative for Systemic Lupus Erythematosus (SLE).

Conclusions: Necrotizing serositis is typically seen in patients with chronic autoimmune disorders, or in association with peritoneal dialysis. This may be the first reported case in which it has been found as a comorbidity of acute appendicitis. Necrotizing intestinal serositis can be successfully managed without radical resection. The key operative features of the condition are reviewed, as well as treatment options. Laparoscopic surgeons will hopefully be better prepared to act should this rare entity present as an unexpected finding when treating abdominal emergencies.

12.121 General Surgery

Video-assisted Techniques in Thyroid Surgery
Nicola Tartaglia MD, Francesco Lapolla MD, Vincenzo Neri Prof Dr MED
Department of General Surgery – University of Foggia - Italy

Background: Minimally invasive video-assisted thyroidectomy, a recently developed technique, has been shown to be feasible and safe.

Patients and Method: From March 2004 to September 2011, 43 lobectomies by minimally invasive video-assisted thyroidectomy were performed for monolateral goiter (24 left, 19 right), and 5 total thyroidectomies for multinodular goiter. The inclusion criteria were nodules < or = 3.5 cm diameter or thyroid lobe volume less than 15 ml, and no thyroiditis or previous neck surgery. Suspect malignant nodules were excluded. The procedure was carried out through a 20 to 30 mm central neck incision, with external retraction and no neck insufflation. The vessels were ligated or closed by means of clips.

Results: There were no intraoperative complications. One recurrent laryngeal nerve palsy (2.1%), after lobectomy, no permanent hypoparathyroidism occurred. The mean operative time was 70 min (range: 45-125) with no conversion to open procedure.

Discussion: Meanwhile the results in term of percentage of major complications (recurrent laryngeal nerve palsy, permanent hypoparathyroidism) seem to be comparable with our experience with open procedure; the results, in terms of patient comfort, reduced postoperative pain and cosmetic quality were excellent. The learning curve appeared short, owing probably to previous experience in conventional endocrine surgery and the closer similarities of minimally invasive video-assisted thyroidectomy to enhanced-view conventional surgery than to laparoscopic surgery.

Conclusion: In our experience the Minimally invasive video-assisted thyroidectomy has been shown to be a safe and perfectly reproducible technique for benign thyroid disease when correct indications are strictly followed.

12.122 Plastic Surgery

Laparoscopic Transperitoneal Harvest of Deep Inferior Epigastric Vessels in Unilateral Deep Inferior
Background: The Deep Inferior Epigastric Artery Perforator (DIEP) Flap has gained acceptance in autologous free tissue breast reconstruction. We report a case of laparoscopic transperitoneal harvest of the deep inferior epigastric vessels in unilateral DIEP free flap breast reconstruction.

Methods: The case was selected using CT angiography. The patient underwent laparoscopic transperitoneal harvest of the right DIEP vascular pedicle followed by free transfer to reconstruct the left breast. Pneumoperitoneum was achieved with standard 10mm infraumbilical cutdown technique. Three 5 mm trocars were placed opposite the target vascular pedicle. Harmonic scalpel dissection proceeded along the DIEP vessels from origin to the dominant perforator. Concurrent flap elevation confirmed the dominant perforator. The DIEP vessels were divided superior to the perforator. The deep inferior epigastric pedicle was taken at its origin. The vascular pedicle was then delivered elevating the flap. The flap was inset as the left breast after anastomosis to the internal mammary vessels. The rectus muscle and anterior sheath were closed separately. The operation concluded without complication. The laparoscopic harvest time with closure of the laparoscopic sites took sixty-nine minutes. There were no interoperative complications. The patient did require reoperation thirty hours later for venous congestion. The patient was discharged on POD#8 with a healthy flap. The patient is doing well at eighteen months follow up.

Conclusion: Laparoscopic DIEP vessel harvest for free transfer breast reconstruction is safe and efficient. The technique is straightforward. Greater experience is required to compare results to open harvest.

12.123 General Surgery
Factors Responsible for Prolonged Postoperative Hospital Stay After Laparoscopic Cholecystectomy

Objective: This study aims to identify various factors which prolong post-operative hospital stay and therefore will be of help in future in the field of minimal invasive surgery.

Methods and Procedures: This is an observational prospective study conducted in the Department of Surgery, Liaquat University of Medical & Health Sciences, Jamshoro, from January 2005 to December 2009.

This study includes 580 patients of symptomatic cholelithiasis, admitted and treated by laparoscopic surgery during a period of five years in a public sector university. All patients were observed from 1st postoperative day to date of discharge and different operative, postoperative and patient related variables were recorded on a proforma. The duration decided for short stay was 48 hours and duration more than that was considered as prolonged stay.

Results: Out of 580 patients, 187 (32.24%) had prolonged stay extending from 3-28 days. Majority of patients presented in 4th & 5th decade (60.52%) with symptoms of pain in right hypochondrium (58.79%) and pain in right hypochondrium and epigastrium (27.6%) as main clinical features. Twenty-eight variables were identified comprising of 10 patients related (15.86%), 12 surgery related (16.55%) and 6 post-surgery related (16.38%). Patients having co morbid conditions, with difficult operative procedure and major postoperative complications were main candidates for prolonged stay.

Conclusion: The prolonged post-operative hospital stay can be reduced by careful pre-operative assessment, meticulous surgery and proper post-operative management.

12.124 Gynecology
Robotic Assisted Dissection of the Uterine Artery at its Origin: Approach and Technique.
Matthew Palmer. DO: Jalloul Randa. MD: Hanna K. Rabbie. MD
In this video, the robotic platform is used to perform a hysterectomy and bilateral salpingo-oophorectomy (BSO) during which the uterine arteries are dissected at their origin.

A 59-year-old female had a 5 cm complex ovarian mass causing pelvic pressure. On exam, a 14 week-size uterus with right adnexal fullness were noted. Ca125 was 13. PET scan was positive in the ovarian mass, the iliac lymph nodes and within the wall of the uterus. She was counseled about possible malignancy and consented to undergo a robotic assisted hysterectomy BSO, frozen section and possible staging.

A five-point trocar entry was used with the camera at the umbilical level.

Dissection of the pararectal and the paravesical spaces allowed the identification of the external iliac vessels and the ureter. The superior vesical artery was dissected, guiding in the identification of the uterine artery origin. Using the bipolar cautery, the uterine artery was coagulated and transected selectively with minimal blood loss. The procedure was completed in less than 10 minutes console time. A hysterectomy and BSO was then completed, frozen and final pathology were benign.

The patient did well and she was discharged home the next day in good condition.

The advantages of ligating the uterine artery at its origin compared to doing so at the isthmus of the uterus include: 1) minimizing blood loss, 2) decreasing the use of coagulation that could jeopardize the ureter, 3) controlling over the operating field should any complication occur, since all the vital structures are dissected and identified.

12.125 Gynecology
Closure of the Vaginal Cuff at da Vinci Robotic Hysterectomy – Techniques
Bunyan Stephens Dudley, MD; Nkechinyere Nwaobasi, MD;
Division of Gynecologic Oncology, Meharry Medical College & Tennessee Oncology, PLLC; Nashville, Tennessee

Dehiscence of the vaginal cuff is a recognized complication of hysterectomy and has been reported more commonly after laparoscopic and robotic procedures than after abdominal and vaginal hysterectomy. Reasons have been postulated to include inadequate mobilization of the vaginal cuff with resultant insufficient tissue closure and over zealous use of cautery that compromises tissue healing capability. The role of suture type and technique of closure have also been questioned but poorly studied. Recently, a unidirectional barbed suture has become available that helps insure tight approximation of the vaginal edges by preventing “back slippage” of the suture through tissue resulting in an improperly loosened suture line. Furthermore, speculation has arisen that perhaps a novel approach such as the “baseball” stitch might result in a stronger closure with a lower rate of dehiscence. The baseball stitch has been used in successfully in uterine myomectomy procedures where strength of closure is of paramount importance also. This video describes and depicts our early experience with this approach, alongside a video of a more traditional running locked closure. At the time of video preparation, thirty cases had been completed with no complications.

12.126 General Surgery
Laparoscopic Management of Bowel Obstruction, the All Inclusive Approach Improves Outcomes
Morris Franklin, MD
Texas Endosurgery Institute

Background: Multiple series on laparoscopic management of Bowel obstruction have been published. Most are limited to likely cases of adhesive Small Bowel Obstruction and exclude patients with hernias and/or Colon Obstruction. We present our series on the “all inclusive approach” to laparoscopic treatment of bowel obstruction.

Methods: From 1991 to 2010, 448 patients underwent laparoscopy for Bowel Obstruction. Results: Laparoscopic management was successful in 74.5%. There were 62 enterotomies (13.8%). Mean length of stay was 10.4 days. Mortality was 1.7%. Significant differences were found between the Laparoscopic and Converted patients in enterotomies (6.4% vs 40%),
Mean ASA score (2.47 vs. 2.94), Blood loss (49.183 vs. 177.35 cc), Length of surgery (94 vs. 166 min.), length of stay (9.485 and 14.714 (p value 0.008) and in the Nonenterotomy and Enterotomy length of surgery (94 vs. 149 min.) and Blood loss (64 vs. 127cc). Linear regression showed a relation between ASA score and Length of Stay (p value 0.0001).

**Conclusion:** Bowel Obstruction can be managed by laparoscopy in 74.5% of cases. Conversion is associated with a significant increase in blood loss, operating time, a greater number of enterotomies and increased length of stay, with the latter being related to patient co-morbidities.

**12.127 General Surgery**

**Successful Laparoscopic Common Bile Duct Exploration**
Morris E. Franklin, MD; Texas Endosurgery Institute

The routine use of intraoperative cholangiogram (IOC) performed by some surgeons at the time of laparoscopic cholecystectomy, also leads to identification of patients with totally unsuspected choledocholithiasis.

**Sequential Technique:**
- Intraoperative cholangiogram: Road map of the biliary system, ID of biliary stones
- Anterior dissection of common bile duct: Stay sutures, traction on cystic duct
- Choledochotomy
- Flushing the duct: This maneuver will frequently suffice to clear stones
- Choledochoscopy: Direct visualization of the biliary system and stones, stone retrieval with basket, trans-scope cholangiogram
- Placement of T-tube: T-tube tailoring, pre-tied sutures, suture technique
- T-tube cholangiogram
- Completion of cholecystectomy
- Extraction of specimen and stones

**Conclusions:**
Laparoscopic CBDE is a safe technique that allows the surgeon a successful exploration of the common bile duct and clearance of stones. Systematic, stepwise technique is advised. Two-handed laparoscopic suturing techniques are essential.

**12.128 General Surgery**

**Small Bowel Incarceration in Original Hernia Sac Following TEPP Inguinal Hernia Repair - Treatment and Prevention**
Massier C. MD; Costin J.III MD
Cleveland Clinic, Cleveland, OH

**Objective:** Small bowel obstruction following transabdominal preperitoneal repairs (TEPP) is an infrequent complication. Previous reports of small bowel incarceration through a peritoneal defect after a TEPP repair have been made but we present an internal hernia through the reduced hernia sac.

**Methods:** The case of a 56 year old patient with recurrent inguinal hernia after multiple prior repairs with mesh is presented. Bilateral TEPP hernia repairs were performed. He returned with a bowel obstruction, showing a transition point in right lower quadrant on computer tomography.

At laparoscopy, we found an incarcerated internal hernia through the original hernia sac (and not through a defect in the peritoneum). The hernia sac was inverted and sutured laterally to cover small peritoneal tears.

**Results:** We highlight several important technical details of TEPP hernia repairs. First, a vigilant search for and repair of any peritoneal defects should be part of any TEPP procedure. Secondly, ligation of a large hernia sac should be done even after a TEPP repair.

**Conclusions:** Attention to these technical details along with increased awareness of the possibility of bowel entrapment.
of this approach. Knowledge of the presentation of small bowel entrapment in peritoneal defects or residual hernia sacs could result in less costly and more timely intervention.

**12.129 Gynecology**

**Laparoscopic Treatment of Endometriosis in Patients with Failed In Vitro Fertilization Cycles; Mansoura Experience**

Maher Shams Eldeen Hosanna, MD
Mansoura Faculty of Medicine, Mansoura University, Mansoura, Egypt

**Objectives:** To report our experience in patients with previous in vitro fertilization failures who conceived after laparoscopic treatment of endometriosis.

**Methods:** This was done through retrospective case series study in Mansoura University Hospital in which laparoscopic evaluation and treatment of patients with previous in vitro fertilization failure was performed.

**Results:** Out of 29 patients with prior in vitro fertilization failures, 22 conceived after laparoscopic treatment, including 15 non-IVF pregnancies and 7 IVF pregnancies.

**Conclusions:** in the absence of tubal occlusion or severe male infertility, laparoscopy may still be considered for the treatment of endometriosis even after multiple IVF failures.

**12.130 General Surgery**

**Laparoscopic Cholecystectomy for Acute Cholecystitis**

Miin-Fu Chen, Prof Dr Med; Chang Gung Memorial Hospital, Chang Gung University

From Jan 2006 to Dec 2010, 5104 cases with gallstones diseases were undergone laparoscopic Cholecystectomy (LC). Among them, 1389 cases (27.2%) were diagnosed as “acute cholecystitis”. This is retrospective analysis the timing, comorbidity and complications. 755 were male and 634 were female. Age ranged from 23-89 yrs with median of 45 yrs and mean of 50.5 yrs. Diagnosis was made as clinical history, physical finding, leukocytosis with imaging studies as Echo or CT scan. 79 cases were performed by emergent percutaneous transhepatic gallbladder drainage (PTGBD), were excluded. LC was done <72 hrs in 1258 (96.3%) and >72 hrs in 52 (3.97%). 15 of 1310 was converted into open cholecystectomy. Post-operative complications were wound infection in 20 (1.52%), bile leak in 15 (1.15%) and common bile duct injury in 2 (0.15%). Bile leak was treated by ERCP stent and ductal injury was managed as hepatico-enterostomy with un-eventful postoperative course till now. LC is a safety operative procedure for acute cholecystitis if performed within 72 hrs with minimal complications.

**12.131 General Surgery**

**Comparison of Single Incision with Conventional Four Port Cholecystectomy**

P.N. Agarwal1 MS, Rajdeep Singh2 MS, Nikhil Talwar3 MS, Vaishali Srivastava4 MBBS

Department of Surgery, Maulana Azad Medical College & Associated Lok Nayak Hospital, New Delhi, INDIA

**Background:** A number of techniques have been devised to reduce the number of incisions for laparoscopic surgery. Single incision or single site surgery may be accomplished by the use of dedicated (expensive) ports or by the use of conventional ports through a single incision. The present study was done to compare the results of a single incision laparoscopic cholecystectomy using conventional ports and instruments, with conventional four-port cholecystectomy.

**Methods:** Forty adult female patients with symptomatic gallstones were randomized to either single incision or four-port cholecystectomy. For single incision access, a transverse sub-umbilical skin incision was used, through which one 10mm and two 5mm ports were placed for the procedure. The primary end-points were postoperative pain and cosmesis. Secondary
**Results:** Currently 20 patients have been enrolled, and interim analysis has been done. The study is expected to complete by July 2012. Interim analysis suggests that pain is equivalent in both groups, and there is no difference in patient satisfaction in both groups with regard to cosmesis. Operating time was significantly longer in single incision laparoscopic cholecystectomy than in four-port cholecystectomy. Intra-operative difficulties relating to movement of instruments and clashing is present with single incision.

**Conclusions:** A preliminary result from this prospective trial show operative time is longer with single incision laparoscopic cholecystectomy and intra-operative difficulties are also more. Final results will be analyzed when all the patients are completed and the results will be presented in the meeting.

**12.132 General Surgery**

**Evaluation of Clinical Outcome of Early Laparoscopic Cholecystectomy vs Delayed Laparoscopic Cholecystectomy for Acute Calculus Cholecystitis**

P.N. Agarwal MS, Rajdeep Singh MS, Nikhil Talwar MS, Sushant Verma MBBS
Department of Surgery, Maulana Azad Medical College & associated Lok Nayak Hospital, New Delhi, India

**Background:** The decision regarding early vs late cholecystectomy is still unclear. Proponents of early cholecystectomy cite shorter hospital stay without added morbidity and decreased chance of recurrent attacks of acute cholecystitis. Advocates for delayed surgery point out the increased chances of complications in early laparoscopic cholecystectomy. The purpose of this study is to evaluate the clinical outcome of early vs delayed laparoscopic cholecystectomy for acute calculus cholecystitis.

**Methods:** A prospective study enrolled 60 patients of acute cholecystitis with 30 undergoing early surgery within 5 days and 30 undergoing surgery after 6 weeks. Exclusion criteria included pancreatitis, common bile duct calculi and previous upper abdominal surgery. Variables compared included duration of surgery, bile duct injury, gall bladder perforation, analgesic requirement, conversion rate, wound site complication and hospital stay.

**Results:** The mean operative time in early group was significantly longer. No case of bile duct injury was recorded in either group. 5 cases of intra-operative gall bladder perforation were recorded in early group as compared to 4 in delayed group (p > 0.05). 3 cases needed conversion to open cholecystectomy in early group as compared to 1 in delayed group (p >0.05). Mean hospital stay in early group was 2.7 days as compared to 2.5 days in delayed group (p >0.05). The visual analogue scale score for postoperative pain after 24 hours was 3.7 in early group as compared to 3.8 in delayed group (p >0.05).

**Conclusions:** Early laparoscopic cholecystectomy is recommended for acute calculus cholecystitis and can be carried out without increasing morbidity.

**12.133 General Surgery**

**Single Incision Laparoscopic Cholecystectomy (SILC) Using Non Articulating Instruments – Our Institutional Experience**

Chaudhary S MD, Bhullar J MD, Subhas Gokulakrishna MD, Kolachalam Ramachandra MD, Mittal Vijay MD
Department of Surgery, Providence Hospital and Medical Centers, Southfield, MI

**Purpose:** SILC was first described in 1999. Many techniques using new instruments have emerged but none has been standardized. We describe our technique and our experience, using non articulating instruments and conventional trocars.

**Method:** Patients who underwent SILC over 2 years (July 2009-July 2011) were included in the study group. All laparoscopic cholecystectomies done at the same time by the same surgeon were included in the control group. Demographic data, previous abdominal surgeries, bile spillage, conversion, and duration of surgery were recorded.

**Results:** Seventy patients underwent SILC and 115 patients had laparoscopic cholecystectomy. Ninety-three percent of SILCs were done in women as compared to 68% in the control group (p<0.0001). More SILC patients were younger (65% were 20-30 years old) as compared to control patients (60% were 50-70 years old, p<0.001). Mean duration (± standard
were 30-50 years old) as compared to control patients (60% were 50-70 years old, p<0.001). Mean duration (± standard deviation) of SILC was 73±16 minutes as compared to 66±24 minutes in controls (p<.0001). Of the first 20 SILC, 9 required insertion of additional instruments and 1 was converted to laparoscopic cholecystectomy. The subsequent 50 cases had only 1 conversion (p =0.001). In the first 20 SILC, one patient (out of 3) with BMI above 35 required conversion to laparoscopic cholecystectomy and one required insertion of an additional instrument. In the last 50 cases, all the patients with BMI above 35 (n=6) were done successfully without any additional instrument insertion or conversion.

**Conclusions:** SILC has a learning curve. Patients with BMI>35 can undergo SILC. With experience, SILC has comparable outcomes to laparoscopic cholecystectomy in properly selected patients and is economical.

12.134 Gynecology

**Unusual Complication of Laparoscopic Subtotal Hysterectomy- A Case Report**

Radha Syed, MD, FACOG
Staten Island University Hospital, Staten Island, New York

**Objective:** To highlight the remote dangers of supracervical hysterectomy where cervix did not close adequately producing future complications

**Methods and Procedures:** Retrospective case report of a 53 year old patient who had undergone LSH BSO (laparoscopic supracervical hysterectomy with bilateral salpingoophorectomy) in 2005 for chronic pelvic pain, myoma, menorrhagia, and endometriosis. No immediate postop complications. She had vaginal bleeding periodically for next 4 months. This was presumed to be residual endometrium. Patient was diagnosed with fibromyalgia. Later, bleeding stopped. Cervix was very small and flush against vagina due to vaginal atrophy. At age of 59, pap smear showed positive high risk HPV for which colposcopy and biopsies were performed. All biopsies showed LGSIL with HPV effect. Patient opted to have LEEP (loop electrosurgical excision procedures) procedure in hospital with lapchole. After LEEP, a white polypoid lesion presented itself at external os. Suspecting endocervical polyp, we evaluated its origin. More of polyp came into vagina revealing it to be a bowel loop. This loop of bowel was evaluated intraoperatively for any thermal injury and cervix was closed at the external os with multiple interrupted sutures. No postop complications ensued.

**Results:** Supracervical hysterectomy may give rise to a small opening through which bowel prolapse can occur. This can be a disaster waiting to happen if at a future date LEEP has to be performed.

**Conclusions:** Bowel prolapse after LSH is uncommon but a possible complication which can be prevented by adequate intraoperative suturing of cervix.

12.135 Gynecology

**Delayed Complication of LEEP in a Postmenopausal Patient Requiring Hysterectomy- A Case Report**

Radha Syed, MD, FACOG
Staten Island University Hospital, Staten Island, New York

**Objective:** To delineate possible complication of LEEP (loop electrosurgical excision procedure) causing cervical stenosis secondarily obstructing bloodflow from either pre or post menopausal bleeding.

**Methods and Procedures:** Retrospective review and case report of a 52 year old G5 P3 023 postmenopausal patient who arrived with sudden onset of acute pelvic pain to the ED (Emergency Department). CT Scan and pelvic sonogram revealed enlarged 17cm sized uterus with dilated cavity and containing complex fluid. Cervix was closed with fibrosis. On exam, uterus was bulky and tender with cervix fused at the vault of vagina. Previous LEEP done 4 months prior for HGSIL and had post partum tubal ligation in 2002. She underwent RA TLH BSO (Robotic Assisted Total Laparoscopic Hysterectomy with Bilateral Salpingoophorectomy) where a large hematometra with 5 cm submucous myoma was removed. Postop period and recovery uneventful.

**Results:** LEEP in postmenopausal patient has the potential to cause severe cervical stenosis and fibrosis. In the event of postmenopausal bleeding secondary to fibroid, the outflow obstruction can cause hematometra especially with tubal ostia.
Conclusions: LEEP, though an innocuous procedure, can have devastating complications remotely due to cervical stenosis especially in a postmenopausal patient.

12.136 Gynecology

Robotic Hysterectomy: Approach to the Massively Enlarged Uterus
Matthew M Palmer, D.O., Mona Orady, M.D.
Division of Minimally Invasive Gynecology and Robotic Surgery, Department of Obstetrics, Gynecology, and Women’s Health, Henry Ford Health System, Detroit, MI, USA

The benefits of minimally invasive methods of hysterectomy are well described. Minimally invasive hysterectomy offers patients smaller incisions, decreased blood loss, decreased length of stay, and a faster recovery and return to normal activities. The use of the da Vinci Surgical System for robotic hysterectomy has helped to extend the ability of surgeons to perform hysterectomy in patients who may not otherwise have been candidates for a minimally invasive approach, such as in those with extremely large bulky uteri making traditional laparoscopic hysterectomy difficult.

The patient is a 43 year-old G2P0 with a history of severe menometorrhagia and bulky uterine fibroids. She desired a definitive solution to her pain and bleeding and a minimally invasive option was desired. She was counseled that her risk of conversion to laparotomy was great due to the large size of her uterus.

This video demonstrates how the da Vinci surgical robot can be useful in helping to overcome the surgical challenge of a grossly enlarged uterus. The use of an Alexis retractor and a small mini-laparotomy incision of 3-4 cm allowed us to extract the uterus quickly without subjecting the patient the risk of prolonged anesthesia. Final pathology revealed a uterus weighing 2770 grams. The use of the da Vinci robot spared the patient a prolonged recovery and the increased pain of a laparotomy.

While minimally invasive hysterectomy is not possible in all patients, robotic assistance reduces the rate of laparotomy and allows more patients the benefits of a minimally invasive approach.

12.137 Head and Neck Surgery

Transoral Robotic Surgery for Hypopharyngeal Squamous Cell Carcinoma: 3-year Oncologic and Functional Analysis
Young Min Park, MD, Won Shik Kim, MD, Se-Heon Kim, MD.
Department of Otorhinolaryngology, Yonsei University College of medicine, Seoul, Korea

Objectives: This prospective study evaluated the oncologic and functional results of Transoral robotic surgery (TORS) for the treatment of hypopharyngeal cancer obtained at our institution over a period of three years and confirmed the validity of TORS as a surgical organ-preserving strategy.

Methods: Between 2008 and 2011, 28 patients who were diagnosed with hypopharyngeal cancer underwent TORS for removal of a primary lesion. The da Vinci Robotic system was used to remove the lesion. The Kaplan-Meier method was used to analyze overall survival and disease-free survival. Videopharyngogram study (VEF) was performed and functional outcome swallowing scale (FOSS) was utilized to measure and evaluate swallowing function. Acoustic wave form analysis was conducted to evaluate voice status.

Results: Overall survival at 3 years was 89% and disease-free survival was 84%. On the VEF study, serious aspiration or delay of swallowing was not observed during the pharyngeal stage of the swallowing process. Overall, 96% of the patients showed favorable swallowing abilities with an FOSS score ranging from 0 to 2. The fundamental frequency variation (vF0) and jitter were increased upon acoustic waveform analysis (vF0=2.71±0.063, Jitter=2.01±0.034), but the harmonic-to-noise ratio (HNR) and shimmer were maintained close to the normal range (HNR=1.28±0.001, Shim=1.74±0.036).

Conclusions: The oncologic and functional results of TORS were quite acceptable for the treatment of hypopharyngeal
12.138 General Surgery

Laparoscopic Reversal of Hartmann's Procedure Reduces the Length of Postoperative Recovery in Patients with Sigmoid Diverticulitis

Jennifer J Liang MD, Erman Aytac MD, Luca Stocchi MD

Hartmann’s procedure remains as the mainstay treatment for perforated, purulent sigmoid diverticulitis. Up until recently, the reversal of stoma is performed in an open fashion as a 2-stage procedure. Despite best attempts, only 50-70% patients proceed to reversal. The reversal itself is not without significant morbidity with reported leak rates of 0-15% and mortality rate of 10%. With this in mind, we have conducted a case-matched study to investigate the outcomes of laparoscopic vs. open reversal of Hartmann’s procedure.

Methods: Patients were identified from a prospectively maintained laparoscopic and diverticular disease databases at Cleveland Clinic, Ohio. Patients were matched for age, gender, ASA, co-morbidities, date of surgery. Our primary endpoints were operative outcomes, length of hospital stay, complications and mortality.

Results: 22 patients with laparoscopic reversal of Hartmann’s were matched to the open group. There was no difference in operating time in lap vs. open groups, 184.68 +/- 69.41mins vs 154.20 +/- 56.91mins (p= 0.11), 2 patients (10.6%) in the lap group were converted to open. No difference was noted in 30 day complication rates (p=0.75), while 1 patient (5.6%) in the open group required post-op transfusion (p=0.47). No anastomotic leak or mortality in either groups. A significant shorter hospital stay was noted for the lap group (4.80 +/- 2.12days vs 6.85 +/- 2.60 days, p =0.009).

Conclusion: Laparoscopic reversal of Hartmann’s procedure is feasible with an acceptable conversion rate. This approach significantly reduces length of hospital stay and has comparable complication rate to the open group.

12.139 Colon and Rectal Surgery

A Novel and Reproducible Technique for Transanal Excision Training in Ex-Vivo Porcine Models

Jaime E. Sanchez MD, Michael L. Campbell MD, Sowsan H. Rasheid MD, Jorge E. Marcet MD
University of South Florida, Department of Surgery, Division of Colon and Rectal Surgery.

Background: Rectal tumors can be excised through a number of minimally invasive transanal techniques. However, specialty training is often required to master the nuances of these approaches. The single incision laparoscopic surgery port used in abdominal laparoscopy has properties that make it suitable for transanal excisions, including its flexibility and multiple channels. This study aimed to create a reproducible transanal excision training model that is suited for laparoendoscopic techniques.

Methods: Frozen porcine rectum and anus with intact perianal skin was commercially obtained. Thawed specimens were then cut to approximately 20cm in length. The proximal end of the rectum was then everted and suction applied to the mucosa to create pseudo-polyps of various sizes (sessile and pedunculated). Larger pedunculated lesions were made by tying the base of the pseudo-polyps with 5-0 monofilament suture to gather more tissue. Methylene blue dye was injected submucosally into the lesions to simulate tattoos. The proximal rectum was then closed with suture. The model was then suspended in a trainer box by clamping the proximal end with a ringed clamp and the distal end to the box. Various transanal excisions, including laparoendoscopic techniques with insufflation using a SILS port were then performed.

Results: Full thickness excisions of sessile and pedunculated rectal pseudo-polyps were successfully performed on five porcine models using a single incision laparoscopic surgery port. These models were subsequently used to reliably simulate laparoendoscopic transanal excisions for surgeons.

Conclusion: Transanal laparoendoscopic procedures can be successfully and reproducibly performed on a porcine model using a single incision laparoscopic surgery port.
Laparoscopic Anterior Resection of the Rectum and Ileal Resection: A Case of Deep Infiltrating Endometriosis
M. Venza, C. Micossi, M. Marziali, S Lazzaro, V.M. Stolfi
University of Rome Tor Vergata, Villa Tibera Hospital, Rome, Italy

Background: The subject of this video is a thirty years old patient with IV degree pelvic endometriosis. She underwent three previous laparoscopic surgeries for endometriosis disease including excision of ovarian cysts, resection of Douglas pouch and recto-vaginal localization of endometriosis. Last surgery was performed three years before. During the last three years the patient underwent hormonal therapy without symptom relieve in the absence of menses. Actual symptoms include pelvic pain, hip pain, painful defecation, dyspareunia, abdominal pain and cyclic rectal bleeding. A recent MRI showed pelvic, ureteral, rectal and small bowel localization of endometriosis.

Methods: The patient underwent laparoscopic exploration, ureteral dissection, excision of Douglas peritoneum, anterior resection of the rectum, with laparoscopic intracorporeal end to end anastomosis. She also underwent a 30 cm small bowel resection with side to side anastomosis through a 4 cm service laparotomy used to retrieve the rectum out of the abdomen.

Results: The patient’s postoperative course was uneventful and she was dismissed in sixth postoperative day. After surgery and until now, ten months later, she experienced the complete resolution of symptoms.

Conclusions: Laparoscopic bowel resection seems to be the best treatment for small and large bowel endometriosis. The shorter hospital stay, the faster return to normal activities and the better aesthetic results improve compliance from young female patients.

Robotic Assisted Laparoscopic Management of a Unicornuate Uterus
M. Ali Parsa, MD; Elizabeth Buescher, MD; Camran Nezhat, MD
Center for Special Minimally Invasive and Robotic Surgery Stanford University, Palo Alto, CA

Introduction: Unicornuate uterus is a type of congenital Mullerian anomaly where there is a partial or complete lack of development of one Mullerian duct during weeks 7 and 8 of gestation. It is associated with renal anomalies in 40% of cases as well as increased rates of endometriosis. This is a video presentation of robotic assisted laparoscopic management of a unicornuate uterus in a patient with worsening dysmenorrhea.

Hypothesis: Dysmenorrhea will be relieved after laparoscopic removal of the rudimentary uterine horn of a unicornuate uterus.

Methods: Robotic-assisted laparoscopic excision of a rudimentary uterine horn. The uterine horn was dissected and incision made in the rudimentary horn draining the hematometra.

Results: Pelvic pain and dysmenorrhea resolved after surgery.

Conclusion: The triad of dysmenorrhea beginning at menarche, increasing severity of dysmenorrhea with each menses, and a unilateral pelvic mass, is strong evidence for the presence of congenital Mullerian dysgenesis.

Robotic-assisted Abdominoperineal Resection for a Morbidly Obese (BMI=56) Patient with Rectal Cancer: Lessons Learned
Deirdre Kelleher MD, Sarah E. Matt MD, Katherine W. Kalifeh MD, James F. Fitzgerald MD, Anjali S. Kumar MD. Section of Colon and Rectal Surgery, Washington Hospital Center
clearly demonstrates the benefit of robotic-assisted surgery in the super obese population.

**Methods:** A 54-year-old woman with a body mass index of 56 was found to have a 3x2cm proximal rectal adenocarcinoma. Her history was remarkable for a node-positive cecal cancer treated with a right hemicolectomy and chemotherapy. Rigid sigmoidoscopy and rectal ultrasound showed a uT3N1 right anterolateral mass 11-15 cm from the anal verge. FOLFOX and radiation was initiated. The patient did not tolerate chemotherapy, but was able to complete the radiation. Six-weeks after a complete course of radiation, flexible sigmoidoscopy showed no residual tumor. She was scheduled for a robotic APR.

**Results:** The operative time was ~10 hours. The robotic portion of the case was 5 hours. The patient was ambulatory on postoperative day (POD) 1 and was discharged home with ostomy care on POD 4. Pathology showed no residual tumor.

**Conclusions:** Robotic-assisted APR in the super obese patient has the advantages of better visualization, prevention of a large morbid incision, and less surgeon fatigue compared to open surgery. However challenges include lack of tactile sensation, and difficulty in retracting adjacent structures. In addition, careful attention needs to be paid to patient positioning to account for the limits of the robot’s vertical clearance as well as the inability to adjust positioning once the robotic portion of the case begins. In experienced hands, robotic-assisted technique may offer significant benefits to super morbidly obese patients.

**12.143 Gynecology**

**Shall We Remove the Myoma During the Laparoscopic Oophorocystectomy for Endometrioma?**

_Zhou, Rong; Cui, Heng; Yang, Zhenjuan; Wei, Lihui_

_Peking University People’s Hospital_

**Objectives:** To discuss it is worse or not to performe oophorocystectomy and myomectomy at the same time in the patients with endometrioma concomitant leiomyomas.

**Methods:** We reviewed 102 patients who were in those preoperative conditions: 1) having ovarian endometrioma coexisted with leiomyoma detected by ultrasound. 2) having mild dysmenorrhea without using analgesic. They were divided into Group A (72) and Group B (30). They were undertaked laparoscopic oophorocystectomy firstly. Then patients in Group B had myomectomy subsequently. After the surgery, GnRH-a was used in 3-month. At the end of the 12th month, ultrasound was used to measure the size of uterus and ovary and also made the assessment of the dysmenorrhea severity. The patient was considered to have a heavier dysmenorrhea if she had to use analgesic to relieve pain, or the pain-duration became longer.

**Results:** In Group A, the volume was (139.5±39.5)cm$^3$ preoperatively, (136.8±41.9)cm$^3$ postoperatively for uterus, and (220.4±248.9)cm$^3$ preoperatively, (18.5±4.7)cm$^3$ postoperatively for ovary. $P>0.05$, $<0.01$, respectively. And in Group B, the volume was (200.7±58.6)cm$^3$ preoperatively, (82.7±18.3)cm$^3$ postoperatively for uterus, and was (167.2±141.1)cm$^3$ preoperatively, (24.7±7.6)cm$^3$ postoperatively for ovary. $P<0.01$, $<0.01$,respectively. Heavier dysmenorrhea occurred in 16 patients after the surgery in Group A(22.2%), while 6 patients in Group B (20.0%), $P=0.29$.

**Conclusions:** The endometrioma with mild dysmenorrhea accompanied with leiomyoma, both lesions of uterus and ovary can be treated by laparoscope at the same time without producing a heavier dysmenorrhea postoperatively.

**12.144 Urology**

**Opioid-Free Analgesia Following Robot-Assisted Laparoscopic Prostatectomy (RALP): 10 Case Experience**

_Carson Wong, MD$^1$, Xiao Gu, MD, PhD$^1$, Susan Raphealy, MD$^2$, Thomas D. Tinker, MD$^3$ and Jane K. Fitch, MD$

1SouthWest Urology, Inc., Middleburg Heights, OH; Division of Urology, Ahuja Medical Center, University Hospitals, Cleveland, OH; Division of Urology, Parma Community General Hospital, Parma, OH
2Department of Anesthesiology, Ahuja Medical Center, University Hospitals, Cleveland, OH
3Department of Anesthesiology, University of Oklahoma Health Sciences Center, Oklahoma City, OK_
Opioid analgesia for pain control following abdominal/pelvic surgery have potential adverse events and can delay return of normal bowel function. To minimize its use, we utilized scheduled intravenous (IV) acetaminophen and ketorolac for perioperative analgesia following RALP.

Prospectively collected data of consecutive patients who underwent transperitoneal RALP using perioperative IV acetaminophen and ketorolac for pain control were reviewed. Patients received a post-auricular scopolamine patch, IV midazolam 1-2mg and fentanyl 3-4mcg/kg, followed by IV induction of general endotracheal anesthesia (GEA) with propofol 1-2mg/kg. After IV rocuronium 0.45-0.60mg/kg for muscle relaxation, patients were intubated. GEA was maintained with sevoflurane 0.7-1.0 MAC and dexmedetomidine infusion 0.4mg/kg/hr. All patients were extubated in the operating suite and transported to the post anesthesia care unit (PACU). IV acetaminophen 1000mg was administered prior to and q6 hour post-surgery, while IV ketorolac 30mg was administered 30 minutes prior to transfer to PACU and at q8 hour intervals. Patients were ambulating the evening of surgery. Once tolerating a regular diet, patients were discharged home.

Ten patients had a median age of 63 years and an American Society of Anesthesiologists (ASA) class of 2. Median operative time was 90 minutes and estimated blood loss was 60mL. All patients had a bilateral nerve-sparing RALP. Median hospitalization and urethral catheter duration were 20 hours and 4.0 days, respectively. No parenteral or oral opioid analgesia was required postoperatively.

Perioperative scheduled IV acetaminophen and ketorolac are effective for pain management following RALP, having the potential to minimize the need for postoperative opioid analgesia.

12.145 Urology
Intermediate Clinical Outcomes of Robot-Assisted Laparoscopic Prostatectomy (RALP)
Carson Wong, MD, Xiao Gu, MD, Massimiliano Spaliviero, MD and Michael Barkoukis, MD
1SouthWest Urology, Inc., Middleburg Heights, OH; Division of Urology, Ahuja Medical Center, University Hospitals, Cleveland, OH; Division of Urology, Parma Community General Hospital, Parma, OH
2Department of Urology, University of Oklahoma Health Sciences Center, Oklahoma City, OK

We review our RALP experience having a minimum 24 month follow-up duration.

A bladder neck sparing dissection was preferentially performed and the urethrovessical anastomosis was completed using a running double-armed 3-0 Monocryl suture. The urethral catheter was removed following normal cystography.

233 patients had a mean age of 62.7±6.7 years and serum PSA of 6.2±4.6 ng/mL. Median operative time was 190 minutes and estimated blood loss was 75 mL. 3 (1.3%) patients required bladder neck reconstruction, while 198 (85.0%) had bilateral, 20 (8.6%) had unilateral and 15 (6.4%) did not undergo nerve sparing prostatectomy. 199 (85.4%) patients had negative surgical margins. Median hospitalization and urethral catheter duration were 1.0 and 5.0 days, respectively. At 6 weeks, a median 1.0 pad per day usage was reported and mean AUASS (9.7±7.3 vs. 5.7±2.8, p=0.001) and QoL (1.9±1.4 vs. 1.4±1.0, p=0.001) were significantly improved from baseline. 96.7% of patients were continent at 12 months. 52.3% of patients having a nerve sparing procedure achieved potency within 24 months following RALP. The incidence of adverse events were low: 5 (2.1%) prolonged urine leak, 3 (1.3%) pelvic hematoma, 1 (0.4%) urinary tract infection, 2 (0.9%) deep vein thrombosis and 5 (2.1%) bladder neck contractures (BNC). 95.3% and 96.5% of patients at 24 and 36 months, respectively, had an undetectable serum PSA (<0.2 ng/mL). Five patients had adjuvant radiotherapy for positive surgical margins or PSA recurrence.

RALP is an effective treatment option for clinically localized prostate cancer that preserves ones quality of life with low patient morbidity.

12.146 Gynecology
Robotic-assisted Excision of Mullerian Anomaly
Mark A. Zakaria, MD; Margaux Hemstreet, MD; Celso Silva, MD; Larry Glazerman, MD
1University of South Florida, Morsani College of Medicine, Department of Obstetrics and Gynecology
2Division of Reproductive Endocrinology
3Division of Gynecology
Objective: Mullerian anomalies are congenital entities that result from non-development, defective fusion or failure of absorption of the paramesonephric ducts. Because of the variations in anatomy, surgical treatment of such cases can be challenging. We present a video highlighting the enhanced visualization and greater precision in the dissection of a case of Mullerian anomaly using the Da Vinci surgical system.

Methods and Procedures: A case report and descriptive surgical video.

Results: 19 year-old gravida zero with a medical history significant for congenital absence of the right renal collecting system, presented for evaluation of primary dysmenorrhea and a pelvic mass palpated on exam. Imagine studies suspected uterus didelphys with a rudimentary right uterine horn and hematometracolpos. Despite continuous oral contraceptive use, she experienced persistent pelvic pain. Robotic-assisted laparoscopic excision was scheduled. A lighted left ureteral stent was placed to assist in defining critical anatomy. Inspection of the pelvis revealed a left unicornuate uterus with a 10cm non-communicating right uterine horn. Posterior cul-de-sac endometriosis was also found. Chromopertubation confirmed a patent left fallopian tube, and both ovaries otherwise appeared normal. Postoperative day one the patient was discharged home with continuous oral contraceptives and oral pain medicine.

Conclusions: In this select case of a Mullerian anomaly, the Da Vinci surgical system offered improved visualization and greater precision when variant anatomy was encountered. As with laparoscopic surgery, such patients also have a quicker recovery and good cosmetic results compared with traditional open techniques.

12.148 General Surgery
Laparoscopic versus Robotic Subtotal Splenectomy in Hereditary Spherocytosis
Catalin Vasilescu Ph.D., Oana Stanciulea M.D., Stefan Tudor1 M.D.
Department of General Surgery and Liver Transplantation, Fundeni Clinical Institute, Bucharest, Romania

Objective: The aim of this study is to point out that subtotal splenectomy, which removes 85–90% of the enlarged spleen, can be easily performed by robotic approach with advantages for both the patient and the surgeon. The major drawbacks of the laparoscopic procedures are the intraoperative evaluation of the splenic remnant volume and the vascular dissection of the splenic vessels.

Methods: Between June 2002 and January 2012 we performed 34 consecutive subtotal splenectomies by minimal approach in patients with hereditary microspherocytosis. A retrospective analysis of the 12 robotic versus 22 laparoscopic subtotal splenectomies is presented. All procedures were performed by a single surgeon

Results: The median operative time until full exposure of the splenic anatomy was 20 minutes in laparoscopic group, compared with 15 minutes in the robotic group. Median intraoperative bleeding was 90 ml in the laparoscopic group and 35 ml in the robotic group. Median operative time was 95 minutes for the laparoscopic group and 107 minutes for the robotic group. In one case splenic remnant removal was necessary 11 month after the surgery due to persistent hemolysis. Follow-up for 4-115 months was available.

Conclusion: Subtotal splenectomy seems to be a suitable candidate for robotic surgery, requiring a delicate dissection of the splenic vessels and a correct intraoperative evaluation of the splenic remnant. Robotic subtotal splenectomy is comparable to laparoscopy in terms of hospital stay and complication; the main benefits are: lower blood loss rate, vascular dissection time and a better evaluation on the splenic remnant volume.

12.149 General Surgery/ Thoracic
Robotic-Assisted Thoracoscopic Operations for Mediastinal Lesions - A Single-Institution Experience
Tomulescu Victor MD PhD, Stanescu Codrut MD, Oana Stanciulea MD, Blajut Cristian MD, Vilciu Crisanda MD, Herlea Vlad MD PhD, Irinel Popescu MD PhD
“Dan Setlacec” Center of General Surgery and Liver Transplantation, Fundeni Clinical Institute
Objective: The minimally invasive techniques have found a growing application in thoracic surgery. The robotic technology has increased the potentiality of thoracoscopic technique particularly for the management of mediastinal diseases. We reviewed our experience in robot-assisted thoracoscopic resection of benign and malignant lesions of the anterior mediastinum.

Methods: Between 2008 and 2012, 60 patients (38 women and 22 men; median age 36y) underwent robotic approach of the anterior mediastinum. We have used the right side approach in 10 cases and the left side approach in 50 cases. There were 53 thymectomies for tumoral or nontumoral myasthenia gravis, 1 case of possible “thymic rebound” after mediastinal Hodgkin’s lymphoma, 4 ectopic goitre, 2 ectopic ectopic parathyroid adenoma.

Results: All procedures were completed successfully using the da Vinci robot; no conversions to open or classic thoracoscopy were required, minor or major incidents as pericardial suture or brachiocephalic vein suture being solved robotically. The mean operative time was 105 minutes (range 70 to 200 minutes). The mean pure robotic time was 60 minutes (range 30 to 150)

Mortality was null and morbidity was 5 % (3 cases): one case of postoperative hemotherax and two cases of chylothorax. Median hospitalization was 3 (range 2–18) days.

Conclusions: Robotic surgery brings dexterity, precision and a much better control improving the minim invasive surgery in anterior mediastinum, allowing an easier, reproducible and safer technique. There are some drawbacks in relation with 12mm camera and the bulky Óarms that crowded in a small chest that need to be solved.

12.150 General Surgery
The Robotic Approach in Rectal Cancer: Pros and Cons
Prof. Dr. Irinel Popescu
Fundeni Clinical Institute
“Dan Setlacec” Center of Digestive Diseases and Liver Transplantation

Objective: Conventional laparoscopic surgery has been used for rectal cancer, resulting in a better postoperative early outcome and similar short-term results. However, laparoscopic surgery is technically challenging, with a long learning curve. Robotic technology could overcome the limits of laparoscopic surgery allowing increased dexterity, optimal ergonomics and improved intraoperative view. The aim of this paper is to present our experience in robotic rectal surgery.

Methods: Between January 2008 and January 2012 81 consecutive patients with rectal cancer underwent robotic rectal resections. Clinical and pathological data were reviewed retrospectively.

Results: 54 anterior rectal resection, 21 abdominal -perineal resection, 4 Hartmann procedures and 2 total pelvic exenterations were performed by robotic approach. The mean operative time was 192.8 min for anterior resections and 168.5 min for abdominal perineal resections. Conversion rate was 5%. The morbidity rate was 18, 5 %. Postoperative mortality was nil. Median follow up was 21, 03 months.

Conclusions: Robotic surgery offers several benefits that overcome its limitations: more refined dissection and optimal access in confined spaces such deep pelvis, lower conversion rate and shorter learning curve , better preservation of the hypogastric and autonomic pelvic nerves that results in fewer urinary bladder dysfunction compared to open surgery and consequently in a better quality of life. There are also certain limitations to the use of robots.So far the cost of the procedure is the main disadvantage.

12.151 General Surgery
Effects of Intraluminal Chemotherapy on Colorectal Cancer – Study In An Orthotopic Murine Model
Jasneet Singh Bhullar MD, MS, Amir Damadi MD, FASCRS, Gokulakkrishna Subhas MD, Jacqueline Tilak BS, Navin Anthony DO, Milessa Decker LVT, Vijay K Mittal MD, FACS

Introduction: Previously, intraluminal chemotherapy was used as an adjunct to surgery to decrease tumor micro
Introduction:
Previously, intraluminal chemotherapy was used as an adjunct to surgery to decrease tumor micrometastasis. Theoretically, transanal chemotherapy offers benefits over conventional chemotherapy as it acts directly on the mucosal surface where the tumor transformation takes place. The purpose of our study was to evaluate the effects of transanal chemotherapy in a true orthotopic colorectal cancer murine model for subsequent potential application in humans.

Methods:
An intraluminal-mucosal orthotopic colon cancer murine model was designed by doing transanal low dose mucosal coagulation, using a specially designed electrode, 2cm inside the anus. Followed by transanal instillation of LS174T human colon cancer cells(1x10^6) in NOG mice. Control, 5FU, Irinotecan and Oxaliplatin groups had 10 mice each. Treatment groups underwent weight adjusted 3 doses of alternate day transanal drug instillation after intraluminal tumor was confirmed by Coloview-mouse colonoscope.

Results:
Control group showed a mean survival of 3.5wks, tumor size of 14±4mm with widespread metastasis. 5FU group had an increased mean survival of 12wks, disappearance of primary tumor in 7 mice and mean tumor size of 0±3mm with decreased metastasis. The Irinotecan and Oxaliplatin groups showed increased survival of 5wks and 6.5wks with tumor sizes of 5±2mm and 3±2mm respectively.

Conclusion(s):
Transanal chemotherapy shows promising effects on colonic tumor with considerably decreased primary tumor size and increased survival. This treatment option could be applied to patients with rectal tumors, obstructing colonic tumors, and as chemotherapeutic drug eluding colonic stents deployed endoscopically. This is the first report of effects of transanal chemotherapeutic agents in a true orthotopic colorectal cancer model.

12.152 Gynecology
Laparoscopic Segmented Colon Resection in Severe Endometriosis
M. Ali Parsa, MD, Chandhu Paka, MD, Camran Nezhat, MD
Center for Minimally Invasive and Robotic Surgery, Stanford University

Rectovaginal or bowel involvement is estimated to be present in 5 to 12 percent of women with endometriosis. The rectosigmoid colon is the most common site of bowel endometriosis. Symptoms may include dysmenorrhea, dyschezia or constipation. Rectal bleeding may occur with rare mucosal involvement. Surgical treatment has been considered the mainstay of therapy for rectovaginal or bowel endometriosis. Segmental bowel resection is necessary with deeply involved endometriosis or if causing bowel obstruction. This is a videopresentation of segmental colon resection in a patient with severe endometriosis. Meticulous dissection is performed to mobilize the bowel by developing the pararectal and rectovaginal spaces in a patient with severe adhesions due to endometriosis.

12.153 General Surgery
Laparoscopic Sigmoid Colectomy for Colovesical Fistula
Amit N Gogia, MD, FACS
Surgical Specialists of Richmond
Bon Secours Memorial Regional Medical Center
Mechanicsville, VA

Objective: To review the technique and available technology used to accomplish Laparoscopic Sigmoid Colectomy for Colovesical Fistula safely and successfully.

Procedure: A case presentation of a 52-year-old male with a documented colovesical fistula secondary to diverticular disease. Techniques to aid in dissection are explored. Infrared ureteral catheters are employed to help identify bilateral ureters.

Results: Laparoscopic resection is planned, but the density and extent of pelvic inflammation required the utilization of a hand-assisted technique. The infrared ureteral stent failed to visually identify the left ureter due to technical error in deployment. The surgery however is successfully accomplished without complications.

Conclusion: Laparoscopic Sigmoid Colectomy for Colovesical Fistula can be performed safely and successfully without
Single Access Laparoscopic Surgery in the Pregnant Patient

F. Arias[1], N. Cortes[2], D.A. Padilla2, D. Gomez[3], C. Trujillo[4], E. Torres 4


**Aims and Objectives:** Abdominal pain in pregnancy poses a diagnostic and management challenge to the attending physician. Delay on the decision to operate when a surgical condition is suspected has a significant impact on the fetal and mother outcome. As laparoscopic techniques and equipment improve, pregnant patients are beginning to benefit from this less invasive approach. Advantages over open abdominal surgery such as shorter hospital stay, decreased postoperative pain and rapid return to daily activity have made it the preferred surgical approach in pregnancy. The aim of this study is to present the management of several conditions using single access laparoscopic surgery.

**Material and Methods:** We reviewed the medical records of 3 patients who underwent single access laparoscopic surgery at University Hospital, Fundacion Santa Fe de Bogotá.

**Results:** Four pregnant women underwent single access laparoscopic surgery. One cholecystectomy and three appendectomies were carried out. The gestational ages were 9, 29, 11 and 25 weeks respectively. This last patient presented as intraoperative finding an appendicular mass associated to diffuse peritonitis. The operative time in this case was of 95 minutes. Hospital stay was of 8 days in which the patient received IV antibiotics. All of these pregnancies proceeded to term without complication.

**Conclusion:** The results of the present series shows that single port laparoscopic surgery is a feasible option in pregnant women, with no unfavourable outcomes with respect to both the fetus and the mother.

**12.155 Gynecology**

Posterior Colpotomy: A Novel Approach to Cervico-Vaginal Anastomosis in a Case of Cervical Dysgenesis with Partial Vaginal Agenesis

Ameigh V. Worley, MD, Monica Y. Willis, MD, and Carla P. Roberts, MD, PhD
Department of Gynecology and Obstetrics, Emory University School of Medicine, Atlanta, GA

**Objective:** A 17-year-old nulligravid Asian female with primary amenorrhea but cyclic pelvic pain since the age of 12. This abstract describes a minimally invasive surgical approach to develop a functioning outflow tract.

**Procedure:** Examination under anesthesia, diagnostic laparoscopy, fulgaration of endometriosis, vaginoplasty, ultrasound-assisted cervico-vaginal anastomosis, hysteroscopy.

**Results:** The preservation of this patient’s uterus and the creation of a functioning outflow tract alleviated this patient’s pelvic pain. This was accomplished by a laparoscopic-guided posterior colpotomy with a resultant patent cervico-vaginal anastomosis.

**Conclusions:** Cervical dysgenesis and vaginal agenesis is successfully in this case by cervico-vaginal anastomosis. This approach can only be performed if there is functioning cervical tissue with a patent cervical canal. Otherwise, the risk of secondary stenosis, ascending infection and hysterectomy is often unavoidable. Utilizing a posterior colpotomy approach permits direct palpation of the cervical tissue to aid in anastomosis to the vaginal tissue and offers the benefit of avoiding an abdominal incision, hysterotomy (to allow entry of a cervical dilator to identify the cervical canal and distal cervix prior to anastomosis) and subsequent uterine reconstruction. This decreases the risk of uterine synechiae, removes the obstetrical concerns of a uterine incision, and results in less morbidity and improved recovery time.
Robotic-assisted Laparoscopic Fimbrioplasty and Lysis of Adhesions in a Patient with True Hermaphroditism
Nikhil V. Joshi, BS, Monica Y. Willis, MD, Carla P. Roberts, MD, PhD
Department of Gynecology and Obstetrics, Emory University School of Medicine, Atlanta, Georgia (all authors)

**Background and Objectives:** Robotic gynecologic surgery is increasingly utilized because of intuitive instrumentation, microsurgical technique and improved visualization. Studies report increased operating times, similar clinical outcomes, decreased blood loss, and shorter hospital stays for robotic in comparison to laparoscopic gynecologic surgery. While robotic techniques have been utilized for tubal reanastamosis, there are no reports, to our knowledge, describing robotic fimbrioplasty or other fertility-preserving surgeries. Additionally, to our knowledge, there are no reports of robotic surgery in patients with true hermaphroditism.

**Methods/Results:** We performed robotic-assisted laparoscopic fimbrioplasty, extensive salpingolysis and paratubal cystectomy (8 cm cyst) with the goal of fertility preservation in a 13 year old, 46XX individual with true hermaphroditism and left-sided mullerian structures. The patient had previously undergone orchiectomy on the right pelvic side leading to extensive adhesions on the left pelvic side. The patient had a 23-hour observation hospital stay without complications.

**Conclusion:** Laparoscopic surgery has similar clinical outcomes to open surgery for fimbrioplasty, but carries a steeper learning curve. In the case of surgery on the fallopian tubes and ovaries, which requires fine manipulation, we feel that the advantages of robotic surgery over laparoscopic techniques are magnified, and patients benefit from decreased blood loss, reduced scarring and shorter recovery times. In this patient, the added benefit of microsurgical technique for fimbrioplasty and an extensive lysis of adhesions to aid in fertility preservation was maximized using the laparoscopic-assisted robotic surgical approach.

Laparoscopic Transperitoneal Harvest Technique of Rectus Abdominis Muscle Free Flap for the Traumatized Lower Extremity
Robert G Neumann, MD1, Hans J Serleth, MD1, David Dries, MD2 and James W Fletcher, MD1, 1 Department of Plastic Surgery, Regions Hospital, St Paul, MN, 2 Department of General Surgery, Regions Hospital, St Paul, MN

**Objective:** Muscle free flaps are used by plastic surgeons to provide coverage of vital anatomic structures. However, open harvest can lead to significant donor site complications, including incisional hernias, infections, chronic pain, and seromas. Here we present the first series of laparoscopic rectus abdominis muscle harvest results with comparison to a concurrent cohort of open muscle harvests.

**Methods:** From September 2009 to December 2010, eight patients underwent laparoscopic rectus harvest with free transfer to reconstruct lower extremity injuries at a Level I trauma center. We compare operative characteristics and outcomes to eleven consecutive patients with open rectus harvest from February 2008 to September 2010.

**Results:** Laparoscopic subjects were four females and four males, average age 44 years (range 28-61yrs). Open harvest subjects were four women and seven men, average age 37 years (range 10–65yrs). Ileus duration was 2 days laparoscopic vs 3.36 days open (p=0.026). Complication incidence was 0.5 laparoscopic vs 1.36 open (p=0.045). No laparoscopic and one open harvest patient developed an abdominal bulge. There were no significant differences in OR time (246 minutes vs 234 minutes), blood loss (176ml vs 205ml), or time to discharge (10.8 days vs 17 days).

**Conclusion:** Laparoscopic rectus muscle harvest for free transfer is safe, efficient, and well received by patients. Our technique is straightforward. We demonstrated a shorter duration of ileus and reduced complication rate with our laparoscopic technique compared to conventional open harvest. Laparoscopic technique compares favorably to open rectus harvest and represents a viable option in the carefully-selected patient.
Objective: We report the case of a patient with a Schwannoma of the posterior gastric wall that was resected in combination with a Laparoscopic Sleeve Gastrectomy for Morbid Obesity.

Methods: This is a video that was recorded and edited demonstrating the successful minimally invasive resection of a Schwannoma of the stomach via a Sleeve Gastrectomy procedure, as well as primary hiatal hernia repair.

Results: A 57-year-old morbidly obese woman presented for bariatric surgery. She had an upper endoscopy for workup of reflux symptoms and a presumed GIST was found. Due to its location on the antrum, a sleeve gastrectomy procedure for her obesity would also allow for proper margins on the tumor excision. As such, the patient was offered a laparoscopic approach for ailment. Intraoperatively, a 2cm hiatal hernia was discovered and repaired primarily. The procedure was performed successfully, and the patient was discharged home after 48 hours in the hospital. Final pathology of the tumor revealed that it was a Schwannoma instead of the presumed GIST.

Conclusion: This video demonstrates the safe and effective use of minimally invasive techniques for combination resection of a benign tumor of the stomach, hiatal hernia repair, as well as morbid obesity management.

Objective: Minimally invasive attempts to explore a less invasive transabdominal incision could represent an alternative to laparoscopic or vaginal surgery, for patients not able to afford the cost, and the safety and the long learning curve of laparoscopic surgery as well as vaginal surgery

Methods: This cohort analytic study describes our 3-year experience with a 3-5 cm pfennestiel incision. Through this incision, total hysterectomy, subtotal hysterectomy for different indications with salpingoophrectomy, adnexectomy and ovarian cystectomy were performed. We compared surgical parameter length of incision, operative time, estimated blood loss, duration of ileus, and per operative complication.

Results: The mean population age 41, (=11,3) body mass index 27,34 =(2,4) the mean operative time was 69,4(=41,9) and the estimated blood loss, all cases were mean significant blood loss with a maximum of 150 cm, the mean duration of ileus was 1,2 day (=0.7 S.D) and the mean days of discharge were 2,25 (=1,15) with a significant lower duration of recovery in a group of simple adnexal surgery with respect to the others, one case with dehiscence.

Conclusions: This unique minimally invasive approach proved to be a feasible surgical approach for most gynecological disorders. The operative time is shorter than reported for laparoscopy, laparotomy and vaginal surgery.

Objective: The purpose of this study is to evaluate the feasibility of laparoscopic and robotic-assisted cytoreduction for advanced stage ovarian, fallopian or primary peritoneal cancer.
Methods: This is a retrospective analysis of a prospectively maintained database from 7/2008 to 12/2012 of all videolaparoscopic (VALS) or robotic-assisted (RALS) surgery for advanced-stage disease, with the goal of maximum cytoreduction. This report examines VALS and RALS outcomes, including optimal cytoreduction, intraoperative and postoperative complications and outcomes.

Results: During the study period, 25 patients were operated on for presumed advanced-stage ovarian, fallopian or primary peritoneal cancer. 6 patients were excluded; 4 patients had a different primary on frozen/final pathology and 2 patients refused/were not candidates for cytoreduction. Of the 19 patients included, 9 had VALS, 5 had RALS and 5 were converted to laparotomy (LP). Of these 19 patients, 8 received neoadjuvant chemotherapy prior to debulking. These patients previously underwent diagnostic surgery and were not candidates for primary cytoreduction at that time. 8/9 VALS, 5/5 RALS and 3/5 LP were optimally cytoreduced (<1cm residual disease). Mean EBL was 243ml, 190ml, 850ml and OR time was 396min, 416min, 433min in the VALS, RALS, LP groups respectively. There was 1 intraoperative complication in the LP group and 2 postoperative complications requiring 1 reoperation after VALS and 1 after RALS. Median follow up was 9m with 11NED, 5 deaths, 2 alive with disease and 1 lost to follow up.

Conclusions: Laparoscopic and robotic-assisted cytoreduction for primary ovarian, fallopian and primary peritoneal cancer is safe and feasible with low complication rates and acceptable outcomes in selected cases.

12.162 Gynecology
The Influence of Robotic Training on Residency Program Selection
Sarah Goodrich, MD; Eric Strand, MD; Elizabeth Moore, PhD
a: St. Vincent Hospital, Obstetrics and Gynecology, Indianapolis, IN, USA
b. St. Vincent Hospital, Statistics, Indianapolis, IN, USA

Objective: To determine how the presence of robotic training curriculum impacts selection of residency programs.

Methods: A link to a ten-question survey was sent to all ABOG approved obstetrics and gynecology programs. Frequency tables were used to evaluate responses.

Results: 484 responses were received – 321 from university, 95 from community and 68 from residents in combined programs. The largest percentage of respondents (39.9%) planned to enter generalist practice (urban). 59.9% stated their program did have a robotic training curriculum, while 40.7% had a dual/teaching console. Residents in a community program were significantly more likely to have a robotic training (56.1% vs. 71.6%; p=0.024).

74.2% felt that robotic surgery was important to the future of gynecology, and 78.5% thought robotic training during residency was important. Residents planning for gynecologic oncology or urogynecology fellowships were more likely to have their residency selection influenced by the presence of robotic training (25% and 60%).

Overall, only 22.7% stated that robotic experience influenced their choice of residency program; however 57.7% stated that if choosing a program today, robotic experience would be an important factor in program selection. Additionally, 55.4% stated that the presence of a dual/teaching console would make them more likely to highly rank a program (p = 0.007).

Conclusions: The presence of a robotic curriculum, and a dual/teaching console, is attractive to residents – especially to those with future plans for a gynecology-based fellowship. By developing robotic curriculums and investing in dual console systems, residency programs may be able to attract the highest quality candidates.

12.163 Pediatric Surgery
Laparoscopic Large Ovarian Cystectomy, Appendectomy, and Removal Through a Natural Orifice in a 16 Year Old Female
A. Katz, MD; A. Gojayev, MD; and C. H. Nezhat, MD
Atlanta Center for Minimally Invasive Surgery and Reproductive Medicine, Atlanta, GA
**Method and Procedure:** This video demonstrates the laparoscopic excision of an 18 cm mucinous, multiloculated right ovarian cyst and appendix are described using 5 mm laparoscopic abdominal incisions. The patient was a 16 year old female who presented with abdominal distension initially thought to be due to urinary retention. After 3 months of expectant management including an extensive genitourinary workup, she had an MRI suggestive of an enlarging adnexal mass and mild bilateral hydronephrosis. The cystectomy was performed through four 5 mm laparoscopic abdominal ports and a 12 mm posterior colpotomy. Controlled entry into a large ovarian cyst and no-spill evacuation of the cyst fluid are demonstrated. The cyst wall is enucleated through an elegant and hemostatic technique. The laparoscopic appendectomy is performed with an Endo GIA stapler. Laparoscopic closure of the posterior colpotomy, chromopertubation of the fallopian tubes, and survey of the pelvis complete the procedure.

**Results:** Successful removal of large ovarian cyst with ovarian preservation utilizing 5mm ports abdominal ports and 12mm posterior colpotomy.

**Conclusion:** Laparoscopic management of a benign ovarian cyst with preservation of the ovary is an acceptable and preferable method in young reproductive age females.

**12.164 General Surgery**

**Reversal of Ileostomy Using Laparoscopic Assistance**

Ahmed Khan Sangrasi, FCPS, Abdul Aziz Laghari, FRCS, Altaf K. Talpur, FCPS, Mujeeb Rehman Abbasi, FRCS, Javaid Naeem Qureshi, FRCS, Naushad A. Shaikh, FCPS, Liaquat University of Medical & Health Sciences, Jamshoro, Sindh, Pakistan (all authors).

**Objective:** Exteriorization of the bowel is a social stigma, and patients face many physical and psychological problems. Ileostomy is quite common in the third world, and the standard open approach for closure of an ileostomy carries significant morbidity. This study was done to observe the benefit of minimally invasive surgery in an attempt to reduce morbidity and mortality in this group of patients.

**Patients and Methods:** All patients who were previously exteriorized in our emergency unit and came for reversal after about 3 months were included. Three ports were placed at appropriate sites, depending on the location of the previous laparotomy incision. Adhesiolysis was done laparoscopically, and bowel was freed up to the ileo-cecal junction. Stoma was mobilized and brought out through the same wound; hand-sewn end-to-end ileo-ileal anastomosis was done. Operative and postoperative variables were recorded and analyzed.

**Results:** A total of 32 patients, 23 men and 9 women with mean age of 42.1 years underwent laparoscopic-assisted reversal of ileostomy. The procedure was completed in 29 patients; 3 (9.3%) patients were converted to laparotomy. Mean operative time was 110 minutes (range, 80 to 150), mean estimated blood loss was 150mL (range, 90 to 185). Mean hospital stay was 7.5 days. There were no major complications except intestinal obstruction in 1 patient (3.1%). Mean follow-up was 18 months. There was no operative mortality.

**Conclusion:** Laparoscopic-assisted reversal of ileostomy is feasible and safe with low morbidity and mortality. Along with all the benefits of minimally invasive surgery, it saves many patients from having a second laparotomy.

**12.165 General Surgery**

**Management of Peritonitis by Minimally Invasive Surgery**

Ahmed Khan Sangrasi, FCPS, Abdul Aziz Laghari, FRCS, Mujeeb Rehman Abbasi, FRCS, Altaf K. Talpur, FCPS, Javaid Naeem Qureshi, FRCS, Naushad A. Shaikh, FCPS, Liaquat University of Medical and Health Sciences, Jamshoro, Sindh, Pakistan (all authors).

**Objective:** Laparoscopy has gained clinical acceptance in many subspecialties in the last decade. Conventional open surgery for peritonitis carries significant morbidity and mortality. This study was done to extend and evaluate benefits of minimally invasive surgery in this subset of patients.
Methods: All diagnosed and hemodynamically stable patients were included in this study after initial resuscitation. Procedures were performed with the patient under general anesthesia, by using 3 standard ports at appropriate sites according to pathology. Patients were treated either laparoscopically or with laparoscopic assistance after diagnosis. Operative and postoperative data were collected and analyzed.

Results: Ninety-two patients with peritonitis underwent diagnostic and therapeutic laparoscopy. Mean age was 46.5 years. Twenty-four patients were diagnosed with perforated duodenal ulcer; in 14 (58.3%) of these patients, laparoscopic suture repair was done and in 10 (41.6%) a small upper midline incision was made, and the perforation was repaired. Of 32 patients with perforated appendix, 25 (78.1%) underwent laparoscopic appendectomy, while in 7 (21.8%) perforation was dealt with by laparoscopic assistance. Of 14 patients with ileal perforation, 6 (42.8%) with minimal contamination received laparoscopic suturing, while in 8 (57.1%) perforated loop was brought out by making a small window, and the perforation was closed. All 22 patients with pelvic sepsis needed aspiration of pus and peritoneal lavage. Only one patient died postoperatively, and 2 (2.1%) patients developed fistula. Six (6.5%) patients developed port-site infection.

Conclusion: Laparoscopic management is a viable and safe surgical option for properly selected patients with peritonitis due to different pathologies.

12.166 Multispecialty

Voiding Urosonography: The Best Imaging Study for Obstructive Urethral Pathology in Boys
Dario Garcia-Rojo, MD; Carmina Duran, MD; Miriam Barrio, MD; Angel Prera, MD; Carlos Abad, MD; Cesar Martin, MD; Juan Prats, MD: Urology and Radiology Departments. Hospital Sabadell. UDIAT. Corporacio Parc Tauli, Sabadell. Spain

Objectives: Phase II study. To assess the usefulness of voiding urosonography (VUS) for the evaluation of the urethra.

Methods: From October 2005 through March 2011, we performed contrast-enhanced VUS examinations in 331 boys, using a 6 MHz convex transducer to study the urethra. To perform VUS, we used a specific harmonic imaging mode based on pulse inversion with low mechanical index and galactose-based contrast agent. We used a 6-4-MHz convex probe and a transperineal and/or a transpelvic approach. During voiding, attention was focused on the presence of posterior urethral dilation, poor distention of the valve area, and reduced caliber of the anterior urethra.

Results: Six boys had obstructive urethral pathology. Five patients, presented prenatal oligohydramnios and hydronephrosis, were studied 2 days after birth and diagnosed with posterior urethral valves. In these 5 patients, VUS found: thickening and diverticula of bladder walls in 100 %, posterior urethral dilatation (11-14mm +/- SD) in 100 %, poor distension of the valve area in 4 cases, and transitory dilatation of the valve area in the fifth. The last case was a boy with difficulty in urinating who was diagnosed of anterior urethral valves. These findings were confirmed with voiding cystourethrogramy and after surgery. The treatment was performed in 5 patients by endoscopic resección of urethral valves. The 325 remaining patients showed no significant urethral changes in VUS.

Conclusions: VUS can replace voiding cystourethrogramy for the diagnosis, characterization and postoperative follow-up of obstructive urethral pathology and thus obviate irradiation of the pelvis and gonads.

12.167 General Surgery

Epidural vs. General Anesthesia for Laparo-Endoscopic Single Site (LESS) Cholecystectomy
Sharona Ross MD1, Rachel Karlinski PhD2, Devanand Mangar MD2, Enrico Camporesi MD2, Kenneth Lubercie BS3, Rita Patel MD3, Edward Choung MD3, Alexander Rosemurgy MD3.

1University of South Florida, Department of Surgery, Tampa Florida
2Florida Gulf-to-Bay Anesthesiology, Tampa General Hospital, Tampa Florida
3Tampa General Medical Group, Tampa General Hospital, Tampa Florida

Introduction: Laparo-Endoscopic Single Site (LESS) surgery involves a single umbilical incision, lending itself to epidural anesthesia. This prospective randomized study was undertaken to evaluate epidural anesthesia for patients undergoing LESS.
cholecystectomy, to assess the feasibility, and to analyze all intra- and postoperative complications. The secondary objectives were to determine differences in postoperative pain and time until PACU discharge-to-home readiness between patients.

**Methods:** With IRB approval, 20 patients with chronic cholecystitis were randomized to receive spinal epidural anesthesia (n=10) or general anesthesia (n=10). Postoperative pain at rest was recorded in the PACU every 10 minutes, and at rest and walking at discharge using the visual analog scale (VAS). Operative time and time until PACU discharge-to-home readiness were recorded. Results are expressed as mean ± SD.

**Results:** Patient age, ASA class, and BMI were similar. There were no additional ports/incisions, conversions to “open” operations, or conversions to general anesthesia. There were no differences in operative duration: 65±25.1 vs. 65±21.5 minutes. Time until PACU discharge-to-home ready was also not significantly different. The most common postoperative adverse event was urinary retention (1 epidural and 3 general anesthesia patients). Resting postoperative VAS pain score at discharge was 4.7±2.5 vs. 2.2±1.6 (general versus epidural, p=0.02). The stressed VAS pain score at discharge was 6.1±2.3 vs. 3.1±2.8 (p=0.02).

**Conclusions:** LESS cholecystectomy with epidural anesthesia was completed with no operative or anesthetic conversions, and less postoperative pain at discharge. Epidural anesthesia appears to be a preferable alternative to general anesthesia for patients undergoing LESS cholecystectomy.

12.168 General Surgery

**Laparo-Endoscopic Single Site (LESS) Heller Myotomy and Anterior Fundoplication with Giant Hiatal Hernia Repair**

Kenneth Lubercie BS1, Harold Paul MS1, Sharona B. Ross MD2, Alexander S. Rosemurgy MD1

1Tampa General Medical Group, Tampa General Hospital, Tampa, Florida
2University of South Florida, Department of Surgery, Tampa, Florida

The journey from “conventional” laparoscopy to minimally invasive operations involves progression to Laparo-Endoscopic Single Site (LESS) surgery. LESS surgery promises improved cosmesis, and hopefully less pain, by reducing the number of access incisions to a single incision hidden in the umbilicus.

This video demonstrates LESS Heller Myotomy and anterior fundoplication with repair of a giant hiatal hernia for palliation of achalasia. The operation was undertaken through a single 12mm incision at the umbilicus and a single multi-trocar port. A 5mm deflectable tip laparoscope was utilized. The dissection was undertaken along the right crus into the mediastinum and then along the greater curve of the stomach to the left crus. The hiatal hernia was reduced in its entirety. The hernia sac was excised. To begin the myotomy, longitudinal muscle fibers were first divided with a hook cautery and then an EndoGrabTM was used to provide exposure for division of the transverse muscle fibers. EGD was undertaken to document an adequate myotomy. The gastroesophageal junction was widely patent with slight air insufflation, in which there was no evidence of esophagotomy / gastrotomy. The myotomized segment extended well above and below the squamocolumnar junction. Anterior fundoplication, covering the myotomized esophagus, was constructed to minimize postoperative gastroesophageal reflux.

Laparo-Endoscopic Single Site (LESS) Heller myotomy and anterior fundoplication with a giant hiatal hernia repair can be safely undertaken without apparent scar. Patients will embrace LESS surgery, and laparoscopic surgeons will need to meet patient demands.

12.169 Multispecialty

**Is Transurethral Resection a Good Treatment for Bladder Endometriosis?**


**Objectives:** To report the case of a 32 year-old woman suffering from bladder endometriosis who presented with pelvic pain associated to cyclic recurrent haematuria coinciding with menstrual period.
Methods: Following history, physical examination, transvaginal ultrasound (TVU) and cystoscopy, surgical treatment was indicated.

Results: Imaging (TVU) revealed a protrusion of the left bladder wall. Cistoscopy confirmed a swollen and oedematous lesion in left retro-trigone that seemed extrinsic in origin. With the clinical diagnosis of a possible bladder endometriosis, the patient underwent surgical treatment consisting in deep transurethral resection of the neoplasm, until see the perivesical fat, and laparoscopic evacuation of right endometrial cyst, partial oophorectomy and releasing of peritoneal adhesions. After a follow-up period of 7 years, we observed no recurrence of bladder lesion.

Conclusions: Bladder endometriosis is an uncommon disease. Surgical treatment is indicated for patient suffering from symptomatic bladder endometriosis. For many authors transurethral resection is not an optimal treatment for bladder endometriosis due to the high recurrence rate. We believe that if we opt for transurethral resection, this should be deep and complete, as performed in our case.

12.170 General Surgery
Laparo-Endoscopic Single Site (LESS) Distal Pancreatectomy and Splenectomy with an Extraction Port
Alexander S. Rosemurgy MD1, Harold Paul MS1, Kenneth Luberice BS1, Edward Choung MD1, Sharona B. Ross MD2
1Tampa General Medical Group, Tampa General Hospital, Tampa, Florida
2University of South Florida, Department of Surgery, Tampa, Florida

Laparo-Endoscopic Single Site (LESS) surgery provides satisfactory access to all quadrants of the abdomen, and thereby, can be efficaciously applied to a broad range of operations providing the salutary benefits of multi-incisional laparoscopy and superior cosmesis. This video documents that LESS surgery is applicable for a safe, expeditious, and efficacious distal pancreatectomy with splenectomy.

After bupivacaine was injected into the umbilicus, a single 12mm incision was made without violating the umbilical ring. A 5mm deflectable tip laparoscope was utilized. The stomach was widely mobilized and the gastrocolic omentum was divided utilizing bipolar cautery, achieving wide access to the pancreas. A liver retractor lifted the liver and mobilized the stomach away from the pancreas, providing adequate exposure to the left gastric artery, an important landmark. The dissection was carried along the inferior border of the pancreas toward the caudal tip of the spleen. The splenic flexure of the colon was mobilized. The pancreas was divided utilizing a laparoscopic articulating stapler. The specimen was freed by dividing lienophrenic ligaments and removed in an extraction bag. Hemostasis was achieved and 10ml of dilute bupivacaine solution was sprayed over the subdiaphragmatic spaces prior to specimen extraction. With liberal use of water-soluble lubricant at a lateral incision extraction site, it is possible to extract a large specimen through a small incision. The umbilicus, as well as the lateral incision, was closed with absorbable sutures in a figure-of-eight fashion. After recovery, there was no notable scar.

12.171 Foregut
Laparoscopic Management of a Giant Type III Paraesophageal Hernia
Kevin El-Hayek, Matthew Kroh, Bipan Chand
Bariatric and Metabolic Institute, Cleveland Clinic, Cleveland, Ohio 44195.

Objective: Paraesophageal hernia is a defect of the diaphragmatic hiatus with subsequent herniation of abdominal contents into the thorax. These hernias are graded based on the degree of herniation into the chest. There is a strong association with reflux disease, and complications include incarceration of the stomach and other viscera. Considerable debate exists regarding operative approach (thoracic versus abdominal, laparoscopic versus open) for these complex hernias. Our objective is to review the laparoscopic management of a giant Type III paraesophageal hernia.

Methods: An 81 year old patient presented with a long-standing history of paraesophageal hernia. Pre-operative symptoms and work-up, operative technique, and short-term operative results are highlighted.

Results: The operation was completed laparoscopically. Four concepts aimed at reducing post-operative recurrence are
1. Reduction of the hernia with excision of the hernia sac.
2. Hiatal closure with mesh reinforcement.
4. Anterior and posterior gastropexy fixation.

Operative time was 120 minutes. The patient experienced transient dysphagia which resolved during her hospitalization. She was discharged home on post-operative day 5 and was symptom free at 2 week follow up.

**Conclusions:** Paraesophageal hernia is effectively managed laparoscopically. A complement of maneuvers as highlighted above may serve to reduce the rate of post-operative recurrence.

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**12.172 General Surgery**

**The Standardization of Laparo-Endoscopic Single Site (LESS) Cholecystectomy**

Sharona Ross MD, Rosemurgy A2, Michael Albrink MD1, Edward Choung MD2, Scott Gallagher MD1, Jonathan Hernandez MD2, William Kelley MD3, Santiago Horgan MD15, Michael Kai DO21, Kenneth Luberice BS2, Jeffery Marks MD7, Jose Martinez MD18, Yoav Mintz MD13, Dmitry Oleynikov MD23, Harold Paul MS2, Aurora Pryor MD4, David Rattner MD8, 9, Homero Rivas MD10, Kurt Roberts MD6, Eugene Rubach MD16, Steven Schweitzberg MD9, 20, Lee Swanstrom MD17, John Sweeney MD12, Erik Wilson MD14, Harry Zemon MD5, Natan Zundel MD22

1Surgery, University of South Florida, Tampa, FL; 2Tampa General Medical Group, Tampa General Hospital, Tampa, FL; 3Richmond Surgical Group Inc., Richmond, VA; 4Surgery, Stony Brook University, New York, NY; 5Surgery, North Shore LIJ Hospital, New Hyde Park, NY; 6Surgery, Yale Medical Group, New Haven, CT; 7Surgery, University Hospitals Case Medical Center, Cleveland, OH; 8Surgery, Massachusetts General Hospital, Boston, MA; 9Surgery, Harvard Medical Group, Boston, MA; 10Surgery, Stanford School of Medicine, Stanford, CA; 11Surgery, Forsyth Medical Center, Winston-Salem, NC, United States; 12Surgery, Emory University, Atlanta, GA; 13Surgery, Hadassah Hebrew University Medical Center, Jerusalem, Jerusalem, Israel; 14Surgery, The University of Texas Medical School at Houston, Houston, TX; 15Surgery, University of California, San Diego, CA; 16Surgery, New Jersey Medical School, Newark, NJ; 17The Oregon Clinic, Portland, OR; 18Surgery, University of Miami Health Systems, Miami, FL; 19Surgery, UC San Diego Medical Center, San Diego, CA; 20Cambridge Health Alliance, Cambridge, MA; 21Surgery, McLaren Regional Medical Hospital, Flint, MI; 22Florida International University College of Medicine, Miami, FL; 23Surgery, University of Nebraska Medical Center, Omaha, NE

Many surgeons find LESS cholecystectomy challenging. This video promotes a standardized approach to LESS cholecystectomy in which surgeons with laparoscopic skills can safely and efficiently adopt. This approach imitates the 4-incision conventional laparoscopic cholecystectomy.

After administration of general anesthesia, 10ml of bupivacaine is injected at the umbilicus and a 12mm vertical incision is made in the anatomical scar of the umbilicus. A single 4-trocar port is inserted. A 5mm deflectable tip laparoscope is placed through the trocar at the 8 o’clock position, a bariatric length rigid grasper at the 4 o’clock position (to grasp the fundus), a bent grasper at the 2 o’clock position (to grasp the infundibulum), and the working port is located at the 10 o’clock position. This arrangement of the instruments and the deflectable tip laparoscope minimizes internal and external instrument clashing, and allows retraction of the gallbladder in a cephalad and lateral direction. A window is developed between the gallbladder and the liver, which promoted the subsequent “critical view” of the cystic duct and artery. Before disengaging the gallbladder from the liver bed, hemostasis is ensured. The diaphragm is irrigated with bupivacaine solution to minimize postoperative pain. The umbilical defect is closed with an absorbable suture in a figure-of-eight fashion, and the skin is approximated.

Standardization of LESS cholecystectomy will potentially reduce intra-operative complications by providing a safe and easily adaptable approach to cholecystectomy with reproducible outcomes.

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**12.173 General Surgery**

**The Standardization of Laparo-Endoscopic Single Site (LESS) Nissen Fundoplication**
Laparo-Endoscopic Single Site (LESS) surgery represents a paradigm shift in minimally invasive surgery; it improves cosmesis, possibly reduces pain, and shortens recovery time. This video promotes a standardized approach to LESS Nissen fundoplication in which surgeons can safely and efficiently adopt.

After administration of general anesthesia, 10ml of bupivacaine was injected and a 12mm vertical incision was made in the anatomical scar of the umbilicus. A single 4-trocar port was inserted. A 5mm deflectable tip laparoscope was placed at the 8 o'clock position, a liver retractor at the 4 o'clock position, a rigid grasper at the 10 o'clock position, and the working port was placed at the 2 o'clock position. The hiatal hernia was reduced and the sac excised. The distal esophagus was circumferentially dissected, while both the anterior and posterior vagus nerves were preserved. The gastric fundus was mobilized by dividing the short gastric vessels and the hiatus was reconstructed with interrupted sutures. The posterior fundus was then brought behind the esophagus and the fundoplication was constructed utilizing three interrupted sutures. Then, it was anchored to the right crus to avoid tension and to prevent twisting of the lower esophagus. The umbilical defect was closed with an absorbable monofilament suture in a figure-of-eight fashion. The skin was approximated with an interrupted absorbable suture.

Standardization of LESS Nissen fundoplication will potentially increase adoption by providing a safe surgical approach, with reproducible outcomes and reduction of intra-operative complications.

**12.174 Robotic Surgery**

**An Analysis of the Impact of Previous Laparoscopic Hysterectomy Experience on the Learning Curve for Robotic Hysterectomy**

Eddib, N., Jain 2, A, Eswar1, A. Danakas1, D. Marchetti1,4, M. Erk1, C. Michalik4, M. Sathianarayanan1, V. Krovi1, P. Singhal1

1University at Buffalo, Buffalo, NY, 2University of Rochester, Dept of Neurosciences, Rochester, NY, 3Kaleida Health, Millard Fillmore Suburban Hospital, Williamsville, NY, 4Gynecologic Oncology Associates of Western New York, Buffalo, NY

**Background:** To analyze and compare the safety and perioperative outcomes of newly trained robotic surgeons with previous laparoscopic hysterectomy experience (TLH Exp) and those without previous laparoscopic hysterectomy experience (Non-TLH Exp).

**Methods:** Prospective data were collected on the first RALH performed by (TLH Exp) and (Non-TLH Exp) surgeons, perioperative outcomes and morbidity were evaluated.

**Results:** The (TLH Exp) group had 36 pts, and the (Non-TLH Exp) group had 66 patients. The parameters that were analyzed for associations with these 2 groups were estimated blood loss (EBL), Hb drop, Length of hospital stay (LOS), Procedure time, and complications.

When comparing patients in the (TLH Exp) group with patients (Non-TLH Exp) group, the mean age was 43 and 44 (P=0.66), mean BMI was 28.7 and 33.9 kg/m2 (P=0.28), mean procedure time was 126 and 172 minutes (P<0.05), mean console time 71 and 117 minutes (P<0.05), mean EBL was 67 and 90 ml (P=0.43), Hb drop 1.86 and 1.4 (P=0.058), uterine wt was 166 and 183 gms (P=0.69), and length of stay was 1.11 and 1.35 days (P=0.29), respectively. The (TLH Exp) surgeons had a lower procedure and console time. There were no operative deaths, or conversions in either group. Morbidity occurred in 3 pts (3%), No statistically significant difference between the groups.

**Conclusions:** Previous advanced laparoscopic skills appear to only significantly impact the length of the procedure, but not other variables. Robotic surgery may level the playing field between the basic and advanced laparoscopic surgeon for robotic
Examples of Complex Gynecological Cases Utilizing Single Port Laparoscopic Surgery

Jessica Ybanez-Morano, MD, MPH, FACOG
Wheeling Hospital

**Objective:** In the recent years, reduced site laparoscopy has gained popularity in surgical practice. Various laparoscopic approaches have allowed significant advances in gynecology. Using a single incision laparoscopic techniques in complex gynecological cases is feasible. Furthermore, the one umbilical incision has shortened hospital stay, improved convalescent time and provide greater patient satisfaction.

**Methods:** Single incision laparoscopic surgery using a trans-umbilical approach has been used to accomplish various procedures in the field of gynecology. These three cases depict the ability to address markedly complex cases. The first case reviewed the management of a markedly enlarged fibroid uterus. The second case highlights the dissection of adnexal structures in spite of dense pelvic adhesions and an irregularly shaped uterus. Lastly, the third case depicts the techniques in isolating the left adnexal structure in a patient with recurrent pelvic inflammatory disease, dense pelvic adhesions, and persistent pelvic pain.

**Results:** The patients stayed for overnight observation and was discharged home the following day. They returned to work in less than two weeks and had minimal scars with an umbilical incision of less than 2 cm in length.

**Conclusion:** Single site laparoscopy has improved the patient stay with overnight observation admission and shortened convalescent stay at home for recovery. The patients have a well-hidden 1-2cm scar within the umbilical folds.

Analysis of the impact of Age on the Surgical Outcomes After Robot Assisted Laparoscopic Hysterectomies

Eddibi, N. Jain, A. A. Eswar, A. Danacas, D. Marchetti, M. Erk, C. Michalik, M. Sathianarayanan, V. Krovi, P. Singhal

1University at Buffalo, Buffalo, NY, 2University of Rochester, Dept of Neurosciences, Rochester, NY, 3Kaleida Health, Millard Fillmore Suburban Hospital, Williamsville, NY, 4Gynecologic Oncology Associates of Western New York, Buffalo, NY

**Objective:** To estimate the impact of patient’s age on surgical outcomes in patients undergoing robotic hysterectomy.

**Methods:** A retrospective cohort data analysis of a consecutive series of patients undergoing gynecologic robotic surgery. Patient’s age was abstracted from the medical charts of all patients undergoing robotic hysterectomy. Data on perioperative variables was collected.

**Results:** 293 patients underwent robotic surgery for Gynecologic disease. 274 patients who were under age 70 were compared with 19 patients who were over age 70.

When comparing patients under age 70 with patients over age 70, the mean age was 47.6 and 76.4 (P<0.05), mean BMI was 33.9 and 27.6 kg/m2 (P<0.05), mean procedure time was 179 and 219 mins (P<0.05), mean console time 122 and 164 mins (P<0.05), mean EBL was 75.7 and 44.7 ml (P<0.05), Hb drop 1.6 and 1.3 (P=0.29), uterine weight was 206 and 94.9 gms (P=0.98), and length of stay was 1.49 and 1.25 days(P=0.08).

The patients over age 70 had a statistically significant lower mean BMI, higher blood loss, longer procedure time, and console time. No statistically significant difference was noted between the 2 groups and Hb drop, LOS, or complications. There were no operative deaths. Morbidity occurred in 11 patients (3%), and were all in the under 70 age group.

**Conclusions:** Advanced age does not appear to be associated with an increased risk of morbidity in patients undergoing robotic hysterectomy.

Analysis and Treatment of Gastric Leak Following Laparoscopic Sleeve Gastrectomy
Background: The number of sleeve gastrectomies performed continues to increase as data continues to show comparable weight loss results and co-morbidity resolution to the gastric bypass and duodenal switch procedures. Although considered less technically complex to perform, the associated morbidity of gastric leak poses considerable challenges and increases health care cost. Even in the acute setting, attempts at surgical repair are unsuccessful. As ongoing discussions continue regarding standardization of the procedure to limit gastric fistula formation and optimize patient results, so are attempts to develop treatment strategies and algorithms for this complication.

Methods: We present a case series of six patients who have undergone a laparoscopic sleeve gastrectomy with the associated morbidity of gastric leak. The goal of our study was to perform a retrospective analysis of gastric leakage in terms of location, time of presentation, diagnostic studies, therapeutic strategies, length of hospital stay, cost effectiveness, and clinical outcome. Our therapeutic strategies included re-operation with washout, closure and drain placement, percutaneous drain placement, endoscopic clipping, fibrin glue injection and stent placement.

Results: Approximately 240 laparoscopic sleeve gastrectomies have been performed at our institution with a leak rate of 2.5%. Leaks occurred at all points on the learning curve for the procedure and were diagnosed within 30 days of the initial operation. Both proximal and distal fistulas were represented. Gastric fistula closure was achieved in all six patients using a combination of modalities.

Conclusion: The management of gastric leak following laparoscopic sleeve gastrectomy is complex and often requires a multi-modality approach.

12.178 Gynecology
Minimally Invasive Surgical Techniques in Benign Gynecology - A 3-year Retrospective Review
Jessica Ybanez-Morano, MD, MPH; Manu Kaushik, MD
Wheeling Hospital

Background: Minimally invasive surgery (MIS) techniques, such as vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH), are advocated rather than the abdominal approach (TAH). Trends to laparoscopic approaches in gynecology have been slowly adapted. In 2003, rates of TAH, VH, and LH were 66%, 22%, and 12% respectively. The combined MIS rate (VH and LH) for 2003 was 34%.

Method: Data from 2009-2011 is reviewed for all hysterectomies 314 (118-2009), (114-2010), (82-2011.) Parameters noted include approach of surgery, age, BMI, specimen weight in grams, EBL in mL, OR time in minutes, and hospital stay in days. Trends over the 3 years were compared. LH was performed via single incision laparoscopic techniques exclusively in 2010 and 2011.

Results: The MIS rates (VH and LH) were 75%, 95%, and 95% for 2009, 2010, and 2011 respectively. OR time improved in all 3 approaches over the 3 yrs. VH OR times are the least, 2009-41, 2010-30, and 2011-30. LH OR times are 2009-82, 2010-57, and 2011-53. TAH OR times are 2009-78, 2010-51, 2011-47. Average estimated blood losses (EBL) in mL are least in VH-88mL, LH-172mL, and TAH-186mL. Patients stayed overnight and were discharged the next day after VH and LH. They returned to work in less than 2 wks with minimal scars.

Conclusions: Minimally invasive surgical approaches for hysterectomy are feasible in the majority of benign gynecological cases. Adoption of laparoscopic techniques and utilization of vaginal surgical approaches decreased patient convalescent time, shortened hospital stay, and improved incisional cosmesis.

12.179 General Surgery
Laparoscopic Repair of a Type IV Hiatal Hernia
Francisco Jacome, MD, Nestor De La Cruz-Munoz, MD.
University Of Miami Miller School Of Medicine
**Introduction:** Laparoscopic repair of hiatal and para-esophageal hernias is a common procedure that has demonstrated to be superior to open repairs, decreasing the length of hospital stay as well as lower overall complications. We present a laparoscopic Type IV Hiatal Hernia repair.

**Procedure:** Patient is placed on steep reverse Trendelenburg position to aid in the reduction of the hernia contents and have better visualization, after colon is reduced the defect is clearly seen, the edges of the hernia sac are identified and retracted, initial dissection is done to separate the hernia sac from the left cruse then the sac is completely dissected allowing the reduction of the stomach into the abdomen; dissection around the esophagus is done to gain length and have an appropriate amount of intra-abdominal esophagus, a retro-esophageal window is created and the left crus is visualized from the right side. Appropriate dissection and identification of the anatomic structures is key to avoid injuries to the esophagus or stomach. Next the both crus are approximated on the posterior aspect. The use of mesh is debatable as well as the type of mesh, in this case we use a biological absorbable mesh to re-enforce the repair; a Nissen fundoplication was added at the end of the surgery to prevent reflux and aid on the repair.

**Conclusion:** Laparoscopic repair of hiatal hernia is a complex procedure around vital structures the presence of a large hernia can obscure the anatomy and increase the risk of a complication. Appropriate dissection and identification of all the anatomical structures is the base of a good repair and safe repair.

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**12.180 General Surgery**

**Closure of the Mesenteric Defect at Jejuno-Jejunostomy**

Francisco Jacome, MD, Nestor De la Cruz-Munoz, MD.
University Of Miami Miller School Of Medicine

**Introduction:** Bowel obstruction and internal hernia after a gastric bypass is a well know complication ranging from 1.5% to 3.5% (1) and the most common site is at the jejuno-jenunostomy defect 91%(1), closure of this mesenteric defect can reduce the incidence of internal hernia (2). We present here a technique to visualize and appropriately close this defect.

**Procedure:** After the anastomosis is created the bowel and mesentery should be rotated in a clockwise fashion to visualize the complete defect from the anastomosis to the base of the mesentery forming a U shape; the defect is then closed from the top to the bottom with a running permanent suture in manner avoiding small gaps that in the future could cause an internal hernia

**Conclusion:** Appropriate closure of the defect can only be done when adequate visualization of the complete defect is archived, to do this clockwise rotation of the bowel is necessary and the defect should be closed with a running permanent suture.

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**12.184 Gynecology**

**Vaginal Cuff Dehiscence in Robotic Assisted Total Hysterectomies, Incidence, Prevention and Management**

Shabnam Kashani, MD*; Taryn Gallo, MD**; Anita Sargent, MD**; Karim ElSahwi MD**; Dan-Arin Silasi MD**; and Masoud Azodi MD**

*Yale New Haven Health / Bridgeport Hospital, Department of Obstetrics & Gynecology, Minimally Invasive Gynecologic Surgery Fellowship Program

**Yale University School of Medicine, Department of Obstetrics, Gynecology & Reproductive Sciences, Division of Gynecology Oncology

**Study Objective:** The aim of this study was to estimate the cumulative incidence of vaginal cuff dehiscence in robotic assisted total hysterectomies in our patients and to provide recommendations to decrease the incidence of vaginal cuff dehiscence.
**Design:** Observational case series, Canadian Task Force Classification II-3.

**Setting:** Academic and community teaching hospital.

**Patient:** A total of 654 patients underwent robotic assisted total laparoscopic hysterectomy for both malignant and benign reasons from September 01, 2006 to March 01, 2011 by a single surgeon.

**Interventions:** The da Vinci Surgical System was used for the robotic-assisted total laparoscopic hysterectomy.

**Measurement and Main Results:** There were 3 cases of vaginal cuff dehiscence among 654 robotic-assisted total laparoscopic hysterectomy that make the cumulative incidence of vaginal cuff dehiscence 0.4% after this procedure in our patients. The mean time between the procedures and vaginal cuff dehiscence was 44.3 days (6.3 weeks). All patients were followed up twice after surgery, in 3-4 wks and 12-16 wks.

**Conclusion:** In our study the incidence of vaginal cuff dehiscence after robotic assisted total laparoscopic hysterectomy compares favorably to total abdominal and vaginal hysterectomy. Our study suggests that the incidence of vaginal cuff dehiscence is more likely related to the technique of colpotomy and vaginal cuff suturing rather than with robotic assisted total hysterectomy per se. With proper technique and patient education our vaginal dehiscence rate has been 0.4% which is 2.5 to 10 times less than previously reported vaginal cuff dehiscence in the literature.

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**12.185 Gynecology**

**Vaginal Cuff Complications In Patients Undergoing Total Robotic and Laparoscopic Hysterectomy: Bidirectional Barbed vs. Conventional Suture**

Emery Salom, MD; Lisa Lacorte, MS4; Rebecca Arana, MS3; James West, MS3; Manuel Penalver, MD
Florida International University College of Medicine, Nova Southeastern School of Medicine

**Objective:** The literature suggests that vaginal cuff dehiscence is highest with robotic procedures (1-4%). The purpose of this study is to compare vaginal cuff complications among patients undergoing total robotic hysterectomy (TRH) vs. total laparoscopic hysterectomy (TLH), and the effect of bidirectional barbed suture utilized to close the vaginal cuff.

**Design:** A retrospective cohort study was performed including women undergoing TRH and TLH from 2007 to 2011. Age, weight, BMI, surgical procedure, EBL, vaginal cuff complications, dehiscence, DVT, PE were evaluated. Student t test and chi square test were used to determine statistical significance, p value < 0.05.

**Results:** A total of 437 patient charts were evaluated, with TRH n = 243 and TLH n = 194. There was a statistically lower estimated blood loss (128 vs. 179) and higher uterine weight (333 vs 184 g) among TRH. Overall vaginal cuff complications were less in the TRH (1.83%) vs. TLH (2.74%) p=0.65). Vaginal cuff dehiscence was lowest among TRH 0.23% vs. TLH, 1.14%, yet not significant (p=0.42). Bidirectional barbed sutures were used more often among the TRH (46%) vs. TLH (0). Vaginal cuff complications among the TRH closed with Bidirectional barbed sutures (0.41%) were 6 and 12 times less compared to the TRH (2.47%) or TLH closed with conventional suture (6.18%), respectively.

**Conclusions:** In our study, vaginal cuff complications overall were lowest among the robotic hysterectomy. This finding appears to be related to the use of a bidirectional barbed suture which decreased the risk by 6 to 12 times when compared to conventional suture.

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**12.187 General Surgery**

**Transoral Thyroidectomy Using New Mandibular Periosteal Approach: Natural Orifice Transluminal Endoscopic Surgery For Thyroid Gland**

Hoonyub Kim, MD PhD; Hyeeyoon Lee, MD; Hyeeyoon Lee, MD; Jiyoung You, MD; Seongbae Hwang, MD; Jaebok Lee, MD PhD; Jeoungwon Bae, MD PhD Division of Breast and Endocrine Surgery, Department of Surgery, Korea University College
Objective: Although endoscopic thyroid surgery is gaining wide acceptance, however, existing endoscopic methods for thyroidectomy also have been blamed for necessity of more flap dissection and longer operative time. More recently, transoral endoscopic thyroidectomy have been reported to overcome the limitations of previous approaches. However, previous transoral approaches have also shown limitations. Herein we present our initial experience of new transoral thyroidectomy using mandibular periosteal approach in cadaver and porcine models, which showed better operative view with lesser limitation of motions.

Methods: Transoral thyroidectomies using mandibular periosteal approach were performed in five human fresh cadavers and four living pigs. Total thyroidectomies were performed in all cadavers and pig. In animal study, follow-up examinations were carried out for 7 days and followed by autopsy.

Results Through three trocars in mandibular periosteal area, it was possible to create a working space under the platysma muscle and to reach the pretracheal area. Total thyroidectomies were performed and all the ten recurrent laryngeal nerves were preserved in all five cadavers using the method. Mean operative time was 89.8(55-132) minutes. After operation, we identified intact mental nerves in all cases. In four orally intubated living pigs, total thyroidectomies were also performed via transoral, mandibular periosteal approach without complications. Postoperatively, white blood cell count remained normal in all cases. On the postoperative sacrifice of the pigs, three locally encapsulated seromas were observed. Both recurrent laryngeal nerves were intact in all cases.

Conclusion: Transoral thyroidectomy using mandibular periosteal approach might be feasible, effective and safe.

12.188 Gynecology
Emery Salom, MD1, Lauren Puchades Lisa1, Lacorte, MS4,2 Daniel Castro2, Luis Mendez,MD1, Manuel Penalver, MD1

1Florida International University College of Medicine,
2 Nova Southeastern School of Medicine

Objective: We are presenting a novel technique for vaginal vault prolapse utilizing a robotic-assisted sacrocolpopexy with a bi-directional barbed suture deployed in a continuous manner.

Methods: This is a case series of 17 patients with advanced vaginal vault prolapse that underwent a robotic sacrocolpopexy. Additional procedures include: hysterectomy= 4, BSO=3, and lysis of adhesion=1. The average age= 65 years, total operative time=103.4 min (87min excluding hysterectomies), EBL=33.9ml (17 ml excluding hysterectomies) , hospital days=1.2 days. There were no major complications and minor complications included: 1 (6%) fever, 1 (6%) hypokalemia, and 2(17.5) de novo urinary stress incontinence. No symptomatic recurrences have been reported. This is an 8 minute video highlighting and describing the technique of utilizing a continuous barbed bidirectional suture technique to anchor a Y-mesh to the vaginal vault in a zig-zag pattern.

Conclusions: We believe that this novel approach of robotic sacrocolpopexy using a continuous knot-less bidirectional barbed zigzag suturing technique is durable, reduces operative time to a little over 1 hour and minimizes postoperative morbidity.

12.189 General Surgery
Percutaneous Endoscopic Gastrostomy and Preventable Minor Complications: a Retrospective Analysis.
Fatin R. Polat1, MD; Ergün YILDIZ2, MD

1: General Surgeon Toyota State Hospital, Sakarya, Turkey
2: General Surgeon New City State Hospital, Sakarya, Turkey
study was to evaluate preventable minor complications.

**Material and Methods:** Our study included 76 patients who underwent PEG in the endoscopy unit between 2008 and 2011. PEG catheter insertion points were evaluated retrospectively. Patients were divided into 2 subgroups according to PEG catheter insertion point: (1) Two-thirds or three-quarters of the distance from the umbilicus to the midpoint of the left costal margin, and (2) outside two-thirds or three-quarters of the distance from the umbilicus to the midpoint of the left costal margin.

**Results:** There was no major complication. Minor complication such as peristomal infection, hematoma, tube dislodgement, and peristomal leakage occurred in 4.7% of patients from subgroup 1, 76.9% of patients from subgroup 2, and 17.1% of all patients. Significant differences were found between in group I and group II (p<0.05). There was no association with diabetes mellitus in both groups.

**Conclusions:** PEG is a very efficient, safe and fast method. Minor complication rate occurred mainly among patients with inappropriate PEG insertion point, which is a technique-related factor. If PEG catheter insertion point is made appropriately, it seemed to reduce of minor complications.

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**12.190 Gynecology**

**Single-port Versus Three-port Laparoscopic-assisted Vaginal Hysterectomy for Benign or Precancerous Uterine Disease**

_Jong-Hyeok Kim, M.D., Ph.D., Jeong-Yeol Park, M.D., Ph.D., Joo-Hyun Nam, M.D., Ph.D._

Department of Obstetrics and Gynecology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea

**Objectives:** To compare the surgical outcomes between single-port versus three-port laparoscopic-assisted vaginal hysterectomy (LAVH).

**Methods:** All consecutive patients who tried single-port (n=355) or three-port (n=544) LAVH for benign or precancerous uterine disease were included.

**Results:** 355 and 544 patients tried single-port and three-port LAVH, respectively. Six and (1.7%) one patient (0.3%) in single-port LAVH group required additional ports and laparo-conversion, respectively, and each one patient (0.4% and 0.4%) in three-port LAVH group required additional ports and laparo-conversion (P=0.064). There were no between-group differences in age, menopause, parity, body mass index, and previous abdominal surgery, nor were there between-group differences in the diagnosis of uterine disease and uterus weight. There were no differences in operating time (120min vs. 119min, P=0.545), mean hemoglobin level change (1.4mg/dL vs. 1.4mg/dL, P=0.614), transfusion requirement (8.7% vs. 9.8%, P=0.596), and transfusion amount (2.5pints vs. 2.4pints, P=0.625). However, single-port LAVH group had significantly less estimated blood loss (110 vs. 135, P<0.001), less postoperative pain sores at POD 0 (4.9 vs. 5.3, P<0.001) and POD 1 (2.4 vs. 2.6, P=0.006), less analgesics requirement at POD 0 (23% vs. 46.8%, P<0.001) and POD 1 (23.6% vs. 41.6%, P<0.001), and shorter postoperative hospital stay (2.3days vs. 2.5days, P=0.005). Perioperative complications occurred in 12 (3.4%) and 23 (4.2%) patients of single-port and three-port LAVH groups, respectively (P=0.512).

**Conclusions:** Single-port LAVH was as feasible as three-port LAVH. It was more minimally invasive surgery with more favorable operative outcomes in terms of estimated blood loss, postoperative pain, analgesics requirement, and hospital stay.

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**12.191 Gynecology**

**Laparoscopic-assisted Surgery for Benign Ovarian Cyst in a Young Girl**

_Takashi Yamada MD,_ Department of Pathology, Osaka Medical College, Osaka, Japan

**Introduction:** We report here a case of an ovarian cyst in an 7-year-old girl with torsion of an ovarian mature cystic teratoma underwent laparoscopic-assisted cystectomy with an abdominal wall incision of only 2 cm.
Case report:
A 7-year-old girl was admitted because of marked abdominal distention and sudden lower abdominal pain and vomiting. Computed tomography revealed a cystic tumor without solid parts, 8 cm in diameter, and with no ascites. Torsion of a benign ovarian cyst was suspected and emergency laparoscopic-assisted surgery was performed. The abdominal wall was incised 1.2 cm vertically midpoint between the umbilicus and pubic symphysis. The intraperitoneal space was opened by open technique. A 12-mm blunt cannula on which the sutures were hooked was pulled up in order to lift the abdominal wall, making the organs in the intraperitoneal space easily visible. There was no ascitic fluid or peritoneal adhesion, and a pale purplish, discolored cyst was identified. The cannula was withdrawn and the tumor was punctured with a SAND balloon catheter inserted through the abdominal incision by direct visualization. Approximately 250 ml of serous fluid was aspirated without leakage into the peritoneal cavity. The laparoscope was again inserted and the right ovarian cyst was twisted 720 degrees. The abdominal incision was enlarged to 2 cm and ovarian cystectomy was performed extracorporeally. After returning the right adnexa into the intraperitoneal space, laparoscopic observation was again performed. All of the manipulations were possible through a 2-cm incision in the abdominal wall.

Conclusions: Laparoscopic-assisted surgery with only one small abdominal incision is useful in pediatric patients because it is minimally invasive.

12.192 Urology
Predictors of Hospitalization and Prognostic Factors of Primary Bladder Tumors Diagnosed in Patients Evaluated in the Emergency Department with Macroscopic Painless Hematuria
Dario Garcia-Rojo, Carmen Campos, Maria Dolores Ferrer, Jose Luis Gonzalez-Sala, Emili Gene, Maria Teresa Martinez, Juan Prats. Corporacio Parc Tauli. Hospital Sabadell. Sabadell. Spain.

Objectives: The etiology of macroscopic hematuria may be due to especially a primary bladder cancer (BC). METHODS: Retrospective analysis. Patients presented in the emergency department (ED) with macroscopic painless hematuria between 01/2008 and 04/2009. We analyzed patients requiring hospitalization and those who could be discharged. We also analyzed if differences exist in pathological stage and prognosis between primary BC diagnosed in the ED and those diagnosed in the office. We used the chi-square test to compare qualitative variables and Student’s t test for quantitative variables.

Results: We analyzed 506 episodes of hematuria. 18.4% required admission in the hospital. Variables analyzed in the comparison between patients who required admission compared to those without hospital admission: age 76.3 years vs. 67. years (p =0.0001); urinary catheter for bladder washings 81.7% vs 20.5% (p=0.0001). We have not found statistically significant differences regarding previous urologic tumor, use of anticoagulants, post-surgical hematuria and permanent indwelling urinary catheter. Pathological stage comparing patients diagnosed in the ED vs those diagnosed in office showed: invasive,16.6% vs 20.3%. In the superficial BC, the average probability of relapse at 2.5 years was 27.7% of those diagnosed in the ED vs 27.6% in the office (p= 0.32) and of progression of 5% vs. 3.95% (p=0.53).

Conclusions: There are no differences in pathological stage and prognosis when comparing patients diagnosed of BC in the ED and those diagnosed in the office. The initial diagnostic and are essential in order to not delay the treatment in an high grade superficial tumors and invasive BC.

12.193 General Surgery
Indications and Efficacy of intragastric balloon in Obese Egyptian Patients
Galal Abouelnagah MD FRCS, Wael Nabil MD, Mohamed Bekhit FRCS
Alexandria Faculty of Medicine, Alexandria, Egypt

Background: The surgical management of morbid obesity is faced by several challenges. Alternative therapeutic strategies could have an important role in peri-operative risk reduction. Intragastric balloon was described to be effective in weight reduction, and is used as a bridge before bariatric surgery.

Objective: To present the indications of intragastric balloon, as well as its efficacy as a weight reduction tool in obese Egyptian patients.

Methods: A retrospective review of a prospectively maintained bariatric database was conducted. Indications of Intragastric
Results: 55 patients’ records (11 males and 44 females) were retrieved. Mean initial BMI was 45.3 ± 11 kg/m². The mean of excess body weight percent (EBW %) was 105.8 ± 51.4 % for females and 134 ± 55.8 % for males. Nausea was reported in 30 patients (54.5 %), epigastric discomfort was reported in 23 patients (41.8 %), and vomiting was reported in 27 patients (49.1 %). Six patients (10.9 %) had early removal of the balloon (before six months), while four (7.2 %) had delayed removal. The mean excess weight loss % (EWL %) was 17.2 %. There was significant reduction in patients’ BMI from 45.3 to 38.3 kg/m² (p<0.001). There was no significant association between the EWL % and the gender, age or initial BMI. Two patients had second balloon insertions without complications.

Conclusion: Intragastric balloon is effective and safe in weight reduction in obese Egyptian patients.
Conclusions: Robotic calyceal diverticulectomy is a safe and effective alternative to laparoscopic and open diverticulectomy.

12.197 Gynecology
Long Term Follow Up of the PAIR Treatment of Liver Hydatid Cysts
Ali Uzunkoy, Hasan Ciecie
Harran University School of Medicine Department of General Surgery and Radiology

Background: Hydatid cysts are endemic in some region and they may be symptomatic and cause severe complications. Surgical interventions have been still performed for the treatment of symptomatic hydatid cysts. Recently percutaneous treatment modalities have begun for selected liver hydatid cysts. In this study, we aimed to evaluate long term results percutaneous aspiration, injection and reaspiration (PAIR) treatment of liver hydatid cysts.

Patients and methods: Thirty-one patients with hidatid liver cysts undergoing PAIR treatment were evaluated. All of the patients were evaluated with ultrasonography and tomography in the preoperative period and diameters of cysts were measured. The diagnosis was confirmed with serological tests. PAIR procedures were performed under ultrasonography. Medical treatment was initiated 2 weeks before the procedure and continued for postoperative 3 months. After the PAIR procedures, reduction of cyst cavity diameters was measured at 1 month, 6 months 1 year and later yearly.

Results: The mean preoperative cyst diameter was 7.6±1.8 cm. The mean duration of hospital stay was 3±1.4 days. There was no local recurrence or peritoneal spread of the disease. The cysts were evaluated via abdominal ultrasonography and tomography. After postoperative 24 months, the cysts were disappeared in the eight patients and it was seen CE4 cysts in 11 patients and CE5 cysts in the 12 patients. Mean cyst diameter was 3.0±0.2cm

Conclusion: PAIR procedure for hydatid liver cysts is an effective method. There is no important side effect and it can be performed safely. It is an alternative treatment procedure for suitable liver hydatid cysts.

12.198 Gynecology
The Usefulness of the Shock Index to Predict Intraabdominal Bleeding of Ectopic Pregnancy.
Mineto Morita, M.D., Takehiko Tsuchiya, M.D., Masahito Nakakuma, M.D., Toshimitsu Maemura, M.D., Yukiko Katagiri, M.D. Department of Obstetrics and Gynecology, School of Medicine, Faculty of Medicine, Toho University

Objectives: To assess the clinical utility of the Shock Index (SI: ratio of the heart rate to systolic blood pressure) to predict hemoperitoneum in cases of ectopic pregnancy.

Design: Retrospective case control study.

Materials and Methods: We analyzed a total of 227 ectopic pregnancy patients who underwent either laparotomy (n=46) or laparoscopic surgery (n=181) between March 2004 to December 2010.

Results: In 195 cases (< 1000ml of intraabdominal bleeding), SI was 0.72 +/- 0.12. In 32 cases (> or = 1000ml of intraabdominal bleeding), SI was 1.03 +/- 0.23. The SI of hemoperitoneum over 1000ml cases was significantly higher (p<0.0001) than less 1000ml. We classified all the patients into two groups. Group A (n=127) : SI < 0.75, and Group B (n=100) : SI > or = 0.75. Intraabdominal bleeding of Group A vs. B were 133.9 +/- 173.5 ml vs. 819.2 +/- 1102.0 ml (p<0.0001). In addition Group B was classified into two groups. Group B1 (n=79) : SI > or = 0.75 and < 1.00, and Group B2 (n=21) : SI > or = 1.00. Intraabdominal bleeding of Group B1 and B2 were 475.0 +/- 712.9 ml and 2113.9 +/- 1342.3 ml. Fifteen cases of 79 patients of Group B1 (19%) and 15 cases of 21 patients of Group B2 (71%) required salvage autotransfusion and / or homologus blood transfusion.
autotransfusion system and homologus blood transfusion.

12.199 Liver/ Pancreas

The Value of Laparoscopic Liver Resections for Benign and Malignant Lesions. A Single Center Experience.
Harry F. Dorn MD, Avinash Agarwal MD, Kenneth Brayman MD, Daniel Maluf MD.

Background: Laparoscopic liver resection is a highly demanding procedure; it requires refined surgical skills and there still a lot of skepticism about the outcomes and benefits. We present herein single-center experience with laparoscopic liver resection.

Methods: We reviewed the records of 20 patients who underwent a laparoscopic liver resection from July 2010 until July 2011. Seven patients had malignant lesions and thirteen benign lesions. The variables we look at were length of stay, reoperation, conversion to open procedure and post operative surgical complications.

Results: All the procedures were completed laparoscopically, during which 20 liver resections were undertaken, including 14 nonanatomic and 6 anatomic resections. The median operative time and blood loss were 80 minutes and 120 cc respectively. There were none intraoperative complications and one (5%) postoperative complication, a biloma that was treated with a percutaneous drain, there was no mortalities. No reoperations were needed. The average length of stay was 2.4 days. Tumor-free resection margins determined by histopathologic evaluation were achieved in 100% of the seven specimens.

Conclusions: Laparoscopic liver resection has proven to be a beneficial modality to treat benign hepatic lesions and to obtain free margins in malignant hepatic lesions. Patients benefit from a shorter length of stay and narcotic use and have a low morbidity and mortality.

12.201 Pediatric Surgery

Cost Effective Safe Approach for Laparoscopic Appendectomy in Children
Mohamed E Hassan MD*, Khalid Al Ali MD*, Prashant Bharatkumar MD, Mamoun Al Marzouki MD

*Pediatric Surgery Department, Al Qassemi Hospital, Sharjah, UAE
Pediatric Surgery Department, Alwasl Hospital, Dubai, UAE

Introduction: Appendectomy is one of the most commonly performed pediatric surgical procedures. The aim of this study to describe our technique for laparoscopic appendectomy in children as well as highlighting our experience with the use of monopolar electrocautery to divide the mesoappendix.

Patients and methods: We conducted a retrospective data review for all the cases of laparoscopic appendectomy done in 2 Pediatric surgery departments, Alwasl hospital, Dubai and Al Qassemi hospital, Sharjah, UAE from February 2006 to April 2012.

Results: The study included 82 patients, 37 males and 45 females. Age range was 4 years- 13 years (mean = 8.6). Operative time ranged from 25 min – 120 minutes (Mean = 40 minutes). According to intraoperative findings, there were 31 cases of perforated appendicitis (38%). There was one case of intraoperative conversion. Postoperative complications included 2 cases of umbilical wound infection (2.4%), 2 cases of localized peritonitis (2.4%) due to perforated appendicitis required reoperation due to residual pus collection, 1 case of abdominal wall surgical emphysema (1.2%) and 1 case of postoperative hematoma (1.2%). There were no cases of any iatrogenic organ, vascular or bowel injury in the study.

Conclusions: The routine use of electrocautery in dividing the mesoappendix, as well as endoloops for appendicular stump during laparoscopic appendectomy in children proved to be safe and cost effective in our study population. Appedicular retrieval from the umbilical port is cost effective procedure in most of the cases as well.

12.202 Colon and Rectal
Purpose: Laparoscopic-assisted colectomy with an extracorporeal anastomosis is associated with a higher conversion for tumors distal to the hepatic flexure (left-sided tumors). We hypothesized that a completely intracorporeal laparoscopic colectomy would minimize conversion and morbidity.

Methods: This is a case-control study comparing laparoscopic colectomy for left and right-sided tumors. All operations performed used a completely intracorporeal technique (February 2004 to September 2011). Using a prospective database, we randomly matched thirty-five patients with left-sided tumors with seventy patients with right-sided tumors. Patients were matched based on age and ASA status. Patient variables: case frequency during the learning curve (LC), body mass index (BMI), conversion, 30 day complications, and length of stay (LOS) were compared between groups by chi-square analysis or t-test where appropriate. Data are expressed as mean ± STD and significance defined as p < 0.05.

Results: Laparoscopic colectomy was performed for 105 colon tumors with a conversion rate of 6.7% and a complication rate of 22%. There was no significant difference in LC (84 ± 37 cases vs. 76 ± 39 cases) between left vs. right-sided tumors.

Conclusions: Laparoscopic colectomy can be successfully performed with equivalent results for tumors distal to the hepatic flexure compared to right-sided tumors by using a completely intracorporeal technique which appears to be independent of surgical experience.

12.204 General Surgery
Laparoscopic Evaluation in Chronic Post-operative Abdominal Pain
Veidan SA, M.D, Birjand University of Medical Science, Imam Reza's Hospital, South Khorasan, Iran; Dadashi Kataneh, RN, St, Michel Hospital, Toronto, Ontario, Canada

Objective: Chronic post-operative abdominal pain especially after a heavy meal is a common problem in this setting. Approximately 20% of patients that underwent laparotomy, have chronic post-prandial abdominal pain for months after operation. About 50% of them are referred to their doctors for treatment. Most of the surgeons are not interested for a second operation in this condition, and perform to do conservative treatment. This study evaluates the cause of this chronic abdominal pain with diagnostic and therapeutic laparoscopic surgery.

Method and Procedures: Elective laparoscopic surgery was performed on 76 patients suffering chronic abdominal pain mostly after heavy meal. They did not have any sign and symptom of acute intestinal obstruction and the most popular complaints were: abdominal pain in 100%, nausea in 30%, vomiting in 10%. Diagnostic laparoscopy was detected positive abdominal findings in 81% of patients. At the same operation, treatment modalities (laparoscopic enterolysis) were performed.

Results: In 81% of patients the cause of pain was intestinal adhesions do to adhesional bands. From the remaining, 10% had adhesions without any correlation to the patient's symptoms. Adhesiolysis (sharp release with scissor) is the treatment of choice. 95% of those patients that underwent adhesiolysis became pain free for a mean average of 11 months fallow up (pre-operative average of pain episode was 4 time per week).

Conclusions: In a patient with post-prandial chronic abdominal pain and a history of previous laparotomy, diagnostic and therapeutic laparoscopic Adhesiolysis can be an effective method for treatment.

12.205 General Surgery
V.Lombardo, MD, M.Turrisi, MD, B.Bronzetti, MD
Department of Surgery, Azienda Ospedaliera Ospedali Riuniti Papardo Piemonte, Contrada Papardo, 98158 Messina, ITALY
Background: Multiple techniques for splenectomy are now employed and include open, laparoscopic and hand-assisted laparoscopic splenectomy (HALS). Concerns regarding a purely laparoscopic splenectomy for massive splenomegaly (> 20 cm) arise from potentially longer operative times, higher conversion rates and increased blood loss. The laparoscopic technique offers the potential advantages of shorter hospital stay and less postoperative pain.

Methods: We report a case of laparoscopic splenectomy for massive splenomegaly secondary to hematologic disease.

Results: Operative time was 90 minutes, estimated blood loss was minimal if any. Length of stay in hospital was 4 days. The patient had no perioperative complications.

Conclusion: Laparoscopic splenectomy seems a safe and effective technique for the management of spleens larger than 20 cm. The technique results in shorter hospital stays, and it seems a good alternative to open splenectomy when treating patients with massive splenomegaly. It should be performed by experienced surgeons with advanced laparoscopic skills.

12.206 General Surgery
Miniinvasive Surgical Treatment of Splenic Cysts
Lytvyn O.I., PhD, Nichitaylo M.Ye., MD Prof, Skums A.V. MD
The National Institute of Surgery and Transplantology of the AMS of Ukraine, Kiev

Nonparasitic cysts of the spleen belong to the number of the rare diseases of this organ. Their frequency makes 0,5-2% of all diseases of the spleen.

Materials and Methods. From January 2002 to December 2011 our clinic saw 45 patients with cysts of the spleen.

The age of the patients varies from 12 to 78 (30 women and 15 men). The main complaint of most of the patients (52,3%) was pain. The cysts of the spleen were found accidentally in 18 (40,0%) patients during the ultrasound examination; these patients had no special complaints. The sizes of the cysts varied from 4 to 19 centimeters.

Three main types of interventions were performed: 1) laparoscopic partial decapsulation-fenestration cysts of spleen (30 patients) 2) laparoscopic splenectomy (11 patients) and 3) laparoscopic resections of the spleen with cyst (4).

Results. There were no specific intraoperational complications and transition on the laparotomy. The morphological investigations of nonparasitic cysts of the spleen showed that in 31 cases they were pseudocysts, 11 true cysts and 3 cystical-hemangioma.

The duration of the operation varied from 38 to 162 min. All patients were discharged from the hospital in satisfactory condition. The duration of the hospital treatment was average 5,9 bed-days.

Conclusions. The best method of surgical treatment when cysts are located on the periphery of the organ in the limit of one segment is considered to be partial unroofing decapsulation-fenestration of the cyst; when it's necessary they should use resection of the spleen.

12.207 General Surgery
Endoscopic Treatment of Ampullary Neoplasms
Ogorodnik P.V., MD, Nichitaylo M.Ye, MD Prof, Skums A.V., MD, Deynichenko A.G., PhD, Lytvyn O.I., PhD.
The National Institute of Surgery and Transplantology of the AMS of Ukraine, Kiev

Aims: To study results of endoscopic papillectomy in patients with ampullary adenomas.

Methods: A total of 21 patients with ampullary neoplasms were treated by endoscopic papillectomies during the 6 year period from 2005 to 2011 in our clinic. There were 12 (57,1%) women and 9 (42,9%) men. The indications for endoscopic
standard polypectomy snare using blended electrosurgical current was used to tighten around the lesion and transect it. Tumors larger than 2 cm were resected piecemeal. Pancreatic stenting was attempted in 7 patients. All tissue was retrieved and sent for histopathologic evaluation.

Results: Of the 21 patients with ampullary lesions there were 16 adenomas and 5 adenocarcinomas. These 5 patients with diagnosed malignancy after evaluation of papillectomy specimen were referred to surgical treatment. Complications occurred in 7 (33.3%) cases. Six patients had acute pancreatitis and early bleeding. One retroperitoneal perforation was recognized at the time of papillectomy. This patient was managed conservatively and 1 month later underwent pancreaticoduodenectomy. Tumor recurrence was found in 2 patients with ampullary adenomas in terms of 10-12 months after the initial papillectomy and required repeated endoscopic interventions.

12.208 Gynecology
Whether Ovarian Reserve is Reduced in Women with Polycystic Ovary Syndrome Who Underwent Laparoscopic Ovarian Drilling?
Fahimeh Ramezani Tehrani, Abbas Moieni
Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences

Objective: To compare the ovarian reserve assessed by anti-Müllerian hormone (AMH) and antral follicles count (AFC), in women with polycystic ovary syndrome (PCOS) undergoing laparoscopic ovarian drilling (LOD) with age and BMI frequency matched PCOS women without LOD.

Material & Methods: This was a nested case control study. Fifty-two PCOS women who were undergoing LOD (case group) and 104 age and BMI frequency matched PCOS women with no history of LOD (control group) were followed for 7 years and their day-3 anti-Müllerian hormone (AMH), antral follicles count (AFC) and summed ovarian volume was compared.

Results: AMH levels were significantly lower in the LOD (3.10 +/- 2.36 ng/ml) than in the PCOS (5.86 +/- 3.76 ng/ml) groups (p=0.02) and AFC was statistically significantly lower in the LOD than in the control group (p=0.03; these differences remained significant after further adjustment for their basal hormonal and ultrasonographic parameters.

Conclusion: It seems that LOD have some diathermal effect on the ovarian tissues leading to a decrease in the ovarian reserve further in life.

12.209 Multispecialty
An Impact Factor for the Journal of the Society of Laparoendoscopic Surgeons (JSLS) and Its Implications for Authors, Reviewers and Readers
Jacobs VR, Fischer T Frauenklinik (OB/GYN), SALK University Hospital and Paracelsus Medical University (PMU), Salzburg, Austria

Objectives: The impact factor is a journal-specific point value calculated by bibliographic citation analysis to quantify the average impact of a scientific paper published in this journal within a defined time frame. JSLS started publication in 1997 and received its first impact factor for 2010 in mid 2011. The process of calculation of the JSLS’s impact factor is analyzed and its implications for different stakeholders identified.

Methods: Definition and calculation of the impact factor is explained. Detailed analysis of JSLS’s impact factor for 2010 according to the Journal Citation Reports 4.5 Science Edition 2010 within Thomson Reuters’ Web of Knowledge V5.3 is performed.

Results: The first impact factor of the JSLS for 2010 is 0.799. It is the result of cited articles in 2008 (n=90) and 2009 (n=77), together n=167 divided by articles published in 2008 (n=88) and 2009 (n=121), together n=209. The impact factor without self-citations is 0.751. The immediacy index for 2010 is 0.044, n=4/90 articles were cited within the same year. The journal cited half-life is 5.0 years, the journal citing half-life is 7.2 years.
Conclusions: The impact factor is increasingly important since scientists and academic institutions worldwide are trying to quantify scientific success. Although only given to the journal it is used as surrogate marker for single publications. Free internet access to all JSLS publications as offered by the SLS allows higher citation rates and can increase the impact factor. This will further increase quality of manuscripts submitted. Reviewers are encouraged to connect existing knowledge with newly submitted manuscripts. Readers benefit from a higher scientific quality of JSLS.

12.210 Gynecology
Laparoscopic Lymphadenectomy for Isolated Lymph Node Recurrence in Gynecologic Malignancies: A Preliminary Report
Joong Sub Choi, Jung Hun Lee, Jin Hwa Hong, Jong Woon Bae*, Division of Gynecologic Oncology and Gynecologic Minimally Invasive Surgery, Department of Obstetrics and Gynecology, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea

*Division of Gynecologic Oncology and Gynecologic Minimally Invasive Surgery, Department of Obstetrics and Gynecology, Dong-A University School of Medicine, Busan, Seoul

Objective: To assess the feasibility and efficacy of laparoscopic lymphadenectomy in patients with isolated lymph node recurrences (ILNR) who underwent initial surgery for gynecologic malignancy.

Methods: From March 2003 to July 2010, our hospital conducted six laparoscopic lymphadenectomies in patients with recurrent cancers: one cervical, four ovarian, and one peritoneal. This study investigated the clinical characteristics, operating time, estimated blood loss, hospital stay, number of harvested lymph nodes, and operative morbidity in patients with ILNR who underwent laparoscopic lymphadenectomy.

Results: The median age was 59.5 years (range 24-70) and the median body mass index was 21.7 (range 21.0-24.6). No unplanned conversion to laparotomy occurred. The median operating time was 337.5 minutes (range 200-400), median hemoglobin change was 0.9 g/dL (range 0.4-2.6), and median hospital stay was 8.5 days (range 5-19). The median number of harvested lymph nodes was 20 (range 5-27) and those of positive lymph nodes was 4 (range 1-24). One case had common iliac vein laceration with complete hemostasis achieved by intracorporeal suture. Postoperative lymphedema occurred in one patient and was managed conservatively. All patients were treated with adjuvant chemotherapy following laparoscopic lymphadenectomy.

Conclusions: Laparoscopic lymphadenectomy in patients with an ILNR is feasible and might be an alternative therapeutic strategy.

12.211 General Surgery
Clinical Application of Laparoscopic Transcystic Choledochotomy and Lithotomy with Primary Closure
Dexing Chen, Prof Dr Med, Qianwei Hospital of Jilin Province, China

Objective: To explore the feasibility of laparoscopic transcystic choledochotomy and lithotomy with primary closure.

Methods: After laparoscopic cholecystectomy, leave the residual cystic duct for about 1.5cm. Cut the anterior wall of cystic duct along its longitudinal axis to the confluence between cystic duct and choledoch. Continue cutting the choledoch about 0.3cm along its longitudinal axis. Insert choledochoscopy, and clear all stones. Explore the bile duct again to confirm the bile duct wall didn’t have obvious inflammatory abnormality, the duodenal papilla and the Oddi sphincter functioned well. Continuously suture the mucosa of choledoch from the incision’s lower ending with absorbable thread. Then suture the seromuscular layerinterruptedly with the same direction. Double ligate the cystic duct 0.2cm away from choledoch and cut the superfluous cystic duct. Routine drainage tube was put in gallbladder bed.

Results: Laparoscopic transcystic choledochotomy and choledochofiberscopy were done in 165patients. The diameters of extracted stones were 0.2-1.8cm. The operation time was 50-120min. The blood loss was 10-200ml. The diameters of choledoch showed no abnormal changes compared between preoperative and postoperative MRCP of 50 patients. Three
Postoperative follow-up of 165 patients ranged from 1-12 months. No patient had biliary tract stricture.

**Conclusion:** The surgical method of laparoscopic transcytic choledochotomy and lithotomy with primary closure is safe, feasible, decreases the occurrence of bile leakage and the stricture of choledoch. It can be operated by surgeons with certain experience of laparoscopic surgeries on biliary tract.

### 12.212 Pediatric Surgery

**Robot-Assisted Partial Cystectomy for a Large Urachal Hemangioma in a Child**

*Hubert S Swana MD, Paul R Bradley MD, Timothy Kim MD, Saif Haque MD and Mark A Rich MD*

Nemours Childrens Clinic Orlando, University of South Florida School of Medicine Department of Urology

**Objectives:** Bladder hemangioma is an uncommon benign bladder tumor. Hemangiomas account for 0.6% of all bladder tumors and are a rare cause of gross hematuria in children. Urachal hemangioma is exceedingly rare in children. Small bladder hemangiomas can be treated endoscopically with laser coagulation. Larger tumors require excision. We describe what we believe to be the first excision of a large urachal hemangioma causing gross hematuria in a child via a robotic-assisted technique with intraoperative cystoscopy to insure adequate resection.

**Methods and Procedures:** After induction of general anesthesia the patient was placed in low lithotomy position. A midline supraumbilical port was used for the camera. Two lateral robotic ports were placed and one assistant port was used. Dissection began at the level of the umbilicus. Distal dissection continued to the bladder. The umbilical arteries constituted the lateral surgical boundaries. Concomittant cystoscopy was used to help delineate the margins of partial cystectomy. Watertight bladder closure was performed in two layers. A Foley catheter was left in place.

**Results:** Total operative time was 3 hours and 50 minutes. Blood loss was minimal. There were no intraoperative or postoperative complications. The patient was discharged on the fourth postoperative day. Pathology confirmed a large urachal cavernous hemangioma with negative margins. The catheter was removed at an outpatient visit after cystography revealed no urinary leaking.

**Conclusions:** Urachal hemangioma is a rare cause of gross hematuria in children. The robotic approach, combined with cystoscopy allows for safe and complete resection.

### 12.213 Gynecology

**Multivariate Analysis of Pregnancy Rate After Laparoscopy in Infertile Patients with Endometriosis**

*Xiaoyan Ying*, Department of Obstetrics and Gynecology, the Second Affiliated Hospital of NJMU, Nanjing, China

**Objective:** To investigate the factors related to pregnancy rate after laparoscopy in infertile patients with endometriosis to provide basis for clinical treatment.

**Methods:** A total of 60 patients in infertility with endometriosis were completed by laparoscopy and pregnancy rate was analyzed retrospectively during August 2006 to August 2010, including 19 R-AFS stage I cases, 26 stage III cases, 15 stage IV cases. Data were analyzed with logistic regression.

**Results:** Logistic regression analysis revealed that a total of 20 (33.3%) of 60 patients investigated showed pregnancy. Factors that might significantly (P<0.05) correlate pregnancy rate of postoperation included tubal patency (OR=5.304, CI=1.123-25.045, P=0.035), postoperative combined medication (OR=6.080, CI=1.077-34.339, P=0.041) and postoperative artificial proconceptive (OR=8.477, CI=1.469-48.911, P=0.017).

**Conclusions:** Tubal patency, postoperative medication and assisted reproductive technology are influential factors of pregnancy rate after laparoscopy in infertility with endometriosis. Appropriate laparoscopy skills and postoperative treatment improved their pregnancy rate for infertility with endometriosis.
The development of robotic technology has favored the application of minimally invasive techniques for the treatment and evaluation of patients with gynecologic cancer. The objective of this study is to report our surgical experience and pregnancy outcomes data with robotic radical trachelectomy for patients with early stage early cervical cancer.

This is a retrospective review of all patients that underwent a robotic radical trachelectomy and lymphadenectomy from 2007 through 2011 at our institution. Data was collected in a prospective fashion. Nine patients were identified as having an early stage cervical cancer and desired to maintain fertility. Mean follow-up to date is 2.4 years. All patients underwent a uterine artery sparing robotic radical trachelectomy with pelvic and para-aortic lymphadenectomy with cerclage with no intraoperative complications and no conversions to laparotomy. Mean blood loss was 112 ml and mean operative time was 170 min. Median hospital stay was 1.8 days. Six of 9 patients have attempted pregnancy and 4 have been successful. One patient has achieved 2 pregnancies, 1 pregnancy was by in-vitro fertilization from eggs harvested before trachelectomy and 1 patient had a spontaneous abortion. All 4 deliveries have been by cesarean section scheduled at term with no complications. One patient had a recurrence of carcinoma in-situ and underwent a completion robotic hysterectomy with upper vaginectomy with no complications.

In conclusion, robotic radical trachelectomy is safe with low recurrence rates and has good pregnancy outcomes.

**Objective:** Laparoscopic management of large hiatal hernias is still controversial due to the reported high recurrence rates. We present our center’s experience of the past 5 years with elective laparoscopic repair of giant hiatal hernias.

**Methods:** 8 patients underwent elective laparoscopic repair of giant hiatal hernia. Hernia’s size in all cases was at least two thirds of the stomach in the mediastinum. In one case the repair was without the use of mesh, in all consequent cases a “Tension-free” repair using an absorbable mesh was performed, accompanied by partial fundoplication (6 patients) and/or gastropexy (2 patients) and/or positioning of a gastrostomy tube (2 patients).

**Results:** There was no mortality, no conversions to open surgery, and no intraoperative complications. No recurrences were observed in any of the patients treated with a mesh. We had one recurrence in a patient without mesh but without symptoms to warrant reoperation. The operative time was between 3-5 hours. An upper gastrointestinal series was performed in every case in the first postoperative day and the patients were all discharged in the third postoperative day.

**Conclusions:** Recurrence rates for open giant Hiatal Hernia repairs in expert hands range between 2% and 12%; large series have demonstrated that meticulous laparoscopic surgical technique can emulate the results of open giant Hiatal Hernia repair with shorter hospital stay and significant less morbidity in these usually elderly patients. The use of absorbable mesh has less recurrence rates, avoiding the complications of a synthetic nonabsorbable mesh material (i.e. erosion, dysphagia).

**Objective:** The patient is a 27 year old male who in early 2011 referred an acute lumbar pain that reflected to the thorax accompanied with dyspnea. It lasted for an hour and it recurred intermittently for the next three days. 5 months later he was found to have hypertension.
Methods: He went through a thorough investigation including heart ultrasound, triplex of renal artery, kidney ultrasound, thoracic and abdominal CT. There were only two important findings, a dissecting thoracic artery aneurysm and a big pelvic mass. All blood test exams were normal.

Results: He underwent a laparoscopic resection of the pelvic mass. The pathology report revealed a ganglioneurinoma.

Conclusions: Ganglioneuromas are neurogenic tumors arising from sympathetic nerve ganglions. These tumors are commonly found in young population. They are highly differentiated benign tumors and are compatible with long-term disease free survival even though surgical treatments are unsatisfactory. Although retroperitoneal localization is relatively frequent for these tumors, presentation as a pelvic mass is also seen. Here, we present a case of ganglioneuroma arising in the pelvis extending up into the retroperitoneum, which was undiagnosed before the operation. The patient had temporary retrograde ejaculation due to trauma of the pelvic parasympathetic plexus during the operation.

12.217 Gynecology

Results After Laparoscopic Myomectomy or Laparoscopic Uterine Vessel Occlusion in the Management of Women with Uterine Myomas

Peng-Hui Wang, MD, PhD; Wen-Ling Lee, MD, PhD; Wei-Min Liu, MD; Wen-Hsuns Chang, NBD; Ming-Huei Cheng, MD; Wen-Hsiang Su, MD, PhD; Ben-Shian Huang, MD

aDepartment of Obstetrics and Gynecology, National Yang-Ming University, and Taipei Veterans General Hospital, Taipei, Taiwan

bDepartment of Medicine, Cheng-Hsin General Hospital, Taipei, Taiwan

cDepartment of Obstetrics and Gynecology, Taipei Medical University and Taipei Medical University Hospital, Taipei, Taiwan

dDepartment of Obstetrics and Gynecology, Yee-Zen Hospital, Tau-Yuan, Taiwan

Objective: To compare the short-term results of laparoscopic myomectomy (LM) or laparoscopic uterine vessel occlusion (LUVO) in the management of women with symptomatic uterine myomas

Design: A case-control study.

Setting: Medical center.

Patient(s): One hundred and ninety patients with symptomatic myomas underwent treatment either by LUVO (n=104) or LM (n=86).

Intervention(s): LUVO and LM for symptomatic uterine myomas.

Main Outcome Measure(s): The outcome was measured by comparing blood loss, operative time, postoperative recovery, postoperative pain (visual analogue scale (VAS)), complications, and one-year and two-year symptom control rate in both groups.

Results: General characteristics of the patients were similar in both groups, although the number and size of uterine myomas were larger in the LUVO group. There were no statistical differences in one-year and two-year therapeutic effectiveness (symptom relief) between the two groups. LUVO had advantages over LM, including less operative time (37 ± 7 min vs. 89 ± 27 min, p<.001), minimal blood loss (25 ± 6 ml vs. 203 ± 138 ml, p<.001), less VAS (3.1 ± 0.8 vs. 3.7 ± 0.4, p<.001), lower complication rate (2% vs. 12%, p=.001) and rapid postoperative recovery.

Conclusion(s): Either LM or LUVO could be used in the management of uterine myomas, because of no difference of one-year or two-year outcome, but LUVO seemed to take operative advantages.
Laparoscopic Primary Repair of Sigmoid Laceration During Laparoscopic Oophorectomy
Stratoulias Constantinos MD, FACS, Liakos Christos MD, Kalantzis Georgios MD, Anagnostopoulos Georgios MD Mitera Hospital of Athens

Objective: A 47 year old female patient underwent a laparoscopic oophorectomy due to a cystic mass in continuity to the left ovary and sigmoid colon. During the operation a laceration of the sigmoid occurred.

Methods: The patient did not have a formal preoperative bowel preparation. The sigmoid laceration point was sutured laparoscopically with a running coated 2.0 Vicryl suture in two layers. The abdominal cavity was thoroughly irrigated and a Blake type drain was placed.

Results: Once the laceration was sutured the bowel’s integrity was tested with the bubble test that was negative. The patient was started on clear liquids the next day and was discharged on the fifth postoperative day.

Conclusions: Iatrogenic colonic perforation is one of the most serious potential complications of laparoscopic surgery. Standard management is primary surgical repair. This case supports that early laparoscopic management of colonoscopic perforation is safe. Laparoscopic management may lead to reduced surgical and psychological stress for the patient because of its low morbidity and mortality rates and shorter hospital stay. However, the procedure should be converted to a laparotomy if necessary.

12.219 Gynecology
A Prospective Comparison of Single-port Laparoscopically Assisted Vaginal Hysterectomy Using Transumbilical Access and Multiport Laparoscopically Assisted Vaginal Hysterectomy
Jung Hun Lee, Joong Sub Choi, Jin Hwa Hong, Jong Woon Bae*,

Division of Gynecologic Oncology and Gynecologic Minimally Invasive Surgery, Department of Obstetrics and Gynecology, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea

*Division of Gynecologic Oncology and Gynecologic Minimally Invasive Surgery, Department of Obstetrics and Gynecology, Dong-A University School of Medicine, Busan, Seoul

Objective: To evaluate the feasibility and safety of single-port laparoscopically assisted vaginal hysterectomy (SP-LAVH) using transumbilical GelPort access.

Methods: A prospective case-control study was performed at a University teaching hospital from January 2009 to March 2010, a total of 242 women with a uterus ≤ 16 weeks gestational size were enrolled in the study. Eighty women underwent SP-LAVH using transumbilical access (SP-LAVH group), and 162 women underwent conventional multiport LAVH (conventional LAVH group).

Results: There were no statistical differences between groups in the patients’ demographic characteristics, median operating time (92.5 vs. 90 min; P = 0.479), postoperative changes in hemoglobin concentration (1.4 vs. 1.4 g/dL; P = 0.290), weight of the resected uterus (246 vs. 256 g; P = 0.098), return of bowel activity (37.1 vs. 39.8 h; P = 0.103), hospital stay (3 vs. 3 days; P = 0.554), complication rate (3.8 vs. 4.3%; P = 1.000), and the rate of using an additional trocar or conversion to laparotomy (1.3 vs. 0.6%; P = 0.553).

Conclusions: SP-LAVH using transumbilical access is feasible and safe in women with a uterus ≤ 16 weeks gestational size. However, a large prospective randomized study is needed to confirm this conclusion and to establish guidelines for the use of SP-LAVH.

12.220 Multispecialty
Direct Veress Needle Entry in an Obese Patient
**Objective:** The purpose of this video is to highlight a novel technique of direct veress needle entry in an obese patient.

**Methods & Procedures:** This video illustrates a novel approach to direct Veress needle entry in the morbidly obese. The surgical technique utilizes the following instruments: scalpel, bovie, penetrating towel clamp, 00 10 mm laparoscope, and Veress Needle.

**Results:** Pneumoperitoneum is obtained safely in patients with difficult anatomic landmarks, thereby facilitating the availability of minimally invasive surgery. Thus these patients avoid a laparotomy and are able to reap the benefits of laparoscopy including: decreased morbidity and mortality, less estimated blood loss, less analgesic administration, decreased infection, less operative trauma, and shorter recovery times.

**Conclusions:** Currently there is no consensus on the best method to obtain peritoneal access in the obese population. However, we feel that our Direct Veress Needle Entry is an excellent choice to obtain peritoneal access in this group.

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**12.221 General Surgery**

**Results of Single Incision VATS Lung Wedge Resection**

Hsing-Hsien Wu  
Division of Thoracic Surgery, Tainan Municipal Hospital, Taiwan

**Purpose:** Single incision laparoscopic surgery is well developed and now can be applied to different field laparoscopic surgery. We developed single incision VATS to perform lung wedge resection. The preliminary result was presented.

**Materials and Methods:** From December 2009 to September 2010, there were 5 cases that received single incision VATS wedge resection. The mean age was 33.6 years old. The diagnosis of all cases was spontaneous pneumothorax with lung blebs. They all received general anesthesia with double lumen endotracheal intubation. The single 2cm wound was made 5th or 6th intercostal space either by new incision or previous chest tube wound. The lung resection was done by endo-GIA. One Fr 24 chest tube was placed for drainage of pleural cavity after the procedure was completed.

**Results:** The hospital course of all cases was uneventful. The mean operative time was 52 minutes. The mean length of postoperative stay was 2 days. The mean time of chest tube drainage was 1.4 days.

**Conclusion:** The single incision VATS of lung wedge resection was available in clinical practice. The benefit of this procedure is more than small wound. The instruments used in this procedure will be selected for better performance. The experienced thoracic surgeon should be capable of performing this procedure.

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**12.222 General Surgery**

**Management of a Twisted Roux Limb**

Kunoor Jain-Spangler MD, Dana Portenier MD  
Duke University Medical Center, Division of Metabolic and Weight Loss Surgery

**Objective:** In this video we depict the complication of an ischemic twisted roux limb during Laparoscopic Roux-en-Y Gastric Bypass. The purpose is to highlight this potential complication and to show the viewer how it was handled in this situation.

**Methods and Procedures:** We demonstrate identification of the complication as well as surgical techniques involved in its management. These techniques include taking down the gastrojejunal anastomosis, resection of the ischemic roux limb, reconfirmation of the anatomy, measurement of appropriate antecolic tension, creation of a retrocolic tunnel, redo of the gastrojejunal anastomosis using a two layered hand sewn method, performance of an air leak test and closure of the mesenteric defect.
12.223 Gynecology

Application of Tissue Retrieval Pouch for Laparoscopic Removal of Exceptionally Large Adnexal Mass
Mireille Truong, MD, Jessica Shepherd, MD, MBA, University of Illinois at Chicago, Chicago, IL

Objective: This technical video demonstrates an alternative approach to the use of an endobag for laparoscopic removal of a large adnexal mass and displays the application of the tissue retrieval pouch in gynecologic surgery.

Method: We present a case of a 30yo nulliparous female with a large dermoid ovarian cyst measuring greater than 20cm that underwent torsion. We performed a successful laparoscopic left oophorectomy with removal of the dermoid cyst through a 10mm port using the tissue retrieval pouch, a pouch typically used for removal of kidneys or spleens.

Results: The total EBL for the procedure was less than 20cc and the patient was discharged in less than 23hrs post the procedure with no postoperative complications. This video demonstrates that laparoscopic removal of a large adnexal mass can be achieved with the use of a tissue retrieval pouch.

12.224 Gynecology

Laparoscopic Splenectomy for Isolated Recurrent Ovarian Cancer
Sternchos J1,2, Finger T1,2, Halpern D2, and Nezhat F1,2

1St. Luke's-Roosevelt Hospital
2Winthrop University Hospital

Objective: To show the feasibility and safety of laparoscopy in the management of recurrent ovarian cancer isolated to the spleen.

Methods/Design: An 85yo G3P3 female presented with a history of recurrent papillary serous ovarian carcinoma for which she had undergone 2 prior tumor cytoreductions and chemotherapy. While undergoing routine surveillance with tumor marker and imaging, her CA 125 was found to be elevated at 41 and CT scan of the abdomen and pelvis showed an isolated 4.5 x 4.9 cm splenic mass with no evidence of lymphadenopathy, ascites or carcinomatosis. She was then consented for laparoscopic splenectomy and tumor debulking.

Results: The patient underwent a laparoscopic splenectomy and partial omentectomy. She had no intraoperative complications. The operative time was 2 hours and 25 minutes. Estimated blood loss was 50 mL. On postoperative day 1 she had elevated troponins and was diagnosed with demand ischemia and then had atrial fibrillation on postoperative day 2. Her elevated troponins and atrial fibrillation resolved and she was discharged home on postoperative day 6 with no further sequelae. She has completed 4 out of 6 cycles of hycamtin with Avastin and is alive with no clinical evidence of disease 6 months postoperatively.

Conclusions: Laparoscopy is feasible and safe in the management of recurrent ovarian cancer isolated to the spleen.

12.225 General Surgery

Intraoperative Management of Stapled Nasogastric Tube During Roux-en-Y Gastric Bypass
Kunoor Jain-Spangler MD, Dana Portenier MD
Duke University Medical Center, Division of Metabolic and Weight Loss Surgery

Objective: In this video we depict the complication of stapling of the nasogastric tube during Laparoscopic Roux-en-Y Gastric Bypass. The purpose of the video is to highlight this potential complication and to demonstrate techniques utilized in managing it.

Methods and Procedures: We show the consequence of stapling the nasogastric tube within the gastric pouch, which
Methods and Procedures: We show the consequence of stapling the nasogastric tube within the gastric pouch, which, in this case results in a proximal gastrotomy as well as a gastrotomy within the gastric remnant. We proceed to extract the nasogastric tube and to then manage both gastrotomies. We employ linear stapler devices to transect and remove both gastrotomy sites and additionally oversew the gastric remnant.

Results and Conclusions: We provide techniques that can be used intraoperatively following identification of a stapled nasogastric tube. Using these techniques the surgeon is equipped to manage this potentially devastating complication and to provide better patient outcomes.

12.226 General Surgery
Intraoperative Management of Iatrogenic Injury During Formation of Jejunojejunostomy During Roux-en-Y Gastric Bypass
Dana Portenier MD, Kunoor Jain-Spangler MD, Duke University Medical Center, Division of Metabolic and Weight Loss Surgery

Objective: In this video we depict the complication of stapler perforation during creation of the jejunojejunostomy during Laparoscopic Roux-en-Y Gastric Bypass. The purpose of this video is to bring attention to this potential complication and to display techniques employed in correcting it.

Methods and Procedures: We demonstrate identification of the complication as well as surgical techniques involved in its management. Perforation is identified within one limb of the jejunojejunostomy. The portion of this limb of jejunum containing the perforation is resected and the limb is then reanastomosed using a side to side stapled technique. Once this limb has been put back together the jejunojejunostomy is created again, also using a side to side stapled technique.

Results and Conclusions: We identify and repair an intraoperative complication during Laparoscopic Roux-en-Y Gastric Bypass. Stapler perforation can be seen in a variety of settings and the techniques illustrated in this video will be helpful to the general surgeon seeking better ways to handle similar complications and improve patient results.

12.227 General Surgery
Is the Laparoscopic Hernia Repair Safe?
Fanaei S. Ahmad †, Ziaee S. Ali ‡
†Associate Professor of Surgery, MD, Erfan Hospital, Tehran, Iran
‡ MD, ATLS Instructor by ACS, SaudiGerman Hospital, Dubai, UAE

Objective: The laparoscopic transabdominal preperitoneal (TAPP) approach for inguinal hernia repair is well documented in numerous studies as an excellent choice when performed by an experienced surgeon. To compare tension-free open mesh hernioplasty (OH-Lichtenstein) under local anaesthetic with transabdominal preperitoneal laparoscopic hernia repair under general anaesthetic.

Design: A randomized controlled trial of 200 patients with inguinal hernias.


Subjects: 200 patients with a diagnosis of groin hernia, 100 in each group.

Method: Operative time, hospital stay, complications and recurrence after 1 year follow-up and VAS score were recorded.

Result: Mean operative time was 54.88 ±8.06 and 44.07± 3.42 minutes. p-value 0.02 (TAPP and OH). Mean hospital stay was 1.57± 0.71 and 3.44±0.59 days. p-value 0.02 (TAPP and OH) Most complications such as bleeding, seroma, hematoma, urinary retention, post operative infection were studied in 10 and 24 days post operation day. Simply the infection was significantly higher in OH group. (1 and 8 patient, TAPP and OH, p-value 0.03) There was one recurrence after one-year follow-up in the laparoscopic group, no significant difference was detected in comparison to OH. The VAS score was 3.95±1.34 and 5.24± 1.69 p-value 0.02 (TAPP and OH)
Conclusion: This study demonstrated that complications of the TAPP technique were minimal and it was safe to perform.

12.228 General Surgery
Appendicovesical Fistula: A Case Report and Review of Literature
Mohummed R. Khani, MD; Roman Grinberg, MD; Murlidhar Pahuja, MD, FACS; Sihana Sela, PA; Scott W. Bloom, MD, FACS Department of Surgery, Staten Island University Hospital, Staten Island, NY

Background: appendicovesical fistulas are extremely rare, account for less than 5% of all enterovesical fistulas. Only 114 cases have been previously reported in the literature. To our knowledge, only 4 cases have been treated with laparoscopic approach. This is the first case of appendicovesical fistula due to previously incorporated mesh in the right inguinal region.

Methods: Case report and review of literature.

Case presentation: We report a case of 52 year old male with history of right inguinal hernia repair with mesh, who presented recently with perforated appendicitis and small abscess treated nonoperatively without drainage. Subsequently, he suffered urinary tract infection associated with pneumaturia, further workup including imaging studies, colonoscopy and cystoscopy confirmed diagnosis of appendicovesical fistula. Patient underwent laparoscopic appendectomy, takedown of appendicovesical fistula and removal of mesh. Filling the bladder with 300 ml of normal saline mixed with methylene blue showed no extravasation. Patient was discharged with urinary foley catheter, postoperative imaging studies confirmed closure of bladder defect

Result: Appendicovesical fistulas are more common in men with peak incidence between age 10 and 40. Most common presentation is recurrent urinary tract infection. Many diagnostic tools can be used for diagnostic confirmation; however, computed tomography (CT) is the most accurate imaging modality.

Appendicovesical fistula is usually treated with appendectomy and repair of the bladder wall defect followed by foley catheter for 2 weeks. The prognosis following surgical treatment is excellent.

Conclusion: Appendicovesical fistulas occur as a result of inflammatory or neoplastic process. Laparoscopic management of appendicovesical fistula is feasible.

12.229 General Surgery
Conservative Management of Duodenal Injury After Laparoscopic Cholecystectomy,
Steven C Tizio MD, Monica Enamandram BS, Michelle Browne MD, Robert G Sheiman MD, and Stephen R Odom MD, Beth Israel Deaconess Medical Center

Objective: A 78 year old female presents with gallstone pancreatitis and cholecystitis. The patient was taken to the operating room for a laparoscopic cholecystectomy and was discharged home on postoperative day 1. On POD13, the patient was complaining of 1 week of right upper quadrant pain and low grade fevers. CT of the abdomen was consistent with a fistula between the second part of the duodenum and a fluid collection in the gallbladder fossa.

Methods and Procedures: The patient was made NPO, an NGT was placed for gastric decompression, and ciprofloxacin and flagyl was started. Interventional radiology then inserted a pigtail drain. After drainage of the fluid, an IR-guided gastro-jejunostomy tube was placed. Tube feeds were started via the J-tube and the G-tube was opened to gravity. The NGT was subsequently removed and the patient remained NPO.

Results: The patient remained afebrile, the RUQ pain resolved, and she tolerated tube feeds. On HD11, CT abdomen with Gastrografin confirmed resolution of the RUQ fluid collection and closure of the duodenal fistula. The pigtail drain was removed and the patient was discharged to a rehabilitation facility on HD13. After 21 days of NPO, the patient was started on clear liquids and her diet was slowly advanced without complications.

Conclusions: Duodenal injuries after laparoscopic cholecystectomy are uncommon. In this case study, we experienced a delayed duodenal injury, most likely a thermal injury. We have successfully demonstrated that contained duodenal leaks
Is There Any Role for Ursodiol After Sleeve Gastrectomy?
Benjamin Clapp MD, Adeel Yusoof BS, Providence Memorial Hospital, El Paso, TX

**Background:** Laparoscopic sleeve gastrectomy is quickly becoming the bariatric procedure of choice. As it grows in popularity and increasing numbers of this operation are performed, we will discover its true rates of complications. Little is known about the formation of gallstones after the sleeve and what the rate of symptomatic gallstones is postoperatively.

**Methods:** We studied the rate of symptomatic cholelithiasis after sleeve gastrectomy in patients with at least one year of follow up. Symptomatic cholelithiasis was defined as symptoms severe enough to warrant cholecystectomy. No patients were placed on ursodiol postoperatively and routine preoperative ultrasonography was not employed.

**Results:** Out of 55 patients undergoing laparoscopic sleeve gastrectomy in a one-year period, sixteen patients had already had a cholecystectomy. Initial BMI was 46.6 and BMI at one year was 33.1. Of the 39 remaining patients, only two patients required cholecystectomy within a one year follow up period.

**Conclusion:** The rate of symptomatic cholelithiasis after laparoscopic sleeve gastrectomy is acceptively low. There is no role for prophylactic ursodiol use in sleeve patients. There is also no role for screening ultrasonography prior to a sleeve in asymptomatic patients.

Endoscopic Clip Closure of Gastric Perforation After Splenectomy for Trauma.
Tamayo D. BS; Carre A. MD, MPH; Odom S. MD, FACS, Harvard Medical School

**Introduction:** Post splenectomy gastric perforations are rare, however it is more common in elderly males that have undergone splenectomy secondary to blunt abdominal trauma. The gastric perforations are usually managed with re-operation and are associated with a high morbidity and mortality. A 75-year-old man suffered blunt abdominal trauma with splenic rupture after a 15-foot fall. The patient underwent splenectomy and in the post operative period developed a gastric perforation at the fundus with abscess and peritonitis. We hypothesize that the use of new endoscopic technology such as over-the-scope-clips (OTSC) can be a safe alternative to celiotomy for gastric perforations.

**Procedure:** 5mm helical cut CT scan with oral contrast was used to diagnose a small perforation at the fundus along the greater curvature of the stomach. An Endoscope with a 12mm bear-claw-clip was used to seal the perforation.

**Result:** A 10mm gastric perforation was adequately sealed using OTSC with a 12mm bear–claw-clip. The patient was discharged from the hospital shortly after the intervention. 16 weeks follow up showed no evidence of gastric leak. The patient is tolerating a regular diet and back to base line.

**Conclusion:** The use of OTSC as an alternative for celiotomy for post splenectomy gastric perforations is safe, feasible, cost effective and also decreases the morbidity and mortality of this rare complication.

Can Residents Perform Single-incision Pediatric Endosurgical (SIPES) Appendectomy Safely in a Teaching Hospital?
Oliver J. Muensterer, MD, PhD
Division of Pediatric Surgery, Department of Surgery Weill Cornell Medical College, New York-Presbyterian Hospital, New York, NY

**Objective:** We have been performing single-incision pediatric endosurgical (SIPES) appendectomy routinely since March 2009. Appendectomy is considered an important teaching procedure and is usually the first SIPES procedure performed by trainees.

This study evaluates the outcome of SIPES appendectomy performed by surgical residents versus pediatric surgical fellows in
Methods: SIPES appendectomies performed by trainees under the supervision of a single academic pediatric surgeon in 2 different medical centers (one with a pediatric fellowship and surgical residency, one with a surgical residency alone) were reviewed retrospectively. Data on patient age, weight, operating time, estimated blood loss, length of stay and perioperative complications were compared between cases performed by a general surgical resident or a pediatric surgical fellow.

Results: In the study interval, there were 73 appendectomies performed by residents and 60 by fellows, of which 20 and 22% percent were for perforated appendicitis, respectively. There was no difference in patient age or weight, estimated blood loss, length of stay, or perioperative complication rate between the groups. Operative time was significantly longer when residents operated compared to fellows (43.4 +/-11.1 versus 35.4 +/-16.2 minutes, p<0.01). Interns performed 15 (21%) of the resident operations.

Conclusions: SIPES appendectomies can be performed safely by residents, and even interns, in a teaching institution under qualified assistance. However, the average operative time is slightly longer compared to when SIPES appendectomies are performed by fellows.

12.233 Urology
Kidney Access Device (KAD): a new Concept and Invention
Jasneet Singh Bhullar, MD, MS, Robert T Scott, BA, Milessa Decker, BA, Vijay K Mittal, MD, FACS

Introduction: Percutaneous nephrolithotomy (PCNL) is the most complicated stone surgery technique to learn. The steep learning curve is mainly related to obtaining the precise renal access by puncturing the correct calyx. A minimally misaligned puncture may lead to torrential bleeding, failure of surgery and loss of the kidney. Renal puncture can take up to an hour even in trained hands. Moreover, increased fluoroscopic time is a hazard for the patient and surgeon.

Methods: We designed Kidney Access Device (KAD), which aligns the 3-dimensional targeted calyx under fluoroscopy for precise needle placement. KAD allows access to calyces at all angles. A 3-step puncture technique was formulated for puncturing the kidney using KAD in a porcine model (comparable renal size and anatomy with humans). KAD was used to puncture 3 targeted calyces of bilateral kidneys in 4 pigs. Guide wires were inserted into renal collecting system through the placed needle.

Results: Mean time per puncture was 4±2 minutes (n=24). Necropsy showed no retroperitoneal hematoma, visceral organ injury, or active bleeding from kidneys in any of the pigs. Kidneys were dissected and precise intrarenal placements of guidewires in relation to targeted calyces were noted in all 24 sites.

Conclusions: This is the first reported successful kidney puncture device with an animal trial. KAD with the 3-step technique aids in the safe and correct placement of puncture needle even in novice hands while drastically reducing the operative and fluoroscopy time. KAD may also be used to access other organs and has potential applications in minimally invasive surgery.

12.234 General Surgery
Laparoscopically Monitored Colon Polypectomy in a Small Community Hospital: It Can Be Done Successfully?
Naveed Zafar, South Texas Regional Medical Center, Jourdanton, TX, United States.

Purpose: Laparoscopically Monitored Colon Polypectomy (LMCP) is a procedure by which a colon polyp is excised using a combination of laparoscopy and endoscopy, sparing the patient a partial colectomy and its associated morbidity and complications. This procedure is only done by a few surgeons in the country, all at teaching institutions. This is a case report of an LMCP performed successfully in a 67-bed hospital by a single surgeon.

Methods: A 60-year old male presents with a sessile tubulovillous adenomous polyp of the ascending colon. Laparoscopy is
performed to mobilize the ascending colon in a medial-to-lateral manner, sparing the blood supply. This is followed by an on-table colonoscopy to locate the polyp. The colon wall adjacent to the polyp is grasped laparoscopically and a stapler is then used to resect this small portion of the colon in a longitudinal relation to the colon. Colonoscopy confirms the complete excision of the polyp as well as the patency of the colonic lumen.

**Results:** Pathology showed a 2.5 cm, tubulovillous adenoma, negative for high grade dysplasia or malignancy with negative margins. The patient was discharged on post-operative day 2 and returned to work on POD 10.

**Conclusions:** This case report shows that in skilled hands a surgeon in a small community setting can perform LMCP successfully and safely. Hopefully similar results in the future will add LMCP as an additional step in the treatment algorithm for unresectable colon polyps before settling for a colon resection.

**12.235 General Surgery**

**Adoption of Single Incision Laparoscopic Colorectal Surgery in a Community Hospital Setting: Experience of a Single Surgeon**

**Ami D. Sood, MD**, Regional Medical Center of San Jose, **Huy T.T. Nguyen, DO**, Regional Medical Center of San Jose

**Background:** After initial applications of single incision laparoscopic (SIL) surgery in cholecystectomy, focus has expanded to colorectal surgery. While conventional laparoscopic colon surgery is evolving as the standard, universal acceptance of SI approach has been slow. To date, no large series of a single surgeon outside of academic institutions has been presented. This study illustrates the experience of SI colorectal surgery by a single surgeon in a community hospital.

**Methods:** A retrospective chart review was performed on patients who underwent a single-site colorectal procedure by a single surgeon from 2008 to 2012. All pertinent demographics, operative parameters and postoperative outcomes were analyzed. Outcomes measured included OR time, perioperative/postoperative events, LOS, and mortality.

**Results:** SIL colorectal procedures were performed in a series of 73 consecutive patients with appropriate indications. Procedures included segmental colectomy, lower anterior resection, and abdominoperineal resection. Primary diagnoses included neoplasia, polyps, and diverticulitis. Four patients required conversion to open. Average length of incision was 2.6 cm. Mean operative time was 153 min. There were no intraoperative complications. Eight patients experienced minor perioperative complications. One patient required surgical reintervention. There was no mortality. The mean hospital stay was 5.0 days.

**Conclusions:** SIL colorectal surgery, even complex procedures, is feasible in patients seen in a community setting. While proper training and patient selection is integral, single incision colorectal surgery is safe and oncologically effective. This experience suggests that single-site laparoscopic colorectal surgery has comparable outcomes to traditional laparoscopy. However, larger, prospective studies are needed to assess if it is superior to conventional laparoscopy.

**12.236 Urology**

**Incidence of Local and Port Site Recurrence After Laparoscopic Surgery for Renal Cell Carcinoma**

**Dario Garcia-Rojo**, Angel Prera, Jose L. Gonzalez-Sala, Eduardo Vicente, Naim Hannaoui, Younes Fadil, Juan Prats. Urology Department. Hospital Sabadell. Corporacio Parc Tauli. Sabadell. Spain

**Objectives:** Tumor seeding after open and laparoscopic urological surgery is a potential risk. The rate of tumor seeding varied with the type of tumor. The incidence of local and port site recurrence after laparoscopic surgery for renal cell carcinoma is extremely low.

**Methods:** Prospective study to determine the incidence of dissemination and port site metastases in patients undergoing laparoscopic surgery for renal cell carcinoma, with a minimum follow-up of one year or to death. We analyzed the incidence, type of surgery performed and the method of extraction of the surgical specimen. From January 2003 to January 2010, 124 laparoscopic procedures for renal cell carcinoma were performed. Surveillance protocol according UCLA integrated staging system was performed.
Results: Of the 124 patients with renal cell carcinoma, 1 patient (0.8%) developed a peritoneal dissemination. The histologic type of the renal cell carcinoma was multiple grade 3 papillary cell carcinoma, stage pT1b. The patient presented a peritoneal carcinomatosis 5 months postoperatively. The extraction of renal specimen was performed with open laparotomy without using endo-bag (method used only in the first 8 cases). No port site metastases were observed.

Conclusions: The incidence of recurrence in our serie was closely correlated with the range in previous reports. The use of endo-bag for extraction of the surgical specimen is imperative in order to tumoral seeding does not occur.

12.237 General Surgery
Obstruction at Transversemesocolon Following a Retrocolic Retrogastric Roux en Y Gastric Bypass
Elizabeth A Gordon MD; Rana C Pullatt MD, FACS, MRCS (Edin)
Division of Gastrointestinal and Laparoscopic Surgery, Department of General Surgery, Medical University of South Carolina, Charleston, SC

In this video we describe the diagnosis and management of a patient who had undergone a Retrocolic Retrogastric Roux-en-y Gastric bypass who presented 2 weeks post surgery with emesis and cramping abdominal pain. A diagnostic laparoscopy was performed which showed dilated loops of bowel supramesocolic and decompressed loops of bowel inferiorly. There appeared to be a band of tissue that had formed between the jejunoojejunostomy and the mesocolon. This band was identified and divided sharply to relieve the obstruction. The patient did well postoperatively and had an uneventful recovery. The transverse mesocolon in a retrocolic rertrogastric bypass can be a source of major morbidity in this approach. Traditionally the defect created in the mesocolon is a source of hernias. However this potential defect if overzealously closed can result in cicatrization around the roux limb and resultant obstruction. In this particular case the dissection at the mesocolon in the original operation to route the roux limb caused scarring and an adhesive band to form between the jejunojejunostomy and subsequent obstruction. Early recognition and prompt management is required to prevent major morbidity.

12.239 Gynecology
Removal of Migrating Intrauterine Contraceptive Device by Laparoscopy
Abdulrahim A. Rouzi, MB, ChB, FRCSC, Rawan Gari, MB, ChB; Nora Sahly, MB, ChB
Department of Obstetrics and Gynecology, King Abdulaziz University, Jeddah, Saudi Arabia

Objective: To report a case series of women who had laparoscopy for removal of intra-abdominal contraceptive device.

Methods and Procedures: Follow up visits for the intra-uterine contraceptive device (IUCD) revealed missing threads of the IUCDs in seven women. The age was 27.1 ± 5.4 years (Mean ± SD). The parity was 2.6 ± 1.1. The mean time since insertion of the IUCD and presentation was 6 ± 3 months. Diagnostic workup revealed the IUCDs to be intra-abdominal. After proper counseling of the couples, decision was made to proceed with laparoscopy to remove the IUCDs from the abdomen. Consent was taken for laparoscopy and possible laparotomy. Bowel preparation was done by Polyethylene glycol without prophylactic antibiotics.

Results: Laparoscopy was successful to remove the misplaced intra-abdominal IUCDs in the seven women. No laparotomy was necessary. The operative time was 54 ± 16 minutes. The IUCDs were totally outside the uterus and in different areas in the abdomen. The women went home on the first postoperative day in good condition.

Conclusions: Laparoscopy is the preferred option to safely remove migrated intra-abdominal IUCDs.

12.240 Gynecology
Robotic Repair of an Obturator Nerve
Uchenna C. Acholonu, Jr., MD, Shao-Chun R. Chang-Jackson, MD, Farr R. Nezhat, MD
St. Luke’s-Roosevelt Hospital

Introduction: Obturator nerve injury may occur in gynecologic surgery, particularly in cases in which extensive pelvic sidewall dissection is performed. The natural history of injury includes localized scar formation, muscle palsy, atrophy, and pain. Traditionally, open surgical procedures have been used for the repair of obturator nerve injuries. Recent advances in the fields of robotics and laparoscopy have allowed for minimally invasive techniques to be used in the repair of obturator nerve injuries.
Methods and Procedure: A 76-year-old Go with endometrial adenocarcinoma sustained a left obturator nerve transection during pelvic lymphadenectomy that was recognized immediately. Robotic-assisted laparoscopic repair was performed successfully, with the patient experiencing no residual neuropathy six months postoperatively.

Conclusion: Robotic-assisted laparoscopic repair is feasible for the treatment of obturator nerve injury.

12.241 Gynecology
Laparoscopic Supracervical Hysterectomy for Ovarian Cancer - The Incidence of Subsequent Cervical Metastases
James Fanning, DO; Joshua Kesterson, MD
Penn State Hershey Medical Center, Division of Gynecologic Oncology, Hershey, PA

Objective: The purpose of our study is to evaluate the incidence of cervical recurrence following laparoscopic supracervical hysterectomy (LSCH) for ovarian cancer debulking or staging.

Methods: From a prospective surgical data base we identified 51 cases of LSCH for ovarian cancer debulking or staging. No cases were excluded.

Results: From 2009 to 2012, 51 patients were identified. Median age was 62 years old (32-83 yo) and median BMI was 29 kg/m2 (16-41 kg/m2). 40 patients (78%) had medical comorbidities and 53% had prior abdominal surgery. Median operative time was 2 hours (1-3.5hrs) and median blood loss was 200cc (50-900 cc). Median length of stay was one day (0-12days). Stage was: 12 stage 1, 6 stage 2, 33 stage 3/ 4. At a median follow up of 1.7yrs (0.3-2.6), 20 patients (39%) cancer has recurred at a medium time of recurrence of 1.1yrs (0.3 – 2.3yrs). All recurrences have been in the abdomen or pelvis except for one axillary node and one distal vagina recurrence. There have been no recurrences in the remaining cervical stump. No patient developed a postoperative vaginal cuff infection. Of the 104 cycles of intraperitoneal chemotherapy, there was no vaginal leakage of intraperitoneal chemotherapy.

Conclusion: LSCH for ovarian cancer debulking or staging does not result in cervical recurrence.

12.242 Urology
Percutaneous Nephrolithotomy in Spinal Cord Neuropathy Patients: A Single Institution Experience
Philippe Nabbout MD, Gennady Slobodov MD, Adamantios Mellis MD, Daniel Culkin MD
Oklahoma University Health Science Center

Objectives: Patients with spinal neuropathy are at an increased risk for urolithiasis. Data on percutaneous nephrolithotomy (PCNL) in this population is limited. Our Objective is to review our experience in treating stones in spinal neuropathy patients with PCNL.

Material and Methods: 21 patients with spinal neuropathy underwent PCNL at our institution between January 2005 and August 2011. Their medical records were reviewed retrospectively to collect data relating to stone characteristics, treatment outcomes and complications.

Results: 42 PCNL were performed on 26 kidneys. 5 patients had bilateral stones. They were 14 patients with spinal cord injury (66.7%), 5 with spina bifida (23.8%), and 2 with other neurologic abnormalities (9.5%). 90.5% of patients had pre-op bacteriuria and 46.2% of them had severe scoliosis making positioning for PCNL challenging. 30.8% of kidneys had complete staghorn and the majority of stones were struvite (50%). Only 53.8% of kidneys were stone free after the first PCNL. The success rate increased to 80.8% after the second, and 88.5% after the third PCNL. 3 patients (14.3%) developed urosepsis requiring admission to the intensive care unit post-operatively. 6 patients (28.6%) required blood transfusion. One patient had a pneumothorax and another had a perforation of the collecting system.
Conclusions: Based on our experience, PCNL in spinal neuropathy patients had a stone clearance rate comparable to the general population. However, these patients required multiple PCNLs to be stone free and had a higher incidence of complications (especially infectious).

12.244 Gynecology
Single Port Total Laparoscopic Hysterectomy: The Greek Experience of Introducing Innovative Surgery in a Financial Crisis Environment
Stefanos Chandakas MD MBA PhD(1,2), Stephen Grochmal MD(3), Asimakis Pappas MD(1,2), Professor Dimitris Kassanos PhD(2)

1. Hygeia and Mitera Group of Hospitals, Athens, Greece; 2. Attikon University Hospital, University of Athens, Greece; 3. Howard University, Washington DC

Objective: Minimally invasive surgery has influenced the techniques used in gynaecology, with an overall minimisation of complications and increased patient satisfaction.

The study objective is to demonstrate the safety and feasibility of Single Port (SP) Total Laparoscopic Hysterectomy

Methods: Retrospective, descriptive, non randomized study. Iaso Hospital and Attikon University Hospital, Athens, Greece. 101 patients underwent SP Total Laparoscopic Hysterectomy between October 2008 and January 2012.

Indications included 91% Dysmenorrhoea and 9% Large Fibroids Uteri that underwent Single Port Total Laparoscopy Hysterectomy

Results: Duration of operation and of hospital stay, safety (morbidity and mortality), and patient satisfaction were assessed. Estimated blood loss was 125 ml (range 165-370 ml). Intraoperative complications: 0% vascular injuries and 0% nerve or ureter injuries. Early postoperative morbidity included no major complications, 0% bladder infection and dysfunction and 0.24% of incision infection. 59% of patients were discharged to home the same day with an average length of stay for these patients of 14 hours. The compared cost with traditional laparoscopic hysterectomy was reduced by 29%, mainly due to the use of reusable instruments and just one single use Single Port Special Trocar.

Conclusions: Single port Total Laparoscopic Hysterectomy seems to be a safe and more cost effective alternative to traditional Laparoscopy for the procedure. Surgical time, safety and feasibility is similar, were as the cosmetic result and the post operative pain levels seem to be better accepted by the female patient.
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**12.246 General Surgery**

**Totally Extra-peritoneal Repair of Inguinal Hernia (TEP) - The Limits, Applicability and Safety.**

Arshad M. Malik, MBBS, FCPS

Department of Surgery, Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan

**Objective:** To study the limitations and applicability of the TEP in different varieties of inguinal hernia and to study the safety of this technique depending upon the experience of operating surgeon and type and other characteristics of hernia itself.

**Methods:** This is an observational prospective descriptive study including a total of 186 patients with 197 (11 Bilateral) inguinal hernias operated by totally extra-peritoneal (TEP) technique over three years period in a teaching hospital as well as various private hospitals. Patients with recurrent or complicated hernias were excluded. All the patients were operated by the technique of TEP. The variables studied to confirm safety and validity of technique were recorded and analyzed on SPSS version 17.

**Results:** A total 186 patients with 197 inguinal hernias with a mean age of 39.90 years, Std of 13.079 and a range of 53(12-65) are operated by TEP. Of these, (59.89%) patients had right-sided inguinal hernia, 57(28.93%) left sided and 11(5.58%) had bilateral inguinal hernias. A vast majority of the inguinal hernias were small/incomplete while complete scrotal hernias comprised only 16(8.12%). Initial bleeding occurred in 16 patients operated by trainee registrars (P<0.001) while complete hernias presented difficulties in 32 patients operated by junior consultants (P<0.001). Nineteen patients operated by junior consultants needed conversion because of one or the other complications (P<0.001).

**12.247 General Surgery**

**Laparoscopic Ventral Hernia Repair - Another Fast Growing Challenge for Surgeons**

Arshad M.Malik, Qassim University, Buraydah, Saudi Arabia

**Introduction:** Laparoscopic ventral hernia repair is gaining global acceptance in terms of rapid recovery, decreased hospital stay and better cosmetic results. This study is performed to compare the results of open mesh repair of ventral hernias with laparoscopic ventral hernia repair in terms of outcome, morbidity and mortality.

**Methods:** One hundred and thirty six patients were admitted with ventral hernias of different variety during January 2008 to June 2010. The study population was divided in two groups, Group A , comprising 65 patients operated laparoscopically for different ventral hernias while Group B included 71 patients with different types of ventral abdominal hernias operated by open mesh repair. The patients were explained both the techniques, their likely consequences in terms of advantages and disadvantages and randomization was done by way of a flip of a coin. Data of both groups compared and statistically analyzed on SPSS version 17.

**Results:** A total of 136 patients with a mean age of 41.70, Std 9.639 and range of 50(23-73) were included as study subjects during study period of two and a half years. The study population comprised 28 males (20.58%) and 108 (79.41%) females.
Conclusion: Laparoscopic ventral hernia repair has a number of advantages over open mesh repair. A substantial amount of work has to be done before a concrete conclusion can be drawn.

12.248 General Surgery
Hemorroidectomy: Comparison of a Minimally Invasive Technique with Milligan-Morgan Operation
Asieh Sadat Fattahi MD, Hosein Shabahang MD, Ghodratollah Maddah MD, Seyed Hosein Fattahi MD, Ghodsieh Seyed Alavi MD, Mohammad H. Ebrahimzadeh MD Mashhad University of Medical Sciences

Background: Hemorrhoidal disease is the most common rectal disorder and many modalities have been suggested for its treatment. In this study, we compared Doppler-Guided Hemorrhoid Artery Ligation with the conventional Milligan-Morgan Hemorroidectomy in the treatment of this disease. This is a non-excisional technique for the treatment of hemorrhoidal disease, consisting of the ligation of the distal branches of the superior rectal artery, resulting in a reduction of blood flow and decongestion of the hemorrhoidal plexus.

Material and Methods: One hundred patients were enrolled in this study and divided randomly into two groups of 50 patients. Each group either underwent the Milligan-Morgan (group A) procedure or the Doppler-guided Hemorrhoid Artery Ligation (group B) method. The outcomes were compared using statistical methods.

Results: Patient's demographic results and symptoms and the type of anesthesia were similar in both groups. The mean duration of the operation had no statistical difference. The major impact of this new method was less postoperative pain and more patient satisfaction. The mean postoperative pain score in group A was 4.6+1.2 and 1+_0.6 in group B on a visual analogue scale (p<0.001). The complications occurred in 10% of patients in group A & 4% in group B. (P<0.001). After a mean follow-up of 18 months, we had two cases of recurrence in group B with grade IV hemorrhoidal disease.

Conclusion: Doppler-guided Hemorrhoid Artery Ligation is a safe and easy method for treating hemorrhoidal disease, but its results should be interpreted carefully, especially in grade IV of the disease.

12.249 General Surgery
Laparoscopic Cholecystectomy During Third trimester of Pregnancy: Is it Safe?
Asieh Sadat Fattahi MD, Ghodsieh S. Alavi MD, Seyed Hosein Fattahi MD, Mohammad H. Ebrahimzadeh MD, Mashhad University of Medical Sciences

Introduction: Biliary pathology is the second cause of acute abdomen after appendicitis in pregnancy. Most reports are about laparoscopic cholecystectomy during 2nd trimester. Doing that in 3rd trimester of pregnancy is controversial.

Method: In this study we report our case with this operation during 32 weeks of pregnancy & we reviewed literature.

Result: A 30-year woman at 32 weeks of pregnancy admitted in our department with biliary pain. She had 2 episode of biliary colic & one episode of pancreatitis during past 8 weeks. She had small stones in gallbladder in ultrasound with normal ducts and laboratory data were in normal range. We did laparoscopic cholecystectomy with first 12 mm trocar in the left upper quadrant (open technique), the second 9 cm above umbilicus, 3th in epigaster, 4th in Right Upper quadrant. The patient was in 45 degree left lateral position and intraabdominal pressure was set at 12 mmHg & capnogram showed the co2 level during operation. The gallbladder did not have inflammation. After completion of operation we did not have any fetal or maternal complication. Patient discharged 2 days after operation and visited 2 times after surgery in outpatient clinic.

Conclusion: Laparoscopic cholecystectomy is feasible during third trimester of pregnancy with some cautions. Decision of conversion to open technique must be in mind with any fetal or maternal problems.
Advantage of Site Specific Adhesion Prevention in Gynaecologic Endoscopic Surgery
L. Mettler, Department of Obstetrics and Gynaecology, University Hospitals Schleswig-Holstein, Campus Kiel, Germany

Objectives: In every 5th laparoscopy we have to deal with adhesions.

Methods: We performed a selective Pubmed/Medline search using “adhesions”, “laparoscopy” and “prevention of adhesions” as key words. Of all known methods, barriers appeared to be the most effective technology. In laparoscopy and hysteroscopy the use of heated and moist gas definitely causes less adhesion. A continuous suction and irrigation at endoscopic procedures is also advisable.

Results: The first generation of barriers consisted of meshes. Later viscous solutions were propagated. In recent years sprayable liquids as polyethylene glycols = PEG’s which polymerize to hydrogels with addition of colorants and without color, revealed 65 – 70 % reduced adhesion formation.

Hydroflotation with liters of icodextrin solutions (4%) for rinsing and instillation at the end of surgery gave on the surgical site a significant adhesion reduction. Hyaluronate products are applied by simply squeezing through an applicator. These have recently gained attention again and appear to be effective.

Conclusions: The level of evidence of the current available products on the market is limited. However, a combination of a site-specific spray or gel together with hydroflotation and, possible assisted by an antiinflammatory medication seems promising.

12.251 Gynecology
Fibroid Recurrences after Myomectomy: A Retrospective Cohort Study
Matthew Palmer, DO; Marisa Dahlman, MD, MPH1; Suzanne Havstad, MA2; Ganesa Wegienka, PhD; Roopina Sangha, MD, MPH; Madhu Bagaria, MD1, Madhurima Keerthy, MD1, David Eisenstein, MD1.

Objective: Recurrence and reoperation rates of laparoscopic (robotic and traditional laparoscopy) compared to abdominal myomectomy are described in relation to pre-operative and intra-operative factors.

Design: Retrospective cohort study

Setting: Henry Ford Hospitals (Detroit and West Bloomfield, MI)

Patients or Participants: 225 women who underwent a myomectomy prior to May 2009.

Interventions: Myomectomy (any approach)

Measurements & Main Results: The electronic medical records of all women who were at least 1 year post-myomectomy were reviewed. Date of specific mention of fibroids in the medical the record after the index myomectomy was also recorded as were any additional fibroid-related procedures: myomectomy, uterine artery embolization (UAE) or hysterectomy. Survival analysis techniques were employed to account for variable follow-up and loss to follow-up (censored) for the outcomes of time to recurrence or retreatment. Of the 225 women, 57 (25.3%) had some type of recurrence or retreatment. Of the 23 women who had retreatment, 9 had hysterectomy, 12 had myomectomy and 2 had UAE. Those who had a recurrence were more likely to have had multiple fibroids (p=0.006) and an “open” surgical approach (p=0.029); however, the statistically significant associations did not persist after adjusting for surgical approach, number of leiomyomas removed and size of largest leiomyoma diameter.

Conclusion: These data suggest no evidence of differences in recurrence and the rate of having a subsequent procedure by index surgical approach. This, coupled with prior evidence of shorter hospital stay, less blood loss and a quicker recovery suggest that a minimally invasive approach to myomectomy is preferable.
Evaluation of Surgical Simulation Using the Da Vinci Robot Skill Simulator
Laura Drudi, MDCM Candidate, b, c; Joshua Feder; Audrey Gilbert MDCM; Joshua Z. Press MD, MSca,b; Suzie Lau, MDa; H Abenhaim MDa; Walter H. Gotlieb MD, PhDa,b

a Division of Gynecologic Oncology, Jewish General Hospital, McGill University, Montreal, Quebec, Canada
b Segal Cancer Center, Lady Davis Institute of Medical Research, McGill University, Montreal, Quebec, Canada
c Department of Undergraduate Medical Education, Faculty of Medicine, McGill University, Montreal, Quebec, Canada

Introduction: The primary objective of this study was to determine if there is a difference in performance on the da Vinci® Robot Skill Simulator based on the participant’s level of training. The secondary objective was to assess the validity of the simulator as an educational platform in surgery.

Methods: The da Vinci® Robot Skill Simulator scored exercises based on a set of metrics. Participants included medical students, residents, fellows and staff from the Division of Gynecology Oncology. Participants were given a questionnaire to assess the importance of the simulator in surgical training.

Results: Three staff gynecology oncology surgeons, 4 fellows, 17 residents, 13 medical students, and 4 other participants completed simulation exercises during the study period. Based on the mean exercise scores of first attempts, staff, fellows and senior residents scored better compared to junior residents, medical students, and other participants. This trend disappeared once the participants used the simulator for 5 exercise attempts. The questionnaire revealed that the simulator was realistic (mean=8.1/10), was useful for residents (mean=9.5), and should be included in robotic training (mean=9.7). The participants felt that the ideal mean total robotic training time for junior residents, senior residents and fellows should be 36, 26, and 22 hours respectively.

Conclusions: There is a trend for senior residents, fellows and staff to initially score better on the simulator. The trend disappeared once all participants gained experience. Robotic surgical simulation might become an important educational tool as robotic-assisted surgeries continue to gain momentum across many surgical specialties.

Vaginal Vault Dehiscence After Robotic Hysterectomy in Gynecology Oncology: A Retrospective Review and Review of the Literature
Laura Drudi MD, MDCM candidate a, b, c; Joshua Z. Press MD, MSca, b; Suzie Lau MDa; Raphael Gotlieba; Jeffrey How MD, MDCM candidate, a, c; Nancy Drummond; Sonya Brina; C Delanda; Walter H. Gotlieb MD, PhDa, b

a Division of Gynecologic Oncology, Jewish General Hospital, McGill University, Montreal, Quebec, Canada
b Segal Cancer Center, Lady Davis Institute of Medical Research, McGill University, Montreal, Quebec, Canada
c Department of Undergraduate Medical Education, Faculty of Medicine, McGill University, Montreal, Quebec, Canada

Introduction: Vaginal vault dehiscence is a major complication following robotic-assisted hysterectomy and has been attributed to patient characteristics and surgical techniques. Our aim was to analyze risk factors in our patient population, and complement this with a literature review.

Methods: Robotic surgeries at Montreal’s Jewish General Hospital were analyzed between 19 December 2007 and 16 March 2012, and extracted data for patients with vaginal vault dehiscence following robotic-assisted hysterectomy for gynecologic oncology indications. PubMed articles were reviewed relevant to "gynecologic oncology" and "robotics" with "vaginal cuff dehiscence". Respective authors were contacted to obtain missing information.

Results: We identified 7 dehiscences at our institution out of 461 cases. The closures in these 8 were performed using interrupted 1-Vicryl (4 dehiscences out of 173), combination of interrupted 1-Vicryl and 1-Biosyn (3 out of 163), and V-lock (1 out of 125). Associated risk factors included low BMI (mean=22), adjuvant chemotherapy/radiation, and early resumption of sexual activity. Dehiscences occurred regardless of suturing by staff or trainees. Review of operative videos did not reveal
Conclusions: Post-operative chemotherapy and radiotherapy, and early resumption of sexual activities are risk factors for vaginal vault dehiscence. Surgical technique, particularly the use of interrupted Vicryl sutures alone deserves further evaluation.

12.256 Urology
An Initial Head to Head Comparison of Laparoscopic versus Robotic Nephrectomies,
Michael W. McDonald, M.D. and Joyce Coulter, RNFA, Florida Hospital Celebration, FL, and University of Central Florida, Orlando, FL

Objectives: To determine the initial efficacy of utilizing the da Vinci robotic system versus standard laparoscopy for nephrectomy. Our initial goal was to compare and contrast the initiation of robotic assisted laparoscopic nephrectomy versus laparoscopic nephrectomy in a clinical setting. We wanted to evaluate the efficacy with both the advantages and disadvantages for robotic and laparoscopic surgery in both radical and simple nephrectomy.

Methods: We retrospectively reviewed the last 15 laparoscopic nephrectomies performed against the first 15 robotic assisted laparoscopic nephrectomies. A comparison was made for patients’ age, body mass index score, estimated blood loss, length of hospital stay, and operative time.

Results: Of the 15 patients in the Laparoscopic Nephrectomy group, 7 were female and 8 male. In the Robotic Assisted Laparoscopic Nephrectomy group there were 7 males, 8 females. In the Laparoscopic Nephrectomy group 9 radical and 6 simple nephrectomies were performed and in the Robotic Assisted Laparoscopic Nephrectomy group, 10 radical and 5 simple nephrectomies. Of the radical nephrectomies performed in the Laparoscopic Nephrectomy group the tumor size ranged from 3−6.5cm and in the Robotic Assisted Laparoscopic Nephrectomy group 2−11cm. No significant p values were elicited in any of the parameters reviewed

Conclusion: Initially it appears that there is no clinical advantage to robotic nephrectomy with respect to operating room time, hospital stay, or blood loss. However, this may be a function of a learning curve with robotic surgery, which may or may not improve with time. Further evaluation is warranted.

12.257 General Surgery
Trans-linea-alba Laparoscopic Cholecystectomy Improvement of a Single Incision Laparoscopic Cholecystectomy
Hai Hu, MD, Ph.D.*, Anhua Huang, MD, Weidong Wang, MD, Chuanqi He, MD, Bingguan Chen, MD, Ph.D. *Department of Minimally Invasive Surgery, Tongji University Affiliated Shanghai East Hospital

Objective: To overcome the disadvantages of SILC, we developed a trans-linea-alba laparoscopic cholecystectomy (TLLC).

Methods: One hundred sixty four patients (110 female and 54 male) with gallbladder stones (130 cases) and polypus (34 cases) were recruited for this new approach. Two 5 mm trocars were placed through a single incision at the right edge of the umbilicus, one for inserting a 5 mm laparoscope and another one for inserting a 5 mm harmonic scalper (for cutting the cystic vessels), 5 mm grasper, or 5 mm clip holder. Under laparoscopic guidance, a 2 mm trocar for a grasper, separator, or electricautery hook was placed at subsiphoid linea alba. With this modification the cholecystectomy was completed as per conventional laparoscopic cholecystectomy (LC). The gallbladder was retrieved from the umbilical incision.

Results: All gallbladders were successfully removed without intraoperative complications. The mean operating time of the TLLCs was 13.6 ± 3.4 min (range 10-21 min), which is significantly shorter than that of SILCs. All patients who received a TLLC did not complain of pain after recovering from general anesthesia. They resumed free oral intake 6 hours after the procedure. All patients were satisfied with the appearance of the incisions. All patients were discharged 24 hours after the operation and returned to work within 5 postoperative days.
Conclusions: The approach we have developed has greatly overcome the disadvantages of SILC. Important merits include a shorter operation time, a shorter learning curve, same cosmetic results and less pain after surgery.

12.258 Gynecology
Overcoming the Surgical Challenges of Laparoscopic Tubal Anastomosis

Jonathan Y. Song, MD, FACOG, FACS (TLC Medical Group, SC)
Carlos Sueldo, MD, FACOG (Oakbrook Institute of Endoscopy)
Carlos Rotman, MD, FACOG, FACS (Oakbrook Institute of Endoscopy)

Laparoscopic tubal anastomosis has provided hope for couples who could not afford the expense and time commitment required by IVF, or for those who have ethical concerns regarding this alternative. Over the years, we have modified and adjusted our technique to facilitate the performance of the procedure. Objective: the objective of the video is to demonstrate a new and easier method to cannulate the distal tubal segment during a laparoscopic tubal anastomosis. Methods: the techniques of our traditional method vs. our newly described method for cannulation are compared. Results: 50 cases have been performed using a new attachable/detachable 6 French tubal cannula tip to help feed the stent. Conclusion: implementing this new step has facilitated the cannulation of the distal tubal segment, and has not affected our pregnancy rate.

12.259 Urology
Functional and Oncological Outcomes After Cryoablation or Open Partial Nephrectomy for Small Renal Masses

Nabbout P, Bradley N, Culkin D, Slobodov G.

Objectives: According to the AUA guidelines, open partial nephrectomy (PN) is the standard of care for small renal masses (SRM) while cryotherapy is an option. Our objective is to compare the functional and oncological outcomes of these two treatment modalities.

Material and Methods: We retrospectively identified 32 patients who underwent PN between April 2008 and June 2011, and 29 patients who underwent renal cryoablation between August 2004 and June 2011. Follow-up was done using serial CT Scan and MRI. Recurrence was confirmed by a percutaneous biopsy.

Results: The two groups were similar with regards, to tumor size. Patients undergoing renal cryotherapy were older (65.7 vs 48, p<0.0005) and had more comorbidities than those in the PN group. Almost half of the patients (48.3%) in the cryotherapy group had chronic kidney disease (CKD) prior to treatment. Patients undergoing PN had longer duration of hospital stay (4.5 vs 1.1 days p<0.0005), a higher rate of perioperative complications (21.9%vs 3.4% p<0.05), and a higher mean of estimated blood loss (380 vs 38.8cc p<0.0005). There was no onset of de novo CKD in any patient postoperatively in both groups. Patients undergoing cryotherapy had significantly more risk of local recurrence (13.8% vs0% p<0.05).

Conclusions: Compared to PN cryotherapy results in a higher rate of local tumor progression. The rate of perioperative complications was higher in the PN group although patients in the cryotherapy group had significantly more comorbidities. Both techniques are safe with regards to renal functional outcomes.

12.260 Gynecology
Transiently Intraoperative Occlusion of Uterine Arteries with Endoscopic Vascular Clip Preceding Laparoscopic Myomectomy

Yong-Soon Kwon, Department of Obstetrics and Gynecology, Ulsan University Hospital, University of Ulsan College of Medicine, Dong-gu Ulsan, Korea

Objective: To determine whether performing transiently intraoperative occlusion of uterine arteries (TOUA) immediately before laparoscopic myomectomy can reduce intraoperative complications.
Methods: In a retrospective case–control study, laparoscopic myomectomy with and without TOUA was examined. Data were analyzed from 89 laparoscopic myomectomies performed by a single surgeon (Y.S Kwon) at Ulsan University Hospital between March 2011 and March 2012. Surgical outcomes included preoperative myoma size, number of myoma, operative time, and operative blood loss. Data were analyzed via 2-tailed Student t test.

Results: forty-nine women underwent laparoscopic myomectomy with TOUA with endoscopic vascular clip. Forty control patients underwent laparoscopic myomectomy alone.

The TOUA group had no case of nerve or vascular injury during the operation time. The mean time of both occlusions of uterine arteries is 15 minutes. The TOUA group had a lesser mean blood loss during the operation rather than the other group with laparoscopic myomectomy alone (67.5 versus 116.8 mL, P=0.001). There were no significant differences in size and number of uterine myomas and intra-operative complications. There was no case of conversion of laparoscopy to laparotomy in the both groups.

Conclusion: TOUA performed immediately before laparoscopic myomectomy facilitated minimally invasive surgery with lesser blood loss, with no differences in other intraoperative complications.

12.261 Gynecology
Impact of Subtle Tubal Abnormalities on Fertility: An Underestimated Factor of Infertility
Antoine Watrelot, Prof Dr Med; Chauvin Géraldine, MD, Hopital Natecia

Objectives: To study the importance of subtle tubal abnormalities such as paratubal cyst or tubal sacculation on fertility.

Material and Method: After a review of literature showing very few works on the subject we have conducted a review of our cases of patients diagnosed with such minor abnormalities during fertiloscopy. 284 patients with subtle abnormalities and a story of unexplained infertility for more than two years at the time of fertiloscopy were enrolled in this study between 2007 and 2011.

Incidence of such abnormalities was in our series of 32%. Most of them were para tubal cysts (Morgani hydatid) (n= 143) sacculations of the ampulla (n=98) congenital phimosis (n=44) accessory tubes (=29). Treatment of these abnormalities have been practiced through fertiloscopy in 172 cases (60,5%) and by laparoscopy for the other cases, mostly in case of sacculations and phimosis; pregnancy rate in the following 6 months was of 48,9% (n=137) with no ectopic pregnancy.

Conclusion: The treatment of subtle tubal abnormalities seems to be important providing that the diagnosis is established. It is a strong argument to recommend the practice of endoscopy before ART in patients with unexplained infertility, because only endoscopic evaluation of the tubes allows the diagnosis of such underestimated lesions.

12.262 General Surgery
Pain Relief from Combined Wound and Intra-peritoneal Local Anesthesia for Patients who Underwent Laparoscopic Cholecystectomy
Chun-Nan Yeh, MD, Chi-Tung Cheng, MD, Shang-Yu Wang, MD, Chun-Yi Tsai, MD.
Shu-Yi Huang, MD, Yu-Yin Liu, MD, Feng-Jen Hsieh, MD, Chih-Chung Lin*, MD, PhD, Yi-Yin Jan, MD, FACS, Miin-Fu Chen, MD, FACS
Department of Surgery and *Department of Anesthesiology
Chang Gung Memorial Hospital, Chang Gung University

Background: Laparoscopic cholecystectomy (LC) has become the treatment of choice for gallbladder lesions. Although LC results in less pain than open cholecystectomy, it is not a pain-free procedure. Many trials have demonstrated that pain after LC is multifactorial. This prospective case-control study explored the pain relief provided by combined wound and intra-peritoneal local anesthetic for patients undergone LC.

Methods: Between 2009 and 2011, 220 consecutive patients undergoing LC were categorized into 1 of the following 4
anesthetic after LC with/without intra-peritoneal local anesthetic (NW+P; NW+NP). A visual analog scale (VAS) was used to assess postoperative pain when the patient awakened in the operating room, 6 hours after surgery, and 24 hours after surgery. The amount of analgesic use was also recorded. We compared the demographics, laboratory data, hospital stay, and perioperative complications of the 4 groups.

**Results:** The 4 groups of patients had similar clinical features, laboratory data, ASA grading, and operative findings. However, the VAS was significantly lower immediately after LC for the W+P group than for the NW+NP group (4.8 versus 6.3; p = 0.0047). Patients in the W+P group received a lower total amount of meperidine during their hospital stay. These patients also remained in the hospital for less time than the patients in other groups.

**Conclusions:** Combined wound and intra-peritoneal local anesthetic after LC significantly decreased immediate postoperative pain. It also reduced use of meperidine and earlier discharge of patients.

### 12.263 Cardiac Surgery

**Ten Years TECAB – Experience After a Decade of Robotic Totally Endoscopic Coronary Artery Bypass Grafting**

Johannes Bonatti (1), Eric Lehr (1), Jeffrey Lee (1), Patricia Hong (1), Nikolaos Bonaros (2), Dominik Wiedemann (2), David Zimrin (3)

(1) Division of Cardiac Surgery, Department of Surgery, University of Maryland School of Medicine, Baltimore, Maryland USA (2) University Clinic of Cardiac Surgery Innsbruck Medical University, Innsbruck, Austria, EU (3) Division of Cardiology, Department of Internal Medicine, University of Maryland School of Medicine, Baltimore, Maryland USA

**Background:** Since the introduction of robotic totally endoscopic coronary artery bypass grafting (TECAB) significant technological improvement has happened. Nevertheless only a few dedicated centers can offer TECAB and only a few studies on procedure outcome and progress are available. The aim of this study was to assess trends in patient profile, intraoperative performance, and perioperative outcome in patients undergoing TECAB during ten years of application.

**Patients and Methods:** From 10/2001 to 9/2011 541 robotically assisted TECAB procedures were carried at one US and one European center. Operations were performed using the daVinci, daVinci S, and daVinci Si surgical robotic systems.

**Results:** Procedure numbers increased significantly over the first 10 years. During the last two years more multivessel procedures than single vessel TECAB operations were carried out. With time, preoperative patient risk profile increased. The conversion rate to larger thoracic incisions fell from 40.0% during the first year to 5.6% during the last year (p=0.036). Improvements were seen for operative time which decreased from 475 (320-690) min during the first year to 276 (123-865) min during the last year (p<0.001). Postoperative revision for bleeding fell from 10.0% in the first year to 2.1% in the last year (p=0.016), and hospital stay decreased from 7 (5-13) days to 5 (3-49) days (p<0.001). Overall hospital mortality was 0.9%.

**Conclusion:** Procedure performance in robotically assisted TECAB shows very favorable trends. General perioperative outcome is excellent and TECAB can be applied in higher risk groups.

### 12.264 Gynecology

**A Team Approach in Robotic Gynecologic Surgery Consistently Improves Room Turnaround Times**

Aileen Caceres, MD MPH FACOG, Abe Segui ST, Anthea Ponce RN, Elaine Suris RN, Terrie

**Objectives:** Evaluate the role of teams in robotic gynecology procedures and impact on turnaround times.

**Method:** Retrospective analysis of robotic gynecologic surgical cases.

**Results:** Robotic cases were analyzed from January 2010 to April 2012. A total of seventy-five (75) cases were performed robotically. These cases consisted of robotic assisted hysterectomy (61), robotic assisted myomectomy (10) and robotic sacrocolpopexy (4). With the introduction of gynecologic robotic cases in 2010, a dedicated team approach was instituted. This
delineated during these processes to determine which activities may be conducted simultaneously. A dedicated and consistent robotic team was composed of a robotic team coordinator and facilitator of dedicated nurses, surgical technicians and other allied health personnel. The robotic team and surgeon maintained consistent communication regarding cases and equipment needs. Robotic instrument sets were standardized and robotic pack contents were constantly updated and reviewed. Subsequently, average time for room turnover in 2010 was twenty-five (25) minutes (range, 10 to 45 minutes); in 2011, twenty-two (22) minutes (range, 8 to 40 minutes); and in 2012, twenty-seven (27) minutes (range, 14 to 39 minutes).

**Conclusion:** Since the start of robotic gynecologic procedures at our institution, a dedicated robotic team approach has been instituted. Subsequently, efficient and timely room turnovers have been achieved.

**12.265 Gynecology**

**Management of Symptomatic Uterine Fibroids: Laparoscopic Occlusion Versus Embolization of the Uterine Artery**

Prof. Tawfik A.S. Tawfik, Prof. Khamis Yosry, Prof. Fawzy A. Moneim, Prof Khamis Hassan*

Department of OB/GYN and Interventional Radiology*, Faculty of Medicine, University of Alexandria

The ultimate objective of the current study is to evaluate the therapeutic potential of laparoscopic bilateral uterine artery occlusion compared to bilateral uterine artery embolization in the management of symptomatic fibroids and to assess their possible complications.

Study was performed on 60 patients having symptomatic fibroids recruited from outpatient clinic of Shatby University Hospital, Alexandria University, Egypt. Selection criteria include: age group 30 – 45 years, completed family size or not desirous for future fertility, fibroid size not exceeding 20 weeks gestational size

Cases were allocated into two groups: group I : (40 patients) were subjected to laparoscopic uterine artery occlusion (LURO)either by vascular clips or bipolar coagulation

Group II : ( 20 patients) were subjected to transcatheter uterine artery embolization (UAE) using Seldinger technique of retrograde double-wall femoral artery puncture with super selective catheter to catheterize uterine artery. Embolizing material used was polyvinyl alcohol ion particles (PVA) injected till complete devascularization.

The study revealed that all cases in both groups experienced postoperative ischemic uterine pain which was significantly more and severe in UAE group – Post-embolization syndrome (fever, malaise, vomiting) was commonly leading to more hospital stay as compared to LURO group – At 6 months follow up, reduction in mean leading myoma volume was 59.1% in LURO and 58.7% in UAE – Doppler studies of the uterine arteries during follow up showed non-significant changes in pulsatility and resistance indices.

LURO and UAE are both minimally invasive safe techniques for treatment of symptomatic fibroids with comparable efficacy and complete symptom relief.

**12.266 Gynecology**

**Using the PROMIS Global Physical Score as an Outcome Measure in Laparoscopic Surgery for Chronic Pelvic Pain**

Bradford W Fenton, MD, PhD; Michele McCarroll, PhD; Vivian VonGruenigen, MD

**Introduction:** Measuring the outcomes of laparoscopic surgery for chronic pelvic pain can be challenging due to many factors. Responder analysis is a proven approach, but requires validation based on a benchmark measure. This objective of this study is to evaluate two brief measures: the patient reported outcome measure information system (PROMIS) Global Physical (GP) score and the visual analog scale (VAS) for pain against a benchmark measure.

**Methods:** This is a retrospective comparison of outcome scores in minimally invasive hysterectomy for chronic pelvic pain. 20 patients provided complete data sets. Treatment outcome was assigned based on a minimum 15 point improvement on
Physical Function. Changes in the briefer four item GP and single item VAS scores were compared against this benchmark.

**Results:** Two thirds of patients responded to treatment using based on the benchmark definition. The VAS did not correlate with the benchmark. The change in GP correlated well with the combined measures (R²: 0.679, p<0.001), and responders improved significantly on the GP measure (-9.5, P=0.001). Receiver operator characteristic curves demonstrated a significantly greater area under the curve for the GP compared to the VAS (z=58.6, p<0.001).

**Conclusion:** The PROMIS Global Physical score is a better measure of outcome than VAS in minimally invasive hysterectomy for CPP; an improvement of 5 points or more in the Global Physical score reliably identifies patients who respond to treatment.

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**12.267 Multispecialty**

**Factors influencing the time cost of a perioperative surgical quality checklist.**

Bradford W. Fenton, Nathaniel Evans, Michele McCarroll, Vivian von Gruenigen

**Introduction:** Enhanced perioperative team communication using a three step perioperative checklist (such as ORready), has been advocated as a method to decrease surgical complication rates. However the time costs of these methods, and any influence of case type, attending surgeon, or patient source, are not well described.

**Methods:** A checklist was developed to cover the recommended elements: preoperative consent, intraoperative time out, and postoperative sign out. These were filled out by the attending surgeons, along with a record of the time spent for each phase in each case. Resident based cases, case type (major vs. minor), and the attending surgeon were used as categorical variables in multiple comparison corrected t tests.

**Results:** A total of 108 patients were included in this IRB exempted study. None of the three times were significantly different between attending surgeons. Resident cases compared to private cases also did not have significantly longer times: preoperative (148 vs. 123 sec.), time out (61 vs. 64 sec.), or sign out (23 vs. 20 sec.). There was a significant difference between major and minor cases for preoperative times (182 vs. 111 sec., p=0.0002), but not time out (69 vs. 58 sec.), or sign out (22 vs. 21 sec.).

**Conclusion:** Use of a perioperative surgical safety checklist imposes a small time burden on the OR team, which is not dependant on the individual attending or service origin of the patient. Patients undergoing major surgery have longer preoperative counseling, likely appropriately reflecting the increased case risk.

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**12.268 Gynecology**

**Evaluation of Dual Robotic Platforms in the Education and Training of Residents and Proctored Physicians in an Ob Gyn Residency Program: Patient Safety Outcomes, Learner Satisfaction and Instructor Satisfaction**

Michael T. Breen, MD, University of Texas Southwestern Medical, Austin Ob-Gyn

The objective of this study is to contrast the dual console robotic platform as a training and teaching modality to the single console platform that is most available. The presumption is that the dual console provides a safe, more efficient environment for learning and teaching which was superior to the traditional single console platform.

**Methods and procedures:** Using faculty who taught on both dual and single console platforms as well as residents who had their learning both on single console as well as dual console platforms a Lickert scale questionnaire was used to question both the educators and the residents and physicians being proctored. Categories included preference of single vs. dual console, ease of understanding instructions, preference for beginning cases, preference for proctored difficult cases(colpexy), level of confidence on single versus dual console, level of apprehension beginning robotics dual versus single console. Overall sample of preference single vs. dual console for resident and proctored cases was assessed.

**Results:** While sample size was small the findings overwhelmingly supported the preference for dual console versus single console in all categories studied. Confidence, less perceived anxiousness, better perceived learning off the dual console platform was the overwhelming finding.
The conclusion of the sampling was that the Dual Console robotic platforms provide a tremendous teaching training modality when inserted into an already robust DaVinci program on single console platforms. These findings should help programs looking for the justification of the expense of a dual console system for educational purposes to enhance training in residents and physicians being proctored.

12.269 Gynecology

Single-port Access (SPA) Laparoscopic Surgery in Benign Gynecology: The Perioperative and Late Complications of 515 Cases

Jin-Young Park, Tae-Joong Kim, Yoo-young Lee, Chel Hun Choi, Jeong-Won Lee, Duk-Soo Bae, Byoung-Gie Kim, Kyoung Young Seo; Department of Obstetrics and Gynecology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

**Objective:** To report 515 single-port access (SPA) laparoscopic surgeries and present the perioperative outcomes and late complications according to Clavien-Dindo classification.

**Study design:** This is a prospective single-center study. One surgeon dedicated in minimally invasive surgery performed 515 cases by single port approach from May 2008 through September 2011.

**Results:** Five hundred and fifteen patients underwent SPA gynecological surgery (274 total hysterectomy; 26 subtotal hysterectomy; 87 adnexectomy including oophorectomy, salpingectomy and salpingo-oophorectomy; 100 ovarian cystectomy; 17 myomectomy; 11 others). The median age and body mass index were 45 and 22.6 kg/m², respectively. SPA surgery was successfully completed in 493 patients (95.7%), without the need for ancillary port(s) or conversion to laparotomy. Twenty patients needed additional port(s) and 2 patients were converted to laparotomy. Especially, additional port(s) were needed in ovarian cystectomy procedures (12/100, 12%). Thirty six patients required intraoperative and/or postoperative transfusion. All these patients were taken hysterectomy (33/274, 12.0%) or subtotal hysterectomy (3/26, 11.5%). Perioperative complications (< 30 postoperative days) except transfusion occurred in 8 patients, 1 vault bleeding, 1 vault abscess, 1 stump watery discharge, 1 rectal injury, 1 vesicovaginal fistula and 3 urinary tract injury. Late complications occurred in 3 patients; 2 umbilical hernia and 1 vault evisceration. The overall complication rate except transfusion was 2.1% (11/515).

**Conclusion:** The rate of late postoperative complications which include umbilical port site hernia and vault evisceration is not increased in this study, compared to previous report of single port and conventional laparoscopic surgeries.

12.270 General Surgery

Hybrid Single Incision Laparoscopic Splenectomy for Heamatological Diseases: Early Experience.

Mohamed A Sharaan (MD), Department of General Surgery, Faculty of Medicine, Alexandria University, Egypt

**Background and objective:** Single incision laparoscopic surgery is a new surgical technique of minimal access laparoscopic surgery. Laparoscopic splenectomy is considered the gold standard treatment for patients with heamatological diseases. The present study was to assess the feasibility of the Hybrid single incision laparoscopic splenectomy for patients with hematological diseases, its morbidities.

**Methods:** We report 6 cases, 4 cases of (ITP), Idiopathic thrombocytopenic purpura, 2 cases of hereditary spherocytosis, all were indicated for splenectomy. Through an umbilical incision, the single port was inserted. A 5mm 300 lens was used. Mobilisation and sealing of the hilum of the spleen was done by Ligasure. We used an accessory trocar in the left hypochondrium for retraction of the spleen. Extraction of the spleen in endobag through the umbilical incision. Assessment included operative time, complications, cosmesis, conversion rate, blood loss.

**Results:** We operated 6 cases; all of them were females with a mean age of 25.3 ± 5.4 years. The procedure was completed successfully in 5 patients. Operative time was 122± 20 minutes. Blood loss was 150±30 cc. We converted to standard laparoscopic splenectomy in one case for difficult viewing. We had no complications. The mean hospital stay was 2.1 days± 1.
Conclusion: The procedure is feasible and safe. Availability and good knowledge and experience of the single port instruments are needed. We had no complications, minimal blood loss, and only one conversion to standard laparoscopy. It achieved accepted cosmetic results.

12.272 Urology

Single Incision Robotic-Assisted Donor Nephrectomy

Angela Echeverria, MD; Carlos Galvani, MD; Ulises Garza, MD; Amit Kaul, MD; Chirag Desai, MD; Tun Jie, MD; Rainer Gruessner, MD; University of Arizona, Tucson, AZ

Introduction: Robotic-assisted donor nephrectomy is evolving as an improved method of standard laparoscopic donor nephrectomy. To further reduce the donor morbidity, we are present a case of a single incision robotic-assisted donor nephrectomy.

Materials and Methods: A 21 year old female was cleared for left kidney donation to her father. Computed tomography (CT) angio of abdomen revealed normal renal anatomy. The procedure was explained to the patient, its innovative nature, expected advantages, and potential risks. The patient was placed in a right lateral decubitus position. A single port was inserted through a 5-cm midline incision starting at the umbilicus and extending downwards. Two 12-mm and two 8-mm trocars were placed in a diamond configuration through the port. The robotic system was used for the case.

Results: Operative time was 150 minutes with warm ischemia time of 3 min and EBL was 75 ml. The patient was discharged 72 hours after surgery and there were no perioperative complications.

Conclusion: Single incision robotic donor nephrectomy can be safely performed using the same incision that is used for extraction of the kidney. This approach can potentially increase the donor pool by further decreasing the invasiveness of living donation.

12.273 General Surgery

Robotic-Assisted Paraesophageal Hernia Repair (RA-PEHR)

Ulises Garza, MD; Angela Echeverria, MD; Amit Kaul, MD; Carlos Galvani, MD
University of Arizona, Tucson, AZ

Laparoscopic repair of large paraesophageal hernias is technically challenging. Robotic surgery appears to be very effective in facilitating complex procedures in small spaces such as the posterior mediastinum. The adoption of robotic technology for surgical treatment of paraesophageal hernia is not widespread. We describe our current surgical technique for repair of paraesophageal hernia.

Methods: The patient is a 37-year-old male with 3-year history of heartburn, regurgitation, and severe epigastric and chest pain. Patient was treated with PPI with no resolution of symptoms.

Barium swallow demonstrated a significant esophageal reflux and a large paraesophageal hernia. Upper endoscopy also confirmed the presence of large paraesophageal hernia with no strictures.

Patient was placed in reverse trendelenburg position with legs and arms open. The robotic system was docked. A total of 4 trocars were used for the robotic system and one 12mm trocar for the assistant. The liver retractor was placed. Dissection of the hernia sac was performed with posterior resection. Primary closure of the diaphragmatic crura was performed. Crura closure was reinforced with a “U” shaped mesh. A Nissen fundoplication was performed over a 56 Fr bougie.

Results: The operative time was 154 minutes. EBL was 20cc. No intraoperative or postoperative complications were observed. Patient was discharged 48 hours after surgery. Patient asymptomatic 6 months after surgery.
Laparoscopic Internal Hernia Repair and Closure of Peterson's Defect due to Small Bowel Obstruction (SBO)

Angela Echeverria, MD, Bianca Zangeneh, MD, Ulises Garza, MD, Amit Kaul, MD, Carlos Galvani, MD
University of Arizona, Tucson, AZ

Introduction: The incidence of internal hernia is about 0.5% to 9% after a laparoscopic Roux en Y gastric bypass (LRYGB). Peterson's defect is the most common internal hernia from the three types of mesenteric openings. The most sensitive sign to diagnose is a CT scan showing a whirl sign/mesenteric sign (mesenteric vessel rotation). This condition if not diagnosed early can be life threatening.

Methods: This is a 29-year-old female with a one-year history of a laparoscopic surgical Roux en Y gastric bypass with 100 lb of excessive weight loss. The patient came to the ER department with complaints of severe epigastric abdominal pain 10/10, nausea and vomit for more than 12 hours. CT showed mesenteric edema, swirling of the central mesentery. The patient was scheduled for diagnostic laparoscopy. The small bowel was twisted and incarcerated in the mesenteric defect of the J-J anastomosis and reduced completely. An opening of the mesenteric J-J anastomosis and the peterson's defect were identified and closed using non-absorbable suture in a running fashion.

Results: Operative time was 55 minutes The patient was discharged 36 hours after surgery. No intraoperative or postoperative complications were seen. The three-month-follow-up was unremarkable.

Conclusion: Patients that undergo LRYGB for morbid obesity are at risk for the development of internal hernias and SBO, general awareness of this condition and high clinical suspicion allow for prompt surgical intervention with decreased morbidity and mortality. Therefore, the best preventative measure is the proper closure of these defects at the time of the initial procedure.

Adjustable Gastric Band as a Revisional Procedure for Gastric Bypass

Authors: Amit Kaul, MD, Carlos Galvani, MD, Ulises Garza, MD, Bianca Zangeneh, MD, Angela Echeverria, MD; University of Arizona

Introduction: Roux-en-Y Gastric Bypass (RYGB) is the most common weight loss surgical procedure performed for obese patients in the United States. Studies have shown that in 1 year following RYGB, patients will have a 5% failure in weight loss, and in 2 years this increases to 15%. Laparoscopic gastric band (LAGB) is a feasible, underutilized procedure that can be a very useful adjunct procedure among these patients.

Methods: This is a 47 year-old female with a 5-year history of Laparoscopic Roux en Y Gastric Bypass. The patient lost 120 pounds in the first three years, however she re-gained 70 pounds over the last 18 months and complaints of lack of restriction after each meal for solid food. Preoperative studies showed a dilated GJ anastomosis. The patient was offered a gastric band as an option for continued weight loss. An intraoperative UGI endoscopy was performed to evaluate the anatomy of the gastric pouch and a dilation of the GJ anastomosis was confirmed. The gastric band was then fixed around the gastric pouch to the gastric remnant.

Results: Operative time 145 minutes, The patient was discharged 24 hrs after surgery. On her 12 month follow-up the patient has received four band adjustments and the excessive weight loss is 35%.

Conclusion: The ideal surgical approach for correction or improvement of patients with failure of weight loss after a RYGB it is not well established. An adjustable gastric band is an attractive alternative for continued weight loss.
12.276 General Surgery
Reduced Port Laparoscopic Sleeve Gastrectomy: One Step Closer to Single Incision Surgery?
Ulises Garza, MD; Angela Echeverria, MD; Amit Kaul, MD; Carlos Galvani, MD
University of Arizona, Tucson, AZ

Introduction: Laparoscopic Sleeve Gastrectomy usually is performed using 5 to 7 ports. Benefits of using fewer ports include less postoperative pain and cosmesis, such as the results of Single Incision Laparoscopic Surgery. Disadvantage of Single Incision Surgery is primarily crossing instruments. We present our technique using three ports avoiding the intersection of instruments, and with a novel technique of internal liver retraction, exposure of the anterior wall of the stomach and the Angle of His.

Methods: Female patient of 37 years old with a 10-year history of morbid obesity. BMI of 38. Three trocars were used, one umbilical of 15 mm for stapling devices, and two more of 5 mm in the left upper quadrant. An internal retractor (modified bulldog clamp is attached to the pars flaccida and a silastic ring with a hook needle), was used for left lower liver retraction. A 40 Fr bougie taylor the gastrectomy. Staplers were used. A leak test is then performed using methylene blue. The gastric remnant is placed on an endobag and removed.

Results: The operative time was 103 minutes and estimated blood loss was minimal. The patient was discharged 48 hours after surgery without perioperative complications. The four months follow up showed excellent cosmetic and weight loss results.

Conclusion: The laparoscopic three port sleeve gastrectomy is safe, feasible, and reproducible, it could be considered one step closer to Single Incision Laparoscopic Surgery, with excellent postoperative results.

12.279 General Surgery
Significantly Longer Operative Times Occurred with Single Site Access (3 Port) versus Three-port Laparoscopic Appendectomy.
Robert McKay MD FRCSC, Ellis Hospital, Schenectady, New York

Introduction: Various studies have compared single site access (SSA–LA) laparoscopic appendectomy with three-port laparoscopic appendectomy (LA), but no consensus has been reached regarding superiority of one technique versus the other. This study compares outcomes of these two procedures.

Materials and Methods: From 1/2010 to 4/2012, data were collected on 99 LA patients and 65 SSA–LA patients. Eighty-three males and 81 females, mean age 35.4 years (range 10 - 86) with CT suspected appendicitis were enrolled. All patients underwent an emergent appendectomy by a single, experienced surgeon at one institution. SSA–LA was performed with an infraumbilical glove access, utilizing three ports; LA, an infraumbilical 10-mm port and two lateral 5-mm ports. ASA, age, gender and operative findings (retrocecal, pathology) were compared. Operative time, length of stay (LOS), and postoperative infection rate were also compared. Descriptive statistics, Chi square, Fisher’s exact test and Student’s t-test were used to analyze data.

Results: No significant differences occurred in age, gender, BMI (overall and over age 15), operative findings, pathology, and LOS between the two groups. Seven postoperative complications occurred, including two deep infections in LA and one in SSA–LA; wound infection or inflammation in one LA and two (SSA–LA). One seroma occurred in one SSA–LA. Operative time was significantly longer in SSA–LA versus LA, 30.6 minutes versus 27.7 minutes, respectively (p=.03).

Conclusion: Most outcomes were similar in SSA–LA and LA; however, operative times were significantly longer in SSA-LA. This may not be clinically significant.

12.282 Urology
Robotic and Laparoscopic Ureterolithotomy; Changing Course in the 21st Century.
Michael McDonald, M.D., Joyce Coulter, RNFA, Florida Hospital Celebration, Celebration, FL and University of Central
**Objectives:** To review the literature and our own patients that has been treated initially with robotic and laparoscopic ureterolithotomy as a first line treatment option for those patients with large (>20mm) proximal ureteral calculi.

**Methods:** A literature review demonstrates great variability for successful stone free rates for calculi >10mm in the proximal ureter. Extracorporeal shock wave lithotripsy, ureteroscopy with laser therapy, followed by laparoscopic ureterolithotomy reveals increased stone free rates, specifically more so for those calculi greater than 20mm. At our institution within the past 6 months, 10 robotic and laparoscopic ureterolithotomies were performed for stones ≥20mm in the proximal ureter. This led to complete resolution of all stones with no intraoperative or postoperative complications.

**Results:** A literature review for treatment of large proximal ureteral calculi >10mm reveals an overall stone free success rate of 73% with ureteroscopy and laser therapy and 67% for extracorporeal shock wave lithotripsy. Adjunctive therapy increases markedly as a proximal ureteral stone size increases. Laparoscopic ureterolithotomy is associated with a stone free rate of 93-100%.

**Conclusions:** Laparoscopic and robotic ureterolithotomy has generally been reserved for failed or second line therapy for large proximal ureteral calculi. However with increased adjunctive therapies required specifically for those large ureteral calculi ≥20mm a change in course of first line therapy for these patients maybe in order.

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**12.284 Gynecology**

**Robotic Cerclage: Assessment of Effectiveness and Obstetric Outcomes**

Ricardo Estape, MD; Maria Elena Fernandez-Mestres, MD, South Miami Gynecologic Oncology Group

The benefits of cerclage have been addressed by the current literature. For patients that have failed vaginal cerclage attempts, an abdominal cerclage has proven effective. We present a case series of robotic cerclage on patients that were candidates for abdominal cerclage.

**Purpose:** To determine the feasibility of robotic cerclage as a safe and effective surgical procedure and to measure long-term obstetrical outcomes.

**Methods:** This is a prospective, non-randomized collection of cases undergoing robotic cerclage. The population consisted of patients who underwent robotic cerclage by one surgeon from January 2007 to August 2011. Outcomes data was collected from follow-up, direct patient contact or referring physician contact.

**Results:** A total of 13 patients were identified as candidates for this study. Mean age is 35 years and average BMI is 27.3. Demographics showed 4 White, 4 African-American, and 5 Hispanic patients. There mean number of prior pregnancies is 2.6. Six patients had a previous history of cerclage placement. Four patients were pregnant at the time of the robotic cerclage ranging from 10 – 16 weeks estimated gestational age. No major complications were identified. Mean operative time was 118 min and mean blood loss was 54.6 ml. Five patients achieved intrauterine pregnancies after cerclage and 4 delivered at full term without complications (by cesarean section). One patient had an intrauterine fetal demise at 24 weeks with subsequent development of chorioamnionitis, requiring hysterotomy.

**Conclusion:** Robotic cerclage is a safe and effective procedure with good obstetrical outcomes.

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**12.285 Gynecology**

**Natural Orifice Translumenal Surgery (NOTES) - An Analysis of Patient Perception Across Cultures**

Garg, A. - BSc (Hons), MSc, FBW; gynaecology plus, Adelaide, South Australia, Australia
Behnia-Willison, F. - MBBS, FRANZCOG, MRANZCOG; Department of Obstetrics, Gynecology and Reproductive Medicine, Flinders Medical

**Background:** One of the latest advancement in minimally invasive surgery is Single Incision Laparoscopic Surgery (SILS). SILS is a minimally invasive surgical approach that utilizes a single incision site for the entry of the surgeon and typical laparoscopic instruments.

SILS provides a host of potential benefits over the traditional multi-port laparoscopic approach, including a reduction in the number of incisions, decreased postoperative pain, and shorter recovery times. The aim of this study was to assess the patient perception of this new technique.
SILS may result in reduced pain, improved cosmesis and reduced length of stay. Natural orifice translumenal endoscopic surgery (NOTES) is the next evolution in minimally invasive surgery. Transvaginal entry offers potential benefits because it gains access to the peritoneal cavity without the need to incise the abdominal wall. Much of the discussion pertaining to NOTES focuses on technical and training issues, with little attention paid to patient opinion. In the present study, the perceptions of female health care workers, Anglo-Saxon patients and Middle-Eastern patients were sought in relation to their views on transvaginal NOTES.

**Methods:** Three studies surveyed women using a 12-point questionnaire. The questionnaire was designed to establish the opinions of women with respect to NOTES surgery versus standard laparoscopic procedures.

**Results:** Most of the women surveyed were neutral or unhappy about the prospect of a NOTES procedure, and this remained constant even when it was stipulated that laparoscopic cholecystectomy and NOTES had equivalent safety and efficacy. Younger nulliparous women were most concerned about the potential negative effect of NOTES on sexual function. A minority was concerned about the cosmetic effect of surgery, although surgical scars were perceived as more important to younger respondents.

**Conclusions:** NOTES surgery offers women a scarless operation with the possibility of less pain and reduced recovery time. It appears, however, that cosmesis plays only a minor role in choosing surgical approaches for women. Further study into patient perceptions is required.

**12.286 Gynecology**

**Sexuality & the Role of Gynaecologists - A Case Report on Vaginal Repair & the Importance of Understanding the Patient Perspective**

Garg, A. - BSc (Hons), MSc; FBW gynaecology plus, Adelaide, South Australia, Australia
Behnia-Willison, F. - MBBS, FRANZCOG, MRANZCOG; Department of Obstetrics, Gynecology and Reproductive Medicine, Flinders Medical Centre and Flinders University, Adelaide, South Australia, Australia

**Introduction:** A 67 year old female was referred by her GP 12 months post-hysterectomy seeking conventional anterior/posterior repair with vaginal stricture and dyspareunia. The patient presented with a constant tightness in her lower pelvis, 7 months of deep dyspareunia resulting in a negative affect on her relationship and an overactive bladder with subsequent Ditropan use + severe side effects. The following analyzes the patient’s perspective on her surgical repair and outcome.

**Methods:** The anatomy of the vagina was restored by reconstructing the anterior and posterior vaginal walls with no tension; however, a gap between the incised sections of the walls remained. To achieve a diameter of the vagina of 4cm, a biological mesh was used to fill in the gaps of the incised anterior/posterior walls. To keep the anterior vaginal mesh separated from the posterior vaginal mesh, a vaginal support device was utilized. This was removed 3 weeks post-operatively.

**Results:** Post-operatively, the patient reported significantly decreased pressure in the vagina. At 3 weeks post-op, examination of the vagina revealed 2 cm of biological mesh anteriorly and posteriorly with good healing and no signs of infection. The patient reported that ‘she felt normal again’ and the dyspareunia had disappeared.

**Conclusion:** The patient felt that others should be educated on this. This type of procedure significantly raises the quality of life of patients undergoing similar symptoms. This case also reminds us that the satisfaction of patients is of the utmost importance and that, regardless of age, normal sexual function is a goal worth pursuing.

**12.288 Gynecology**

**The Use of SILS in the Repair of Endometriosis**

Behnia-Willison, F. - MBBS, FRANZCOG, MRANZCOG; Department of Obstetrics, Gynecology and Reproductive Medicine, Flinders Medical Centre and Flinders University, Adelaide, South Australia, Australia. Maryam, S. - BSc (Hons); FBW gynaecology plus, Adelaide, South Australia, Australia
Garg, A. - BSc (Hons), MSc; FBW gynaecology plus, Adelaide, South Australia, Australia
Combining the benefits of conventional laparoscopic surgery, such as less pain and faster recovery, with improved cosmesis, the present study looks to evaluate the use of SILS in a common gynaecological procedure – the repair of intra-abdominal endometriosis – by analyzing feasibility, safety, cosmesis and outcomes.

**Method:** A prospective case series analysis of 85 patients scheduled to undergo surgery by SILS for endometriosis staged 1 to 4 from August 2010 to May 2012. Intra-operative data such as operative time, estimated blood loss, complications, additional ports and hospital stay were collected. Post-operative pain and cosmetic outcomes were also recorded.

**Results:** Out of 85 women with endometriosis of any stage, SILS endometriosis was performed for 80. SILS was not undertaken for 4 women because of a number of factors, including the lack of required equipment (e.g., bariatric scope, SILS port, reticulating instruments and diathermy leads) or presence of dense adhesions/bowel involvement due to endometriosis of stage 5 or 6. Four women required insertion of additional ports because of surgical difficulties. Four post-operative complications (three wound infections and one pelvic abscess – possibly due to a concomitant intraoperative uterine perforation and subsequent Adept solution inflow) occurred. Mean operation time was 55 min.

**Conclusions:** Our experience shows that SILS is a feasible and safe technique for the treatment of endometriosis, staged 1-4. The patients' satisfaction is high because of improved cosmesis, shortened length of stay and reduced analgesic requirements.

**12.289 Gynecology**

**Mesh Sacrohysteropexy & Vaginal Mesh Repair**

**Bedford, N MBChB, FRANSCOG Obstetrics and Gynecology, Flinders Medical Centre and Flinders University, Adelaide, South Australia, Australia, Behnia-Willison, F. - MBBS, FRANZCOG, MRANZCOG; Department of Obstetrics, Gynecology and Reproductive Medicine, Flinders Medical Centre and Flinders University, Adelaide, South Australia, Australia. Maryam, S. - BSc (Hons); FBW gynaecology plus, Adelaide, South Australia, Australia. Garg, A. - BSc (Hons), MSc; FBW gynaecology plus, Adelaide, South Australia, Australia**

**Introduction and Hypothesis:** Prolapse & incontinence can affect 70% of women in their lifetime. This study evaluates the role of mesh sacrohysteropexy repair and the use of a mesh vaginally on symptomatic prolapse and its subsequent effects on quality of life. This abstract is submitted in combination with another that utilizes the same database but analyses a different surgical procedure.

**Methods:** We analyzed 40 patients with severe vaginal prolapse who declined hysterectomy. All patients underwent intraoperative evaluation and staging of their prolapse. Inclusion into the study required the presence of levator muscle avulsion, poor native tissues and/or previous recurrent vaginal repair. Given that they met one of the above, the patients underwent laparoscopic mesh sacrohysteropexy with a vaginal mesh kit. Success rates were measured according to the pelvic organ prolapse quantification (POP-Q) system, and patients’ symptoms and quality of life were assessed via questionnaire.

**Results:** All 40 patients experienced symptomatic prolapse. The mean operation time with vaginal repair was 90 min, and hysteropexy alone was 45 min (20-120) with an average hospital stay of 3 days. The average blood loss was 100 ml (10-400). At a median 24 months (7 - 54) follow-up, overall objective success rate was 100%. Bladder and prolapse symptoms were significantly improved. There were 2 post-operative infections, 1 post operative urinary retention and 4 mesh erosions.

**Conclusions:** Laparoscopic mesh sacrohysteropexy with vaginal mesh augmentation and concomitant sacro-ligament hitch is an effective and safe procedure with a high long-term success rate.

**12.290 Gynecology**

**A Prospective Study of the Use of a Permanent Mesh Kit in Pelvic Floor Repair**

**Foroughinia, L. - MBBS, FRANZCOG; Department of Obstetrics and Gynecology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran, Behnia-Willison, F. - MBBS, FRANZCOG, MRANZCOG; Obstetrics & Gynaecology, Flinders Medical Centre, Adelaide, South Australia, Australia. Garg, A. - BSc (Hons), MSc; FBW gynaecology plus, Adelaide, South Australia, Australia**
Objective(s): The objective of this observational prospective study is to assess the effectiveness and complications of the permanent mesh kit technique in pelvic floor prolapse repair.

Study Design: Patients with symptomatic prolapse underwent a permanent mesh procedure. Prolapse assessment was performed in accordance with the pelvic organ prolapse quantification (POP-Q) scoring system. A validated self-administered female pelvic floor questionnaire was completed before the procedure and 6 weeks post operatively.

Results: The median age was 65 years (36-90), median parity was 2 (range, 1–6). Mean operation time was 57 minutes, with an average hospital stay of two days. At a median follow-up of 14 months (range 7-25) the objective success rate was 98%. There was one cystotomy, one vaginal hematoma, two postoperative urinary tract infections and 6 mesh erosions.

Conclusion: Permanent mesh kits provide a minimally invasive and effective procedure with a high success rate for pelvic floor repair, however, further study with long term follow up is essential.

12.291 General Surgery
Single-Site Robotic Cholecystectomy: Safe and Efficient
Cari Ogg, MD, FACS; Ben Stivers, MD; Ryan Helmick, MD
The Jewish Hospital, Cincinnati, OH

The advent of robotic surgery has introduced new tools for the surgeon to approach common problems, though as technology advances these modalities require close follow up and monitoring to assess efficacy for patients. Patients were recruited for single site robotic cholecystectomy study based on body mass index, gallbladder disease, etc. Seventeen patients enrolled between January and May of 2012 for single site robotic cholecystectomy without cholangiography. The results are comparable to multi-port robotic cholecystectomy and traditional laparoscopic cholecystectomy. The average patient is a female, average age of 53 years, average BMI of 27, and with cholelithiasis / biliary dyskinesia. Total operative time for docking, console, and non-console operative times were recorded. Total operative time ranged from 41 minutes and 88 minutes, with an average of 60 minutes. Average docking time for the first four cases improved from 10.25 minutes to 8 minutes for the last four cases. Console time averaged 25 minutes and non-console operative time averaged 27 minutes.

There were no major morbidity or mortality; one patient had a minor wound infection managed on an outpatient basis. This series indicates that single site robotic cholecystectomy can be performed safely and efficiently.

12.292 Multispecialty
The Valluceral Line: An Objective Measure of Feasibility of Trans-oral Robotic Resection of Base of Tongue and Valluceral Cancers
Nabila Hai, M.D.*, M. Reza Taheri, M.D. Ph.D.*, Nader Sadeghi, M.D. †‡

*: Department of Radiology, The George Washington University Medical Center, Washington, DC 20037
†: Division of Otolaryngology Head and Neck Surgery, The George Washington University Medical Center, Washington, DC 20006

Background and Purpose: The current TNM staging of base of tongue/vallecular (BOT) cancers excludes assessment of the endophytic or exophytic growth pattern of these lesions. We hypothesize that the degree of the exophytic nature of BOT cancers determines feasibility and success of trans-oral surgical resection. The growth pattern of BOT cancers can be measured by the vallecular line (VL), defined as the distance between the hyoid and the tip of the vallecula.

Methods and Materials: The normal VL was measured by three radiologists on sagittal neck MRI scans of 50 patients. The mean, standard deviation, and kappa values of the VL were calculated. Linear regression analysis and T-test analysis were used to determine the relationship of the VL to age and gender, respectively. A retrospective review of the BOT cancers was performed.
Results: The mean VL was 8.2 mm (6.4 – 10mm). The mean kappa value for interobserver agreement was 0.4. Multivariate linear regression analysis showed no statistically significant change from ages 17-82 (95% CI for regression line slope = -0.003, 0.002). There was no statistically significant difference between genders. The varying exophytic component of similarly-sized BOT cancers using the VL is shown. Post-operative images of patients are provided to demonstrate minimal loss of the patients’ native tongue after trans-oral resection.

Conclusion: The application of the VL is a valuable objective measurement of the exophytic nature of BOT cancers. Predominantly exophytic BOT cancers are deemed more amenable for successful and functional surgical resection by trans-oral robotic approach.

12.293 Gynecology
The Impact of Obesity on Perioperative Outcomes in Robot Assisted Hysterectomy
Karina E Hew, MD. Ryan Macdonald, PhD, Dwight D Im, MD

Objective: To determine the impact of obesity on perioperative outcomes of robot assisted hysterectomy.

Methods: A retrospective study was performed at Mercy Medical Center, Baltimore, Maryland. We performed a chart review of 274 patients who underwent robot assisted hysterectomy between July 2010- January 2012 for benign and malignant indications. Body mass index (BMI) was defined by WHO 2004 criteria. BMI less than 30 was defined as non obese and 30 or greater was defined as obese. Data collected included age, BMI, race, medical comorbidities, previous abdominal surgeries, pathology and uterine weight. Variables for perioperative outcomes included surgical times, intraoperative and post operative complications, estimated blood loss (EBL), length of stay and hospital charges.

Results: 274 patients underwent robot assisted hysterectomy, 142 (51.8%) patients were obese and 132 (48.2%) were non obese. BMI ranged from 16-59 kg/m2. Both groups were similar with respect to demographic data, number of previous abdominal surgeries and type of pathology. No significant differences were found between obese and non obese patients with respect to uterine weight p=.29, EBL p=.41, total surgical length (minutes) 141 vs 133, p=.15, console time (minutes) 39 vs 42, p=.38 and length of stay (days) 1.78 vs 1.64, p=.63. Obesity did not correlate with an increase in severity of post operative complications (11.4% vs 15.2%, p=.37). Total hospital charges for obese vs non obese patients were $10,950.00 vs $9638.00, p= 0.18.

Conclusion: Obesity does not impact the perioperative outcomes in patients undergoing robot assisted hysterectomy.

12.294 Multispecialty
Laparoscopic Surgery Pannus Retraction Techniques for the Morbidly and Super Obese Patient
Stacey A. Scheib, MD; Amanda Yunker, DO; Marta Crispens, MD, Vanderbilt University Medical Center

The morbidly and super obese populations are rising faster than the rates of obesity in this country. The bariatric literature has demonstrated that laparoscopic surgery in the patient population does not demonstrate a higher complication rate compared to open procedure and that laparoscopic surgery shows improved outcomes for the patient, including improved postoperative pulmonary function, decreased incidence and severity of wound complications, shorter hospital stays, and quicker return to routine activities. At baseline this patient population has compromised pulmonary function and hemodynamics parameters, but these are exacerbated with pneumoperitoneum and Trendelenburg positioning. The morbidly and super obese patient would most benefit from laparoscopic surgery and pannus retraction can improve the pulmonary function and hemodynamic parameters enough to allow laparoscopic surgery possible. We present three pannus retraction techniques used at Vanderbilt University Medical Center that can be utilized with laparoscopic surgery.

12.295 Gynecology
Overcoming the Large Uterus: A Retroperitoneal Approach to Robotic Hysterectomy
Mona E. Orady MD, FACOG, OB/GYN and Women’s Health Institute Cleveland Clinic
Minimally invasive methods of hysterectomy are well described; offering patients smaller incisions, decreased blood loss, decreased length of stay, and a faster recovery and return to normal activities. Since the FDA approval of the daVinci surgical system for use in gynecology in April 2005, robotic hysterectomy has helped to extend the ability of surgeons to perform hysterectomy in patients who may not otherwise have been candidates for a minimally invasive approach. The challenge of performing a laparoscopic hysterectomy on the very large uterus is in gaining access to the vascular blood supply to the uterus secondary to difficulty navigating around the distorted enlarged anatomy. The enhanced vision, range of motion, and precision of robotic instruments have assisted in overcoming some of these challenges. This video presentation illustrates the careful and precise dissection made possible using the assistance of the daVinci robot and the retroperitoneal approach to the performance of a massively enlarged distorted uterus. An easy method of gaining entry into the retroperitoneal space in order to control the vascular blood supply, dissect out the critical anatomy thus facilitating the performance of a minimally invasive hysterectomy even on an extremely enlarged uterus will be demonstrated. Importance of careful dissection of the anatomy and maintenance of hemostasis will be discussed.

12.296 General Surgery

Techniques for Closure of the Pancreatic Remnant Following Robotic Distal Pancreatectomy: A Review of 50 Cases.
Paritosh Suman MD1 2; John Rutledge MS1; Anusak Yiengpruksawan MD1

1The Daniel and Gloria Blumenthal Cancer Center, The Valley Hospital. Paramus, NJ, USA
2Department of Surgery, Harlem Hospital Center, New York, NY, USA

Background: A high incidence of pancreatic fistula (PF) and associated complications remain a concern following laparoscopic distal pancreatectomy. Robotic-assisted distal pancreatectomy (RDP) has the potential to reduce the PF rate by allowing for precise vascular dissection and tissue handling. We aim to determine the impact of the technique of pancreatic transection and stump closure on the development of PF and postoperative complications in robotic distal pancreatectomies.

Methods: We performed a retrospective review of 50 consecutive patients who underwent RDP. Perioperative and postoperative data were analyzed for the development of PF and postoperative complications as defined by the International Study Group of Pancreatic Fistula and Clavien classification system respectively.

Results: The pancreas was transected with stapler (n=24) or electrocautery (n=25), and the pancreatic remnant was oversewn in 28 patients. In comparison to the stapler/oversewn group, the incidence of PF did not differ in the stapler only group (p=0.62) or electrocautery only group (p=1). Similarly, there were no significant differences in the incidence of PF in the electrocautery with oversewn group in comparison to the staple with oversewn group (p=1), staple only group (p=1), and electrocautery only group (p=1). However, the incidence of Clavien grade II complications were higher in the electrocautery only group in comparison to the stapler only (p=0.03) group.

Conclusions: The method of transection and management of the pancreatic remnant do not seem to affect the incidence of PF following RDP. Use of electrocautery without oversewing of the pancreatic remnant could lead to an increased incidence of postoperative complications.

12.297 General Surgery

Minimally invasive Mc Keown Oesophagectomy in a Prone Position, A Case Series
Wee HE, Tan CH, Lee J, General Surgery, Khoo teck Puat Hospital, Singapore

Since its introduction in the last decade, minimally invasive esophagectomy (MIE) has been a safe and feasible alternative to the open approach, even surpassing the latter in terms of mortality, morbidity and lymphadenectomy in select clinical trials.

The Ivor Lewis esophagectomy is the more commonly described approach in scientific literature. However the Mc Keown approach can offer several advantages over the Ivor Lewis in the management of more proximal esophageal lesions as well as...
We describe 4 cases of minimally invasive McKeown Esophagectomy done in prone position in Khoo Teck Puat Hospital with good results. Mean operative time was 777 min, blood loss was 1.475 g, ICU stay of 3.5 days, return to feeding was 5.5 days and inpatient hospitalization was 11 days. The average American association of anesthesia score (ASA) of our patients was 2 and included patients with chronic obstructive pulmonary disease and significant smoking history.

In this paper we describe our surgical technique, including an innovation used to slide the gastric tube from the abdominal cavity through the thoracic cavity into the neck to perform the cervical anastomosis.

12.298 General Surgery

Minimally Invasive Video-assisted Thyroidectomy (MIVAT) in Asian Patients: Initial Experience from Singapore

Singaporewalla, Reyaz M.; Majumder, Arunesh; Rao, Anil D., Department of Surgery, Khoo Teck Puat Hospital, Singapore

Introduction: Majority of the English literature on MIVAT is from Europe. Our aim was to determine the outcomes of MIVAT in the Singapore Asian population.

Methods: Data of the first 20 cases of MIVAT (April 2011 - December 2011), operated by a single surgeon, was collected prospectively. The inclusion criteria were symptomatic benign goiters, recurrent cysts and follicular neoplasms with a thyroid lobe volume of less than 35 cc or dominant nodule diameter of less than 35 mm. Patients with previous thyroid surgery or proven malignancy were excluded. The operative details, complications, pain score and cosmetic outcome were recorded. Intra-operative nerve monitor was not used in any case.

Results: All patients underwent a hemithyroidectomy with a mean operative time of 115 minutes (range 95-160 minutes). There was one conversion to conventional technique due to technical difficulty and one case of transient post-operative hoarseness that recovered completely in 3 months. Mean incision was 2.7 cm (2.5 - 3.2 cm). The external laryngeal nerve was visualized in only 6 (30%) patients. Mean post-operative pain score was 1.3 on the first day. Follow-up ranged from 4 - 11 months (mean 7.2). Cosmesis at 3 months was reported to be excellent in 18 patients.

Conclusions: MIVAT has a short learning curve for experienced surgeons and in selected cases can be performed safely with superior cosmesis and low analgesic requirements. Despite excellent visualization, it does not increase the rate of identification of the external laryngeal nerve, unless a nerve monitor is used.

12.300 Gynecology

Before Conception Laparoscopic Cervical Cerclage Using Cerclage Tape

Xia Enlan, M.D. Hysteroscopic Center, Fuxing Hospital, Capital Medical University, Beijing, China

Objective: To evaluate the feasibility and safety of laparoscopic transabdominal cervico-isthmic cerclage (LTCC) before conception using Mersilene tape.

Methods and procedures: From December 2008 to May 2011, LTCC was performed on eight cases who had 31 second trimester miscarriages. Three patients had a history of previous failed vaginal cervical cerclage. LTCC was performed using Mersilene tape at the level of the internal cervical os in the non-pregnancy period.

Results: The laparoscopic approach enabled placement of a suture with no morbidity and rapid patient recovery in eight cases. Three cases had delivered babies. One case got pregnant by IVF-ET but suffered a miscarriage at 10 weeks, resulting in severe adenomyosis.

Conclusions: Laparoscopic cervical cerclage is feasible and effective as well as technically feasible and safe for a surgeon trained in laparoscopic suturing methods.
Following Hysteroscopic Myomectomy
MB Morrissey, MD Keltz, A Greene, M Vega; Division of Reproductive Endocrinology, Continuum Reproductive Center, St. Luke’s Roosevelt Hospital Center, Columbia University College of Physicians and Surgeons.

Objective: To assess the rate of persistent submucosal myomas and intrauterine scarring following hysteroscopic myomectomy. To evaluate the preoperative sonohysterographic findings that will predict persistence of myomas, scarring, and the need for repeat surgery.

Methods: Charts from all hysteroscopic myomectomies performed by a single surgeon between 2003 and 2011 were reviewed for pre-operative sonohysterogram findings, intra-operative findings, and post-operative sonohysterographic findings. Predictors included myoma number, the size and the cavitary percent of the largest fibroid, and the percent surgically resected. These predictors were assessed with post-operative sonohysterography. Statistics included t-test, logistic regression, chi-square and fisher’s exact test performed on Systat 13 and SAS software.

Results: Among the 79/269 cases located with post-operative sonohysterograms, 17/79(21.5%) had persistent sub-mucosal myoma, and 9/79(11.4%) had intrauterine scarring on postoperative sonohysterogram. 11/79 (13.9%) cases required repeat hysteroscopic myomectomy, but none required lysis of adhesions. Myoma number was not a significant predictor. Higher percent of the myoma in the cavity (63.35% versus 44.89%, p<0.01) and smaller myoma size (2.22cm versus 3.31 cm, p<0.01) were significant predictors of a complete resection, a normal post-op sonohysterogram, and avoidance of repeat surgery. On regression analysis, the percent of the myoma resected was the most significant outcome predictor (p<0.001).

Conclusion: Larger myomas with a lower percent found within the uterine cavity are less likely to be completely resected. Percent resection is the most significant predictor of a normal post-op sonohysterogram and the best predictor of the need for repeat surgery; arguing for careful case selection and complete myoma resection.

Laparoscopic Surgery for Cholecystolithiasis in Situs Viscerum Inversus Patient
Andrew Dobradin, MD, PhD, FACS; Stephanie Jugmohan, MS-3; Luis Dabul, MS-3

Winter Park Memorial Hospital, Winter Park, Florida
University of Central Florida College of Medicine
St. Matthew’s University, School of Medicine, Cayman Islands.

The mirror image transposition of visceral organs through the sagittal plane called Situs Viscerum Inversus (SVI) is a matter of consideration for the patients with such condition because conventional diagnostic and surgical procedures will need to be adjusted to their anatomic anomaly. The change in anatomical disposition of organs makes laparoscopic cholecystectomy in SVI patients technically more demanding than in patients with orthotopic anatomy. The advancements in the minimally invasive technique of laparoscopic surgery including single incision (SILS), has been recently shown to be effective and safe for treating gallbladder disease.

We present a 31 year-old female with known SVI with clinical symptoms of acute cholecystolithiasis. In her case, we utilized the principles of single-incision laparoscopic surgery to overcome the challenges posed by conventional laparoscopic cholecystectomy with the added benefit of improved cosmesis. A major challenge was the change of spatial orientation. Surgeon usually takes position on the line defined by the image display, affected organ. This forces him to be on right site of patient during standard operation. In the case of SVI dissection of the gallblader is conducted "towards midline" looking at the “mirror image” of the standard anatomy. This requires adjustment to unusual situation and changes the designation of the hand-task relation.

SILS might eliminate the limitations of a right-handed surgeon to perform this type of surgery in SVI. Crowding of instruments in limited space is an obstacle in standard surgical procedure, when on patients with SVI might provide a safe, feasible and successful surgical option.
**12.303 General Surgery**

**Robotic Cholecystectomy as a Training Model for Surgery Residents**

Eric C. Nelson, MD, Rouzbeh Mostaedi, MD, Andrea H. Gottlieb, PhD cand, Hans-George Muller, MD, PhD, William Smith, BS, Mohamed R. Ali, MD, Tamas J. Vidovszky, MD Department of Surgery, University of California, Davis, Sacramento, CA 95817

**Background:** The rising popularity of robotic surgery highlights the need for effective strategies to integrate this technique into general surgery education. We have favored robotic cholecystectomy (RC) as a model for training residents in robotic surgery and present our five-year experience.

**Methods:** Demographic, anthropomorphic, and operative data were collected on all RC performed by surgical trainees over 66 months. Operative duration of docking the robot (S2) and performing RC (S3), as well as surgical outcomes, were recorded for each case. We used a linear mixed effects model with log transformation to investigate learning curves on three levels at 5% significance: individual trainees, variation among trainees, and overall surgical experience of the program.

**Results:** A total of 38 trainees performed 159 RC, with most trainees performing more than 4 operations. Cholecystectomy was completed robotically in 156 (98.1%) patients, with one case cancelled due to hemodynamic instability, and two cases converted to open due to adhesions. There were no technical complications. The duration of S2 (mean = 6.2±3.6 minutes) decreased considerably with increasing experience (p=0.027). Trainees also demonstrated substantial decrease in duration of S3 (mean = 38.4±15.4 minutes), indicating significant improvement in technique of RC (p=0.008). There was no statistical variability among individual trainees for learning in S3, but significant variability occurred in S2 (p=0.01).

**Conclusion:** RC is an effective model for teaching residents to set up and operate with the robot. Significant and reproducible improvement can be realized in the operative learning curve of RC with an exceedingly low risk of adverse outcomes.

**12.304 Head and Neck Surgery**

**Salvage Robotic Surgery in Recurrence Head and Neck Cancer**

Mohssen Ansarin MD, Stefano Zorzi MD, Maria Angela Massaro PhD, Luca Calabrese MD, Gioacchino Giugliano MD, Michele Proh MD, Fausto Chiesa MD. Division of Head and Neck Surgery, European Institute of Oncology, Milan, Italy

**Objective of the study:** Salvage surgery in Head and Neck recurrences is associated with poor prognosis and high rate of complications. Transoral robotic surgery (TORS) is an emerging treatment option which was introduced in ENT in 2006. Since July 2007, TORS has been using at European Institute of Oncology, Milan, Italy. In this study, we analyze retrospectively the preliminary oncological and functional results in patients with recurrence who underwent salvage robotic assisted surgery.

**Methods and procedures used in the study:** Between October 2007 and December 2011, 30 patients with recurrent Head and Neck cancer underwent TORS as salvage surgery. Selection criteria were: rcT1-2 of oro-hypopharynx, larynx, and oral cavity; adequate exposure for robotic surgery; cN0 or cN1, no contraindications to general anaesthesia and signed consent.

**Results:** Four (13%) patients had post-operative bleeding. Surgical margins were negative in 67% of patients, close in 27% and positive in 6%. Tracheotomy was performed in 21 (70%) patients. Permanent Percutaneous Endoscopic Gastrostomy (PEG) was placed in 3%. The mean length of stay was 6 days. Median follow up was 16 months (2-36): 2-yrs overall survival was 89%, 2-yrs local disease control was achieved in 81% while 2 yrs regional disease control was achieved in 93%.

**Conclusion based on these results:** The preliminary data of our study demonstrates that the robotic surgery is a valid alternative to standard treatment for the recurrences from head and neck malignancies. It seems to be an advantage procedure in terms of functionality and less morbidity.
**12.305 General Surgery**

**Single Site Robotic Cholecystectomy: Initial Experience at University of California, Davis**

Tamas J. Vidovszky, MD, Rouzbeh Mostaedi, MD, Mohamed R. Ali, MD, Department of Surgery, University of California, Davis

**Background:** The single site robotic platform has recently been released to a few select centers in the United States and is currently approved for single site robotic cholecystectomy (SSRC). We present one of the first clinical experiences with this novel technology.

**Methods:** Demographic, anthropomorphic and operative data were prospectively collected on patients who underwent SSRC at our institution. Duration of single incision port placement (T1), robotic setup (T2), robotic operative time (T3), and total operative time (T-total) were recorded.

**Results:** Over the first six weeks after availability of the platform, 17 patients underwent SSRC. The patients were predominantly women (n=15) and had a mean age of 43.2±15.7 years and mean body mass index (BMI) of 31.1±8.8 kg/m². Three cases were converted to multiport laparoscopic cholecystectomy for pericholecystic inflammation (n=1) and BMI >50 kg/m² (n=2). There were no complications, including bile duct injury, during SSRC. T1 (13.4±5.2 minutes) and T2 (6.0±2.3 minutes) were relatively brief for all patients. In the 14 cases completed by SSRC, T3 was 44.7±20.4 minutes and T-total was 90.6±20.6 minutes. These patients had mean blood loss of 6.5±4.1 mL and were discharged on the day of surgery.

**Conclusion:** The data from this early series indicate that SSRC is feasible with minimal risk to the patient. Technically, this approach affords superior triangulation of target anatomy, improved ergonomics, and wider range of motion over standard single port laparoscopic surgery. Based on our initial experience with SSRC, we anticipate that single site robotic surgery will play a significant role in minimally invasive surgery.

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**12.306 Multispecialty**

**A Prior Experience in Microsurgery May Improve Robotic Surgical Training**

Manuela Perez MD a,b, Cyril Perrenot a,c, Nguyen Tran MDc, Gabriela Hossu PhDd, Jacques Felblinger, PhDe

a, Jacques Hubert MD a,c,e

a IADI Laboratory, INSERM- U947, Lorraine University, Allée du Morvan, 54500 Vandoeuvre-les-Nancy, France

b Department of Emergency and General Surgery, Central Hospital, University Hospital of Nancy, Avenue du Marechal de Lattre de Tassigny, 54000 Nancy, France

c School of Surgery, Faculty of Medicine-UHP, Lorraine University, Avenue de la Forêt de Haye, 54511 Vandoeuvre-ies-Nancy, France

d CIC-IT Nancy, INSERM-CIT801- Lorraine University, Avenue de la Forêt de Haye, 54511 Vandoeuvre-les-Nancy, France.

e Department of Urology, Brabois Hospital, University Hospital of Nancy, Allée du Morvan, 54511 Vandoeuvre-les-Nancy, France.

**Introduction:** Robotic surgery has witnessed a huge expansion, which resulted in an increasing need for training and development of new pedagogical strategies. Recently, robotic simulators have proved to be of major interest because they significantly reduce learning costs. Moreover, some authors have suggested that prior experience in micro-surgery could improve robotic surgery training.

To test micro-surgery as an active part of a new pedagogical approach in robotic surgery learning, we proposed a prospective study comparing the surgical performance of micro-surgeons to that of general surgeons on a robotic simulator.

**Material and Methods:** A total of 49 surgeons were enrolled in this study; 11 had significant experience in micro-surgery but no experience in robotic surgery (Micro-Surgery Group: MSG); 38 had neither robotic nor micro-surgery experience (Control Group: CG). Robotic skills and the performance of both groups was evaluated based on five characteristic dV-Trainer® exercises.

**Results:** MSG achieved better results for all exercises (« Overall Score » for MSG = 67. % versus 58. % for CG, p=0.017),
including exercises requiring visual evaluation of force feedback, evaluation of economy of motion, instrument force application and control of the instrument position.

Conclusion: Our results show that experience in micro-surgery could significantly improve surgeons' abilities and their performance in the field of basic gestures and handling of the human machine interface in robotic surgery training. So, as micro-surgery practice is relatively cheap, it could be easily included in basic robotic surgery training thereby helping to accelerate it without adding significant extra cost.

12.307 Urology

Robotic Ureterolithotomy with Flexible Pyeloscopy for Stone Clearance
Jayram Krishnan, DO, MBA; Gordon Brown, DO; Rajen Butani, MD
University of Medicine and Dentistry of New Jersey – Stratford, NJ

Introduction: We report a case of a 58 year-old female who presented with urosepsis secondary to a left 2 cm impacted proximal ureteral stone. She also had a 1 cm lower pole renal stone. In the operating room, stent placement was extremely difficult due to the impacted stone.

Objective: We elected to perform a robotic assisted laparoscopic ureterolithotomy with intraoperative endoscopic retrieval of renal calculi in order to achieve maximum stone clearance.

Methods: Robotic ports were placed similar to a pyeloplasty template. The proximal ureter was carefully isolated and subsequent transverse ureterotomy was performed using robotic Potts scissors. The stone was easily extracted from the ureter and placed in a laparoscopic retrieval bag and the stent replaced into the renal pelvis. A 15.5 Fr flexible cystoscope with a preloaded nitinol basket was placed through the infraumbilical 8mm robotic port and was gently passed into the renal pelvis. The additional 1 cm stone was identified, basketed and removed from the patient. The ureterotomy was closed interrupted 4.0 monocryl sutures ensuring a watertight closure with excellent mucosal opposition. We employed a Heineke-Mikulicz closure to ensure a large proximal ureteral lumen.

Results: Total operative time was 93 minutes. The Jackson-pratt drain was removed on post-operative day #1 and the patient was also discharged home that day. The ureteral stent was removed six weeks after surgery.

Conclusion: Minimally invasive approaches may be used to treat large, impacted ureteral calculi as well as renal calculi in patients where retrograde access may be difficult.

12.308 General Surgery

Single Incision Sleeve Gastrectomy
Carlos Galvani, Angela Echeverria, Ulises Garza, Amit Kaul

Introduction: Laparoscopic Sleeve Gastrectomy it is a technically simple procedure with low morbidity. Single incision surgery has been described as a novel technique to further decrease incisional morbidity and enhance cosmetic benefits. However, the adoption of this new approach is not widespread. Here in, we describe our technique for single incision sleeve gastrectomy.

Methods: Patient is 52-year-old female with 20-year history of morbid obesity with a BMI of 42. She failed several attempts of medically supervised weight loss. The patient underwent Single Incision Sleeve Gastrectomy with Hiatal Hernia repair (anterior cruroplasty) through a 2.5 cm umbilical incision.

Results: The operative time was 90 min, with an estimated blood loss of 10 cc. The patient was discharged 48 hours after surgery, without perioperative complications. Three months follow-up is unremarkable.

Conclusion: Single incision sleeve gastrectomy is a safe alternative for morbid obesity in selected patients. Special instrumentation may be required for adequate retraction of the liver and exposure of the stomach.
**General Surgery**

**Single-Incision Laparoscopic Ladd’s Procedure in an Adult with Symptomatic Congenital Intestinal Malrotation: A Case Report**

John Vassaur, BA, Hannah Vassaur, MS, PA-C, F. Paul Buckley III, MD

**Background and Objective:** The potential of single-incision laparoscopic surgery (SILS) as a less invasive and more cosmetically appealing technique has prompted the expansion of its adoption. SILS has been shown to be a safe and feasible alternative to traditional multiport cholecystectomy, appendectomy, colectomy, and many other laparoscopic procedures. The objective of this study is to provide an initial report of the feasibility of correcting intestinal malrotation via a single-incision laparoscopic trans-umbilical approach.

**Patient and Methods:** A 29-year old woman presented with symptomatic congenital intestinal malrotation. She elected to undergo a Ladd’s procedure using a single-incision laparoscopic approach with a SILS port and standard laparoscopic instruments.

**Results:** The procedure was accomplished without additional ports or conversion to laparotomy, and no intraoperative or postoperative complications were noted. Total operative time was 106 minutes. The patient had minimal postoperative pain and was satisfied with the cosmetic outcome.

**Conclusion:** When performed by a surgeon experienced in the SILS technique, single-incision laparoscopic Ladd’s procedure for symptomatic intestinal malrotation in an adult is feasible and safe with minimal postoperative pain and good cosmetic outcome.

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**General Surgery/ Thoracic**

**A Comparison of Robotic Anatomic Resection with Thoracotomy and VATS Resections Entered Into the STS National Registry**

Alexander S. Farivar, MD, Robert Cerfolio, MD, Ayesha Bryant, MD, Eric Vallieres, MD, Ariel Knight, Ralph Aye, MD, Brian E. Louie, MD; Swedish Medical Center, Seattle, WA and University of Alabama-Birmingham, Birmingham, AL

**Objective:** Robotics is a recent addition to the armamentarium of lung surgery, and its safety has been shown in case series. However, comparative outcome data is limited to single institution studies. Robotic lung surgery outcomes must be evaluated on a national scale because its utilization has increased dramatically despite having unproven benefits relative to thoracotomy and VATS. We sought to elucidate any benefits of robotics compared to national outcomes after thoracotomy and VATS entered into the Society of Thoracic Surgery database.

**Methods:** Data from consecutive robotic anatomic lung resections were collected from 2 institutions (n=205) and matched against all anatomic resections done via thoracotomy (n=5913) or VATS (n=4612) entered into the STS national database in the last available year. All clinical N2, N3, and M1 cases were excluded.

**Results:** There was a significant decrease in 30-day mortality and postoperative blood transfusion after robotic lung resection relative to VATS and thoracotomy. Patients stayed in the hospital 2d less after robotic surgery than VATS, and 4d less than thoracotomy, both statistically significant improvements. Robotic surgery demonstrated significantly less: air leaks, intraoperative blood transfusion, need for bronchoscopy, reintubation, pneumonias, and atrial arrhythmias requiring treatment compared to thoracotomy.

**Conclusions:** Robotics significantly reduces length of stay, 30d mortality, and postoperative blood transfusion compared to VATS and thoracotomy. Although robotics and VATS were similar in key postoperative complications after lung resection, robotic outcomes were significantly better compared to thoracotomy further solidifying the benefits of a minimally invasive lung surgery in select patients.

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**Gynecology**

**Irrelevance of Traditional De-Selectors for Minimally Invasive Hysterectomy**
Objective: To assess the relevance of traditional de-selectors for Minimally Invasive Hysterectomy (MIH), specimen weight, number of prior C-Sections and BMI, in 1125 consecutive cases performed for benign indications.

Methods and Procedure: Retrospective Chart Review of Eleven hundred twenty-five patients having hysterectomy for benign indications in a community hospital and private Gynecologic Surgery practice. All patients requiring hysterectomy for benign indications were scheduled for MIH (e.g., vaginal, total laparoscopic or laparoscopic supra-cervical) and outcomes were analyzed.

Results: Of 1125 consecutive hysterectomies for benign indications scheduled for Minimally Invasive Hysterectomy, 1120 (99.56%) were successfully completed. No relationship was noted between increasing specimen weight, number of prior cesarean sections or patient BMI and failure to complete minimally invasive hysterectomy.

Conclusions: In expert hands traditional de-selectors for Minimally Invasive Hysterectomy, increasing specimen weight, number of C-Sections or BMI, are not related to a higher incidence of failure. Minimally Invasive Hysterectomy should be offered to virtually all women requiring hysterectomy for benign indications.

12.314 General Surgery
Laparoscopic Colorectal Resection for Cancer: 7 Years Experience at Security Forces Hospital, A Single Colorectal Surgeon Experience
MO AL-Asiri MD

Background: Colorectal Cancer is ranking the 1st cancer among Male Saudi population, And the 2nd most common cancer among female Saudi population. Laparoscopic resection for colon cancer has been proven to be as effective as open surgery with well-documented advantages in the short and long-term follow-up.

Methods: Data were collected retrospectively between February 2005 and December 2001. A total of 432 confirmed colorectal cancer, a total of 125 laparoscopic resection for cancer were reviewed. The operative time, conversion rate, type of resection, the time of starting oral feeding, the length of stay, and follow up for 3, 6, 12 months and annually for 7 years.

Results: There was a significant decrease in the anagesia adminstration post operative, and oral feeding start on the 1st post op day. There was a significant decrease in the hospital stay ranging between 2-5 days compared to the open resection 5-10 days. Early return of the bowel movements, and the over all long and short period follow up proved to be as comparable to the open technique.

Conclusion: Laparoscopic colorectal resection is a safe, reliable and has significant advantages compared to the open resection. The learning curve is long and demanding.

12.315 General Surgery
Integration of Diffusion-weighted Magnetic Resonance Imaging in Surgical Planning for Robotic Nerve Sparing Total Mesorectal Excision
Luca F, Valvo M, Pozzi S, Zuccaro M, Biffi R., European Institute of Oncology Via Ripamonti 435; 20141, Milano Italy

Objective of the Study: Urinary and sexual dysfunctions are recognized complications of rectal cancer treatment. They are mainly caused by surgery due to the proximity between the mesorectum and the inferior hypogastric plexus and to the difficulty of identifying small neural structures. The 3D magnified vision and the superior movements of the da Vinci Surgical system allow a better dissection of the small anatomical structures during robotic TME.

Magnetic Resonance (MRI) is used to stage patients with rectal tumors and new techniques like diffusion-weighted magnetic resonance imaging (DW-MRI) should improve the identification and depiction of the hypogastric plexus.
The possible advantages and potential benefits for the preservation of genito-urinary function in routine use of DW-MRI integrated with robotic surgery have been investigated.

Methods and Procedures: Used in the study High-spatial-resolution T2-weighted MRI was performed in all patients candidate to robotic nerve sparing TME. Color overlays of diffusion-weighted images on the same T2-weighted images were used to identify preoperatively the neurovascular bundles of the superior hypogastric plexus and their topographic position in respect to the mesorectal fascia and the tumor.

Results and Conclusions: The detailed information about the pelvic anatomy provided by MRI coupled with the tridimensional magnified vision of the operative field provided by the da Vinci System provided a precise assessment of the topographic position of the neurovascular bundle and predict surgical difficulties in nerve sparing TME. This information is also important for the planning of the surgical strategy in order to obtain a negative circumferential resection margin.

12.316 Colorectal Surgery

Early Experience with Robotic Colorectal Surgery: Results & Lessons Learned
Deirdre Kelleher, MD, Anjali Kumar, MD, MPH, Kate Khalifeh, MD, James FitzGerald, MD

Robotic surgery, an emerging technology, may be well-suited for colorectal procedures. Approximately 1000 cases of robotic colorectal procedures are reported in the literature, with the largest volume in anterior resections and right colectomies. Reported conversion rates (1.1-3.8%) and morbidity (13.4-15.1%) are low. In this study, we review our early experience in robotic colorectal procedures, including case type, patient profile, and complications.

Using prospectively-gathered data from our institution’s colorectal registry, we reviewed every robotic case preformed over a six-month period at our institution. All cases were performed by a single surgeon, trained in the techniques of robotic surgery. Variables investigated included procedure type, patient characteristics (age, gender, BMI), operative details (OR time, blood loss), patient length of stay, and any complications encountered.

Over six months, 14 colorectal procedures were attempted robotically, with only two converted to open. Procedure types included right hemicolectomy, APR, LAR, and rectopexy. Patient population was characterized by broad age-range (28-85 years), 79% females, and high BMIs (mean 32, range 23-56). Total OR time ranged from 3.5-9 hours. Blood loss was minimal in most cases (30-250mL) except one difficult peritoneal dissection (3.5L). Other complications were rare and mild in severity. Most patients (71%) were discharged home in 5 days.

Our early experience suggests that robotic surgery is well-suited and safe for several colorectal procedures. Early analysis of our data identified areas for improvement in our clinical practice and data collection. With rigorous data collection, we hope to better understand how to apply robotic approaches in our field.

12.317 General Surgery

A Prospective Study on Long Term Urinary Dysfunction and Quality of Life After Robotic Total Mesorectal Excision
Valvo M, Luca F, Pozzi S, Cossu ML, Biffi R., European Institute of Oncology Via Ripamonti 435; 20141, Milano Italy

Objective of the Study: Urinary and sexual dysfunctions are recognized complications of rectal cancer surgery because of the proximity between the mesorectum and the inferior hypogastric plexus. Quality of life (QoL) represents an important outcome measure that has to be considered when deciding treatment strategy for rectal cancer. Robotic Total Mesorectal Excision (RTME) allows a better dissection of the small anatomical structures providing superior functional outcomes. The aim of our study was to evaluate potential benefits in routine use of RTME on urinary function and the impact of urinary symptoms on patient’s QoL.

Methods and Procedures: From April 2008 to December 2010 seventy-four patients undergoing fully robotic resection for rectal cancer were prospectively included in the study. Urinary and sexual dysfunctions affecting quality of life (QoL) were assessed by means of standardized, validated questionnaires. Data were collected in a dedicated database and Results were
**Results:** The analyses of the questionnaires showed no difference on patient’s QoL at a follow-up of one year when compared to pre-operative status for both sexes. The scores of incontinence, voiding and filling QoL were unchanged: 2.1 ± 2.7 vs. 2.3 ± 3 (pre-op. vs. one year incontinence QoL) for male; 5.3 ± 6.7 vs. 5.8 ± 8.4 (pre-op. vs. one year incontinence QoL) for female.

**Conclusions:** In our series RTME did not affect long-term urinary function QoL. This is probably due to the good preservation of the inferior hypogastric plexus provided by the da Vinci System.

**12.318 General Surgery**

**Economic Evaluation of Robotic Versus Open Surgery for Rectal Cancer**

Luca F, Valvo M, Cossu ML, Cenderelli E, Tamayo D, Biffi R., European Institute of Oncology, Via Ripamonti 435; 20141, Milano Italy

**Objective of the Study:** The use of the da Vinci surgical system for the treatment of rectal cancer is increasing and oncological, clinical and functional results are encouraging. Nevertheless there is still a lack of data regarding economic evaluation of robotic surgery.

The aim of our study was to compare the cost of robotic versus open surgery in patients affected by rectal cancer.

**Methods and Procedures:** 119 consecutive unselected patients undergoing resection for rectal cancer at the European Institute of Oncology were included in the study. Operating room and hospital stay costs were collected and analyzed.

22 patients receiving fully robotic interventions at the Unit of Integrated Abdominal Surgery were compared with 97 patients treated with open surgery in all the institute Divisions.

**Results:** Mean operative time was 180.31 for open and 200.00 min for robotic surgery. Operating room costs (ORC) were higher for the robotic group (€ 3099.10 vs. € 1754.20). Hospital stay costs (HSC) were lower for robotics (€ 3868 vs. € 5134) with a mean hospital stay of 7.5 vs. 9.6 days (p<0.05). Intensive care admission rates and infective complications were higher for the open group, albeit not statistically significant. Overall hospital costs (ORC+HSC) were comparable € 8831.10 (robotic) vs. € 8690.20 (open).

**Conclusions:** In our study the higher operating costs of robotic surgery were counterbalanced by a reduction of hospital stay. If clinical and functional advantages for the patients are foreseen, cost should not be perceived as a factor limiting the development of robotic surgery.

**12.321 General Surgery**

**Robotic Treatment of Hiatal Hernia and Reflux: Presentation of our Techniques**

Savas Hirides MD,MSc, Konstantinos Konstantinidis MD, PhD, FACS, Perikles Chrysoheris, MD, FACS, Fotis Antonakopoulos, MD, Petros Hirides, MD, Michael Georgiou, MD, Athens Medical Center

**Introduction:** Laparoscopic fundoplication is the operation of choice for most patients requiring surgical treatment of gastroesophageal reflux disease. Robotics may overcome certain limitations of current laparoscopic techniques.

**Study Design:** To present our technique concerning the robotic approach of hiatal hernias and gastroesophageal reflux. Since September 2006, 78 patients have been operated using the da Vinci robotic system (at first the standard and later the Si HD). In 6 cases reduction of huge paraesophageal hernia was performed. Our technique involves opening of the hepatogastric ligament, dissection around the esophagus with recognition and preservation of the anterior and posterior vagal branches. After reduction of the hernia mobilization of the greater curvature of the stomach with division of the short gastric vessels follows. Suturing of the crura is performed with interrupted sutures. The antireflux procedure we usually prefer is short floppy-Nissen fundoplication.
**Results:** There were no conversions to open surgery. In one case, duration of surgery was prolonged because of minor splenic capsular tear which was controlled endoscopically. However none of the patients was transfused. There were no deaths or serious morbidity. In one case of a giant paraesophageal in a 92-year-old patient, a gastroparesis was noticed soon postoperatively and led to reoperation.

**Conclusions:** Robotic treatment of gastroesophageal reflux disease and/or hiatal hernia provides comparable subjective and objective results without significant difference in the cost and duration of the operation.

**12.322 General Surgery**

**Robotic Surgery Facilitates Challenging Pancreatic Procedures: Presentation of our Techniques**

Savas Hirides MD, MSc; Konstantinos Konstantinidis MD, PhD, FACS, Perikles Chrysoheris, MD, FACS, Fotis Antonakopoulos, MD, Petros Hirides, MD, Michael Georggiou, MD; Athens Medical Center

**Introduction:** There is only scarce data on robotic approach of pancreatic lesions. Robotics may offer a more stable platform for dissection and mobilization in distal pancreatectomies, especially when the spleen should be preserved. Whipple pancreateoduodenectomy is a long and challenging procedure which may be facilitated from robotics.

**Study Design:** We present our experience with robotic pancreatic cases including 6 patients that underwent distal pancreatectomy (two with spleen preservation), one case of large pancreatic cyst removal and two cases that underwent a Whipple pancreateoduodenectomy using a totally robotic technique. After a series of successful distal pancreatectomies and hybrid pancreateoduodenectomies, we established a totally robotic technique for Whipple pancreateoduodenectomy. The phases of the robotic Whipple operation were: entrance to the omental bursa, kocherization, division of pancreatic head, lymph node harvesting, ligation of the gastroduodenal artery, dissection at the root of mesentery, division of proximal jejunum, division of CBD, removal of the stent and cholecystectomy. After redocking a pancreaticogastrostomy, a duodenojejunostomy, and a choledochojejunostomy were performed.

**Results:** All distal pancreatectomies had an uneventful recovery. In both Whipple patients the robotic platform proved useful during dissection near the SMV and during construction of the anastomoses.

**Conclusions:** Robotic assistance in pancreatic surgery may overcome the limitations of laparoscopy with potentially lower blood loss and morbidity. Further randomized trials and longer follow up will be necessary to validate these results.

**12.323 Gynecology**

**Postoperative Pain Medication Requirements in Patients Undergoing Robotically Assisted and Standard Laparoscopic Procedures for Newly Diagnosed Endometrial Cancer**

Mario M. Leitao Jr, MD, Ginger J. Gardner, MD, Rudy Suidan, MD, Gabriel Briscoe, MD, Priyal Dholakiya, MD, Kevin Santos, BA, Elizabeth L. Jewell, MD, Nadeem R. Abu-Rustum, MD, Carol L. Brown, MD, Dennis S. Chi, MD, Yukio Sonoda, MD, Douglas A. Levine, MD, Richard R. Barakat, MD, Vivek Malhotra, MD

**Objective:** To compare postoperative pain in patients undergoing robotically-assisted (RBT) versus standard laparoscopic (LSC) procedures for newly diagnosed endometrial cancer.

**Methods:** All preoperative endometrial cancer cases scheduled for RBT and LSC from 5/1/07–6/19/10 were identified. All patients were offered IV patient-controlled analgesia (PCA) postoperatively. The total fentanyl dose was divided over the total number of hours of PCA access to calculate the hourly fentanyl dose (HFD). Intraoperative equivalent fentanyl doses (IEFDs) and pain scores in the PACU were assessed.

**Results:** IV PCA was used in 206 (86%) RBTs and 209 (89%) LSCs. The median IEFD was 425 ucg for LSCs and 500 ucg for RBTs (P=0.03). Median pain scores on PACU arrival were similar in both groups. The median highest pain score was 5 for LSC and 4 for RBT (P=0.007). Linear regression confirmed that the IEFD was not correlated with the highest pain score (R=0.09; P=0.07). Fentanyl was used postoperatively in 196/206 (95%) RBTs and 187/208 (90%) LSCs. The total fentanyl dose was 242.5 ucg (range, 0-2705) and 280 ucg (range, 0-2625), respectively (P<0.001). The median HFD was 16.7 ucg.
demonstrated RBT was independently associated with a lower total fentanyl dose compared to LSC (P=0.02).

**Conclusions:** The use of RBT is independently associated with significantly lower postoperative pain medication requirements compared to standard laparoscopy. Use of intraoperative fentanyl analgesia has no impact on postoperative pain.

12.327 Gynecology

**Robotic Single-site Supracervical Hysterectomy Using VESPA: Presentation of Our Technique**
P. Hirides, MD, S. Hirides, MD,Msc, P. Chrysocheris, MD, M. Georgiou, MD, K.M. Konstantinidis, MD,PhD,FACS; Department of Surgery. Athens Medical Center. Marousi – Greece

**Background:** A novel robotic single-site platform has been successfully used for cholecystectomy and varicocele repair.

**Purpose:** To present the technique of the first worldwide robotic single-site supracervical hysterectomy using the novel VESPA platform.

**Technique:** The single-site port was placed through a 2-cm wide incision along the midline, 3cm over the umbilicus. Coagulation of the suspensory ligaments and the uterine arteries was achieved by means of a conventional laparoscopic bipolar cautery inserted through the single site port. The dissection of vesicouterine pouch, broad ligaments and the transection of the cervix accomplished with the robotic monopolar hook. The uterus was placed in an endobag and brought to surface from the initial port incision. There were no intraoperative and postoperative complications. Patient was discharged within less than 24 hours.

**Conclusions:** Robotic Single-Site hysterectomy is feasible and safe. Absence of a robotic bipolar coagulation is a serious limitation. Induction of pneumoperitoneum using the new port and the docking process require additional training for the bedside assistants.

12.328 Gynecology

**Audit of Outpatient Diagnostic Hysteroscopy for the Management of Abnormal Uterine Bleeding** Megan Johnson, MD; Nash S. Moawad, MD, MS

**Objective:** To determine whether office diagnostic hysteroscopy to evaluate abnormal uterine bleeding decreases the need for hysteroscopy in the operating room.

**Methods and procedures:** The study was approved by the Institutional Review Board of the University of Florida. Patients who underwent an outpatient diagnostic hysteroscopy performed between 1/1/2009 and 3/1/2012 were identified using CPT codes. Records were reviewed and financial data were obtained from the billing departments. Descriptive statistics were used to examine the study group and mathematical equations were used to study the cost-effectiveness of office diagnostic hysteroscopy.

**Results:** 135 charts were available for review. 130 of the procedures were performed for abnormal uterine bleeding. 75 women who underwent diagnostic office hysteroscopy for abnormal bleeding did not need to undergo hysteroscopy in the operating room. This represented savings of $1497 per patient. Of the 55 women who underwent operating room hysteroscopy, there was a 71% correlation between findings on hysteroscopy in the office and in the operating room. Patients assessed for postmenopausal bleeding were more likely to undergo a subsequent hysteroscopy/D&C in the operating room. Ultrasound correlated positively with hysteroscopy in only 40% of the cases.

**Conclusions:** Outpatient hysteroscopy is a useful diagnostic tool that decreases the need for the operating room and for anesthesia, with significant cost savings and faster recovery. Ultrasounds are less predictive of pathology when compared to office diagnostic hysteroscopy.

12.329 Urology

**Natural History of Hydronephrosis After Pediatric Robotic-Assisted Laparoscopic Extravesical Ureteral**
**Purpose:** Robotic-assisted laparoscopic (RAL) surgery in children is an emerging, minimally invasive alternative to open surgery in children, such as for the surgical management of vesicoureteral reflux (VUR) via extravesical (EV) ureteral reimplantation. The natural history of hydronephrosis after robotic reimplantation surgery is unknown. We reviewed our experience to determine the natural history of hydronephrosis after RAL EV ureteral reimplantation surgery.

**Methods:** 50 pediatric patients with primary VUR (38 unilateral and 12 bilateral for a total of 62 refluxing units) underwent RAL ureteral reimplantation surgery via an extravesical technique. An institutional review board-approved retrospective chart review was performed to collect patient demographic and perioperative data.

**Results:** The operative success rate, defined as complete resolution of the VUR on the voiding cystourethrogram (VCUG) at the 4-month mark after surgery, was 95%, which is equivalent to those of historical open surgery series. No perioperative complications were noted. De novo mild to moderate hydronephrosis (HN) was noted in 18 kidney units (29%) at the 1-month mark after surgery, with a median time to resolution of 5 months (range: 3 – 14). No evidence of obstruction was identified, and no intervention was required in any of the cases.

**Conclusion:** RAL EV ureteral reimplantation surgery is associated with high success rates and low complication rates that appear to be equivalent to those of open reimplantation surgery. De novo hydronephrosis can occur after RAL EV ureteral reimplantation surgery; however, the hydronephrosis appears to have a temporary and self-limited natural history without the need for intervention.

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**12.330 Gynecology**

**High-Resolution Mini-Laparoscope and Ultra-Fine Instruments: The New Type III Radical Hysterectomy and Paraaortic Dissection**

*Masaaki Andou, MD, PhD*; Kurashiki Medical Center

**Objective:** The use of ultra-fine instrument and high resolution imagine equipment has been applied to develop an ultra minimally invasive, high radicality hysterectomy combined with paraaortic dissection.

**Methods:** This techniques takes advantage of the latest technology ultra-fine instruments so that only 4 abdominal punctures, two 5mm and two 2mm trocars are necessary to cover the entire pelvic and paraaortic areas. The 5mm high-resolution camera gave an excellent view of the operative field despite the compact size. The 2mm grasper has a 5mm head, which is attached from inside the body after inserting the shaft of the instrument into the 2mm port. These ultra-fine instruments are strong enough to proceed in even complex surgical scenarios.

**Results:** All 5 patients who have undergone this procedure have experienced no complications and have recovered quickly.

**Conclusion:** Technological advances in instrumentation offer the least invasive method possible for a more patient friendly result. Strong ultra-fine instruments and high resolution imaging technology make it possible to perform very radical and traditionally very invasive procedures with reduced sized ports taking us to the next stage in minimally invasive surgery.

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**12.331 Urology**

**Laparoscopic Boari Flap and Ileal Substitution Techniques for Urinary Tract Reconstruction**

*Masaaki Andou, MD PhD*; Kurashiki Medical Center

**Objective:** Radical gynecologic procedures present the possible for the need to deal with large ureteral defects. We have developed techniques to overcome extensive ureteral repair scenarios.

**Materials and methods:** Two cases that required extensive repair will be presented. One case where the large ureteral defects were repaired after radical excision of ureteral endometriosis, and another case of repair after extensive dissection of parametria and bladder for recurrent endometrial cancer.
The ureteral endometriosis case, to extend the bladder, a duct is created using a Boari flap and hitched to the psoas tendon. The ureteral stump is anastomosed to the bladder duct created by this flap. Ileal substitution is used when the defect is very large. A vessel-rich ileal graft is harvested and this is anastomosed to the bladder and the ureter is anastomosed to the oral stump of the graft. This technique also requires repair of the ileum using functional end-to-end anastomosis.

**Results:** All patients recovered well without sequel with no stenosis or leaks.

**Conclusion:** After radical surgery where attention is paid to maintaining surgical clearance, reconstructive techniques are sometimes required. Knowledge of these kinds of techniques allows the expansion of the applicability of minimally invasive surgery in complicated urinary tract reconstruction.

### 12.332 Multispecialty

**Quality of Life Outcomes in Patients Undergoing Transoral Robotic Supraglottic Laryngectomy**

Sanjeet V. Rangarajan, M.D., M.Eng.; Kasim Durmus, M.D.; Ricardo Carrau, M.D., Theoedoros N. Teknos, M.D., Enver Ozer, M.D.

Department of Otolaryngology – Head and Neck Surgery, Wexner Medical Center at The Ohio State University, Columbus, OH USA

**Objective:** To investigate health-related quality of life outcomes in patients undergoing transoral robotic supraglottic laryngectomy.

**Methods and Procedures:** A previously validated survey evaluating functional and attitudinal surgical outcomes, the Head and Neck Cancer Inventory (HNCI), was given to enrolled patients who underwent transoral robotic supraglottic laryngectomy between April 2008 and December 2011. Demographic, clinical, and pathologic data for these patients was also collected. Standard descriptive statistical methods were used to analyze the data.

**Results:** Nine out of 21 patients who underwent robotic supraglottic laryngectomy during the study period were enrolled. The mean length of follow-up was 4.5 months. The median age of these patients was 59. Negative margins were achieved in 100% of patients undergoing resection for squamous cell carcinoma and there were no intraoperative complications. Response rates for the HNCI survey were 100% at three weeks, 77.8% at three months, 44.4% at six months, and 11% at one year. Mean functional speech scores were lower at three weeks and three months post-operatively, but were improved from baseline at six months. Functional outcomes related to eating tended to decrease at three weeks and tended to improve to near baseline levels at six months. Mean overall quality of life scores were improved from baseline at all four post-operative time points.

**Conclusions:** Supraglottic laryngectomy is a well-established and effective modality for treating malignant and benign supraglottic neoplasms. Performing robotic supraglottic laryngectomy provides an acceptable and potentially favorable alternative to traditional open procedures from both disease control and quality of life perspectives.

### 12.333 Gynecology

**Ovarian Hyperstimulation Syndrome: An Iatrogenic Complication**

Amanpreet Kaur Bhullar MBBS, DGO

Department of Gynecology and Obstetrics, Army Hospital Research & Referral, New Delhi, India

**Introduction:** Stimulation of the ovaries is a planned intervention as a part of IVF, but it can result in serious complications. Ovarian hyperstimulation stimulation syndrome (OHSS) is characterized by variable degree of ovarian enlargement and/or ascitis, pleural effusion, oliguria, hemoconcentration, thromboembolism and electrolyte imbalance which may be life threatening. OHSS is classified into mild, moderate, severe and critical.

**Material and Methods:** A retrospective analysis was done of total of 4499 cycles of IVF done over six years. Patient demographics, type of protocol used, symptoms and outcome were analyzed.
Results:

Of the 4499 cycles of IVF, 1349 (30%) were done using the antagonist protocol and 3149 (70%) were done with agonist protocol. Of the 1349 cases done using the antagonist protocol, 12% were classified in to mild, 1.2% to moderate, 0.08% in severe and none in critical. Of the 3149 patients of agonist protocol 20% were classified in mild, 4.2 in moderate, severe in 0.55% and critical in 0.09%.

Conclusions: Our results are better than those reported in literature as fewer cases of mild and moderate OHSS were noted in both the groups. But OHSS remains a serious and life threatening complication of ovarian stimulation. Till date no method is available to prevent this complication, however identification of high-risk patients and use of low dose protocols can have an important role in preventing OHSS.

12.335 General Surgery

Laparoscopic Right Hemicolectomy for a Giant Lipoma Causing Intussusception: A Case Report and Review of Literature

University of Medicine and Dentistry of New Jersey- Kennedy University Hospital, Stratford NJ

Intussusception is a relatively common cause of intestinal obstruction in pediatric patients, but rarely reported in adults. It accounts for only 5% of intestinal obstruction with a pathologic abnormality as the cause in 90% of adult patients. Colonic lipomas are the second most common benign tumor of the colon with an incidence of 0.03-0.83%. Only 25% of patients develop symptoms, including bowel obstruction and intussusception. We present a case of 26-yr old male who presented to the hospital with a abdominal pain and intussusception in the right colon diagnosed by CT scan. He was initially reduced by barium enema and ultimately underwent a laparoscopic right hemicolecotomy. Pathologic findings were consistent with a giant colonic lipoma.

12.336 General Surgery

How Significant is a Neck Scar? The Psychological Impact of Surgical Scar After Open and Bilateral Axillo-breast Approach (BABA) Robotic Thyroidectomy

Do Hoon Koo1,2 MD, Kyu Eun Lee1,3 MD, PhD, Da Myoung Kim4 BS, June Young Choi1,3 MD, Eun Young Kim1,3 MD, Yeokyu Yoon1,3 MD, PhD.

Department of Surgery and Cancer Research Institute, Seoul National University College of Medicine, Seoul, Korea
2Department of Surgery, Seoul National University Boramae Medical Center, Seoul, Korea
3Thyroid Center, Seoul National University Cancer Hospital, Seoul, Korea
4Department of Counseling, Graduate School of Counseling Psychology, The Catholic University of Korea, Seoul, Korea

Background: Bilateral axillo-breast approach (BABA) robotic thyroidectomy (RoT) shows comparable oncologic and surgical outcomes as open thyroidectomy (OT) without neck scar. No literature has addressed the psychological distress associated with the neck scar on the patient who underwent thyroidectomy. This study aimed to evaluate and compare the psychological impact of surgical scar after OT and BABA RoT.

Methods: A total of 129 female patients who underwent thyroidectomy were enrolled. Seventy-eight patients underwent OT and 51 BABA RoT after median follow up of 6.5 months. Surveillance questionnaires listing perceived severity of surgical scar with subjective pain and functional discomfort and psychological stress on 5 point Likert scale was used.

Results: BABA RoT group replied significantly lower perceived degree of severity by surgical scar than OT group (6.1 ± 3.4 vs 9.2 ± 4.9, p<0.001). The stress level at immediate postoperative and at surveillance period was lower in BABA RoT than in OT group (2.6 ± 1.1 vs 3.1 ± 1.2, p=0.032, 1.9 ± 0.9 vs 2.4 ± 1.0, p=0.006). Plastic surgery for neck scar had been performed in 3 patients after OT. Additional 8 patients after OT aggressively planned for future plastic surgery.

Conclusion: BABA RoT group showed less degree of perceived severity of scar and lower stress level than OT group. BABA RoT would be a valuable alternative procedure for thyroidectomy that meets the expectations of patients who are concerned about neck scar.
12.338 Cardiothoracic

Robotic Lobectomy for Early Stage Lung Cancer: Results Following the Learning Curve

Mark Meyer, MD, Barbara Tempesta, CRNP, Eric Strother, CSA, Marc Margolis, MD, Farid Gharagozloo, MD

The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC; The University of Arizona College of Medicine, Tucson, AZ

Background: The learning curve of robotic lobectomy for surgeons who are experienced with video-assisted thoracic surgery has been reported to be approximately 20 cases. We present a large, single institution experience with robotic lobectomy after the learning curve.

Methods: We performed a retrospective review of prospectively accrued patients at our institution who underwent robotic lobectomy. The robotic minimally invasive technique included three, 2cm incisions without the use of CO2. Follow up was conducted postoperatively at 2 weeks, 6, 12, 18, 24 months, and annually thereafter.

Results: Following the learning curve of 20 patients, robotic lobectomy for early stage lung cancer was performed in 177 patients. There were 73 men and 104 women with a mean age of 65 +/-10 years. Mean operative time was 198 +/- 32 minutes. There were 3/177 (1.7%) conversions to thoracotomy for bleeding from the proximal pulmonary artery. Pathologic upstaging was noted in 31/177 (17.5%). 52 complications were seen in 35/177 (20%) patients. Mortality rate was 1/177 (0.5%). Median hospital stay was 4 days. At a median follow-up of 48 months, there were 11/177 (6%) patients who died from their lung cancer for a 4-year survival rate of 94%. 5/177 (3%) patients were diagnosed with distant metastases. There was no local recurrence.

Conclusion: After the initial learning curve, robotic lobectomy is feasible and safe and is associated with low morbidity and mortality and short hospital stay. In patients with early stage lung cancer robotic lobectomy is associated with excellent medium-term survival and low recurrence rate.

12.339 General Surgery/ Thoracic

Robotic Transthoracic First Rib Resection for Paget-Schroetter Disease

Mark Meyer, MD, Srinivasa Tummala, MD, Barbara Tempesta, CRNP, Marc Margolis, MD, Richard Neville, MD, Farid Gharagozloo, MD

The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC; The University of Arizona College of Medicine, Tucson, AZ

Reston Radiology Consultants, Reston, VA; MFA, Division of Vascular Surgery, The George Washington University, Washington, DC

Background: Previously described techniques of first rib resection for PSD have been associated with incomplete rib resection and neurovascular complications. We report a minimally-invasive robotic transthoracic approach for resection of the first rib.

Methods: Over a 24-month period, 16 robotic first rib resections were performed in 10 patients. 6 patients had staged bilateral resections. Pre-operative assessment included physical exam and bilateral venous angiography. On a thoracoscopic platform using 3, 2cm incisions, the robot was used to dissect the first rib. Success was assessed by postoperative venous angiography.

Results: There were 6 men and 4 women. Mean age was 38 years. Operative time was 158 +/- 29 minutes. There were no complications and no mortality. All patients (100%) were found to have a bony tuberosity at the site of the subclavian vein groove that compressed the subclavian vein with resultant thrombosis. Patients with a normal and patent subclavian vein on postoperative venogram were anticoagulated with Warfarin for 3 months. Patients with stenotic or occluded subclavian vein underwent angioplasty and stent placement and received antiplatelet therapy and warfarin anticoagulation for 3 months. On
Conclusion: Robotic transthoracic first rib resection is feasible. This technique allows for a minimally-invasive en bloc resection of the offending portion of the first rib, while minimizing neurovascular complications.

12.340 General Surgery/Thoracic

Robotic Transthoracic Selective Sympathectomy for Upper Extremity Hyperhidrosis
Hans Coveliers, MD, Mark Meyer, MD, Barbara Tempesta, CRNP, Eric Strother, CSA; Marc Margolis, MD, Farid Gharagozloo, MD

VU University Medical Center, Amsterdam, Netherlands; The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC
The University of Arizona College of Medicine, Tucson, AZ

Introduction: The surgical management of hyperhidrosis is controversial. Selective sympathectomy as opposed to ganglionectomy has resulted in the lowest rates of compensatory hyperhidrosis. Robotic surgical systems with their high definition magnified 3D view and increased maneuverability in a confined space facilitate the technique of selective sympathectomy. We present a case series of patients undergoing selective postganglionic thoracic sympathectomy (SPTS) using robotic technology.

Methods: This study is a case series analysis of patients who underwent SPTS over a 56 month time period. The operation was performed on a video-assisted thoracoscopic surgery (VATS) platform. The robot was used for pleural dissection and division of the postganglionic sympathetic fibers. The success of sympathectomy was assessed by intraoperative temperature measurement of the ipsilateral upper extremity and scoring of the symptomatic nature of hyperhidrosis based on the Hyperhidrosis Disease Severity Scale (HDSS).

Results: There were 110 sympathectomies performed in 55 patients. Simultaneous bilateral sympathectomy was performed in all patients. There were 25 men and 30 women. Mean age was 31.4 +/- 10.5 years. There was no conversion to thoracotomy. Complications were minor and were seen in 5/55 (9%) patients. There was no mortality. Median hospital stay was 1 day (range 1-4 days). There were 53/55 (96%) patients who had sustained relief of their hyperhidrosis at a mean follow up of 21 +/-12 months. Compensatory sweating was seen in 4/55 (7.2%) patients.

Conclusion: Robotic thoracoscopic selective sympathectomy is an effective, feasible, and safe procedure with excellent relief of hyperhidrosis and low rates of compensatory sweating and complications.

12.341 Multispecialty

Laparoscopic Cholecystectomy During Abdominoplasty: Case Report
Kazim Duman MD (1), Ahmet Fikret Yucel MD (2), Ahmet Pergel MD (2), Ayse Burce Karantinaci Tuna MD (3)

1 Gumussuyu Military Hospital Department of Surgery, Istanbul, Turkey
2 Department of Surgery, Rize University School of Medicine, Rize, Turkey
3 Clinics of Plastic and Reconstructive Surgery, Tepecik Research and Education Hospital, Izmir, Turkey

Introduction: We aimed to present the phenomenon of laparoscopic cholecystectomy and abdominoplasty which we diagnosed at the same period the abdominal laxation, diastase of rectum and cholelithiasis that we think in the literature the first samples without leaving any trocar entrance mark.

Case Report: A 58 year old female patient has consulted to the polyclinic of plastic surgery due to prolapsus on the abdominal region. The patient diagnosed of diastases muscle rectus. It is advised to the patient the abdominoplasty. General consultation is asked by virtue of complaints of nausea, bloating after meals and dorsalgia. Gall bladder multiple stones, the largest one is 15 mm in-length, were ascertained through abdominal ultrasonography. On request and to provide minimal cosmetic failure to the patient, cholecystectomy and abdominoplasty is performed at the same session. The postoperative
Discussion: Patients with abdominal pathologies that may occur after operations requiring surgery such as abdominoplasty very serious impact on cosmetics. It is not possible to predict, but we have attained through the use of forensic techniques to the detection of some of the possible. As in our case, patients must be examined with additional complaints. Abdominoplasty, even during the open surgical pathologies cannot be treated laparoscopically by creating a good cosmesis.

Concordantly, we strongly suggest taking abdominal USG, which is noninvasive, economic and practical, even if there are no additional complaints, especially before the plastic surgery operations and abdominoplasty, for ascertaining the existent pathologies.

12.342 Thoracic

Robotic Video-Assisted Segmentectomy

Farid Gharagozloo MD, Mark Meyer MD, Marc Margolis MD, Barbara Tempesta CRNP, Eric Strother CSA
Washington Institute of Thoracic And Cardiovascular Surgery and The George Washington University Medical Center, Washington, D.C., The University of Arizona College of Medicine, Tucson, AZ

Background: Anatomic segmentectomy has been advocated as a curative procedure in selected patients with non-small cell lung cancer. Robotic anatomic segmentectomy and complete mediastinal exenteration was performed in patients with impaired lung function and small peripherally located tumors.

Methods: Over 81 months, 55 patients underwent robotic-assisted thoracic segmentectomy for early stage lung cancer at our institution. All patients underwent robotic dissection of the artery, vein, and the bronchus with division of the respective segmental structures with complete mediastinal nodal exenteration. Inclusion criteria was a pre-operative clinical T1 disease in a patient with impaired pulmonary function (FEV1 < 800 or DLCO < 50).

Results: There were 29 men, 26 women, mean age 70 +/- 10 years. All patients underwent R0 resection. Operating room time was 112 +/- 23 minutes. Median hospital length of stay was 6 days. All patients underwent segmentectomy for early stage lung cancer. Histology was squamous cell (12 patients), adenocarcinoma (23), adenosquamous (9), basloid (1), giant cell (2), bronchoalveolar (5), solitary fibrous tumor (1), spindle cell (1), and poorly differentiated carcinoma (1). Complications were seen in 13/55 (24%) of patients. Complications included atrial fibrillation in 6/55 (11%), reintubation in 2/55 (3.5%), c-diff infection in 2/55 (3.5%), pneumonia in 1/55 (2%), urinary tract infection in 1/55 (2%), and pericardial effusion requiring pericardial window in 1/55 (2%) patients. There were no mortalities.

Conclusion: Robotic video-assisted segmentectomy is a safe procedure which may represent a less invasive oncologic procedure to patients with small lung cancers and limited cardiopulmonary reserve.

12.343 General Surgery

Robotic-Assisted Gastroesophageal Valvuloplasty: An Alternative Anti-Reflux Procedure Which More Closely Replicates the Normal Anti-Reflux Barrier

Farid Gharagozloo MD, Mark Meyer MD, Mohammed Kalan, MD, Marc Margolis MD, Barbara Tempesta CRNP, Eric Strother CSA, The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University Medical Center, The University of Arizona College of Medicine, Tucson, AZ

Background: The normal antireflux barrier consists of a valve which is formed by the intussusception of the esophagus into the stomach at the gastroesophageal junction. Creation of a gastroesophageal valve using the surgical robot may enable a more physiologic anti-reflux procedure associated with a lower incidence of dysphagia and gas bloat.

Methods: Over 83 months, 52 patients with gastroesophageal reflux disease underwent robot-assisted gastroesophageal valvuloplasty. All patients underwent pre-operative manometry and 24 hour pH study. The procedure was performed through five laparoscopic ports. The hiatus was closed anteriorly and posteriorly. The esophagus was intussuscepted into the stomach by 2 cm for 270 degrees. Results were assessed by preoperative and postoperative endoscopy, manometry, 24-hour pH study, UGI study, subjective symptom questionnaires, and objective Vissik grading.
Results: There were 35 women and 17 men (Age 55 +/- 17 years). Mean operative time was 174 +/- 52 minutes. 1 patient (2%) had supraventricular tachycardia postoperatively. There was no mortality. Median hospitalization was 2 days. 23 patients (44%) had transient postoperative dysphagia which resolved by the third postoperative week. On median follow up of 24 months, 78% patients had a Viscik I grading and the remaining patients had a Viscick II grading. Additionally, there was no gas bloat or long-term dysphagia and there was no recurrence of hiatal hernia.

Conclusion: Robotic-assisted gastroesophageal valvuloplasty is associated with a low incidence of gas bloat and dysphagia. The results appear to be sustained in a medium term follow up.

12.344 General Surgery/ Thoracic

**Robot-assisted Thoracoscopic Ivor Lewis Esophagogastrectomy For Esophageal Cancer**

Vicky Cole PA, Marc Margolis MD, Mark Meyer MD, Barbara Tempesta CRNP, Eric Strother CSA, Farid Gharagozloo MD, The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC, The University of Arizona College of Medicine, Tucson, AZ

**Background:** Ivor Lewis esophagogastrectomy is associated with significant morbidity. With videoendoscopic approaches, intrathoracic dissection and anastomosis have been challenging. Robot assistance may overcome these difficulties.

**Methods:** Over 94 months, 42 patients underwent robotic-assisted esophagectomy with intrathoracic esophagogastrostomy (31 men, 11 women, age 37-77). Robot-assisted thoracoscopic esophageal dissection, mediastinal nodal dissection and intrathoracic anastomosis were performed via 4 ports in the right chest.

**Results:** 17 patients had induction therapy. There were 31 men, 11 women (age 37-77). Median operative time was 9 hours (range 8 -17 hours). The most common cell type was adenocarcinoma (n=32). There were 8 (19%) conversions to thoracotomy. Median hospitalization was 11 days (range 8-60 days). Complications included: 1 anastomotic leak (2.4%), 6 atrial fibrillation (14%), 2 pulmonary embolism (4.8%), 2 tracheostomies (4.8%), 2 C-Diff colitis (4.8%), 1 gastric staple line dehiscence >30 days (2.4%), 1 ileus (2.4%), 2 respiratory failure (4.8%), 1 CHF (2.4%), 1 reversible renal failure (2.4%), 1 thoracic duct leak (2.4%), and 1 UTI (2.4%). There was one death (2.4%). 6 patients (14%) required dilation of the esophagogastrostomy. Median follow up was 61 months. Follow-up was complete in 40 patients (95%). At follow-up, 5 patients had distant mets (13%), there was no local recurrence, 9 patients died of their cancer (23%), and 5 died of other causes (13%). The overall survival was 26/40 (65%) over a median time period of 61 months.

**Conclusion:** Robot assistance facilitates thoracoscopic esophageal mobilization, intrathoracic anastomosis, and may be better suited to patients with induction chemo-radiation therapy.

12.345 Gynecology

**Robotic Trachelectomy: It’s All about Cervical Manipulation**

Tiffany Jackson, MD and Arnold Advincula, MD, FACOG, FACS, Florida Hospital Celebration Health; Celebration, Florida

**Objective:** To demonstrate the effectiveness of using a cervical manipulator to perform a trachelectomy

**Procedure:** This case is a thirty-six year old with chronic pelvic pain with a history of a supracervical hysterectomy. The patient underwent a robot assisted laparoscopic trachelectomy and lysis of adhesions. This procedure highlights the technique of dilating the cervix with pratt dilators and performing the colpotomy with the assistance of the Advincula arch uterine manipulator and the KOH-efficient colpotomizer system.

**Results:** The estimated blood loss was twenty-five cc and there were no surgical complications. The total operative time was approximately one hour.

**Conclusion:** Manipulation of the cervix is important for safely performing a robot assisted laparoscopic trachelectomy.
Background: The surgical treatment of achalasia remains controversial. Controversies include open vs. videoendoscopic approach, laparoscopic vs. thoracoscopic approach, and the need for an antireflux procedure. Laparoscopic Heller myotomy is often hampered by the need for an additional antireflux procedure. Thoracoscopic Heller myotomy does not require an antireflux procedure, but is associated with greater rates of residual achalasia. Robotics by virtue of 3-D visualization and greater maneuverability may facilitate thoracoscopic Heller myotomy.

Methods: Over 71 months, 26 patients underwent robot-assisted thoracoscopic esophageal myotomy for achalasia without an antireflux procedure. Diagnosis of achalasia was confirmed by radiography, endoscopy, and manometry. Robot-assisted myotomy was accomplished through 4 ports in the left chest. Myotomy was extended approximately 1 cm onto the proximal stomach. Success of the myotomy was determined by intraoperative EGD, postoperative contrast radiography, subjective symptom questionnaire, and Viscik grading.

Results: There were 8 men and 18 women. 14/26 (54%) patients had botulinum toxin injection. Mean operative time was 237 +/- 36 minutes. There were no mucosal injuries or conversion to a thoracotomy. Median hospitalization was 3 days. All patients reported improvement in dysphagia. Symptom relief was graded as: Viscik I = 23 patients, Viscik II = 3 patients. 10/26 patients reported symptoms which mimicked reflux but were not associated with objective reflux. Objectively proven gastroesophageal reflux was seen in 1 patient.

Conclusion: The surgical robot facilitates thoracoscopic Heller myotomy. Heller myotomy without an antireflux procedure may represent an excellent alternative to laparoscopic myotomy with an antireflux procedure.

12.347 General Surgery
Robotic-Assisted Giant Hiatal Hernia Repair
Mohammed Kalan, Mark Meyer, Barbara Tempesta, Marc Margolis, Eric Strother, Farid Gharagozloo,
The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC, The University of Arizona College of Medicine, Tucson, AZ

Background: Conventionally, the surgical approach to these large hernias has been through a thoracotomy or laparotomy or the use of a hiatal patch with laparoscopy. Historically, independent of the approach, the results of surgical repair have been disappointing. By virtue of three-dimensional visualization and greater instrument maneuverability, the robot can allow for a laparoscopic approach for the dissection of the intrathoracic stomach and primary repair of the giant hiatal hernia.

Methods: Over 16 months, 8 patients with an intrathoracic upside down stomach and a giant hiatal hernia underwent a robotic laparoscopic approach. The robot was introduced through 4 trocars. The intra thoracic dissection of the hernia sac and the stomach was performed robotically. The right and left crus were dissected, hiatal closure was performed primarily using 0 Ethibond suture with pledgets of vicryl mesh. A concomitant anti-reflux procedure was performed in all patients. The success of the procedure was assessed by intra-operative endoscopy and post-operative esophagram. Subjective symptoms were assessed by a symptom interview. Objective symptoms were assessed by third party Viscik grading.

Results: There were 2 men, 6 women, mean age 72 years. Mean operative time was 199 +/- 47 min. The procedure was assessed to be successful in all patients based on endoscopy and esophagram. All patients were asymptomatic and were graded as Viscik I at 1 day, 2 weeks, and 10 months. There was no recurrence of hiatal hernia.

Conclusion: Robotics enables a complete dissection of the hernia sac and reduction of the intrathoracic stomach in patients with giant hiatal hernias.

12.348 General Surgery/ Thoracic
Robotic Resection of Bronchogenic Cysts

Barbara Tempesta CRNP, Mark Meyer MD, Marc Margolis MD, Eric Strother CSA, Farid Gharagozloo MD
The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC; The University of Arizona College of Medicine, Tucson, AZ

Background: Bronchogenic cysts are usually adherent to adjacent structures which makes a complete resection by conventional thoracoscopy difficult. The magnified 3-D visualization, greater instrument maneuverability, and more accurate dissection of robotic surgical systems are ideally suited for the minimally invasive thoracoscopic resection of mediastinal bronchogenic cysts.

Methods: Over 58 months, 15 patients underwent robotic resection of a bronchogenic cyst. Patients were placed in the lateral decubitus position with the side of interest up and three non-trocar ports were used.

Results: There were 9 women and 6 men. The robotic approach was from the right pleural space in 10 patients (67%) and from the left in 5 patients (33%). Mean operative time was 177 +/- 39 minutes. There was no conversion to a thoracotomy. There were no complications and no mortality. Mean hospital length of stay was 4 days.

Conclusion: Robotic surgery is highly suited for resection of bronchogenic cysts as it allows for a more accurate thoracoscopic dissection of the cysts away from the surrounding structures.

Robotic Laparoscopic Division of the Median Arcuate Ligament in a Patient with Celiac Artery Compression Syndrome

M. Kalan, Mark Meyer, Marc Margolis, Barbara Tempesta, Eric Strother, Farid Gharagozloo
The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC; The University of Arizona College of Medicine, Tucson, AZ

Background: The median arcuate ligament syndrome is a rare disorder which results from compression of the celiac artery by aberrant diaphragmatic muscular or fibrous bands. The syndrome is characterized by post-prandial abdominal pain, nausea, vomiting and weight loss. Surgical management has included complete division of the median arcuate ligament. This procedure has been performed by laparotomy and laparoscopy. We hypothesized that a robotic laparoscopic approach would be superior by virtue of three-dimensional visualization and greater instrument maneuverability at the point of surgery.

Methods: A 24 year old female with history of post-prandial abdominal pain, nausea, and vomiting underwent robotic laparoscopic division of the median arcuate ligament. The syndrome was diagnosed by pre-operative CT, MRA, and duplex US which demonstrated extrinsic compression at the origin of the celiac artery as well as increased velocity of blood flow in the celiac artery upon expiration. Six laparoscopic trocars were used. The celiac artery and branch vessels were completely skeletonized.

Results: Post-operative course was uncomplicated. A post-operative computed tomographic angiography scan of the abdomen demonstrated no residual stenosis. The patient's symptoms improved dramatically in the immediate post-operative period. Post-prandial abdominal pain resolved immediately after surgery but nausea persisted an additional 4 months.

Conclusion: Robotic surgical systems present a significant technological advance to conventional laparoscopic instruments. This advance is most notable in the management of patients with median arcuate ligament syndrome who require highly accurate instrument movement and three-dimensional visualization in a very confined space.
Background: Mediastinal nodal exenteration presents a challenge for minimally invasive thoracic surgical approaches. The unique capabilities of the robot, specifically three-dimensional visualization and greater maneuverability in a confined space, enables a more complete mediastinal exenteration in patients with extensive nodal disease.

Methods: We present a video of a patient that underwent subcarinal nodal exenteration.

Results: Complete mediastinal nodal excision was accomplished with no morbidity or intraoperative complications.

Conclusion: Robotics allows for a safe and effective minimally invasive approach to mediastinal exenteration.

12.352 Gynecology
Robotic Debulking of Fixed Lymph Nodes: When “Less” Invasive Means MORE
Eugene P. Toy, M.D., Department of Obstetrics & Gynecology, Division of Gynecologic Oncology, University of Rochester

Objective: To demonstrate use of the robotic platform in debulking of large, fixed pelvic and periaortic lymph nodes during initial staging of uterine carcinoma.

Methods: 56 year old female with preoperative workup revealing grade 1-2 endometrioid adenocarcinoma presents for Robotic assisted TLH, BSO, pelvic and periaortic lymph node dissection.

Results: Marked abnormal pelvic and periaortic lymph nodes were seen attached to the iliac vessels near the bifurcation of the external and internal branches and at the bifurcation of the common iliacs near the great vessels.

Conclusions: Robotic minimally invasive surgery for debulking of metastatic lymph nodes in uterine carcinoma utilizes “finger-fracturing” techniques with robotic instrumentation that supplants open laparotomy approaches and minimizes blood loss.

13.354 Gynecology
Robotic Abdominal Trachelectomy for Cervical Carcinoma
Dr. Tak Hong Cheung, MBBS, FRCOG; Dr. So Fan Yim, MBChB, FRCOG, MD
Department of Obstetrics and Gynaecology, Prince of Wales Hospital, The Chinese University of Hong Kong, China

Objective: The incidence rate of cervical carcinoma in young women has been increasing in the last decade. Radical vaginal and abdominal trachelectomy have been performed to patients with small size stage 1B disease to preserve fertility function and successful pregnancy can be achieved. Robotic trachelectomy has also been reported but the surgical techniques vary among different centers. We would like to present our surgical method, step-by-step, using the video.

Method and Procedures: Four-arm robotic system was used. Surgical cart is docked between the legs. Uterine manipulator was used during the procedure. The key surgical steps include bilateral pelvic lymphadenectomy, removal of fatty lymphatic tissue of the uterine vessels, transect the cervical branch and spare the ascending branch of uterine artery, transect medial half of the parametrial tissues, divide the vagina 2 cm below the fornix and divide the isthmus just below the level of uterine artery, apply circlage using non-absorbable suture and join the uterine body and the vagina by continuous suture.

Results: Robotic trachelectomy was performed to three cervical cancer patients diagnosed after cone biopsy. The means age was 39.3. The mean blood loss was 430 ml. The mean console time was 6 hours 17 minutes. The surgical margins were clear and the mean number of lymph node removed was 30. The postoperative recovery was uneventful. There was no evidence of recurrence and no successful pregnancy after a mean follow-up time of 9.3 months.

Conclusions: Robotic trachelectomy is feasible and the long-term results on pregnancy and survival are pending.
Robot-assisted Radical Parametrectomy (Upper Vaginectomy) in Patients with Malignant Gynecological Tumors
Grigor Gortchev, MD, PhD, DSc; Gynecologic Oncology Clinic, Medical University – Pleven, Bulgaria

Objective: To describe the operative technique of the robotic radical parametrectomy and analyze the data in regard to its radicality and perspectiveness, based on the contemporary knowledge of laparoscopic anatomy of the pelvic retroperitoneal space and on our operational material.

Methods: A retrospective study of six patients was performed in the Gynecologic Oncology Clinic, Medical University – Pleven from February 2011 to March 2012. Patients underwent robot-assisted radical parametrectomy after prior operation. The morphological results before and after the radical surgery were analyzed. The postoperative complications, duration of surgery, blood loss, and length of hospital stay were described.

Results: The upper part of the vagina, parametrial tissue and pelvic lymph nodes bilaterally of all six patients were removed. The median age of the operated women was 55.6 years. Invasive squamous carcinoma was found in 4, endometrial cervical adenocarcinoma in one, and clear-cell papillary adenocystic cervical carcinoma - in one patient.

The median number of the lymph nodes removed was 19.16, and only in one woman 2 metastatic lymph nodes were detected. The median duration of surgery was 138.33 min. The median intraoperative blood loss was 183.33 ml. In one patient on the tenth postoperative day, a vesicovaginal fistula was found, which after conservative treatment closed spontaneously. The median length of hospital stay was 31.16 days (range, 20 to 42).

Conclusion: The basic surgical and anatomical principles of robot-assisted radical parametrectomy do not change but the 3D image allows more detailed interpretation of the morphological structures and their interrelations in the pelvis.

Minimally Invasive Resection of a Large Esophageal Duplication Cyst: Prone Position
M. Blair Marshall, MD, Division of Thoracic Surgery, Georgetown University School of Medicine

Objectives: Large intrathoracic lesions may be an indication for the traditional approach. This is associated with increased pain and morbidity. We demonstrate the technical aspects of a minimally invasive resection of a large complex esophageal duplication cyst in the prone position.

Methods: A symptomatic 47 year old woman presented with a symptomatic esophageal duplication cyst measuring 9 by 8 cm spanning between the pulmonary veins. For surgical resection, she was positioned prone to facilitate exposure by keeping the heart out of the way. We used 4 ports: (3) 5mm and (1) 10mm with a 5mm 30 degree camera. A combination of blunt and sharp dissection was used to prevent injury to surrounding structures. Intra-operative endoscopy was used, detaching the light cord from the thoroscope to demonstrate the integrity of the esophageal mucosa.

Results: There were no complications. The chest tube was removed and the patient was discharged to home the morning following the procedure.

Conclusions: Large complex intra-thoracic lesions can be safely resected with a combination of techniques. The exposure obtained with a thorascopic approach may be better than that obtained open. Additional demonstrated techniques are useful to insure the safety of the procedure.

Technical Development and In-Vivo Testing of a Novel Magnetic Needle-Retrieval Device
Alexander C. Small, BA,1 Richard E. Link, MD, PhD,2 Daniel M. Gainsburg, MD,1,3 Michael A. Palese, MD1

1 Department of Urology, Mount Sinai School of Medicine, New York, NY, 2 Scott Department of Urology, Baylor College of
**Objective:** Loss of a needle during laparoscopic surgery is a rare but potentially serious adverse event that can cause prolonged operative time and patient harm. We developed and tested a laparoscopic instrument to ease and expedite the recovery of lost needles in the peritoneal cavity.

**Methods:** We designed a laparoscopic instrument with an externally-controlled articulating magnetic tip to easily sweep the peritoneal cavity for metallic objects (patent pending). The first generation device used a 22 Gauss magnet through a 12mm laparoscopic port and the second generation used a 46 Gauss magnet through a 15mm port. We performed in-vivo testing of these instruments in a porcine model by using the devices to recover blindly-placed 17 to 36mm surgical needles and bulldog clamps from within the peritoneal cavity.

**Results:** The mean needle recovery time was $2.4 \pm 3.5$ minutes, and there was not a significant difference in recovery time between the first and second generation devices (1.8±2.4 vs. 2.7±3.9 minutes, $p=0.741$). Both instruments successfully retrieved needles and clamps of varying size, however the more powerful second generation device attracted smaller needles more effectively.

**Conclusions:** Recovery of lost surgical needles using a simple articulating magnetic device is feasible and may significantly speed recovery time. Although both instruments showed similar performance, the larger second generation device promises to be more clinically useful at finding smaller objects that are more likely to be misplaced.

**12.359 Gynecology**
**Focusing on Transvaginal Laparoscopy- Hybrid NOTES**
**(A Hybrid NOTES Procedure - Transvaginal Laparoscopy)**
Masaaki Andou, MD PhD, Kurashiki Medical Center, Japan

**Introduction:** Endoluminal surgery such as “NOTES” has become one of the innovations in minimally invasive surgery. Technical difficulty in manipulation and lack of instrumentation specifically for this environment led to other practical approaches like Hybrid NOTES, which is combination of transluminal endoscopy and a few abdominal wall ports. We have developed an ultra-minimally invasive transvaginal laparoscopic technique for gynecologic procedures.

**Material & Methods:** For myomectomy and hysterectomy, only 2 small ports (5mm umbilical trocar and 3mm trocar- left lower quadrant) are placed. The procedure is performed the same as traditional laparoscopy. Only one 5mm port is required for our adnexectomy as another manipulation port is placed in the vagina to reduce abdominal trauma as much as possible. In these procedures a 5 or 10 mm distal chip flexible videoendoscope is introduced into the vaginal port and flexed 180 degrees. An image converter is used to produce a similar image to umbilical laparoscopy.

**Results:** All procedures were completed without a conversion to open laparotomy or a standard laparoscopic approach. The cosmetic result was excellent as the required incision for the hysterectomy and myomectomy is only 3mm in addition to the incision in the umbilicus, while the adnexectomy is almost scarless. Post-operative discomfort is reduced as a result of minimal abdominal wall incisions.

**Discussion:** Transvaginal laparoscopy demonstrates the potential of introducing novel approaches and instrumentation into the minimally invasive surgery environment.

**12.360 Gynecology**
**Single Site Laparoscopic Surgery for Malignancy**
Masaaki Andou, MD PhD, Kurashi Medical Center, Japan

**Introduction:** To reduce the impact of surgery in terms of cosmesis and invasiveness, we have introduced single site laparoscopic surgery into gynecologic malignancy.

**Material & Methods:** Our technique does not require any special platforms, only standard laparoscopic instruments.
camera trocar through the natural defect in the rectus fascia. Shorter trocars (100mm and 75mm) are also placed through the same site for manipulation. We developed our technique in three stages. Initially, we began with pelvic lymphadenectomy. As a second step we expanded to paraaortic dissection using a transvaginal telescope for observation of the paraaortic zone. In the third step we combined the first and second stages for total retroperitoneal dissection covering both the paraaortic and pelvic regions. We also developed a modified radical hysterectomy. In all procedures we have maintained the operative field by peritoneal suspension to the abdominal wall creating a natural retraction effect.

**Results:** Operative duration is longer than standard laparoscopy with the quality of dissection being the same. The level of recorded pain is much less and the cosmetic result is also much better than standard laparoscopy.

**Discussion:** As the length of the peritoneal and fascial incision is minimal for oncologic surgery, postoperative recovery for this procedure was very quick with minimal pain. Incision reducing surgery for malignancy allows the possibility of faster administration of adjuvant therapy and additional therapies.

### 12.361 General Surgery

**Application of a Collagen Patch Coated by Fibrinogen and Thrombin in Surgical Practice: Our Experience**

C.de Werra, S.Aloia, R.Di Micco, L.Bracciano, R.Del Giudice, M.Cervotti, D. De Filippo, A.Costanzo

Department of General, Geriatric, Oncologic Surgery and Advanced Technologies, University of Naples Federico II

**Introduction:** Tissue hemostasis is fundamental in a well done surgery. We relate about our experience in application of a collagen patch coated by fibrinogen and thrombin in surgery to prevent bleeding, lymphorrea and leakage.

**Materials & Methods:** We selected 83 patients underwent oncologic, bariatric and laparoscopic surgery in our department from 2010 to 2011. 31 patients underwent axillary-lymphadenectomy (AL) for breast cancer, 20 patients sleeve gastrectomy (SG) and 32 videolaparoscopic cholecistectomy (VLC). Collagen patch coated by fibrinogen and thrombin has been applied in 36 patients of these (case group), while in other 47 patients only traditional techniques of resection and hemostasis were realised (control group). We evaluated hospital stay, entity of drain fluids, incidence of seromas after AL, leakage after SG and presence of bile drained after VLC.

**Results:** 14 case group patients that underwent AL showed a shorter hospital stay than control (1.5 vs 2.5 days), reduced drain fluids (10 vs. 60cc), incidence of seromas (7% vs. 47% cases). A leakage appeared in 6th day p.o. in a control patient. 9 case patients who underwent SG presented shorter hospital stay (5.5 vs 7.5 days), reduced drain fluids (85 vs. 220cc) than controls. 13 case patients who underwent VLC reported a shorter hospital stay (1.5 vs 3 days), reduced drain fluids (75 vs. 50cc). Bile was observed in drains of two control patients.

**Conclusions:** the collagen patch coated by fibrinogen and thrombin seems to be a great resource to obtain a better hemostasis, reduction of postoperative complication and hospital stay.

### 12.362 Multispecialty

**Expediting Recovery of Lost Needles During Laparoscopic Procedures Using a Novel Magnetic Device**

Alexander C. Small, BA; Richard E. Link, MD, PhD; Daniel M. Gainsburg, MD; Michael A. Palese, MD

1 Department of Urology, Mount Sinai School of Medicine, New York, NY, 2 Scott Department of Urology, Baylor College of Medicine, Houston, TX, 3 Department of Anesthesiology, Mount Sinai School of Medicine, New York, NY

**Objective:** Loss of a needle during laparoscopic surgery is a rare event that can significantly prolong operative time especially for less experienced surgeons. We developed a laparoscopic instrument to expedite the recovery of lost needles in the peritoneal cavity.

**Methods:** We performed in-vivo testing of a novel articulating laparoscopic magnet (patent pending) in four non-survival pigs. Two experienced surgeons (MP and RL) and two inexperienced surgeons (AS and DG) were blind to the locations of randomly placed 17-36mm surgical needles within the abdominal cavity, and they conducted 73 needle-retrieval trials with the device and 38 trials using standard visual inspection. Time to recovery was recorded and was capped at 15 minutes.
Results: Overall, the magnetic device was able to retrieve needles significantly faster than the standard approach (mean $2.8\pm3.8$ vs. $7.2\pm5.9$ minutes, $p<0.0001$). Experienced surgeons were significantly more likely to locate the needle in <5 minutes when using the device rather than the standard approach (87% vs. 53%, $p<0.0001$), however this difference did not reach significance for inexperienced surgeons (67% vs. 0%, $p=0.078$). On multivariable analysis, recovery time <5 minutes was independently correlated with device use (OR=3.22, $p<0.001$) when controlling for experience level, needle size (small/medium/large), and needle location (by quadrant).

Conclusions: Recovery of lost surgical needles using a simple articulating magnetic device significantly speeds recovery time for experienced laparoscopic surgeons and may be useful for inexperienced surgeons upon further testing.

12.363 General Surgery
Bilateral Axillo-Breast Approach Robotic Thyroidectomy: Review of 1026 Cases and Outcomes of 886 Patients with Papillary Thyroid Carcinoma Who Underwent Total Thyroidectomy
Eunyoung Kim¹², Kyu Eun Lee¹², June Young Choi¹², Do Hoon Koo³, Kyu Hyung Kim4, Hyungju Kwon¹², Yeo-Kyu Youn¹²

Department of Surgery, Seoul National University College of Medicine¹,
Cancer Research Institute, Seoul National University College of Medicine²,
Department of Surgery, Seoul National University Boramae Medical Center³,
Department of Surgery, Seoul National University Bundang Hospital⁴

We developed the robotic thyroidectomy via bilateral axillo-breast approach (BABA) and have performed more than 1000 operations since 2008. Herein, we have analyzed the surgical outcomes and evaluate the effectiveness and safety of BABA robotic thyroidectomy.

Between February 2008 and February 2012, 1026 patients underwent BABA robotic thyroidectomy. The criteria analyzed were clinicopathologic characteristics, types of operation, operation time, short- and long-term complications, postoperative thyroglobulin level, results after radioiodine ablation therapy, and recurrence of disease in these patients.

Of 1026 patients, 969 had a malignant tumor and 57 had benign thyroid disease. The mean console time was $75\pm26$ minutes for 865 patients with papillary thyroid carcinoma underwent total thyroidectomy with central node dissection. Permanent hypoparathyroidism occurred in 1.5% of patients and permanent vocal cord palsy occurred in 0.3%. Mean hospital stay after operation was 3.3±0.7 days (range 2-10 days). Of 886 patients with papillary thyroid carcinoma underwent total thyroidectomy, postoperative radioiodine ablation was performed on 493 patients (55.6%). Their median stimulated thyroglobulin level was 0.4 ng/mL and 65.2% had stimulated thyroglobulin levels <1.0 ng/mL on the first radioiodine ablation therapy. The median serum thyroglobulin level of the ablation-negative patients was <0.1 ng/mL and 96.2% had thyroglobulin levels below 1.0 ng/mL on postoperative 3 months. There were no cases of recurrent thyroid carcinoma.

BABA robotic thyroidectomy is a safe and effective method that gives good surgical completeness and a low rate of postoperative complications and recurrence with an excellent cosmetic result.

12.364 General Surgery
Feasibility of Laparoscopy-Guided Intracorporeal Circular Stapled Anastomosis in Laparoscopy-Assisted Distal or Total Gastrectomy
Kuniaki Aridome, Tsutomu Kozono¹, Kenji Babe¹, Kouichirou Masumitsu¹, Saburou Nakashima¹, Masaki Kitazono¹, Toyokuni Suenaga¹, Shinichiro Morii², Shoji Natsugoe ²

¹Department of Surgery, Kagoshima Nanpuh Hospital
²Department of Digestive Surgery and Breast and Thyroid Surgery, Kagoshima University Graduate School of Medicine
Objective: We report techniques for intracorporeal circular stapled anastomosis in Laparoscopy-Assisted Distal Gastrectomy and in Laparoscopy-Assisted Total Gastrectomy.

Methods and Procedures:

[Intracorporeal Gastroduodenostomy] One hundred twelve patients underwent Laparoscopy-Assisted Distal Gastrectomy and intracorporeal Billroth-I anastomosis using circular stapler. After transection of the duodenum 1cm below pylorus ring, a purse-string suture along the cut end of the duodenum was performed using 3-0 monofilament thread. An anvil head then was inserted into the duodenum, and the thread was tied. Laparoscopy-guided gastroduodenostomy was performed using a circular stapler which inserted via a surgical glove attached to a wound retractor at the incision point at the upper abdomen.

[Intracorporeal Esophagojejunostomy] Twenty five patients with early gastric cancer underwent Laparoscopy-Assisted Total Gastrectomy with nodal dissection and intracorporeal Roux-en-Y reconstruction with esophagojejunostomy using circular stapler. Following total gastrectomy, the jejunum was cut approximately 30 cm distal to the Treitz ligament. After the confirmation of esophageal margin without cancer, OrVilTM device was passed to the distal esophagus. Then, OrVilTM-assisted esophagojejunostomy was performed using hemi-double stapling method by laparoscopy-guided procedure.

Results: Intracorporeal gastroduodenostomy and esophagojejunostomy were performed successfully for all the patients. Postoperative anastomosis-related complications occurred as follows; one anastomotic bleeding and two temporary anastomotic stenosis in gastroduodenostomy, and one anastomotic leakage and two temporary anastomotic stenosis in esophagojejunostomy. There were no mortalities in this series.

Conclusions: Laparoscopy-guided intracorporeal circular stapled anastomosis for gastroduodenostomy and esophagojejunostomy may be safe, simple and feasible for early gastric cancer patients who undergo Laparoscopy-Assisted Distal or Total Gastrectomy.

12.365 General Surgery

Single Incision Laparoscopic TAPP Using Only Conventional Instruments- A Continuing Report
Rajeev Sinha, Prof Dr Med; MLB Medical College, Jhansi, UP, India

Objective: Single incision laparoscopic surgery, especially when done through the umbilicus should be the perfect cosmetic answer as far as the absence of any visible scar is concerned. Is it difficult to learn, and is intracorporeal suturing of peritoneal flap possible?

Material and Methods: All the 107 patients were operated by the same surgeon through a transversely placed umbilical incision in the lower half of the umbilicus. Three conventional ports, 10, 5 and 5 mm were introduced through the same skin incision but separate transfacial punctures. The instruments included 10mm, 30 degree rigid telescope and rigid instruments as in standard laparoscopic cholecystectomy (SLC). Patients with irreducible hernia and obstructed hernia were included, while those with strangulated hernia were excluded.

Results: All the patients were male with an average age of 38.6 years. 6 patients had bilateral hernia and three each had irreducible and obstructed hernia. The mean operating time was 42.8 mins for unilateral hernias when tackers were used and 51.7 mins in those where intracorporeal suturing was done. The operating time for bilateral hernias was 71.7 minutes. There was minimal port site discharge, without infection, in 3 patients. There were no other complications. There were no conversions and no recurrences up to 19 months follow-up.

Conclusion: Trans umbilical single skin incision laparoscopic TAPP for groin hernias, performed solely with conventional instruments is feasible, easy to learn and probably the future of laparoscopic inguinal hernia repair.

12.366 Gynecology

Collaborative Dual Specialty Dual Robotic Console Platform Surgery in a Total Robotic Hysterectomy Following Renal Transplantation
Michael T. Breen MD, Leah Miller MD, Emily Goulet MD, University of Texas Southwestern Austin Ob Gyn
**Objective:** To demonstrate the utility and advantages of simultaneous dual specialty surgeons on a dual platform robotic console in a robotic assisted hysterectomy following renal transplantation with extensive pelvic and ureteral adhesions, previously not described.

**Case Report:** Presented is a patient post cadaveric renal transplant of 23 years presenting with recurrent high grade cervical intraepithelial neoplasia despite repeat conizations. This patient desired definitive surgical therapy while minimizing risks to her kidney and ureter. Intraoperative simultaneous collaboration and surgery using dual console technology between gynecologist and a urologist familiar with transplant surgery minimized risk to vasculature of the cadaveric kidney and ureter. The case was technically difficult due to mass effect from the kidney in the left lower pelvis, as well as extensive intraabdominal and ureteral adhesions. The ureter was adhesed to the lower uterus and buried in vesiculoperitoneal adhesions. This collaborative simultaneous surgery allowed meticulous adhesiolysis and ureterolysis facilitating the case and reducing risk of injury or complications.

**Discussion:** Traditional modalities of hysterectomy post transplant have documented higher complication rates. This case presentation highlights a procedure integrating two specialties simultaneously operating to minimize risk using robotic dual console technology. Conclusion: Dual console Dual specialty surgery has unique characteristics that minimize risks in hysterectomy following renal transplantation. Avoidance of manipulation of kidney, safe identification of ureteral course, minimal bleeding, fine dissection under magnification are significant improvements over traditional open and laparoscopic techniques. Dual specialty surgeons operating simultaneously due to the dual console afforded this patient a safe surgical environment with an excellent outcome.

**12.367 Gynecology**

**Fertility After Myomectomy: A Retrospective Cohort Study**

Marisa Dahlman MD MPH1; Matthew Palmer DO1; Suzanne Havstad MA2; Ganesa Wegienka PhD2; David Eisenstein MD1; Madhu Bagaria MD1; Madhurima Keerthy MD1; Roopina Sangha MD MPH1

Departments of Women’s Health1 and Public Health Sciences2, Henry Ford Hospital, Detroit, Michigan.

**Objective:** Myomectomy is the recommended treatment for symptomatic leiomyomata among women desiring future fertility. A minimally invasive approach is preferable, producing shorter hospitalization and recovery times. A comparative analysis of fertility rates by procedural characteristics of myomectomy has not been previously thoroughly detailed.

**Design:** Retrospective cohort study

**Setting:** Henry Ford Hospital

**Participants:** All patients undergoing myomectomy from 1/05-5/09.

**Interventions:** Myomectomy (any approach)

**Measurements & Main Results:** The medical charts of all patients at least 12 months post-myomectomy were reviewed for details about the index surgery (approach, number of leiomyomata removed, cavity entry, largest diameter leiomyoma). Specific mention of desire for pregnancy and the date of last patient contact within the system were recorded. Survival analysis techniques were employed to account for variable follow-up and loss to follow-up (censored) for the outcome of time to pregnancy. Of the 88 women who attempted pregnancy post-surgery, 38 (47.9%) had clinical pregnancies. There were no statistically significant differences in pregnancy rates based on procedure type, number of leiomyomata, number of uterine incisions or cavity entry (all p>0.3). There were four preterm deliveries (<37 weeks, 3 open and 1 robotic) and a single pregnancy complication (uterine rupture). Use of assisted reproductive technology (23/88, 26.1%) was not associated with a significantly different rate of clinical pregnancy or live birth.

**Conclusion:** During the study period, minimally invasive myomectomy became the standard at our institution. Despite a radical change in surgical approach associated with decreased hospitalization and recovery times, fertility outcomes were not negatively impacted and complication rates were unchanged.
Intracorporeal Knotting and Suturing in LESS – Feasible?
Rajeev Sinha, Prof Dr Med; MLB Medical College, Jhansi, UP, India

Objective: To assess the feasibility of intracorporeal suturing and knotting in laparoendoscopic single site surgery (LESS). This would cut on the cost of tackers in LESS TAPP and conversion to standard multiport laparoscopic surgery in patients requiring intracorporeal suturing.

Methods: Intracorporeal knotting (ICK) was attempted in all patients undergoing LESS appendectomy, in patients undergoing LESS cholecystectomy where the cystic duct was wide and in patients of LESS ovarian cystectomy. Suturing of flaps was done in patients undergoing LESS transabdominal preperitoneal repair for inguinal hernia (TAPP).

Results: ICK with surgical knot was performed in 134 out of 144 patients undergoing LESS appendectomy, in 18 patients out of 616 patients undergoing LESS cholecystectomy. 14 patients had wide cystic duct and in the rest there was injury to the cystic duct. ICK was also carried out in 28 patients of LESS ovarian cystectomy. IC suturing was carried out in 81/107 patients of LESS TAPP. The average time for suturing varied from 5-15 minutes and gradually reduced with gaining of proficiency. ICK took 3-7 minutes.

Conclusion: ICK and suturing and knotting are easily learnt and performed in all kinds of LESS.

Robotic Pulmonary Decortication
Marc Margolis MD, Mark Meyer MD, Barbara Tempesta CRNP, Eric Strother CSA, Farid Gharagozloo MD
The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC, The University of Arizona College of Medicine, Tucson, AZ

Background: Decortication of dense noninflammatory adhesions is performed in patients with distant pulmonary infections and prior thoracic surgery. Open decortication is cumbersome and can result in multiple pulmonary parenchymal injuries. Although video-assisted thoracoscopic surgery (VATS) can be used, there is limited success especially in patients with dense adhesions, resulting in a high conversion rate. The unique capabilities of the robot, specifically three-dimensional visualization, fine instrument dissection, and tremor control enable decortication of the lung in the setting of fibrothorax.

Methods: A 70 year old man with a distant history of empyema and fibrothorax underwent robotic transthoracic decortication. The procedure was performed with 3, 2cm incisions. Robotic hook cautery in each robotic arm was used for pulmonary decortication. Success was determined by complete inflation of the lung intraoperatively and postoperative CXR.

Results: Operative time was 90 minutes. There were no complications and no mortality. There was no air leak and hospital stay was 3 days. The chest tube was removed prior to discharge from the hospital.

Conclusion: Robotics allows for a minimally invasive procedure with a 3D magnified view, fine dissection, and tremor control all of which minimizes pulmonary parenchymal injury. Greater experience is necessary to fully assess the role of robotics in pulmonary decortication.

Totally Intracorporeal Anastomotic Technique of LADG: BI, BII and Roux-en-Y Gastrojejunostomy for Gastric Cancer
Yoon Young Choi, MD; Ji Young An, MD, Yonsei University College of Medicine

Objective of the study: Laparoscopic gastrectomy has become more popular especially in Korea, and Japan for not far advanced gastric cancer. As laparoscopic instruments have improved, the method of anastomosis in laparoscopic gastrectomy has been changed. The object of this study is whether doing totally intracorporeal gastroduodenostomy, loop gastrojejunostomy and Roux-en-Y gastrojejunostomy would be feasible.
Methods and procedures used in the study: We performed 130 cases of gastroduodenostomy, 42 cases of gastrojejunostomy, and 57 cases of Roux-en-Y gastrojejunostomy with totally intracorporeal methods after laparoscopic distal gastrectomy for gastric cancer.

Results: If the remnant stomach is long enough to anastomosis with duodenum, and there is no tension between them, the gastroduodenostomy was performed after laparoscopic distal gastrectomy. In other cases, loop gastrojejunostomy or Roux-en-Y gastrojejunostomy were performed. All procedures were performed without open conversion, and within 10 to 15 minutes. Also, there was no technical failure of anastomosis intraoperatively.

Conclusions based on these results: Totally intracorporeal anastomosis methods are technically possible and feasible, because these methods are easy and fast.

12.371 General Surgery/ Thoracic
Robotics Enables a Single Minimally Invasive Approach to the Right Sided Epiphrenic Diverticulum
Vicky Cole PA, Mark Meyer MD, Barbara Tempesta CRNP, Marc Margolis MD, Eric Strother CSA, Farid Gharagozloo MD, The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC, The University of Arizona College of Medicine, Tucson, AZ

Background: Although minimally invasive approaches have been used with left sided epiphrenic diverticulum, the treatment of a right sided diverticulum has required a thoracotomy. The unique capabilities of the robot, specifically three dimensional visualization and greater maneuverability in a confined space, enables a minimally invasive right sided approach to patients with a right esophageal diverticulum and single stage diverticulectomy and esophageal myotomy.

Methods: Over 84 months, 4 patients underwent robotic diverticulectomy and esophageal myotomy through the right chest. Success of the myotomy was judged by intra-operative EGD and post-operative esophagram. Patients were scored symptomatically both subjectively by interview and objectively by Visick classification of pre-operative and post-operative symptoms. Patients underwent rigorous follow up for recurrence of symptoms.

Results: There were 3 women and 1 man. Mean age was 65.5 years. Mean operative time was 288 +/- 120 minutes. There was no gastroesophageal reflux and all patients were judged to be Visick 1 in the post-operative period. There was complete relief of dysphagia. There were no esophageal perforations. There was no recurrence of symptoms at a mean follow up of 12 months. Pre-operatively all patients had esophagitis. This esophagitis persisted for a mean of 6 months in 2 patients with complete resolution. Post-operatively, one patient was reintubated for respiratory failure and was diagnosed with pneumonia, and one patient underwent a laparoscopic cholecystectomy.

Conclusion: Robotics obviates the need for an open surgical approach in this subset of patients with right-sided epiphrenic diverticulum and is associated with excellent results.

12.372 General Surgery
Laparoscopic Vertical Gastric Plication as an Alternative Treatment for Morbid Obesity – Initial Experience
C. Duta, C. Lazar, Daniela Barjica, A. Dobrescu, F. Lazar

Background: In 2010 we started to perform this new technique as an alternative bariatric procedure to sleeve gastrectomy. In this study we present our first experience with vertical gastric plication.

Methods: We perform 25 laparoscopic gastric plication in patients with a mean age of 41.4 years (25 to 54) and a mean BMI of 43.7 kg/m2 (38 to 47). We used five-port approach (three 10 mm, two 5 mm) in the same position as for sleeve gastrectomy. The first part of the procedure was similar to sleeve gastrectomy. After dissecting greater curvature of the stomach we invaginated it using non-absorbable running suture. We perform plication in two layers starting from the fundus to 5 cm of the oesophagus. We used a 36-Fr bougie for calibration.
Results: Mean operative time was 60 min (40 to 90 min) and mean hospital stay was 48 h (24 to 72). Patients returned to their regular activities at an average of 7 days following surgery. No intra-operative complications occurred. Excess weight loss (EWL) after 1 month was 25% (20% to 30%) and after 3 months was 35% (28% to 47%).

Conclusions: This new procedure has the same result of weight loss as others with minimal risk of complication and very low cost. The lack of gastric resection or intestinal bypass and the lack of the use of prosthetic materials are the major advantages of the technique that influenced the patients’ decisions. Longer follow-up and prospective comparative trials are needed.

12.373 General Surgery
Motility Disorders after Laparoscopic Roux-en-Y Gastric Bypass for Morbid Obesity Presenting with Intussusception
Lucas Pineda, MD, Salil Rajayer, MD, Mohammed Sarhan, MD and Leaque Ahmed MD, Department of Surgery, Harlem Hospital Center, New York, NY

In patients without previous intrabdominal surgeries, the development of intussusception requires the presence of a lead-point lesion in the bowel and it usually occurs in an antegrade fashion: i.e: the intussusceptum invaginates in the direction of the peristaltic wave into a distal intussuscepiens. Such cases are usually attributed to the presence of a tumor, polyp, adhesions from suture lines or from intestinal tubes. In morbidly obese patients undergoing weight loss surgery such as Laparoscopic Roux-en-Y Gastric Bypass (LRYGB), the mechanism leading to intussusception has been attributed to the jeunojejunostomy as a lead-point in cases where the intussusception took place at this site. However, we found instances where the intussusception occurred at other sites and no lead point could be identified. Moreover, Retrograde Intussusception (RI) is much more common in this subset of patients, where a distal portion of small bowel invaginates into a proximal part. Multiple theories were suggested to explain this motility disorders: Transection of the proximal jejunum disconnects the alimentary limb from the natural peristaltic pattern originating at the duodenum and allows for ectopic pacemakers to arise creating waves that travel both in an antegrade and retrograde fashion. Different theories, like rapid weight loss leading to thinning of the mesentery, and the jeunojejunostomy suture line acting as a lead-point, have also been proposed. We are presenting six cases of intussusception after laparoscopic Roux-en-Y Gastric Bypass, two of which were in retrograde fashion, and four in antegrade fashion. The intussusception occurred at the jeunojejunostomy in two cases, and small bowel resection was required in one case. No intussusception was found upon exploration despite the radiological findings in two cases.

12.375 General Surgery
Robotic-assisted Laparoscopic Single Incision Right Hemicolectomy for Colon Cancer: A Case Review
Eric Rideman D.O., Zachary Ichter D.O., Marc Lindner, Siddharth Bhimani and Roy Sandau D.O.

Polyps arising from intestinal mucosa are classified as either pedunculated (with a stalk) or sessile (flat). Further classification is based on histologic appearance into tubular adenoma, villous adenoma or tubulovillous adenoma. 65-80% of all polyps removed are benign tubular adenomas. 5-10% of polyps are villous adenomas which are more commonly sessile. These sessile lesions are generally less amendable to colonoscopic polypectomy and segmental colectomy for complete removal is often necessary. (1) We present a case of a 47 year old male who underwent a robotic assisted single incision laparoscopic right hemicolecctomy for an unresectable colonoscopic polyp.

12.376 Multispecialty
First Clinical Use of Cordless Laparoscopic Ultrasonic Device
Alexandre Pompeo M.D.1, David Sehrt B.S.1, Garrett Pohlman M.D.2, Wilson R Molina M.D.1,2, Fernando J Kim M.D.1,2

Objective: On April 25th 2012, the first laparoscopic cordless ultrasonic device was used in a clinical setting. We describe
Methods: The cordless device is assembled with a reusable battery and generator on a base hand piece. The device has a minimum and maximum power setting controlled by a single trigger for coagulation and cutting. A laparoscopic radical nephrectomy was performed in a 56 years old man with a 7 cm right renal mass. A laparoscopic pelvic lymphadenectomy was performed in a 51 years old man with high-risk prostate cancer. Surgical team satisfaction, operative time, number of activations, and times the laparoscope was removed due to plume was collected.

Results: The surgical technician successfully assembled the device at the beginning of the cases with verbal instructions from the surgeon. Operative time for nephrectomy was 77 minutes with a total of 143 activations (minimum=86 and maximum=57). The operative time for the pelvic lymphadenectomy was 27 minutes with a total of 38 activations (minimum=27 and maximum =11). One battery was used in each case. The laparoscope was removed twice during the nephrectomy and once during the lymphadenectomy. A surgical staff satisfaction survey revealed: easier and faster assembly, more space in the OR, ergonomic handle, and comparable cutting/coagulation, weight, and plume generation with other devices.

Conclusion: The first clinical application of the pioneering cordless dissector was successfully performed resulting in surgeon’s perception of comparable results with other devices with easier and safer use and faster assembly.

12.378 Multispecialty
Comparison Between Da Vinci Skill Simulatorä and dV-Trainerä as an Assessment Tool
Manuela PEREZ MD a,b, Cyril PERRENOT a,c, Nguyen TRAN MDc, Jacques HUBERT MD, a,c,d

Introduction: Recently, robotic simulators have proved to be good assessment and training tools for robotic surgery. The Da Vinci Skill Simulatorä (DVSS) is based on dV-Trainerä (DVT) software included in the Da Vinci SIä console. The purpose of the study was to compare an assessment on those two simulators.

Material and Methods: Thirty-three surgeons were enrolled in this prospective study conducted in April 2012. All surgeons performed, on both simulators, in a random order, five exercises representative of robotic specific skills. Analysis was extracted from questionnaire of face validity and from automatic generated data from both simulators. Concurrent validity was assessed using Pearson’s coefficient.

Results: 25 men and 14 women, aged from 40.4 +/- 11.1 years, 25 without experience in robotic, 14 with previous experience in robotic surgery of 5.7 +/- 11.5 cases, were enrolled. Face validity of DVSS and DVT were considered very high by most of the surgeons (respectively 100% and 89.7%). Major differences between DVSS and DVT were Endowristä manipulation and 3D vision.

Mean score on DVSS was 89.9 +/-5.8 % and 86.8 +/- 5.7% with DVT. Difference was not statistically significant (p>0.05) except for Match Board exercise; respectively, 83.9 +/- 10.5% and 73.6 +/- 14.3 % (p=0.0005). Correlation of DVSS score and DVT score was high (Pearson coefficient; r =0.87).

Conclusion: Face validity and concurrent validity of DVT is very high, yet there is some differences regarding Endowristä manipulation compared to DVSS. Both, DVSS and DVT may be considered as efficient tools for robotic certification.
Introduction: Robot-Assisted Laparoscopic Rectopexy (RALR) for total rectal prolapse (TRP) is safe and feasible but there is few reported cases and no long-term results reported yet.

Objective of the study were to evaluate long-term functional and anatomical results of RALR and learning curve of RALR.

Material and Methods: Monocentric study, pre-operative and peri-operative were collected prospectively, follow-up was assessed by a telephonic questionnaire. All patients who underwent a RALR between June 2002 and August 2010 were enrolled. Patients with previous surgery for TRP or other pelvic previous pelvic surgery were not excluded. RALR was performed with two anterolateral mesh or with one ventral mesh, in 9 cases a sigmoidectomy was associated to rectopexy. Actuarial recurrence rate was evaluated with Kaplan-Meier method. Learning curve was assessed with CUSUM method.

Results: Seventy-seven patients underwent a RALR. Mean age was 59.9 years (range, 23-90). Average operating time was 223 minutes (range, 100-390). Learning curve was achieved after 18 cases. Two patients died of unrelated causes at 5 and 24 months. There was 5 (6%) conversion to open procedure. Overall morbidity was low (8 cases, 10.4%). After a follow-up of 51.8 months (range, 5-115), there were 9 recurrences (12.7%). Pre-operatively 25 (32%) of the patients had constipation, 43 (56%) had faecal incontinence. Post-operatively, constipation disappeared for 13/25 (52%), faecal incontinence disappeared for 34/43 (79%). Constipation appeared for 11 patients (21%), faecal incontinence appeared for 2 patients (6%).

Conclusion: Long-term results of robot-assisted laparoscopic rectopexy are equivalent to conventional laparoscopy and learning curve is short.

Visual and Direct Haptic Feedback in Robotics-Assisted Cardiac Surgery

Maria E. Currie, MD,1,3 Ali Talasaz, PhD2,3, Ana Luisa Trejos, MASc2,3, Reiza Rayman, MD, PhD1, Michael W. A. Chu, MD, MEd1,4, Bob Kiaii, MD1,3,4, Terry Peters, PhD5, Rajni Patel, PhD2,3,4

Objectives: The purpose of this study was to determine the effect of direct haptic feedback and visual force feedback on the amount of force applied to mitral valve tissue and the time to perform ex vivo mitral valve annuloplasty using robotics-assisted techniques.

Methods: The haptics-enabled master-slave surgical system employed for this study comprised an industrial robot as the slave and a customized 7-DOF force reflection master interface. Cardiac surgeons performed surgery within a test bed constructed to measure forces applied to cardiac tissue with or without force feedback, or with visual force feedback, direct force feedback, or both visual and direct force feedback.

Results: Results obtained to date from novice trials revealed that there was no significant difference in the time required to complete either suturing or suture tying using either visual or direct force feedback, or no force feedback (p = 0.9). However, visual, direct, and combined visual and direct force feedback significantly reduced the amount of force applied to cardiac tissue during suturing (p = 0.07) and suture tying when compared to surgery without force feedback (p = 0.09).

Conclusions: Our preliminary results suggest that when comparing robotics-assisted mitral valve annuloplasty with and
of both visual and direct force feedback resulted in a greater decrease in forces applied to cardiac tissue when compared to visual or direct force feedback alone.

12.381 Otolaryngology, Head and Neck Surgery
Transoral Robotic Approach to Carcinoma of Unknown Primary
Kasim Durmus, M.D.; Sanjee V. Rangarajan, M.D., M.Eng.; Enver Ozer, M.D.
Department of Otolaryngology-Head & Neck Surgery, The Arthur G. James Cancer Hospital and Richard J. Solove Research Institute, Comprehensive Cancer Center, The Ohio State University Medical Center, Columbus, Ohio.

Objective: Our goal was to assess the feasibility and efficiency of transoral robotic surgery for the diagnosis and treatment of carcinoma of unknown primary in the head and neck region.

Materials and Methods: Eighteen out of 181 patients undergoing transoral robotic surgery prospective clinical trial in our institution between 2008 and 2012 were treated for carcinoma of unknown primary. Patients diagnosed with metastatic invasive squamous cell carcinoma in cervical lymph nodes were evaluated with detailed physical examination, flexible fiberoptic nasopharyngolaryngoscopy and positron emission tomography-computed tomography imaging. Despite those diagnostic tools, primary tumor site could not be identified; and all those patients were undergone panendoscopy, multiple biopsies, transoral robotic evaluation and surgery under general anesthesia.

Results: Among all those 18 patients, primary tumor sites were identified in 14 (77.7%) patients with tonsil (64%) and base of the tongue (35%) as tumor locations. Thirteen patients underwent diagnostic bilateral palatine and lingual tonsillectomies, 9 of them were successful in tumor localization. Complete tumor resection is achieved in 3 patients with transoral robotic surgery. Transoral robotic radical tonsillectomy was the preferred technique in 6 (43%) of the patients. Tumor location could not be identified in 4 (22.2%) patients despite multiple biopsy and diagnostic bilateral transoral robotic palatine and lingual tonsillectomies. All patients were referred for adjuvant radio or chemoradiotherapy.

Conclusions: Together with panendoscopy, transoral robotic surgery could be a useful tool in identification and treatment of carcinoma of unknown primary.

12.382 General Surgery
Single Incision Robotic Colectomy: Early Results of Sigmoid Resection
Vincent Obias, MD, Samir Agarwal, MD, Ashley Tirona, Colon and Rectal Surgery, George Washington University, Washington, DC, USA

Objectives: Single Incision Laparoscopic Colectomy (SILC) is a new and exciting field that attempts to reproduce traditional minimally invasive colectomy. A multi-center trial highlights the difficulty of the procedure, stating that in SILC it is more difficult to expose critical structures, has poor ergonomics, increased instrument conflict, and worse camera operation. Our study focuses on the first 13 Single Incision Robotic Colectomy (SIRC) for the sigmoid colon at George Washington University Hospital, which is the largest SIRC sigmoid colectomy series in the literature to date.

Methods: 13 patients were reviewed from 8/15/2011 to 5/25/2012 who had undergone SIRC. All patients underwent the classic cross armed technique. Patient demographics, diagnosis, and past medical history were noted.

Results: Of the 13 pts, 12 were male, 1 female. Diagnoses included unresectable polyps (1) and diverticulitis (12). Average age = 53.9 years. Median length of stay = 3.5d. There were two conversions to open. Average operative time = 207.5 min. Average blood loss = 178.6 cc. Median length of stay = 3.5d. Complications included retroperitoneal hematoma (1), myocardial infarction (1), and post operative abscess (1).

Conclusions: The study demonstrates that SIRC is safe and feasible. Although operative times are initially high, they decrease with surgeon experience. Additionally, the loss of tactile sensation is offset by improved camera ergonomics and a three-dimensional view. Wristed instruments provide triangulation and better manipulation of the tissue and are, by anecdotal report, better than SILC.
**12.383 General Surgery**

**Gastroesophageal Reflux Disease Improves Following Laparoscopic Adjustable Gastric Banding in Morbidly Obese Patients**

Anupama Mehta MD, Paul Ricketts MD, Stephen Sontag MD, Michael Klamut MD, Sharfi Sarker MD, FACS

**Objectives:** Gastroesophageal reflux disease (GERD) is prevalent among morbidly obese patients. Laparoscopic adjustable gastric banding (LAGB) is effective for weight loss but its effect on GERD symptoms is unclear. The purpose of this study was to examine how GERD symptoms changed following LAGB.

**Methods:** This is a retrospective study of eighty-one consecutive patients who had undergone LAGB by a single surgeon between 9/2004 and 1/2011. Data was collected by anonymous patient questionnaire and chart review. Outcomes measured were reductions in GERD symptoms and use of acid suppressive medications (ASM). Respondents were categorized into groups based on the presence (Group 1) or absence (Group 2) of preoperative GERD symptoms and ASM use. With approval from the institutional review board, the data was analyzed using the Wilcoxon rank, Mann-Whitney, t-test, and Chi-Square tests.

**Results:** Eighty-one (40%) surveys were completed. Forty-one (51%) patients reported GERD symptoms or regular use of ASM prior to LAGB. There was no difference in mean age, preoperative weight, BMI, absolute or percent excess weight loss between the groups. Twenty-five patients (61%) in Group 1 reported improvement in GERD symptoms, 8 (19.5%) reported no change and 8 (19.5%) had worse symptoms (p<0.0001). Twenty-nine patients (71%) were able to decrease or completely stop their use of ASM, while 3 (7%) increased their medication usage (p<0.0001). Ten patients (25%) in Group 2 reported de novo GERD symptoms following LAGB and 5 patients (15%) started ASM.

**Conclusions:** GERD symptoms improve and ASM use decreases in morbidly obese patients following LAGB.

**12.384 General Surgery/Thoracic**

**Robot-Assisted Thoracoscopic Lobectomy for Early-Stage Lung Cancer: Report of 40 Consecutive Cases**

Ben Yan*, MD, Frank Mott*, MD, Angela Bye*, RN, Abbas Abbas*, MD

*Department of Hematology and Oncology and “Department of Cardiothoracic Surgery, Ochsner Clinic Foundation, New Orleans, LA

**Introduction:** Lobectomy by thoracotomy is the standard operation for early lung cancer. Video assisted thoracoscopic lobectomy has been shown to be safe and efficacious. The use of robotic-assistance may add certain benefits to this approach including better visualization and handling of tissues. Our study aims to evaluate our early experience with the robotic 4-arm totally endoscopic lobectomy.

**Methods:** A retrospective data review of all patients who underwent robotic lobectomy for lung cancer between April 2010 and August 2011 was performed.

**Results:** Forty patients (20 males) were identified with stage I to III non-small cell lung cancer. Median age was 71 years. Successful completion of robotic lobectomy was possible in 36 patients (90%). Conversion to open thoracotomy occurred in 4 of the first 20 patients, but none of the last 20. Reasons for conversion included bleeding (2), extensive (1) and technical difficulties (1). One death occurred due to a massive cerebrovascular accident 5 days after surgery. Complications also included prolonged air leak (5, 12.5%), atrial fibrillation (3, 7.5%), and empyema (1, 2.5%). The median length of hospital stay was 5 days (range 2-45). Of the 39 survivors, follow-up was complete for 36 patients, and at a median follow-up of 10 months all 36 patients are alive. Three patients have had recurrence including malignant pleural effusion, hilar adenopathy, and metastasis to the contralateral lung.

**Conclusions:** Robotic lobectomy is feasible with comparable results to other techniques. Comparative effectiveness studies to other techniques are necessary to further evaluate this procedure.
Laparoscopic ventral hernia repair offers a crescent option for the repair of incisional abdominal wall hernias. A key component of this procedure is the placement of a mesh intraperitoneally to cover the defect without reapproximating the fascial edges with a primary suture repair. Numerous mesh materials are available on the market, each with specific advantages and disadvantages. An ideal prosthesis should be strong, pliable, non-allergenic, non-carcinogenic and should stimulate adequate fibroblastic activity for optimum incorporation into the tissue. However, no single mesh possesses all the qualities of the ideal mesh and relatively few studies have been performed comparing meshes of different materials and design. Currently, the choice of mesh continues to be driven by surgeon preference and individual clinical situation. We review the properties been mesh construction, strength and type other the outcomes of mesh materials currently available and the placement options available.

**Objective:** The relationship of laparoscopic Nissen Fundoplication (LNF) and open (ONF) surgery and charges will be explored over time.

**Methodology:** The Nationwide Inpatient Sample (NIS) from the Health Cost Utilization Project was analyzed using HCUPnet and NIS datasets and SAS 9.2 for the years 2004 through 2009. Queries were made for ONF and LNF (ICD-9 44.66, 44.67). The NIS weighting algorithm was used for National estimates. Overall charges and lengths of stay were calculated. Groups were separated into pediatric and adult groups. The Z-score calculator was utilized for all statistics.

**Results:** NF has remained constant from 2004 to 2009. The incidence in adults is unchanged and pediatric NF dropped 39% (7,355 +/- 1295 to 4,520 +/- 744). These changes demonstrate trends in the use of LNF in the adult, pediatric, and total categories. Changes were 457, 307, and 431 percent respectively. ONF dropped in all categories: -8 -73, -69, and -72 percent. The number of deaths related to LNF remained constant at zero, and dropped 48% (p= 0.0501) for ONF. Mean charges for NF procedures increased from $26,032 to $47,584 (83%), and 35866 to 91047 (154%) for LNF and ONF, respectively. Length of Stay remained unchanged in the LNF and increased from 6.8 to 12.9 days for ONF.

**Conclusion:** LNF trends effectively demonstrate the state of the art in laparoscopic care. Increases in its utilization have led to less dramatic increase in charges and decreased lengths of stay and associated mortality. These changes are prevalent in both pediatric and adult populations.

**Objectives:** It is accepted that robotic coronary artery bypass surgery (rCABG) is associated with increased costs during the early phase of a program due to gradual adaptation to new technology and additional training. We hypothesized that dedicating a multi-disciplinary team towards implementing an rCABG program at an inexperienced institution would reduce the costs by arresting the human factors’ contribution to learning curve.

**Methods:** We evaluated costs of a new robotic program implemented by a multidisciplinary team and an rCABG surgeon. The hospital costs were measured for CABG patients (N=220) undergoing sternotomy (stCABG) and minimally invasive from Feb’11-Jan’12. Total costs were calculated based on ICU, floor, OR and packed RBC utilization. We utilized CUSUM quality
**Results:** The average STS mortality risk for rCABG patients was 0.020 and for sternotomy patients was 0.027. We found a significant propensity for process shifts to be higher during stCABG (n=16) compared to rCABG unattributed to higher risk. (n=2)(p< 0.00). The OR, ICU and floor costs for stCABG were found to be $11881.84 ± 2495.48, $9239.72 ± 13222.62, $5223.86 ± 3971.65 respectively. The OR, ICU and floor costs for rCABG were $10342.71 ± 2670.14 (p=0.12), $3783.28 ± 2871.73(p<0.00), $2587.7 ± 124.56(p<0.00). The total costs were (stCABG) $26471 ± 15791.55 Vs (rCABG) $16747 ± 5682.2 (p<0.00).

**Conclusions:** The implementation of a multi-disciplinary team was effective in reducing costs as well as was able to reduce process shifts systematically as well as successfully.

**12.389 Multispecialty**

**Force-based Assessment of Skill in Minimally Invasive Surgery**

Ana Luisa Trejos1,2, MASc, Rajni V. Patel1,2,3, PhD, PEng, Michael D. Naish1,2,4, PhD, PEng, Richard A. Malthaner1,3, MD, MSc, FRCS, FACS, FCCP, and Christopher M. Schlachta1,3, BSc (Hons), MD, CM, FRCS, FACS

1. Canadian Surgical Technologies and Advanced Robotics, Lawson Health Research Institute, London Health Sciences Centre, London, Ontario, Canada,
2. Department of Electrical and Computer Engineering, Western University, London, Ontario, Canada,
3. Department of Surgery, Schulich School of Medicine & Dentistry, Western University, Canada,
4. Department of Mechanical and Materials Engineering, Western University, Canada.

The reduced access conditions present in Minimally Invasive Surgery create many difficulties for the surgeon that must be overcome through training. Simulators have been shown to be effective learning tools when paired with appropriate measures of skill level. The objective of this study is to develop an objective measure of skill, based on performance. The hypothesis is that force-based metrics correlate better to experience level than task completion time.

Using a force-sensing laparoscopic training system, 30 subjects of various experience levels performed a suturing and knot-tying task. Subject experience level was divided into 6 categories according to the level of training. A Spearman’s Rho correlation was conducted to explore the relationship between experience and various skill metrics.

The results show significant correlations between time and experience level (-0.457, p < 0.001 for suturing; -0.769, p < 0.001 for tying). Stronger correlations were found for the following force-based metrics: integral of the applied forces (-0.567, p < 0.001 for suturing; -0.780, p < 0.001 for tying), first derivative of the grasping forces (-0.524, p < 0.001 for suturing), and third derivative of the grasping forces (-0.782, p < 0.001 for tying). More importantly, force-based metrics were able to provide gradually decreasing values along all experience levels, as opposed to task completion time, which plateaus after Level 4 (post-graduate year 4 and 5).

This study shows that applied forces hold promise for the development of objective performance metrics for minimally invasive surgery that can be integrated into robotic systems or simulators.

**12.390 Gynecology**

**Robotic Reimplantation of the Left Ureter with Resection of Recurrent Endometrial Cancer**

Eugene P. Toy, M.D., Department of Obstetrics & Gynecology, Division of Gynecologic Oncology, University of Rochester

**Objective:** To demonstrate use of the robotic platform to perform ureteroneocystotomy to alleviate obstructive uropathy from recurrent endometrial cancer

**Methods:** 59 year old female with prior early stage uterine cancer diagnosed at time of LAVH and BSO followed by vaginal brachytherapy presents with left ureteral obstruction secondary to pelvic tumor and associated adenopathy. Robotic assisted laparoscopic exploration was performed with resection of pelvic tumor, ureterolysis, and reimplantation of the left ureter.
Results: A clearly defined transition point was seen in the course of the left ureter following ureterolysis. Ureteroneocystotomy was achieved using adventitial stay sutures to align the anastomotic site with closure over a double J stent placed laparoscopically.

Conclusions: Robotic ureteroneocystotomy provides an enhanced view of uroepithelial tissue to optimize integrity of anastomosis while obviating the need for long time bladder catheterization from secondary cystotomy.

12.391 General Surgery
Transanal Rectal Cancer Resection with Traditional Laparoscopic Equipment: GelPOINT Path Transanal Access Platform
Patrick White, MD; Bruce Robb, MD; Virgilio George, MD, Indiana University School of Medicine

Objective: Transanal Endoscopic Microsurgery (TEM) has become an accepted method of resection of T1 and selected T2 rectal cancers. One barrier to entry is the cost of the specialized equipment and learning curve of the TEM instruments. We sought to explore whether a traditional laparoscopic system could be used to effectively resect early rectal adenocarcinoma following oncologic standards.

Methods and Procedures: Ms. W, 63yo female patient with endoscopic ultrasound staged T1 rectal adenocarcinoma was selected for TEM. Using the GelPOINT Path Transanal Access Platform (Applied Medical, Ranch Santa Margarita, CA), standard 5mm laparoscope, and standard straight laparoscopic instruments, oncologic resection of the rectal mass was achieved, ensuring full thickness resection.

Results: Full thickness resection was achieved, with only a 2mm entry into the peritoneum during resection. Insufflation of the rectum held throughout the procedure. The total time of procedure from insertion of the sleeve to closure of the mucosa was 50 minutes. The final pathology on the lesion was T2 rectal adenocarcinoma with negative margins and no loss of architecture. The patient did well; she started a diet and was mobile on the day of surgery, and was discharged from the hospital the day after surgery.

Conclusions: GelPOINT Path offers a viable method for use of traditional laparoscopic instruments to perform TEM. This could help to defray the cost and smooth the learning curve associated with establishment of a transanal endoscopic microsurgery program.

12.392 Gynecology
Patient Preferences of Cosmesis for Abdominal Incisions in Gynecologic Surgery
Patrick Yeung Jr, MD1, Carlos R. Bolden MD2, Daniel Westreich PhD2, Craig Sobolewski MD3

1Minimally Invasive Gynecologic Surgery; Department of Obstetrics, Gynecology & Women’s Health; Saint Louis University; Saint Louis, Missouri

2Department of Obstetrics & Gynecology, Duke University; Durham, North Carolina

3Duke Center for Minimally Invasive Gynecologic Surgery; Department of Obstetrics & Gynecology, Duke University; Durham, North Carolina

Objective(s): To assess patient preferences regarding the cosmetic appeal of abdominal incisions used for hysterectomy.

Study Design: Prospective comparative study (Canadian Task Force II-2).

Methods: This was a comparative study conducted at two gynecology clinics at Duke University Medical Center in Durham, NC (USA). Sixty women participated – 37 consecutive women from a private specialty clinic and 23 consecutive women from a public clinic. Participants were asked to rank incisions on a visual scale for each abdominal incision.
Results: Overall, the LESS incision was the most preferred incision by most common choice and by VAS scores. In the private clinic, the LESS incision was the preferred incision most often by 59% of women (22/37). In the resident clinic, the horizontal mini-laparotomy incision was the preferred incision most often by 43% of women (10/23). Neither the demographic factors, nor any of the factors in decision-making explained the difference between the clinics.

Conclusion(s): The LESS incision was most preferred in this study. However, the horizontal mini-laparotomy incision and the traditional laparoscopic with low lateral incisions were also highly preferred. Patients’ perception of the “visibility” of abdominal incisions may be the distinguishing issue to explain the difference in the preferences between the clinics, as well as the differences between the current study and previously published studies on cosmetic preferences.

12.393 Multispecialty

Face, Content, Construct Validity and Learning Curve in Robotic Surgery Simulation Training: Results of a Multicentric Evaluation of dV-Trainer®.

Cyril Perrenota,b, Antonio Gangemi, Michael Stifelmand, Manuela PEREZ MDa,e, Peggy Gluszakf, Pier Cristoforo Giulianottic, Jacques Huberta,g

a School of Surgery, Faculty of Medicine-UHP, Lorraine University, Vandoeuvre-les-Nancy, France
b Department of general, endocrine and digestive surgery, University Hospital of Nancy, Vandoeuvre-les-Nancy, France
c Division of General, Minimally Invasive and Robotic Surgery, University of Illinois, Chicago, US
d Minimally Invasive Urology, Laparoscopy and Robotics, Department of urology, New York Medical Center, New York, US
e Department of Emergency and General Surgery, University Hospital of Nancy, Nancy, France
f Surgical Skills Lab, Department of surgery, New York University, New York, US
g Department of Urology, University Hospital of Nancy, Vandoeuvre-les-Nancy, France

Introduction: Virtual reality simulators proved to be valid tools for training and assessment of robotic surgery skills, however, standardization of curriculum is lacking. The purpose of this study was to assess reliability, learning curve, face, content and construct validity for all exercises of the dV-Trainer®.

Material and Methods: Multicentric prospective study, from April 2011 to March 2012. Face and content was analyzed using questionnaires. Construct validity was based on automatically generated data from simulators. Learning curve and reliability using Pearson coefficient were used to classify exercises in four groups, "no reliability no improving", “reliability and improving", “reliability without improving”, “improving without reliability”.

Results: Twenty-eight novices and 21 robotic surgeons, aged from 26 to 58 years were included. Twenty-nine exercises and 8753 attempts were analyzed. Face validity was high especially for Camera Targeting 2, Pick and Place, Suture Sponge 2 and Peg Board 1. Content validity was high especially for Match Board 3, Peg Board 2, Suture Sponge 1 and 2.

Robotic surgeons outperformed novices for mean score, 67.8 +/- 15% versus 54.4 +/- 14 % (T-test, p<0.001) but only for 14/29 exercises and 4/11 criteria when studied separately (T-test, p<0.05).

Conclusions: The dV-Trainer® simulator is a valid tool for teaching robotic surgery. Precise definition of learning curve, reliability, face, content and construct validity of each exercise and criteria could help to define a standard for training and credentialing in robotic surgery.
**12.396 Cardiothoracic Surgery**

**The Influence of Pulmonary Function on Outcome of Robotic Totally Endoscopic Coronary Artery Bypass Grafting**

Jeffrey D. Lee, Eric J. Lehr, Patricia Y. Hong, Mukta Srivastava, Mark Vesely, David Zimrin, Johannes Bonatti

Proper selection of candidates for robotic totally endoscopic coronary artery bypass (TECAB) is essential. Pulmonary function testing (PFT) provides objective measures of intrathoracic volume and functional capacity. We investigated the impact of PFT on intra and postoperative outcomes in TECAB.

Preoperative PFTs were retrospectively evaluated in 174 consecutive TECAB patients aged 62(26-84), male 122(70%), history of COPD 26(14.8%) and STS risk score of .006(.002-.1) and EuroSCORE of 2.5(0-11). Total and % predicted FVC, FEV1, DLCO, and FEV1/FVC were correlated to intraoperative performance and postoperative recovery.

16 of 174(9.2%) required conversion to sternotomy. Those requiring conversion had significantly lower FVC and FEV1(FVC:3.1 liters (1.4-4.6) vs. 3.6 liters (1.3-7.1)(p = .021); FEV1: 2.2 liters(1.3-3.5) vs. 2.6 liters(0.9-4.9)(p = .041), whereas FVC % predicted, FEV1 % predicted, FEV1/FVC, and DLCO % predicted had no predictive value. Ventilation time (VT), hospital length of stay (LOS), and time to resumption of household activities (RHA) were inversely correlated to FVC(VT r = -.319, p < .001, LOS r = -.342, p < .001, RHA r = -.301, p = .006), FEV1(VT r = -.278, p = .001, LOS r = -.395, p < .001, RHA r = -.321, p = .003), and DLCO % predicted (VT r = -.219, p = .009, LOS r = -.225, p = .006, RHA r = -.346, p = .002).

We conclude that measures of pulmonary function are strongly associated with intra and postoperative outcome in robotic TECAB. In this closed chest endoscopic procedure, total FVC and FEV1 are more predictive of a successful outcome than % predicted values.

**12.397 Head and Neck Surgery**

**Free Flap Reconstruction After Robot-assisted Neck Dissection via a Modified Face-lift or Retroauricular Approach**

Yoon Woo Koh, MD, PhD, Young Min Park, MD, Won Shik Kim, MD, Hyun Jun Hong, MD, Eun Cahng Choi, MD, PhD, Department of Otorhinolaryngology, Severance Hospital, Yonsei University, Seoul, Korea

**Background.** We performed robot-assisted neck dissection (RAND) via a modified face-lift (MFLA) or retroauricular approach for neck management and carried out free flap reconstruction via these approaches in head and neck cancer patients. Based on patient data, we ascertained the feasibility of free flap reconstruction in patients who had undergone transoral resection of a primary lesion and RAND via these approaches.

**Methods.** In this prospective study, we enrolled five patients with head and neck squamous cell carcinoma between August 2011 and January 2012. Approval was obtained from the Institutional Review Board of Yonsei University. A radial forearm free flap was usually used for reconstruction due to its thin structure and pliability. Microvascular anastomosis was performed via a MFLA or retroauricular approach using a microscope and microvascular instrument set.

**Results.** A negative margin was reported on pathology in all patients. Based on pathologic information of the primary lesion and neck specimens, four patients underwent surgery alone and one patient received adjuvant radiotherapy. As of the last outpatient department visit, all patients were alive without loco-regional recurrence. In terms of cosmetic satisfaction, all patients were extremely content with the invisible postoperative scar. On average, patients tolerated an oral diet after one to two weeks. The status of the free flap was viable and functioning in all patients.

**Conclusions.** Although long-term follow-up of oncologic safety is required to establish these operations as valid treatment methods, this study demonstrated the feasibility of free flap reconstruction and RAND via a MFLA or retroauricular approach.
Laparoscopic Intraoperative Enteroscopy for the Management of Obscure Gastrointestinal Bleeding

J Roberto Ramirez MD (General Surgery Resident, Cleveland Clinic Foundation, Cleveland, OH)
Tony Capizzani MD (Acute Care Surgery Staff, Cleveland Clinic Foundation, Cleveland, OH)

**Background:** This case report of the role of laparoscopic intraoperative enteroscopy (LIOE) for the management of obscure gastrointestinal (OGI) bleeding in patients who had been preoperatively evaluated by multiple diagnostic tools that failed to reveal the source of bleeding.

**Methods:** Our patient, a sixty-year-old otherwise healthy male presented with six months of persistent OGI that required bi-weekly blood transfusion. He underwent an extensive diagnostic testing that included: two colonoscopies, two upper gastrointestinal endoscopies, two Double-balloon colonoscopies, one Double-balloon enteroscopy and two Video-capsule endoscopies. In addition, mesenteric arteriography and radiolabeled red-cell scintigraphy were also completed. These various modalities failed to pinpoint the hemorrhage or adequately evaluate the mid jejunum. Acute Care Surgery was consulted for diagnostic assistance, and a laparoscopic assisted enteroscopy was performed.

**Results:** The most proximal and distal portions of small bowel (SB) successfully visualized by pre-operative endoscopic methods were identified by tattoo markings. A diagnostic laparoscopy revealed no obvious source of bleeding. An enterotomy for endoscope insertion was performed in a loop of mid-jejenum in an extra-corporeal fashion. A small foci of hemorrhage was identified and a figure-of-eight haemostatic suture ligature was placed. A 6 month post-operative visit has confirmed effective therapy of the patient's gastrointestinal bleeding.

**Conclusions:** LIOE remains useful for the management of obscure GI bleeding when preoperative workup fails to reveal small-bowel lesions that are not diagnosed or treated by non operative modalities.

12.399 Multispecialty

Implementation and Validation of a Simulation-Based Curriculum for Robot-Assisted Surgery

T. Kesavadas, Andrew Stegemann, 2Shabnam Rehman, Johar Raza, 1Ashirwad Chowriappa, Yi Shi, 2Amrith Rao, 2Gregory Wilding, Guru Khurshid

1Department of Mechanical and Aerospace Engineering, The State University of New York, Buffalo
2Department of Urology, Roswell Park Cancer Institute, Buffalo

**Introduction and Objectives:** The Robotic Surgical Simulator (RoSS) curriculum consists of 15 tasks with progressive levels of difficulty. It was developed by experienced robotic surgeons using Delphi methodology. We sought to evaluate the RoSS curriculum.

**Methods:** 53 participants were randomized into Test Group (TG; n=23) or Control Group (CG; n=30) in an IRB-approved study. TG completed the RoSS curriculum and 1 test session on the daVinci Surgical System (dVSS). CG directly tested on dVSS and then had the option to complete the RoSS curriculum and re-test on dVSS (CO; n=23). The dVSS test consisted of three tasks: Ball Placement, Suture Pass, and 4th-Arm-Manipulation. Performance was recorded and assessed by a blinded and trained evaluator.

**Results:** Ball Placement: TG was more precise completing this task compared to CG (1.5 vs. 2.5 drops; p= 0.014). The CO group took less time to complete this task (p<0.001) with significantly greater precision after finishing the curriculum (p<0.001). Suture Pass: TG group demonstrated better camera utilization (4.3 vs. 3.0; 0.078) than CG group. Instrument movement outside field of vision was significantly less for TG (0.5 vs. 1.1; 0.026). Proper camera usage improved after the RoSS curriculum (p=0.009). 4th-Arm-Manipulation: Instrument movement outside training field was less frequent in TG (0.2 vs. 0.8; p = 0.076). Precision in CG group improved significantly after the curriculum (p=0.042), and camera control and safe instrument manipulation also showed improvement at completion (1.5 vs. 3.5; 0.2 vs. 0.9).
A Novel Technique for Adhesion Prevention After Laparoscopic Ovarian Cystectomy  
Patrick Yeung Jr, MD  
Department of Obstetrics, Gynecology & Women’s Health, Center for Endometriosis, Minimally Invasive Gynecologic Surgery, Saint Louis University

Postoperative adhesions, especially around the ovary, can have detrimental effects on fertility. There are a number of absorbable barriers available on the market for adhesion prevention. Interceed™ is a barrier mesh that has been shown to be effective in preventing adhesions, though per the manufacturer’s recommendations, it can be adhesiogenic in the present of blood. Surgiwrap™ is an FDA-approved product for the prevention of soft tissue attachments. However, it has the consistency of cellophane and can be difficult to secure in place. Ovarian cystectomy is a procedure that carries a high likelihood of postoperative adhesions. A simple technique to secure Surgiwrap™ laparoscopically around ovaries after cystectomy would be advantageous in preventing adhesions while the ovaries are remodeling. This report describes a simple technique to secure Surgiwrap™ laparoscopically, even around ovaries, which is reproducible and time efficient, without the need for suturing.

Robot-assisted Comprehensive Neck Dissections via a Transaxillary and Retroauricular Approach in Papillary Thyroid Cancer with Cervical Lymph Node Metastases: A Comparative Study with Transaxillary Approach  
Yoon Woo Koh, MD, PhD; Won Shik Kim, MD, Hyun Jun Hong, MD, Eun Cahng Choi, MD, PhD  
Department of Otorhinolaryngology, Severance Hospital, Yonsei University, Seoul, Korea

Background: Recently, a robot-assisted neck dissection using gasless transaxillary approach in thyroid cancer patients with lateral neck node metastases was studied and proven to be feasible. Here, we devised a modified approach with the addition of retroauricular incision to transaxillary approach for competent clearance of level II lymph node. The aim of this study was to compare the surgical outcome of transaxillary and retroauricular approach with transaxillary approach.

Methods: A total of 22 patients with papillary thyroid cancer underwent robotic total thyroidectomy with robot-assisted modified radical neck dissection except level I. Among the patients, 12 unilateral and 3 bilateral neck dissections were performed via transaxillary and retroauricular approach and 7 unilateral neck dissections were performed via transaxillary approach.

Results: There was no significant difference in operation time for neck dissection between either group. The mean primary tumor sizes were 5.14 ± 3.44 mm in transaxillary approach group and 14.40 ± 9.25 mm in transaxillary and retroauricular approach group. Level II and level IV specimens in transaxillary and retroauricular approach group contained relatively larger number of lymph nodes than those in transaxillary approach group. There were no significant differences in postoperative complications between either group.

Conclusions: The surgical outcomes of robot-assisted neck dissection via a transaxillary and retroauricular approach in papillary thyroid cancer patients are comparable or even superior to that of transaxillary approach, especially in the aspect of upper level neck dissection. This is a useful, alternative approach for addressing cervical lymph node metastases in selected cases of thyroid cancer.

Robot-Aided Thyroidectomy for the Treatment of Graves’ Disease: A Comparison with the Conventional Cervical Approach  
Salem I. Noureldine, M.D.; Max A. Trahan, MD, MPH; Ramsy Abdelghani, MD; Barath Krishnan, M.D.; Lu Yao, M.D.; Emad Kandil, M.D., FACS

Introduction: Due to larger gland size and increased vascularity, many authors consider Graves’ disease a contraindication for endoscopic surgery. However, with the advent of robotic technology, some authors have reported utilizing robotic surgery.
Methods: A retrospective analysis of our surgical experience included patients who underwent thyroidectomy over the past three years with Graves’ disease, by a single surgeon. Principal outcome measures were operative times, intraoperative blood loss, thyroid volume, complications and lengths of hospital stay.

Results: Twenty-five patients with Graves’ disease were included, twelve (48%) of which underwent robotic surgery. The mean (±SD) intraoperative blood loss was lower for the robotic group (29.2±30.4 ml) as compared to the cervical group (38.5±33.6 ml), although not significant (p=0.49). The operative times were similar for both the surgical approaches (179.6±49.9 minutes in the robotic group vs. 179.9±38.6 minutes in the cervical group, p=0.98). The cervical approach allowed for resection of higher thyroid volumes (147.3±153.6 ml), as compared to the robotic approach (62.3±47.8 ml), and this difference showed a statistical trend (p=0.08). Both procedures were associated with similar rates of major and minor complications (p=0.99 and 0.99, respectively). Duration of hospital stay was similar in both groups (1.3±0.7 days for the robotic group vs. 2.6±4.9 days for the cervical group, p=0.38). Both groups were cured of their disease.

Conclusion: Compared with a traditional cervical approach, robotic thyroidectomy can be performed safely in patients with Graves’ disease, while achieving better cosmesis through avoidance of a neck scar.

12.403 General Surgery
Salem I Noureldine, MD; Max A. Trahan, MD, MPH; Ali M. Abbas, MD, MPH; Ramsy Abdelghani, MD; Natalia Cortes; Emad Kandil, MD, FACS

Introduction: Robotic technology has recently evolved as an adjunct to thyroid surgery. We aimed to examine the potential benefits of robotic assistance when performing hemithyroidectomy.

Methods: A retrospective review of a prospectively collected database was performed to identify all patients who underwent hemithyroidectomy by a single surgeon. Clinical characteristics, pathology data, surgical outcome and length of hospital stay of the robotic hemithyroidectomy patients (robotic group) were compared with those of the conventional counterpart (conventional group) performed during the same time period.

Results: Fifty robotic transaxillary and fifty conventional hemithyroidectomy procedures were performed by the same surgeon. Patients offered the robotic approach were of younger age (45.3 vs. 52.4 years; p=0.007), favorable body habitus (27.1 vs. 32.8; p<0.001) and underwent surgery for smaller nodules (1.8 vs. 5.3 cm; p<0.001). Total operative time and blood loss was comparable in both groups, (p=0.4) and (p=0.9), respectively. No robotic cases required a conversion to the conventional approach. Transient hypocalcemia occurred in 2 (4%) patients in the robotic group compared to 17 (34%) patients in the conventional group (p<0.001). There were no instances of permanent vocal cord palsy on postoperative laryngoscopy in all patients. 82% of patients in the robotic group were discharged within 4 hours after the procedure compared to 34% in the conventional group (p<0.001).

Conclusion: Despite the advantages of the robotic technology and superior results in terms of postoperative complications and length of hospital stay, conventional hemithyroidectomy offers similar surgical outcomes without the need for additional costs endured by the use of robotic technology.

12.404 General Surgery
Intraoperative Complication of Robotic Transaxillary Total Thyroidectomy
Max A. Trahan, MD, MPH; Salem I. Noureldine, M.D.; Emad Kandil, M.D., FACS

Background: Robotic-assisted transaxillary thyroidectomy is a minimally invasive approach for the removal of the thyroid gland. This technique eliminates a visible scar from the anterior neck and affords excellent visualization of the cervical anatomy. Here we are showing an intra-operative complication associated with this approach.
We performed a total thyroidectomy on a 33-year-old patient with Graves’ disease using a high definition robotic surgical system. The operation was done via a single axillary incision, 5 cm in length. The intraoperative heated harmonic scalpel caused a perforation in the anterior wall of the trachea. A decision was made to continue with the procedure robotically in the tight anatomical space because the robot provides an endosuturing advantage in such cases.

**Results:** We used a 3.0 monofilament simple figure of eight suture to close the perforation. Aided by 3D optics vision, it was performed successfully with only wristed movements. Hemostasis and tracheal closure was ensured and the total thyroidectomy was completed. The patient tolerated the procedure well. After close monitoring, the patient was discharged on the second operative day. On follow-up no complications were reported.

**Conclusion:** In confined spaces which are encountered during a transaxillary approach, injuries can occur. However, with the added benefit of dexterous and meticulous movements afforded by the use of robotic assisted surgery, these intra-operative injury can be repaired.

**12.405 Cardiac Robotics**

**Rural Patient Outcomes & Experience: Robotic Cardiac Surgery**

*Sugam Bhatnagar MD, MPH; Michael Simmons BS; Antonia Doubrava BS; Robert Poston MD*

Dept. of Cardiothoracic Surgery, University of Arizona

**Objective:** Traveling due to surgical care creates challenges for patients who must make arrangements for lodging, post-operative recuperation and emergent situations. These challenges are likely exacerbated for patients travelling from rural locations due to concerns about farmsteads and animals. We hypothesize the benefit of robotic cardiac surgery in combination with fast-track protocol on rural patients. Outcomes were monitored through 6-month follow-up calls.

**Methods:** We employed the US Census bureau definition of ‘rural’ to isolate patients from non-urban locations who had undergone robotic surgery from the time period of Feb’11 through Jan’12 (n=99). HCAHPS Press Ganey surveys were randomly distributed among the entire patient population at 3 weeks. Rural patients were contacted at 6-month to evaluate outcome status. We assessed mortality, revascularization status, recovery and approval through follow-up phone calls.

**Results:** We found 65% of total patient population (n=155) was from rural areas (n=99). Average distance travelled by patients was 80 miles (range 52 to 90). Average length of stay was 3 days. We had a 25% response rate by the patients through the HCAHPS surveys and patients ranked their care between 95 to 99% at multiple quarters. At 6 months we found an average functional capacity score of 14 (max=18) and 85% of the participants could do yard work and heavy exercise. The revascularization rate was 2% at 6 months and mortality rate was 1%.

**Conclusions:** Strong approval ratings for the robotic operative experience indicate that difficulties encountered by rural patients in traveling are limited by early discharge and quicker recovery.

**12.406 General Surgery**

**Automatic Vagus Nerve Stimulation Monitoring During Thyroid Surgery**

*Max Trahan, MD MPH; Salem I Noureldine, MD; Emad Kandil, MD FACS*

Division of Endocrine and Oncological Surgery, Department of Surgery, Tulane University, School of medicine, New Orleans, LA.

**Background:** Newly developed Automatic Nerve Stimulation (ANS) probes allow for continuous intra-operative nerve monitoring (IONM) during thyroid surgery. They enable early detection of changes in nerve function to provide safety from traction injury. Herein, we provide our first experiences using this technology in a North American institution. Methods: A retrospective review of our surgery database identified all patients who underwent thyroid surgery by a single surgeon using ANS technology for continuous intra-operative recurrent laryngeal nerve (RLN) monitoring. A vagus stimulation electrode was placed within the carotid sheath encircling the nerve. Direct stimulations were generated every 6-10 seconds, while parameters of amplitude and latency were recorded in real time by endotracheal tube sensors. Over- traction of the RLN was defined as 50% decrease in amplitude with 50% increase in latency.
**Results:** Fifteen procedures were performed on 15 consecutive patients with a total of 20 RLN at risk. Using ANS added an average of 6 minutes to operative time. Stable and repeatable signals in latency (5.12±1.72 msec) and amplitude (570.3±373 mV) were evocable at a current of 1.35±1.19 mA during 15 (100%) operations. Intra-operative strain of the RLN was identified in 3 (15%) procedures. Pre-operative and post-operative flexible laryngoscopy comparison revealed no vocal cord palsies or paralysis. Iatrogenic complications were not encountered by application of an electrode.

**Conclusions:** Our initial data demonstrates that continuous IONM with ANS technology is safe and feasible. This new adjunct can provide additional protection by identifying early intra-operative strain and possible risk of traction injury to the RLN.

**12.407 General Surgery**

**Influence of Experience on the Outcomes After Minimally Invasive Surgery for Gastric Cancer.**

Yoo Min Kim, M.D., Woo Jin Hyung, M.D., Ph. D.1, Ji Yeong An, M.D., Ph. D.1, Hyung Il Kim, M.D.1, Jae-Ho Jung, M.D., Ph. D.1, Sung Hoon Noh, M.D., Ph. D.1.

1Department of Surgery, Yonsei University College of Medicine, Seoul

**Purpose:** The aims of this study were to assess differences in the surgical performance and short term outcomes by experience between robotic distal gastrectomy and laparoscopy assisted distal gastrectomy in gastric cancer.

**Method:** From May 2003 to August 2011, 742 LDGs and 351 RDGs underwent for gastric cancer by one surgeon at the Severance Hospital, Yonsei University Health System, Korea. We categorized patients into two periods according to number of cases performed (early : <=200 cases, late : >200 cases). All variables related to surgical performance and short term outcomes have been prospectively collected since May 2003.

**Results:** The proportion of patients who had underlying diseases increased, as the number of cases increases (RDG: 40.2% vs. 56.3%, p=.002, LADG: 49% vs. 55.7%, p=.062) and this finding was remarkable especially in RDG. Operative time and blood loss significantly decreased with accumulated experience in LADG, but in RDG, intraoperative blood loss (RDG: 67.4mL vs. 50.1mL, p=.123, LADG: 376.5mL vs. 81.8mL, p<.001) is the same levels as late period of LADG and operative time is stationary over the cases. No significant intergroup difference was found for number of retrieved lymph nodes, rate of margin positive and perioperative morbidity (RDG: 10.0% vs. 11.3%, p=.417, LADG: 11.5% vs. 10.1%, p=.340).

**Conclusion:** Influence of surgical experience was more obvious in LDG than in RDG. Previous experience of laparoscopic surgery has influenced the performance of RDG and RDG even at initial cases might be performed with same level of surgical performance as LDG after having enough experience.

**12.408 Pediatric Surgery**

**Complicated Meckel’s Diverticulum in Children: The value of laparoscopy.**

Gustavo Stringel, , Jamie Golden, Whitney McBride, Samir Pandya, Hanna Alemayehu and Irene Lo NY Medical College, Valhalla, NY, USA.

**Background and Objectives:** Meckel’s diverticulum can present with a variety of complications but is often found incidentally during other surgical procedures. The role of laparoscopy is established in the management of Meckel’s diverticulum. We reviewed our experience with complicated cases of Meckel’s diverticulum in children managed with laparoscopy.

**Methods:** A 15 year retrospective review revealed 15 cases of complicated Meckel’s diverticulum managed with laparoscopy. Incidentally found Meckel’s diverticulum, and cases done by laparotomy were excluded. Ages varied from 2 years old to 16 years old. There were 11 males and 4 females. Seven cases presented with small bowel obstruction; of those 3 had extensive intestinal gangrene, four cases had massive bleeding, 3 cases had acute diverticulitis and one case had intussusception caused by the diverticulum.
Results: Ten cases were treated with laparoscopic Meckel’s diverticulectomy and the other 5 with laparoscopic assisted bowel resection because of extensive gangrene of the intestine. Two cases with significant intestinal gangrene returned several weeks later with small bowel obstruction secondary to adhesions. They were successfully managed with laparoscopic lysis of adhesions. There were no other complications. Ten cases had ectopic gastric mucosa.

Conclusions: Laparoscopy is safe and effective in the management of complicated Meckel’s diverticulum in children. Most cases can be managed with simple diverticulectomy. Laparoscopy is useful when the diagnosis is uncertain. When extensive gangrene is present, laparoscopy can help to mobilize the intestine, evaluate the degree of damage, irrigate and cleanse the peritoneal cavity and minimize the incision necessary to accomplish the bowel resection.

12.409 Pediatric Surgery
Recurrence of Diaphragmatic Hernia Following Thoracoscopic Repair with Strattice™ Patch
Author Block: Gustavo Stringel, MD, Whitney McBride, MD, Samir Pandya, MD, Hanna Alemayehu, MD
NY Medical College, Valhalla, NY, USA.

Background and Objectives: Thoracoscopic repair of congenital diaphragmatic hernia has increased in recent years. When the defect cannot be repaired primarily, a variety of prosthetic materials have been used, Gortex™ being the most popular. The use of biological tissue matrix prosthesis is appealing because theoretically this material will serve as a framework to support the patient’s own tissue regeneration. We report two newborns with congenital diaphragmatic hernia repaired with Strattice™ patch. The hernia recurred in both cases.

Methods: Two newborn babies with weights of 3.5 Kg and 4.0 Kg had a left sided congenital diaphragmatic hernia repaired thoracoscopically with Strattice™ patch because the size of the defect precluded primary repair. The repairs were done at 2 and at 4 days of age after a period of stabilization.

Results: The babies recovered uneventfully and were discharged home several days later. Recurrence of the diaphragmatic hernia was identified by chest radiograph at a routine follow up visit 18 months postoperatively. One patient had mild abdominal pain and increasing shortness of breath while the other was asymptomatic. One patient had an abdominal open primary repair while the other had a laparoscopic assisted repair with AlloDerm™ patch. They both recovered uneventfully.

Conclusions: Postoperative follow up at regular intervals is extremely important following repair of diaphragmatic hernia, especially when prosthetic material is used, because of the high incidence or recurrence. Although our experience is limited, we do not recommend the repair of diaphragmatic hernia with Strattice™ patch at this time.

12.410 Pediatric Surgery
Superior Mesenteric Artery Aneurysm in a 12 Year Old Girl Managed by Selective Embolization.
Gustavo Stringel, Grigory Rozenblit, Shekher Maddineni, Stephen P. Reis, Sam McCabe, Lorenc Malellari and Sateesh Babu.

Purpose: Superior Mesenteric Artery Aneurysms (SMA) are extremely rare in children, with only a few reported in the world literature. We report a 12 year old female presenting with a ruptured SMA aneurysm managed with selective SMA embolization.

Methods: A 12 year old girl presented with sudden onset of severe abdominal pain. She was previously healthy, there was no history of trauma. Physical examination disclosed severe abdominal tenderness with guarding and rebound. A Computerized Tomography Scan with intravenous contrast demonstrated a 3 cm SMA aneurysm with active extravasation. She was managed with selective SMA embolization with Platinum embolization coils. She recovered well but had a second episode of bleeding and required a second embolization with coils and thrombin.
She recovered uneventfully after the second embolization and was discharged home in good condition five days post procedure. There was no mesenteric ischemia or intestinal infarct following embolization. She is asymptomatic and has resumed all regular activities after 6 months of follow up.

**Conclusions:** As illustrated in this case, embolization of SMA aneurysms is safe and effective in selected cases. Embolization controls bleeding and avoids a major and potentially dangerous surgical procedure. Intestinal infarct is a possibility and should be explained to parents.

**12.411 General Surgery/Thoracic**

**Robotics Changes the Approach to the Diagnosis and Management of Mediastinal Masses**
Marc Margolis, MD, Mark Meyer, MD, Eric Strother, CSA, Barbara Tempesta CRNP, Farid Gharagozloo, MD
The Washington Institute of Thoracic and Cardiovascular Surgery at The George Washington University, Washington, DC, The University of Arizona College of Medicine, Tucson, Arizona

**Introduction:** The conventional approach to the diagnosis of mediastinal masses is associated with a high level of inaccuracy and need for multiple interventions. Robotics has the potential of providing a highly accurate approach to the diagnosis and management of mediastinal masses.

**Methods:** Over 75 months, 59 patients were diagnosed with a mediastinal mass and underwent transthoracic robotic biopsy and, if appropriate, robotic resection.

**Results:** There were 27 anterior, 23 mid, and 9 posterior mediastinal masses. Of the anterior mediastinal masses, 22 were thymic, 2 lymphomas, 2 germ cell and 1 cavernous hemangioma. Mid mediastinal masses: 12 lymphatic in origin, 10 aerodigestive cysts, 1 metastatic small cell carcinoma. Of the posterior mediastinal masses: 3 neurogenic, 1 thyroid goiter, and 5 benign cysts. The robotic approach was from the right pleural space in 39 patients and from the left pleural space in 20 patients. The sensitivity of the robotic technique was 98% and specificity was 100%. 47 patients underwent simultaneous robotic resection of the mass. Two patients required conversion to an open procedure. Mean operative time was 179 +/- 43 minutes. Postoperative complications were seen in 10% of patients which included pneumonia, atrial fibrillation, ileus, hemothorax, acute renal failure, and pneumothorax. There was no mortality. Median length of hospital stay was 4 days.

**Conclusions:** Robotic approach to the diagnosis and treatment of mediastinal masses is associated with high sensitivity and specificity for diagnosis. Furthermore, in patients in whom resection of the mass is indicated, the robot can be used for resection in the same operative setting.

**12.412 Urology**

**Radiofrequency Ablation of Renal Tumors: Intermediate Outcome**
Gyung Tak Sung, Dong-A University Hospital, Busan, Korea

**Objective:** The aim of this study was to retrospectively evaluate the intermediate results of radiofrequency ablation (RFA) of small renal masses (SRMs).

**Materials and Methods:** Percutaneous or laparoscopic RFA was performed on 48 renal tumors in 47 patients. The follow-up included physical examination, chest radiography, creatinine, and contrast-enhanced CT or MRI. To confirm pathologic criteria of complete ablation, 35 patients underwent follow-up biopsy. Recurrence was defined as contrast enhancement after 3 months or lesion growth at subsequent imaging or viable cancer cells on follow-up biopsy.

**Results:** Technical success was achieved in 43/48 renal tumors (89.6%). The mean tumor size was 2.3 cm and the mean follow-up period was 49.6 months. Repeated RFA was necessary in 8/5 tumors due to incomplete ablation. The overall complication rate occurred in 35.8% and the low-grade complications accounted for 96.2% of overall complications. Serum creatinine levels 3 months after RFA did not differ from those before RFA (1.28 vs 1.36 mg/dl). Four patients were found to have recurrence at various follow-up intervals and distant metastasis was not found in any cases.
follow-up results suggest excellent therapeutic outcome with RFA, while achieving effective local tumor control.

12.413 General Surgery
Anatomical Landmarks in Difficult Cholecystectomy
Kuldip Singh, M.S, FRCS, FACS, Professor Dayanand Medical College, Ludhiana, India, Ranbir Singh, MBBS, Resident, MGM Aurangabad, India

Laparoscopic cholecystectomy (LC) in complicated cases is still a challenge to laparoscopic surgeons in terms of technical difficulties of dissection and higher conversion rate. To overcome these problems, surgeons evolved new innovations in technology and dissection methods based on the anatomical landmarks. Since 1992, we have been performing laparoscopic cholecystectomies and realized the importance of adhering to the anatomical landmarks in tackling difficult cholecystectomies, which facilitates a safe and successful dissection in difficult situations, thus minimizing any major vascular or bile duct injuries. Anatomical landmarks are:

1. Identification of embedded gall bladder in the adhesions: to stay close to the liver margin to define gall bladder.
3. Demonstration of Calot’s triangle and cholecystectomy triangle by proper retraction to Infundibulum / Hartmann’s pouch.
4. Cystic lymph node as a guide to cystic artery and lateral dissection.
5. Keeping the dissection anterior to Rouviere’s Sulcus in which the portal vessels and right hepatic duct runs.
6. Identifying and lifting the gall bladder neck and Hartman’s Pouch from liver bed.
7. Common bile duct identification at the border of duodenum.

Adhering to these principles of anatomical landmarks, we did not encounter any bile duct or vascular injury in the last 4000 cases. The conversion rate has been 1.2% in difficult cholecystectomies. We conclude that if surgeons adhere to these landmarks one can produce results comparable to conventional cholecystectomy or even better.

12.414 General Surgery
Laparoscopy in Blunt and Penetrating Abdominal Trauma
Peter Yartsev, Prof. Dr. Med; Andrey Guliaev, Prof. Dr. Med; Vladislav Levitsky, MD PhD; Margarita Tlibekova, MD, Sklifosovsky Clinical and Research Institute for Emergency Medicine, Healthcare Department for the City of Moscow, Moscow, Russia

Introduction: The objective of our study was to evaluate the role of laparoscopy in examination and treatment of patients with blunt and penetrating abdominal trauma.

Methods and procedures: A total of 628 patients (474 men and 134 women) with blunt and penetrating abdominal trauma were included in this retrospective eleven-year (2001-2011) study. A mean age of the patients was 35.1±14 years. Laparoscopy was used in 348 (55.4%) of them. 280 patients (44.6%) initially underwent laparotomy.

Statistical analyses were performed using Statistica 6.0 - StatSoft. Data are presented as mean ± standard deviation (SD) or ratio.

Results: Conversion to open surgery was carried out in 130 (37.3%) of 348 patients. Diagnostic laparoscopy without therapeutic manipulations was performed in 160 (46%) patients. Therapeutic laparoscopy was used in 58 (16.7%) patients; among them 15 underwent laparoscopic splenectomy, 12–laparoscopic suturing of diaphragmatic injuries, 2–cholecystectomy, 5–laparoscopic suturing of stomach injuries, etc.

Therapeutic laparotomy was performed in 162 (57.9%) of 280 patients with abdominal trauma. Exploratory laparotomy rate was 42.1%.

No missed abdominal organs injuries were revealed after laparoscopic examination of abdominal cavity. Quicker recovery
observed in patients after laparoscopic surgery compared to patients after exploratory laparotomy.

**Conclusion:** Laparoscopy can be performed safely as a diagnostic and therapeutic tool in abdominal trauma patients. Laparoscopic exploration in patients with blunt and penetrating abdominal trauma allowed to avoid laparotomy in 62.7% of cases.

**12.415 Gynecology**

**Robotic Single-Site Surgery for Endometriomas Using VESPA: Presentation of the 1st Case Worldwide**

P. Hirides, MD, S. Hirides, MD, MSc, P. Chrysocheris, MD, FACS, M. Georgiou, MD, K.M. Konstantinidis, MD, PhD, FACS, Department of Surgery, Athens Medical Center, Marousi-Greece.

**Background:** A novel robotic single-site platform was introduced for cholecystectomy in the beginning of year 2011. In our department we used the same principles for operating the pelvis of a 41-year old with endometriomas in both ovaries.

**Study Design:** We present the technique of single-site approach of endometriomas using the novel robotic VESPA platform. The single-site port was placed through a 1.5cm wide, midline infra-umbilical incision. Newly-designed short single-site cannulas were used. Patient was placed in lithotomy position with the robotic cart between her legs. Dissection started by using a monopolar hook and a crocodile grasper. Robotic suction-irrigation was particularly useful to help identify small foci of bleeding.

**Results:** In total three endometriomas were dissected and excised. Their content was chocolate-dark. The largest of them was 7cm in diameter. Hemostasis was accomplished with monopolar coagulation. All cysts were carefully placed in an endobag and brought to surface from the initial port incision. There were no intraoperative and postoperative complications. Patient had an uneventful recovery.

**Conclusions:** Robotic Single-Site pelvic surgery is feasible but also challenging and requires experience. Limitations of the method include absence of articulation in the instruments as well absence of bipolar coagulation. Newly designed shorter cannulas are very useful in thin patients.

**12.416 General Surgery**

**Robotic Gastric Surgery: Diversity of Applications in Surgery of the Stomach Using the da Vinci System**

Fotis Antonakopoulos, MD, Konstantinos Konstantinidis MD, PhD, FACS, Savas Hirides MD, MSc, Perikles Chrysocheris, MD, FACS, Petros Hirides, MD, Michael Georgiou, MD, Athens Medical Center

**Introduction:** There is only scarce literature on robotic gastric surgery. Robotics have become popular in the treatment of gastric cancer, especially in Asia. Reports show an equally effective lymph node dissection compared to open surgery and a potential advantage in the learning curve.

**Study Design:** We present our techniques used for various types of gastrectomies including: wedge resection for gastric wall tumors in 6 cases, subtotal gastrectomy in 5 cases, total gastrectomy with esophagojejunal anastomosis in 3 cases and 2 cases of esophagogastrectomy for lower esophageal cancer. Also, two sleeve gastrectomies were performed in two cases of morbid obesity. In all 15 cases, the robotic surgical system was used to dissect and mobilize the stomach. Local excision by means of endostapler completed the operation in one case of gastric leiomyoma. In the rest 5 cases simple gastrotomy, enucleation of the tumor and resuturing was enough. In 3 of these cases, simultaneous esophagogastroscopy was performed.

**Results:** The robotic system offered superior visualization and dexterity. Operative times, length of stay and complication rates were comparable to laparoscopy. There was no serious postoperative morbidity or deaths. This approach was particularly useful for fine dissection, especially near the GE junction and the spleen and during intracorporeal suturing.

**Conclusions:** Surgical robotics may facilitate gastric procedures, especially those involving intracorporeal suturing. Future randomized studies are expected to establish its role, especially in the treatment of gastric carcinoma.
**Facilitation of Heller Cardiomyotomy by Using the Robotic System: Presentation of our Approach**

Perikles Chrysoheris, MD, FACS, Konstantinos Konstantinidis MD, PhD, FACS, Savas Hirides MD,MSc, Fotis Antonakopoulos, MD, Petros Hirides, MD, Michael Georgiou, MD, Athens Medical Center

**Introduction:** Laparoscopic Heller myotomy with partial fundoplication has been shown to offer improvement of dysphagia with minimal operative trauma and morbidity after surgery. Literature on robotic approach is scarce. Minimization of esophageal perforation rates has been reported.

**Study Design:** We present the technique used by our team for robotic Heller esophagomyotomy with Dor fundoplication in the treatment of esophageal achalasia. 11 patients with esophageal achalasia underwent robotic Heller myotomy with partial Dor fundoplication using the da Vinci system. The robotic technique offered superior visualization of the surgical field (stereoscopic, high definition) and high precision which is especially important during the myotomy to avoid injury of the esophagus.

**Results:** There was no intraoperative complications or significant blood loss. There was no rupture of esophageal mucosa in any of the patients. The average operative time was 123 minutes including preparation time for the system. The average hospitalization of patients was 1.5 days. During the postoperative follow-up a year after surgery, all patients were free from symptoms of dysphagia.

**Conclusions:** Robotic Heller cardiomyotomy is an excellent operation for esophageal achalasia. The use of robotic system greatly facilitates identification of the muscle layers in myotomy and protects rupture of the esophageal mucosa. The most important factor affecting the good outcome of these patients is experience of the surgical team in advanced laparoscopy and robotics.

**Robotic Single-Site Cholecystectomy Using the VESPA Approach: First Worldwide Experience**

Konstantinos Konstantinidis MD, PhD, FACS, Savas Hirides MD,MSc, Perikles Chrysoheris, MD, FACS, Fotis Antonakopoulos, MD, Petros Hirides, MD, Michael Georgiou, MD, Athens Medical Center

**Introduction:** Laparoendoscopic single-site surgery allows for the performance of most abdominal procedures with a single small incision and minimal scarring.

**Study Design:** To present the first experience with VeSPA System and assess feasibility, advantages and limitations. In February 2011, the first single-site robotic surgery program was initiated in our center with cholecystectomy selected as the pilot procedure. Since then 96 procedures have been performed. Novel specialized flexible 5mm instrumentation set was used. All instruments were introduced through a 2cm single site robotic port.

**Results:** Perioperative data was recorded for all patients including demographics, indications, operative records, length of stay, complications, and pathologic analysis. The procedure was more difficult in morbid obese patients and in cases with multiple previous operations. In one case of a patient with history of coagulative disorder, bleeding immediately after the operation was treated by reoperation and laparoscopic control of the hemorrhage. Three patients presented with wound problems postoperatively. One serious limitation is the absence of articulation of the instruments.

**Conclusions:** Robotic single site cholecystectomy is feasible and safe. Technology offers surgeons numerous potential benefits, including: better ergonomics with no instrument crowding and stable visualization of the field, resolution of the angulation problems, superior identification of biliary anatomy and meticulous dissection around Calot’s triangle. Further development of the existing instrumentation is expected to make the platform even more competitive to existing laparoscopic ones.
Benefits From a Robotic Approach to the Various Colorectal Procedures: Presentation of our Techniques
Konstantinos Konstantinidis MD, PhD, FACS; Savas Hirides MD, MSc; Perikles Chrysoheris, MD, FACS; Fotis Antonakopoulos, MD; Petros Hirides, MD; Michael Georgiou, MD, Athens Medical Center

Introduction: Laparoscopic colectomy for benign and malignant indications is well established in existing literature.

Study Design: From September 2006 till April 2012, 64 robotic colectomies were performed including 9 right and 4 left colectomies, 13 sigmoidectomies (4 with rectopexy for prolapse), 6 transversectomies, 6 colostomy take-downs, 17 low anterior resections, 1 total proctocolectomy with ileostomy, 1 Hartmann procedure and 4 abdominoperineal resections. In left colectomies and low anterior resections a 5-minute pause for re-docking of the system usually takes place (Trendelenburg position before proceeding to the pelvis). In the right colectomy special attention is paid in recognition of the duodenum, while in the left colectomy preservation of the spleen demands fine dissection and careful separation of the colic flexure which is greatly facilitated by the system. Generally a medial- to – lateral approach is preferred for mobilization of the colon. Recognition of the ureters is routinely performed in all cases.

Results: All procedures were completed successfully without any need for conversion. In most cases we usually perform a 5cm vertical suprapubic incision to externalize the colon and perform the anastomosis. In 8 cases of low and very low anterior resections we externalized the colon only to place the anvil, restored pneumoperitoneum and completed the anastomosis intracorporeally. There was minimal blood loss and no postoperative morbidity or mortality. In all cases of rectal prolapse we completed the operation by rectopexy with non-absorbable material sutured intracorporeally.

Conclusions: Robotic surgery for colectomy may offer a safe alternative to conventional laparoscopy, especially in benign cases.

12.420 Cardiac Surgery
Axillary Arterial Cannulation with Femoral Endoaortic Occlusion Balloon for Robotic Totally-Endoscopic Coronary Artery Bypass Grafting
1Eric J. Lehr, MD, PhD, 2Jeffery D. Lee, MD, 2Brody Wehman, MD, 2Alina Grigore, MD, 2Mark R. Vessely, MD, 3Johannes Bonatti, MD.

Swedish Heart and Vascular Institute, Seattle WA
University of Maryland School of Medicine, Baltimore MD
Cleveland Clinic, Abu Dhabi, UAE

Objectives: Cardiopulmonary bypass and cardiac arrest in robotic totally-endoscopic coronary artery bypass grafting is most commonly performed via femoral arterial cannulation and an endoaortic occlusion balloon delivered through the side arm of the cannula. Peripheral arterial disease increases the risk of embolic stroke and retrograde aortic dissection. Antegrade perfusion via the axillary artery with femoral deployment of an endoaortic occlusion balloon may reduce perfusion-related complications. We assessed outcomes of this cannulation strategy.

Methods: Between December 2009 and October 2011, 29 patients (age 63 [48 – 86], 72% male) underwent robotic totally-endoscopic coronary artery bypass grafting (4 single, 17 double, 7 triple and 1 quadruple). Cardiopulmonary bypass was established with axillary arterial cannulation using an 8mm Dacron graft and femoral venous cannulation. An endoaortic occlusion balloon was delivered through a 19F cannula in the femoral artery and advanced into the ascending aorta. Continuous variables are presented as median and range.

Results: Axillary artery atherosclerosis necessitated local endarterectomy in one patient and an interposition graft in a second at the time of arterial cannulation. Endoballoon inflation time was 96(47-180) minutes and cardiopulmonary bypass time was 125(61-361) minutes. One patient suffered a stroke, but regained full neurological function. Hospital length of stay was 6(3-60) days. There were no 30-day mortalities.
Conclusions: Axillary arterial cannulation and femoral endoballoon deployment is technically feasible, but gentle handling of the artery is necessary to reduce the possibility of local vascular injury. There is potential for avoiding major vascular complications in this population with known generalized peripheral arterial disease.

12.421 Urology
Single Port Robotic Varicocelectomy
LB Cornwell BS, BB Storey MD, MK Ankem MD

Objective: Over the last decade, various surgical procedures have been adapted to a robotic surgery platform in order to take advantage of superior visualization, dexterity and shortened recovery time. Laparoscopic single port surgery offers similar outcomes to standard robotic approaches but is limited by the decreased camera control, clashing of instruments and limited articulation. With the introduction of newer robotic systems single port approaches look to be the next big step in the evolution of surgical robotics offering the benefits of robotics with the possibility of improved cosmesis. In this video, we present a novel technique for minimally invasive treatment of a symptomatic varicocele using the single port robotic approach.

Methods: We present a video presentation of a single port robotic varicocelectomy. Insertion of the single port device, docking of the robot and technique are reviewed. Our patient, a 34 year old male with a chief complaint of unrelieved scrotal pain secondary to grade 2 varicocele, underwent single port robotic varicocelectomy safely.

Results: Insertion of single port device with unique robotic docking and arm arrangement is reviewed in the single port robotic varicocelectomy with the total cord ligation approach. Adequate cosmesis was obtained and is demonstrated.

Conclusions: With unique robotic docking and arm arrangement, single port robotic varicocelectomy is feasible, safe and thus demonstrated. To our knowledge, this is the first time a robotic single port varicocelectomy has been attempted. Prospective multi-institutional studies comparing different laparoscopic varicocelectomy techniques with long-term follow-up are needed to study the safety and efficacy.

14.222 Multispecialty
Preliminary Results of a Multidisciplinary, Simulation-Based Robotic Basic Skills Training Course
Kirsten Foell1, Antonio Finell1, Kazuhiro Yasufuku2, Marcus Bernardini3, Thomas Wadell2, Jason Y Lee1

1 – University of Toronto, Division of Urology, Department of Surgery
2 – University of Toronto, Division of Thoracic Surgery, Department of Surgery
3 – University of Toronto, Department of Obstetrics & Gynecology

Objectives: Currently, no validated multi-disciplinary curriculum exists for training surgeons on basic robotic surgical skills. We present and evaluate the preliminary results of a simulation-based robotic basic skills training (BST) course for trainees and post-graduate surgeons from different surgical specialties with minimal robotic experience.

Methods: A robotic BST course was offered to residents, fellows and staff surgeons at the University of Toronto, Departments of Surgery and Obstetrics & Gynecology (OBG). The course consisted of various instruction strategies: didactic lecture, self-directed online-training modules, introductory hands-on training with the da Vinci robot (dVR), and dedicated simulation-based training on the da Vinci Skills Simulator (dVSS). Participants were assessed on both cognitive knowledge and technical performance. Pre- and post-course skills testing was conducting on the dVR on two standardized skill tasks: “ring transfer” and “thread the rings”.

Results: 37 participants completed training (13 urology, 12 OBG, 12 thoracic surgery). 55% had no clinical robotic experience and, of those with experience, 81% had no surgical console experience. The dVSS demonstrated excellent face and content validity and 94% of participants agreed that it was “useful for residency training”. Mean task completion times and number of errors on both tasks improved significantly post-course (p<0.01). ANOVA demonstrated no significant difference in performance between the specialties.
validity. Participants from different surgical disciplines demonstrated improvements in basic robotic skills, regardless of specialty, level of training, and previous MIS experience.