

SCIENTIFIC ABSTRACTS

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13.100 General Surgery

Acute Appendicitis In Elderly: Diagnosis and Management Still A Challenge

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Background: Acute appendicitis is a common surgical emergency affecting all age groups. Early diagnosis with appropriate management improves outcomes. With an aging population, focus has shifted on better care and outcomes in the elderly.

Methods: A retrospective chart review of 790 patients treated for appendicitis at a community urban hospital from Aug 2008 to Aug 2011 was done. Demographic features, preoperative clinical diagnosis, diagnostic workup, Alvarado score, operative interventions and postoperative morbidity were analyzed.

Results: Of the 790 patients, 51% were male and 49 % female. While 14% of patients were >60, 75% were between 15-60 years of age . Mean BMI was 27 ± 7 kg/m². The WBC count of most patients (56%) was between 10,800-20,000, while in 26% it was below 10,000. Diagnosis was made on clinical evaluation alone (3%), radiological basis alone (8%) or combination of both (73%). 49% of patients had an Alvarado score of 6-8 and 30% had a score of 3-5. Majority (78%) underwent laparoscopic appendectomy. Mean length of stay in 60-85 (4.5 ± 4.5 days) and >85 years-old age groups (6.2 ± 3.6) was increased compared to <16 (1.5 ± 1.0) and 16-60 years-old age groups (2.0 ± 2.3). Overall morbidity was 8% which included wound infection and readmission. Increasing age (>60 vs. <60 years old) was associated with increased morbidity (14% vs. 7%, respectively, $p < 0.0001$), but not with gender or BMI ($p < 0.069$).

Conclusions: Increasing age (>60) significantly increased morbidity and length of stay. A high degree of suspicion to expedite diagnosis and management in elderly may improve outcomes.

13.101 General Surgery

Single Port Cholecystectomy with Fewer Hernias than Traditional and Single Incision Laparoscopy

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Objective: To present a series of our experiences in single port laparoscopy cholecystectomies with percutaneous needle assistance that show less hernias than the traditional and single incision laparoscopy.

Methods: A retrospective study of 2431 cases of single port cholecystectomies performed in acute and non acute conditions. These were consecutive patients with

the exception of contraindications for laparoscopy, suspicion of cancer or cholelithiasis. We used the operative laparoscopy technique with only one 12 mm umbilical port. We introduced an operative laparoscope with a 0 degree angle and a 6 mm operating channel. We used percutaneous needle assistance. The marionette leash has an entry and exit site in 2431 cases, a total of 4862 sites. The laparoscopy rein was used in 2431 cases. The laparoscopy hook was used in 2338 cases, and the suture passer needle in 2244 cases. The rein, hook and suture passer needle have only one site. Closure of the fascia at the umbilicus was done using polypropylene sutures.

Results: We encountered 6 umbilical hernias, that is 0.25 % incidence. The 11,845 needle sites had no hernias. We converted 4% of cases to traditional laparoscopy or laparotomy.

Conclusion: Single port laparoscopy has no additional ports and the umbilical entry is nearly half the size of single incision laparoscopy. The use of smaller incisions, percutaneous needles and the fascia closure with non absorbable sutures may have a role in hernia reduction.

13.102 General Surgery

A Practical Revision in Conventional Laparoscopy, Using an Innovative Device

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Objectives: To introduce an innovative portable laparoscopic device called "Khodscope."

Methods: Performing a provisional animal experiment and performing bed-sided laparoscopy in emergency conditions.

Results: Overall, 35 cases underwent laparoscopy by "Khodscope" and resulted in detection of liver and splenic laceration in 8 and 4 cases, respectively; 4 cases of appendicitis; 2 cases of perforated EP; 2 cases of intestinal mesenteric root bleeding; and NEC grade I/II in 2 cases and grade III in the other 2 cases. Khodscopy was negative in 11 cases, in which 2 traumatic cases underwent laparotomy because of peritonitis signs and small intestinal laceration was found.

Conclusion: Our experience showed comparable result with conventional laparoscopy using our innovative device, with some extra benefits.

13.103 General Surgery

"Spaghetti Technique" for Ovarian Cystectomy

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Attempted ovarian conservation for benign pathology should be the guiding surgical principle, particularly in the adolescent patient. In this case report we describe a novel technique that has been utilized for the long appendix and gallbladder by general surgeons as well as urologists for ureteral re-implantation.

Laparoscopic ovarian cystectomy is the preferred approach for benign pathologic lesions in a premenopausal population. Avoiding rupture of the cyst prior to benign pathologic confirmation is of primary importance.

In this case, we describe the application of the “spaghetti technique” to facilitate dissection of the cyst from the overlying cortex. After incising the cortex, the edges were secured and rolled onto the grasper to provide atraumatic intact enucleation of the mass. This allowed the common technical challenges of instability and deep dissection to be easily overcome.

Case: A 14-year-old African American female presented with acute abdominal pain that was found to be related to torsion of the left adnexa. De-torsion revealed bilateral ovarian masses of 10 cm in the left ovary and 3 cm in the right ovary, confirmed pathologically to represent teratomas. A PK bipolar needle was used to incise the anti-mesenteric cortex overlying the mass. The edges were grasped with atraumatic instruments and a combination of “spaghetti rolling”, hydro-dissection and sharp dissection was used to enucleate the masses which were removed via an endoscopic pouch without spillage.

We feel the addition of the “spaghetti technique” to the gynecologic literature provides clinicians an additional technique in their repertoire of methodologies for ovarian cystectomy.

13.104 Gynecology **Attributes and Barriers to Care of Pelvic Pain in University Women**

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Objective: The objective of this protocol is to describe rates of pelvic pain in university women, as well as to explore the barriers to adequate healthcare they experience.

Methods: A cross-sectional study was designed to assess chronic pelvic pain in female students 18 years or older attending the University of Florida (UF). The online questionnaire, created using REDCap electronic data capture tool, included items regarding demographics; general health; categories of pelvic pain; barriers to care for pelvic pain problems; and quality of life. A randomized sample of 2000 email addresses was compiled, and these females received the questionnaire hyperlink via REDCap. Data were analyzed using SAS.

Results: 390 of the 2000 invitees completed the questionnaire, yielding a response rate of 19.5%. Respondents' mean age was 23.28 years (range 18-51). 79.3% of respondents reported experiencing pelvic pain over the past 12 months. Dysmenorrhea was noted by 80% of participants. Significant numbers reported vulvar symptoms, deep dyspareunia, and/or bowel-related symptoms. Most participants with pelvic pain (78.8%) have not received any diagnosis for their pain, while 73.6% report not yet having visited a doctor. Barriers to receiving adequate medical care were reported, including difficulty with insurance coverage, and physicians' lack of time, knowledge, and/or interest in pelvic pain conditions.

Conclusion: Pelvic pain in younger women is a critical public health issue experienced by a significant portion of the population. Careful study of the barriers to receiving adequate medical care reported by these women will allow researchers to describe how best to improve care for these syndromes.

13.105 General Surgery Laparoscopic Cholecystectomy in Cirrhotic Patients

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Background: To value the impact of laparoscopic versus open surgery in cirrhotic patients undergoing a cholecystectomy (with symptomatic cholelithiasis).

Patients and Methods: We have evaluated all patients with cirrhosis who underwent a cholecystectomy in the period 2002-2012: 51 patients, 28 males, 23 females; mean age 63 years (range 43-91 y); child-pugh class A 80%, class B 20%: 13 patients (25.49%) underwent a open cholecystectomy (OC) whereas 38 patients (74.50%) underwent a laparoscopic cholecystectomy (LC) with 12 patients (31.5%) converted from LC to OC. Most patients (90%) had the diagnosis of cirrhosis previously defined.

Results: The mean operative time was 82 min in LC and 168 min in OC, the mean hospital stay 7 days in LC and 17 days in OC; conversion rate was 31.5%. No mortality in our series. The total morbidity in OC was 32% (8/25) versus 15% (4/26) in LC: transient ascites OC 16% (4/25) vs LC 7.6% (2/26), wound hematomas OC 8% (2/25) vs LC 3.8% (1/26); in 2 patients treated with open access and in one converted to OC we have had blood transfusion requirement. The evaluation of post-operative deterioration of liver function tests (LFTs) (OC 28% vs LC 36%) is very difficult because of the changes caused by pneumoperitoneum or also by open procedure.

Discussion/Conclusion: Cirrhotic patients with symptomatic cholelithiasis have increased hospital stay, operative time and postoperative morbidity with open cholecystectomy versus laparoscopic approach; therefore minimally invasive surgery should be the preferred initial choice in cirrhotic patients with cholelithiasis.

13.106 Gynecology The Effect of Race and Increasing BMI on Route of Hysterectomy

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Objective: It has been noted in the literature that the rates of abdominal hysterectomy continue to be 77%, with less than 1/3 of hysterectomies performed via minimally invasive approaches. We hypothesize that at Palmetto Health Richland Hospital in Columbia, SC, the rates of minimally invasive hysterectomies are much higher than the national average.

Methods: Medical records of hysterectomies in 2000 and 2010 were abstracted for basic demographics including age, BMI, uterine size in grams, and route of hysterectomy. Exclusion criteria were any surgery performed for cancer. Standard statistical analysis was performed (X², t-test); null hypothesis was rejected for p value <0.05.

Results: We identified 334 charts in 2000 and 250 in 2010. In 2000, mean body mass index was 29.9 (± 7.31). In 2010, mean BMI was 32.65 (± 7.4). In both years, 50% of hysterectomies were performed through minimally invasive techniques. The difference was the distribution of type of procedure. In 2000, 46.7% were performed via vaginal approach whereas in 2010 47.7% of hysterectomies were performed via laparoscopic approach. When stratified by weight class, obese women (BMI >30) had significantly more hysterectomies performed by the open approach when compared to normal weight women (for 2000, $p=0.039$; for 2010, $p=0.045$). Additionally, black women are more likely to have open surgery (2000, $p=0.0005$; 2010, $p=0.0001$).

Conclusions: At PH Richland, 50% of hysterectomies are performed via minimally invasive approaches. This did not extend to obese women or black women. Given the quicker recovery and return to ambulation it is important to offer these populations of women minimally invasive surgery.

13.107 Gynecology

Advanced Hysteroscopic Surgery-Where Are We Now?

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Advanced hysteroscopic surgery is pivotal in contemporary clinical gynaecology. Nevertheless, many of our trainees lack competence at this vitally important skill.

Objective: To test the above theory.

Setting: Royal Brisbane and Women's Hospital, the main teaching and referral centre, Queensland, Australia, for 23 years, between 1990-2012 (inclusive).

Method: A retrospective observation study examining the performance of trainees (registrars and senior registrars) in accredited training posts of the Royal Australian

and New Zealand College of Obstetricians and Gynaecologists. On average, 150 advanced hysteroscopic operations are done every year. These include hysteroscopic endometrial resection, hysteroscopic myomectomy and resection of uterine septae. As an integral part of training, many consultants allow trainees to carry out major hysteroscopic procedures under direct supervision. The performance of the trainee is monitored and evaluated.

Result: In 50% of cases, the supervising consultant has to take over either partly or completely to ascertain safety of the patient and satisfactory completion of the operation.

Conclusion: Diminishing surgical exposure, the adoption of "safe working hours" in Australia, possible industrial pressure and escalation of surgery-related lawsuits against medical professionals have resulted in our trainees losing skills for advanced hysteroscopic operations.

13.108 General Surgery

Laparoscopic Bile Duct Anastomosis and Roux-en-Y Choledochojejunostomy Are Feasible in Treating Bile Duct Injury

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Objective: Bile duct injury is one of the most severe complications in biliary tract surgeries. Generally, end-to-end anastomosis or Roux-en-Y choledochojejunostomy under laparotomy is used to repair the injured bile duct. However, the deep anatomical position and narrow diameter of the bile duct increase the difficulty in laparotomy. This study aimed to investigate the feasibility of laparoscopic procedure in treating bile duct injury.

Methods: From July 2001 to July 2012, twelve patients with bile duct injury were included in this study. Over all, three types of surgical procedures were utilized. For seven patients with transection of hepatic duct, common bile duct, or postoperative choledochal stricture, laparoscopic bile duct end-to-end anastomosis was employed. Laparoscopic Roux-en-Y choledochojejunostomy was used in three patients with high level hepatic duct injury. Another patient with a 10mm impairment of anterior bile duct wall around hepatic duct bifurcation was repaired by flap from cystic wall laparoscopically.

Results: All patients were successfully cured. Except one patient converted to open, others were repaired laparoscopically. Postoperative anastomotic bile leakage was found in one patient. Two patients had stress stomach ulcer and postoperative intraperitoneal hemorrhage after Roux-en-Y choledochojejunostomy. The follow-up duration was 1-11 years (6y average) and no anastomotic stricture was found.

Conclusions: Laparoscope is characterized by magnifying the narrow bile duct, which facilitates surgical field viewing and suture operation in optimizing the effect of repairing. It could be concluded that laparoscopic bile duct end-to-end anastomosis and choledochojejunostomy are feasible and provides a more delicate procedure in repairing bile duct injury.

13.109 General Surgery Cholecystectomy via a 33 cm Vaginal Port

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Background: To present a facilitating technique for hybrid transvaginal cholecystectomies, using a longer vaginal port.

Method: The procedures were done using a 13 mm in diameter and 33 cm in length vaginal port and a 5 mm umbilical port. The umbilical port was used for visualization and surveillance of the vaginal port entrance in the cul-de-sac and placing 5 mm laparoscopic instruments. The vaginal port was used to place instruments, and 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 back and forth to a Trendelenburg position. The colpotomies were closed vaginally.

Results: We performed 18 cases, no conversion occurred and no complications were found. We achieved good cosmetic results and used less pain medication than in traditional laparoscopy.

Conclusions: The approach uses a newly designed vaginal port that works with standard laparoscopic equipment available in most hospitals, making this technique easy and affordable to perform.

13.110 Gynecology Should Minimally Invasive Hysterectomy be a Quality Improvement Measure?

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Objective: Women undergoing minimally invasive hysterectomy (MIH), including laparoscopic hysterectomy (LH) and vaginal hysterectomy (VH) have shorter hospital stays and recovery times compared to women having abdominal hysterectomy (AH). We investigated the effect of maximizing the proportion of MIH which has been a quality improvement initiative in place since 2008 in Kaiser Permanente Northern California.

Methods: We performed a retrospective cohort study of women undergoing

hysterectomy for benign gynecologic conditions in KPNC from 2001-2011. Annualized hysterectomy rates, post-operative hospital stay (hours), and complications were estimated by surgical route. Multinomial logistic regression was performed to assess patient and procedure characteristics (age, race, income, indication, and BMI) and system factors (year of surgery, surgeon training, hospital) associated with surgical route and complications from 2008-2011.

Results: From 2001-2011 approximately 42,000 hysterectomies were performed; the annual rate decreased by 18% from 3.9 to 3.2 per 1,000 women members. From 2008-2011 the proportion of AH decreased from 61% to 31%, LH increased from 13% to 44%, VH remained the same. While year of surgery was the largest predictor of MIH (7.9-95%CI: 6.9, 9.1), age, race, indication, BMI, and hospital were also independently associated with surgical route. Complications were low for all routes and years.

Conclusions: Minimally invasive hysterectomy increased in response to implementation of a regional MIH training and policy initiative. MIH should be considered a quality improvement measure; variations by patient and procedure characteristics as well as system factors that serve as barriers to quality improvement should be addressed.

13.111 General Surgery Transumbilical Clipless Laparoscopic Cholecystectomy Using Puppeteer Technique

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This is a pilot study of 15 cases to assess the safety, feasibility, and short-term outcomes of trans umbilical clip less laparoscopic cholecystectomy using single operating port. Sutures are used for retraction of the gallbladder - a technique known as the 'puppeteer technique', Puppeteer stings act similar to the traditional three ports. The Harmonic scalpel is not only a safe and effective instrument but also a reliable substitute for clips because it provides complete hemobiliary stasis. Due to puppeteer movement the visibility and trifurcation was brilliant and retraction is done easily at the junction of cystic duct & CBD. This method gives the clarity and safety of conventional four port technique and at the same time gives cosmetic result of scar less surgery.

13.112 General Surgery Transumbilical Multi-Mini Port Clipless Cholecystectomy Without Using Triport

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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 multimini 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

13.113 General Surgery

Laparoscopic Cholecystectomy (SILC) with Conventional Three Port Laparoscopic Cholecystectomy

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To report our experience with Single Incision Laparoscopic Cholecystectomy (SILC) and its retrospective comparison with conventional 3-port laparoscopic cholecystectomy. Data was collected for all patients undergoing Single Incision Laparoscopic Cholecystectomy(SILC) (Group A n = 45) and data for those who had undergone conventional 3-ports laparoscopic cholecystectomy (Group B n = 45) between April 01, 2011, to November 30, 2011. Operative time was longer with Single Incision Laparoscopic Cholecystectomy (SILC) compared with conventional 3 - ports laparoscopic cholecystectomy. A correlation was seen between reducing SILC operative time and increasing experience. Three patients in the SILC group A required the addition of extra laparoscopic port. No patients in the SILC (group A) required conversion to open surgery. Patients stayed an average of 20 hours following SILC and 30 hours following conventional laparoscopic cholecystectomy. No patient in each group had a postoperative biliary leakage. Single-incision laparoscopic cholecystectomy (SILC) may be equal to conventional laparoscopic cholecystectomy in terms of safety and efficacy.

13.114 General Surgery

Laparoscopic Resection of a Symptomatic Gastric Diverticulum

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Gastric diverticula are rare and are usually asymptomatic. This video demonstrates the use of minimally invasive surgical techniques to resect a symptomatic gastric diverticulum. A 54 year old male, with no past medical history, presented with recurrent nausea, vomiting, and change in bowel function. He was found to have a gastric diverticulum on CT enterography and it was confirmed by both upper

gastrointestinal series and upper endoscopy. After the elimination of all other potential acute causes for his symptomatology and failure of conservative management with a proton pump inhibitor, high fiber diet, and probiotics, surgical intervention was chosen for management. The patient underwent a laparoscopic partial gastrectomy for diverticulum resection. There were no complications and at one month follow up the patient had complete resolution of symptoms.

13.115 Other

Clinical Study on Arthroscopic Characteristics of Ankle Lateral Instability and its Reconstruction

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Objective: To explore the clinical effects of reconstruction of ankle lateral instability with allograft tendon and to investigate its arthroscopic characteristics of traumatic arthritis of ankle joint.

Methods: 36 patients with ankle lateral instability and traumatic arthritis were detected with arthroscopy. Sixteen cases of synovitis, 5 cases of loose bodies, 15 cases of synovial interposing, 9 cases of talus cartilage injury and 5 cases of anterior tibia osteophyte were observed under arthroscope. Arthroscopic procedures adopted were gouging synovial membrane, dislodging loose bodies, stripping osteophyte and microfracture. Lateral ligaments were reconstructed by allogeneic tendon and fixed with Biointrafix technique. The ankle was fixed with brace postoperatively for 3 weeks, The rehabilitation program was performed at the same time.

Results: The patients were followed-up for 15~96 months with 38 months averagely. Stability of lateral ankle in all patients was significantly improved with recurrent sprain disappearing. AOFAS was 36.7 ± 0.9 preoperative and 85.4 ± 1.6 postoperative $t=52.361$, $P=0.000$.

Conclusion: Reconstruction of lateral instability of the ankle with allograft and fixed with Biointrafix technique could get satisfactory results. In order to improve symptoms and ankle function, it is important to pay more attention to the disorder within ankle joint and treated timely with mini-invasive surgery technique in lateral instability of ankle with traumatic arthritis.

13.116 Urology

Opioid-Free Analgesia Following Robot-Assisted Laparoscopic Prostatectomy (RALP)

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Opioid-Free Analgesia Following Robot-Assisted Laparoscopic Prostatectomy (RALP)

Opioid analgesia following abdominal/pelvic surgery has 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 RALP patients using perioperative IV acetaminophen and ketorolac for analgesia were reviewed. All procedures were performed under general anesthesia utilizing a balanced technique. The balanced anesthetic was not standardized with the exception that patients received acetaminophen 1000mg IV over a 15 minute infusion and ketorolac 30mg IV prior to extubation. Acetaminophen 1000mg IV was administered q6 hours post-surgery, while ketorolac 30mg IV was administered at q8 hour intervals. Patients were provided a clear liquid diet and ambulating the evening of surgery. Following passage of flatus and tolerating a regular diet, patients were discharged home. Parenteral and oral opioid consumption was reviewed.

44 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. Mean hospitalization and urethral catheter duration were 21.3 hours and 5.0 days, respectively. 14 (31.8%) patients received parenteral opioid medication in the PACU, but did not require opioid medication on the hospital floor; while 27 (61.4%) patients did not require administration of parenteral/oral opioid analgesia in the PACU/hospital floor. No immediate/delayed adverse events were noted.

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

13.118 Gynecology Conservative Laparoscopic Electrcoagulation Adenomyolysis (CLEA): An Innovation for the Management of Adenomyosis

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Objective: To estimate the effectiveness and safety of laparoscopic adenomyolysis as a novel treatment modality for symptomatic adenomyosis.

Study: Prospective observational study.

Methods: Thirty premenopausal women with symptomatic adenomyosis were studied. None of them desired further pregnancy. They underwent laparoscopic adenomyolysis. The primary outcome measure was patient satisfaction as regards pain and menstrual blood loss compared with pretreatment pain and loss. Secondary outcome measures included postoperative pain, complications, secondary interventions, and failures.

Results: Thirty women underwent laparoscopic adenomyolysis and were followed for 3, 6, 12, 18 and 24 months after the procedure. The primary outcome was (89.1%) of patient reported their satisfaction as indicated by reduction in menstrual pain and days of menstrual flow per cycle (4.2 vs. 8.8 days, $p < 0.0001$). There was a significant improvement in quality of life scores ($p < 0.0001$). The rate of failure varies according to the interval of follow up from 15.6% at 6 months to 10.9% at 2 years.

Conclusion: Laparoscopic adenomyolysis as a novel conservative management of adenomyosis improves clinical symptoms in the majority of patients.

13.119 General Surgery Transumbilical Single-incision and Four-port Laparoscopic Transduodenal Papillectomy: How We Do It

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Objective: To introduce the experience of transumbilical single-incision and four-port laparoscopic transduodenal papillectomy

Methods: From Sep 2010 to Dec 2012, LTDP were performed in three patients (case A B and C) and one of them was underwent single-incision LTDP (case C). The mean size of mass was 2.5cm (2.0-3.0cm). The diagnosis before operation was benign or premalignant tumors. In the operation, after locating the tumor, we performed a longitudinal duodenotomy of approximately 1.0 cm, which was a little low on the duodenum opposite the tumor and then lengthen it up or/and down to about 3.0cm just like a diagonal dreich "S". The reconstruction was also performed with incision at the same time all under laparoscopy.

Results: LTDP was successful in all the patients. The mean operative time was 275 minutes (195-330 min), and mean estimated intraoperative blood loss was 240ml (100-400ml). Postoperative histology of case A and C was the same as preoperative while case B with moderately differentiated adenocarcinoma with mucus cell cancer. The papillectomy complication happened only in one with mild pancreatitis and biliary fistula, which were cured after conservative management. The complications of cholangitis, bleeding and delayed papillary were in none. Food intake was started on 72h after operation in case A and C. Recurrences were only seen in case B six months after operation.

Conclusions: Transumbilical single-incision and four-port laparoscopic transduodenal papillectomy were both feasible and could be accomplished safely.

13.121 General Surgery

Single Incision Laparoscopic Surgery – 520 Consecutive Single Port Colon Resections

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Laparoscopic colon surgery has shown several advantages over open procedures in the short run. Since then, efforts were made to reduce invasiveness by using only one access – a single port. We started with a prospective trial of single incision colonic procedures in June 2009. Initially patients with sigma-diverticulitis and inflammatory bowel disease were operated upon with a single port device. Two staff surgeons started with this procedure, meanwhile ten surgeons are involved. The umbilicus or a potential stoma site was used for inserting the SILS-Port and also for extraction of the specimen. Most patients were treated with sigmoid diverticulitis (n=300), colon cancer (n=89), inflammatory bowel disease (n=55), colonic polyps (n=36), and some other diseases. The technical details can be demonstrated in a very short video clip. There were 249 male and 271 female patients. Mean operation time varied significantly according to the different procedures. Sigmoid/anterior rectum resections took mean 157 minutes (range 100-236 minutes). 37 (7%) were converted to open procedures. Overall 89 (17%) complications happened. Most of them were very small wound infections, like umbilical hematomas. 18 (3.5%) anastomotic leakages occurred. Patients were very satisfied with the procedure because of excellent cosmetic results and low pain. Single port access is our preferred method for laparoscopic colon surgery .

13.122 General Surgery

Single-Port Transanal Tumor Resection (SPTTR) in Rectal Surgery

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Single incision laparoscopic procedures in various colorectal diseases are described. We started with single-port laparoscopic surgery in 2009 and also used the single-port also for transanal operations, which we had previously performed with Transanal Endoscopic Microsurgery (TEM). Mainly benign colonic diseases and low risk early rectal cancers were treated with the new approach.

Between October 2010 and January 2013, a total of 16 patients (10 male and 6 female) with rectal lesions were operated by using the single-port Transanal Tumor Resections (SPTTR). The operative procedures were performed by 2 surgeons who are experienced with TEM and with SILS procedures. The procedure was successful

in all patients and there was no need for conversion to conventional TEM. The mean age of the patients was 67 (41-90) years with a mean Body Mass Index of 27 (16-38). The ASA classification in this group was ASA 1 = 0, ASA 2=11, and ASA 3=5. Mean operating time was 99 minutes (range from 35 to 182 minutes).

There were 7 benign and 6 malignant (5 patients with T1 and 1 patients with T3 carcinoma), and 3 patients with high grade neoplasia. The mean pain score (VAS) on postoperative day one was 2.3 (0-5), and on postoperative day three 1.4 (0-4). There were no postoperative complications.

In our series with 16 patients we have shown that single-port Transanal Tumor Resection (SPTTR) is feasible for resection of locally resectable rectum lesions. SPTTR, performed by experienced surgeons, is a promising alternative to TEM.

13.123 Gynecology

Minimally Invasive Hysterectomy at a University Teaching Hospital: The New Gold Standard?

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Objective of the Study: To evaluate the feasibility of a minimally invasive approach for hysterectomy for benign disease at a university teaching hospital.

Methods and Procedures Used in the Study: 537 consecutive patients underwent hysterectomy for benign disease at Penn State Milton S. Hershey Medical Center in 2010. No cases were excluded. Minimally invasive approaches included total vaginal hysterectomy (TVH), laparoscopic-assisted vaginal hysterectomy (LAVH), total laparoscopic hysterectomy (TLH) and laparoscopic supracervical hysterectomy (LSH). All surgeries were completed with residents as primary surgeon or first assistant.

Results of the Study: Mean age was 45yo, mean BMI was 30kg/m², mean estimated uterine size was 11 cm, and 22% had prior C- section. Of the 537 hysterectomies, 526 (98%) were started with a minimally invasive approach and 517 (96%) were completed in that fashion, thus requiring only 9 conversions (2%). Of the cases that utilized a minimally invasive approach 16% were vaginal and 84% were laparoscopic. Mean operative time was 86 min, mean blood loss was 95cc, mean hospital stay was 1 day, and mean uterine weight was 199gm. For the minimally invasive hysterectomies, there was a 5% major complication rate.

Conclusion Based on These Results: Our residency training institution completed 96% of 537 hysterectomies using a minimally invasive approach while maintaining acceptable operative times, blood loss, hospital stay and complication. Thus, our study supports that a minimally invasive approach for hysterectomy for benign disease at an academic resident teaching facility is feasible.

13.124 General Surgery

A Laparoscopic Intra-gastric Approach to Gastrointestinal Stromal Tumor

Excision with Endoscopic Assistance

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Of all the gastrointestinal malignancies, 1-3% are of the gastrointestinal stromal tumor subtype and surgery is the mainstay of treatment for early or small lesions. Approaches to minimize incision size, reduce hospital stay, and decrease postoperative pain, while maintaining negative margins are desired of patients. This is a video presentation of a laparoscopic intragastric gastrointestinal stromal tumor excision with endoscopic assistance. A 53 year old male was referred to surgery after an upper gastrointestinal bleed. Evaluation with endoscopy revealed a 5 cm submucosal endoluminal gastric mass and biopsy demonstrated fundic type mucosa with submucosal smooth muscle. Further work up did not identify lymph node enlargement nor surrounding invasion, and therefore surgery was scheduled for removal of the mass. The patient had an uncomplicated postoperative course and remained asymptomatic at follow up

13.125 Urology

Laparoscopic Renal Resection Training in Cadavers Embalmed Using Thiel's Method: Development and Evaluation of Skills Learning

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Background and Objectives: Thiel's embalming method is less known, however it preserves natural colours, texture and flexibility; thus overcoming the limitations of formalin embalming and places it be an ideal model for minimally invasive surgical(MAS) training. We report assessment of surgical anatomy, tissue planes, consistency, smell and satisfaction with performance of procedure by participants and course faculty.

Materials and Methods: In a prospective descriptive study, 14 participants and 4 experts carried out laparoscopic left or right nephrectomy. Faculty members were laparoscopic surgeons with teaching and training experience of atleast three years. Delegates were in the advanced stage of their training with experience in basic laparoscopy. Questionnaires previously validated for other surgical courses were used. Responses were recorded using five-point Likert satisfaction scale alongwith feedback forms. Mean scores for each step were compared between delegates and faculty.

Results: The anatomy, tissue consistency, anatomical planes, opening peritoneum, ureter identification, dissection to and of hilum, identification with skeletalisation and clipping renal vessels, mobilise poles of kidney were scored with mean of 4.25+/- 0.25. All participants were highly satisfied with surgical quality of the tissues. Similar scores were reported by faculty on the course.

Conclusions: Thiel's embalming method preserves many features of human anatomy and the present study showed excellent preservation of anatomical planes, tissue consistency and landmarks as consistently reported by participants and faculty. This resource can be used to address the challenges of surgical training, particularly MAS.

13.126 General Surgery Appendiceal Mucinous Cystadenoma

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Introduction: Appendiceal mucocele is an uncommon disease. The incidence is 0.2% to 0.7% of all appendectomy specimens. Disease presentation may resemble acute appendicitis, however, the clinical picture may vary considerably, and incidental finding is common.

Case description: We present a case of a 74 year old female with a history of chronic abdominal pain. Physical examination revealed a palpable mass in the right lower quadrant. CT confirmed a round, well-circumscribed soft tissue mass measuring 8 x 4.5 x 3.9 cm, located posterior and inferior to the cecum. A large cystic mass associated with the appendix was identified at laparoscopy. It was adherent to the abdominal wall. There was no obvious lymphadenopathy, hepatic metastases, or other tumors in the abdominal and pelvic cavities. En bloc excision with appendectomy was performed. The specimen was placed in an extraction bag for removal. The frozen section reported clear margins and the final histopathologic diagnosis was mucinous cystadenoma, 10 x 5 cm.

Discussion: Mucinous cystadenomas account for 63-84% of all appendiceal mucoceles. For uncomplicated mucinous cystadenoma, appendectomy is adequate. Caution is advised to avoid rupture of the mucocele which may lead to Pseudomyxoma Peritonei. The role of laparoscopic surgery in the management of appendiceal mucocele remains controversial. Some authors suggest that large lesions should not be approached laparoscopically due to the risk of tumor rupture. However, there are case reports of successful laparoscopic removal of lesions up to 12 cm.

13.127 Gynecology A Comparison of Laparoscopic Versus Abdominal Radical Hysterectomy with Pelvic Lymphadenectomy in the Treatment of Early-stage Cervical Cancer

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Abstract Objective: To determine whether total laparoscopic radical hysterectomy (TLRH) is a feasible alternative to an abdominal radical hysterectomy (ARH) in the treatment of early-stage cervical cancer (IB-IIA).

Method: The outcomes of 92 patients with cervical cancer (IB-IIA) who underwent laparoscopic (LPS group, N=51) or laparotomic (LPT group, N=41) radical hysterectomy and pelvic lymphadenectomy at Peking University Third Hospital from Jan 2005 to Mar 2010 were retrospectively analyzed. The parameters including operating time, intra-operative blood loss, the number of lymph nodes resection, the gastrointestinal recovery time, intra- and post-operative complications, hospital stay, relapse, and mortality rate were compared between the two groups.

Results: In LPS group, the operating time is longer (312.7 ± 58.5 min vs. 275.2 ± 56.5 min, $p=0.003$). LPS group had less intra-operative blood loss ($200(50 \sim 1200)$ ml vs. $900(400 \sim 2300)$ ml, $p=0.000$), shorter gastro-intestinal recovery time (38.6 ± 15.0 h vs. 55.9 ± 13.8 h, $p=0.000$) and shorter hospital stay ($7.0(4 \sim 26)$ d vs. $13.0(5 \sim 22)$ d, $p=0.001$) when compared with LPT group. Post-operative morbidity ($p=0.096$) and intra- and post-operative complications ($p=0.428$) were similar between the two groups. The number of lymph nodes and the width of parametrium and vagina resection, LPS group is less than LPT group ($p=0.000$, $p=0.000 \sim 0.035$). The relapse and mortality rate were similar between two groups ($p=0.090$, $p=0.096$).

Conclusion: It is feasible to do radical hysterectomy and pelvic and para-aortic lymphadenectomy by laparoscopy instead of laparotomy for early-stage cervical cancer. And laparoscopy showed more favorable operative outcomes, although follow-up time was relatively shorter. [Key words] cervical cancer; radical hysterectomy; laparoscopy.

13.128 Other

Three to Four Trocars Method in Total Laparoscopic Aortic Surgery

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Objective: Laparoscopic aortic surgery has become a new therapeutic model following open surgery and endovascular technique. The number of trocars for this procedure varied from six to more than 10. The study is to introduce the experience of total laparoscopic aortic surgery with 3-4 trocars method.

Methods: Our institution performed total laparoscopic abdominal aortic aneurysm (AAA) repair with 3 trocars in 2 cases and laparoscopic aorto-femoral bypass with 4 trocars in 2 cases, 3 trocars in 1 case. Under general anesthesia, the patient was placed in reverse Trendelenburg position. Pneumoperitoneum was induced with Veress needle and maintained at 13mmHg with carbon dioxide. The operation was carried out with 3-4 trocars.

Results: All the operations were performed successfully. None of the cases were converted to open surgery. The mean operative time was 282min (150-450min). The mean blood loss was 660 ml. No complication was found within 18 months (14-26 months) of follow up.

Conclusion: These results show that total laparoscopic aortic surgery with 3-4 trocars is feasible and worthwhile.

13.129 General Surgery Gastro-cutaneous Fistula in the Chest!

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Method and procedure: A young male with stab injury to the chest presented with gastric contents in his chest tube. CT confirmed gastric perforation with diaphragmatic rent. On table the fundus which was intrathoracic, was mobilized into the abdomen, through what appeared to be a congenital diaphragmatic hernia! Identifying the perforation, a limited sleeve of that perforated portion of the stomach was excised and the diaphragmatic defect closed. Pleural cavity toileting was done thoracoscopically.

Result: The decision to operate was because of persistent sepsis in the chest, despite his s.albumin being extremely low. To no surprise he developed a leak on POD7. Re-laparoscopy only providing room for peritoneal toileting and insertion of multiple abdominal drains. Naso-jejunal tube inserted and feeding commenced. Eventually he developed a controlled fistula, which over the days showed no signs of spontaneous closure. A covered self expanding stent was placed across the rent, off naso-jejunal feeds and was eating normally. All drains have been removed and the tract has closed.

Conclusion: Laparoscopy has brought about such drastic reduction of post-op morbidity, especially in this patient having severe hypoalbuminemia. An open laparotomy might have landed us in a graver situation of dealing with a potential burst abdomen scenarios. The decision to stent the patient was commendable. This case has brought a big element of surprise, surgical innovation, wise decision making and most importantly a smiling young man.

13.130 Thoracic Novel Use of Robotic and Ultrasound Guided Techniques in the Resection of a Gastrointestinal Stromal Tumor

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Introduction: Despite evolving experience with laparoscopic resections of gastric gastrointestinal stromal tumors, there is little data describing robotic resections. Here we describe a robotic resection of a gastric gastrointestinal stromal tumor utilizing laparoscopic ultrasonography for tumor localization.

Methods: The patient is a 46 year old African American male who presented with

symptoms of melena and syncope. Esophagogastroduodenoscopy showed a mass along the greater curvature and endoscopic biopsy confirmed a gastrointestinal stromal tumor. CT staging showed a 3.5 x 3.5 cm mass without metastatic disease. Three robotic ports (12 mm umbilical, 8 mm left lower quadrant and 8 mm subxiphoid) were combined with a 12 mm right lower quadrant assist port and a right mid abdomen 8 mm port for the laparoscopic liver retractor. Mass localization was facilitated by intraoperative ultrasound and dissection performed with bipolar electrocautery via dissecting forceps. Resection was performed using a stapled technique and the specimen removed via the assist port.

Results: Total operative time was 104 minutes with an estimated blood loss of 25 ml and no significant morbidity. Length of stay was 3 days and the patient returned to work within one week. Specimen was CD117 and DOG1 positive with 2-3 mitoses/hpf. At 1 year follow-up, there was no evidence of disease.

Conclusion: This video provides a novel and efficient technique for the removal of a gastric gastrointestinal stromal tumor robotically. It demonstrates that this resection can be safely performed with the aid of intraoperative ultrasound for easy identification of the appropriate resection margins.

13.131 General Surgery

The Study of Mini-invasive Treatment for Hepatolithiasis

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Abstract Objective: To study the method, feasibility, and postoperative effects of mini-invasive treatments on hepatolithiasis.

Methods: From 2006 to 2012, 15 patients with hepatolithiasis underwent total laparoscopic treatment. The operation methods were included in simple laparoscopic hepatectomy, simple laparoscopic bile duct exploration, or accompanied with Oddi sphincter preserved hepatico-subcutaneous stoma with gallbladder or free jejunum.

Results: All cases underwent total laparoscopic treatment with no mortality, and postoperative residual stone rate was 26% (4/15). All patients were followed-up (100%) with an average of 29 months (2-80 months), no stone recurrence. One case of the stenosis of anastomotic stoma and intrahepatic duct stricture were discovered separately (1/15, 7%).

Conclusion: If the operative indications were properly controlled, the procedures carefully performed, the choledochoscopy and sub-cutaneous stoma correctly used, the mini-invasive treatments for hepatolithiasis were available.

13.133 General Surgery

Innovations and DIY in Basic Laparoendoscopic Leading to \$2.00 Single Port Access (SPA) Device: Indian Scenario

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Background: The last two decades have seen a paradigm shift in not only teaching but also the practice of laparoendoscopic surgery/Minimal Access Surgery (MAS). In the pursuit for decreasing sites of incisions, there is increasing demand for "Single Port Access" (SPA) devices. The understanding of the various steps of techniques laparoendoscopic surgery has lead to DIY (Do It Yourself) innovative devices. SPA device can be made at a cost factor of maximum \$ 2.00 (with added professional benefits). This is a sure method to ensure that the "MAS" reaches the "Masses" in India. Innovations can be "evolutionary" or "revolutionary".

Methods: Basic DIY "Box Trainer" can be made from any economical packing material and image for training can be generated using a CCTV / web camera and rechargeable LED torch. DIY for "substrate" material is made by mounting a "stretched glove" like a "barbeque / kebab" across the box trainer. In laparoendoscopic surgery often it is mandatory to use a "port separator / sleeve". DIY device is made from truncated "sterile glove and 2 rings combination" – one ring is smaller and flexible and placed intra-abdominal and the other larger rigid ring on the skin. DIY SPA device costing \$ 2.00 lies in use of the intact "sterile glove 2 rings combination". The fingers of the glove house the standard or DIY cannulae and endoscope.

Conclusions: Innovative DIY devices are used routinely or in a "low resource" environment. DIY devices are regularly used starting from box-trainer, trocar, substrate materials, port separator and for SPA.

13.134 Multispecialty

The Global CO₂ Balance Monitoring Software During Laparoscopic Procedures

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Objective was to demonstrate the software is meant for global CO₂ balance monitoring during laparoscopic procedures.

Study design and methods: We presumed that the determining mechanisms of blood gas and acid base balance changes during laparoscopic surgery are an intraperitoneal pressure, CO₂-pneumoperitoneum time and CO₂ elimination ability of respiratory system. Subsequently the design of the software is based on blood gas changes are strictly associated with intraperitoneal pressure and CO₂-pneumoperitoneum time in a rabbit model.

Results: According to the physical law CO₂ moves from abdominal cavity to peritoneal tissue, from peritoneal tissue to venous blood and from venous to arterial

blood stream. Subsequently the framework is settled as computational implementation of mathematical model describing global CO₂ balance and its transport. We divided the whole CO₂ transportation network to several compartments: mesothelial layer diffusion in the abdominal cavity and CO₂ inflow from peritoneum tissue to venous capillaries, CO₂ transportation in arterial and venous blood stream, and alveolar gas exchange in the lungs controlled by the respiration rate. The core mathematics embraces mass balance was coupled with ability of respiratory system to eliminate CO₂ gas in rabbit model.

Conclusions: The software allows monitoring a global balance of accumulated CO₂ in peritoneal tissue, venous/arterial blood stream and calculating the rate of respiratory parameters required to remove an excess amount of CO₂ depending on the ability of respiratory system in order to avoid systemic blood gas acid base balance complications during CO₂-pneumoperitoneum.

13.135 General Surgery Remnant Gastrectomy for Upper GI Bleed in Post Gastric Bypass

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Background: Upper Gastrointestinal hemorrhage is one of the rare but late major complication seen in gastric bypass patients. Usual source of bleeding is from excluded gastric remnant. The diagnosis is not only difficult by standard work up for upper GI bleed which is usually negative but also time consuming. This study will describe 3 cases of late gastrointestinal (GI) hemorrhage after gastric bypass. Methods: 3 patients who underwent previous Roux-en-Y gastric bypass presented to ED several times for management of GI hemorrhage. Their history, diagnostic work-up, management, and surgical pathology are reviewed.

Results: In all 3 patients, preoperative diagnostic evaluation including nuclear scintigraphy, endoscopy, and angiography failed to localize the source of bleeding. Intraoperative endoscopy of the gastric remnant, remnant gastrectomy and revision of gastrojejunal anastomosis were performed in all 3 patients. The mean time interval between gastric bypass operation and gastrectomy was 2 years (range 1.8 - 2.1 years). In all 3 patients, the source of bleeding was documented intraoperatively by presence of clots and severe gastritis and also on pathologic examination of the resected gastric remnant. (Recurrence was not seen in 3 out of 3 at a mean follow-up of 6 months).

Conclusion: GI hemorrhage after Roux-en-y gastric bypass can be a diagnostic and therapeutic dilemma. Intraoperative endoscopy of the excluded stomach and remnant gastrectomy should be considered when the source of bleeding is not identified by usual workup for Upper GI bleed.

13.136 General Surgery Assessment of Single Incision versus Conventional Laparoscopic Resection in Gastric GIST: A Retrospective Cohort Analysis

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Background: Single-incision laparoscopic surgery (SILS) is a recent development of minimally invasive surgery for gastrointestinal stromal tumors (GISTs). The literature comparing it against conventional laparoscopic surgery remains limited. This study aimed to evaluate the feasibility and effectiveness of the SILS approach compared with the conventional laparoscopic resection for GIST.

Methods: A retrospective case-cohort study was performed to compare the benefits and outcomes of SILS and conventional laparoscopic partial gastrectomy for GIST. Between April 2008 and December 2012, 39 patients underwent laparoscopic gastrectomy for gastric stromal tumors in our department. The medical records of the patients were reviewed retrospectively with tumor size, operating time, and other clinical courses.

Results: SILS resection was performed in 19 patients; conventional laparoscopic resection was done in 20 patients. Compared with conventional laparoscopic group, the operative time in SILS group was shorter, gastrointestinal function recovery time and postoperative hospital stay in SILS group was similar with that in conventional laparoscopic group. There were no intraoperative or postoperative complications recorded in both groups.

Conclusions: Compared with the conventional laparoscopic procedure, SILS in gastric stromal tumors is feasible and safe when performed by experienced surgeons.

13.137 Gynecology

Minimally Invasive Surgery in the Obese Patient (MISOP) Project. A Comparison of Robotic vs Conventional Laparoscopic Hysterectomy.

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Objective: To compare intraoperative and immediate postoperative outcomes in obese patients undergoing conventional laparoscopic or robotic assisted hysterectomy for benign disease.

Design: Retrospective descriptive analysis of a cohort of consecutive cases of robotic and conventional total laparoscopic hysterectomy performed on obese patients from January 2008 to December 2011. Patients: A total of 697 obese patients underwent laparoscopic (417) or robotic (280) total hysterectomy. Univariate and bivariate comparison were performed for patient characteristics and surgical outcomes.

Intervention: Conventional laparoscopic or robotic total hysterectomy.

Results: BMI was similar in both groups. Both groups had similar preoperative hemoglobin level, co-morbidities and history of abdominal surgeries. Surgical time was longer in the robotic group (149.2 +/- 72.1 min) p=0.000. The estimated blood loss was greater in the conventional laparoscopic group (174.7 +/-255 ml) p=0.000. Intra-operative complications were similar in both groups. In contrast, conversion to laparotomy was 7.9% (n=33) in the laparoscopic group vs 0.4% (n=1) in the robotic cohort p=0.000.

Conclusion: In this cohort, obese patients that underwent conventional laparoscopic hysterectomy had more unplanned readmissions and an increased rate of conversion to laparotomy when compared to patients undergoing robotic hysterectomy.

13.138 General Surgery

Modified Open Trocar First-puncture Technique in Laparoscopic Surgeries of 23,000 Cases

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Objective: To evaluate the safety of the modified open trocar first-puncture technique.

Methods: A retrospective clinical trial. Clinical data of 23,000 cases with modified open trocar first-puncture technique in laparoscopic surgeries and 10,240 cases with Veress needle puncture (control group) were analyzed retrospectively in our hospitals. There were totally 64 experienced surgeons and 171 learners who attended the study.

Results: The achievement rate of the modified group was significantly higher than that of the control group (97.5 percent vs 87.2 percent, P<0.01). The difference of mean achievement rate between experienced surgeons and learners was 2.9 percent in modified group which was significantly lower than that of the control group(10.6 percent, P<0.01). The complications of modified group were significantly lower than that of the control group (0.3 percent vs 2.4 percent, P<0.01).

Conclusions: Compared with Veress needle puncture, the modified open first-puncture technique significantly increased the achievement rate, while reduced the risk of injuries at the same time and easy to grasp. It is a safe and practicable method of first-puncture for laparoscopic surgeries, especially for learners.

13.139 Urology

Zero-ischemia Radiofrequency Ablation Assisted Laparoscopic Tumor Enucleation of 96 Renal Cell Carcinoma

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Objectives: The aim of the study is to evaluate the safety and efficacy of 0-ischemia, radiofrequency ablation (RFA) assisted laparoscopic tumor enucleation (TE) for renal cell carcinoma (RCC).

Methods: We retrospectively reviewed data for 96 patients with RCC treated with 0-ischemia RFA assisted laparoscopic TE between March 2006 and September 2011. The mean greatest dimension of tumors was 3.6 ± 1.0 cm. Student's t-test, chi-square test and Fisher's exact test were used to compare bleeding and complications. Fisher's exact test was used to analyze the association of tumor size or Preoperative Aspects and Dimensions Used for an Anatomical (PADUA) score and complications.

Results: RFA assisted laparoscopic TE without clamping the renal hilar vessels was done in all cases. The mean blood loss was 107.2 ± 48.7 ml and mean surgery time was 120.2 ± 26.3 min. Overall 13 complications (13.5%) occurred including 6 postoperative fevers (Clavien-Grade II), 2 bleeding need transfusion (Clavien-Grade II) and 5 prolonged urinary leakages (Clavien-Grade III). PADUA score was associated with prolonged urinary leakage ($p=0.03$) and bleeding ($p=0.01$) but not overall complications. No patient had positive surgical margins. Glomerular filtration rate differed before and 12 months after surgery with 1.6 mL/min/ 1.73 m² decline at the first year after the surgery. One patient with a 5.1cm renal tumor had recurrence near the renal sinus near the ablation zone 9 month after surgery and received laparoscopic radical nephrectomy.

Conclusions: Zero-ischemia, RFA assisted laparoscopic TE of RCC is a safe and effective nephron sparing treatment that may provides excellent oncological and functional outcomes.

13.140 General Surgery

Our Series in Minimally Invasive Transaxillary Endoscopic Hemithyroidectomy (TAEHT) versus Conventional Open Hemithyroidectomy for Benign Solitary Thyroid Nodule

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Method and procedure: A total of 46 patients underwent hemithyroidectomy [open 31 and minimally invasive 15] for solitary thyroid nodule in the Department of General Surgery, Sri Ramachandra University. We used a 3-port technique, a 10-mm optical port and two 5mm working ports in the line of anterior axillary fold with arm abducted. The patients was assessed for the following variables- 1. Duration of surgery 2. Postoperative pain was assessed on POD 1,3,7 3. Complications like RLN injury, Intra-op bleeding and hematoma 4. Cosmesis.

Result: In the TAEHT group of patients, the following were observed. The mean operating time was 2hr 36 mins. The post operative pain was considerably less,

averaging scores of 3 , 1 and 0 on POD 1, 3, 7 respectively. There was no recurrent laryngeal nerve injury, intra-op bleeding was at a bare minimum and no post-op hematoma noted. However patients who underwent TAEHT had intra-op which in one of the initial case showed a raised ETCO₂, post-op subcutaneous emphysema was noted in majority of the patients which spontaneously resolved by POD1. Cosmesis was good with no scar in the neck. In comparison, the open group, the pain score was higher, more blood loss and the neck scar wasn't as cosmetically appealing. However the operating time in the open group was much faster compared to TAEHT

Conclusion: Transaxillary endoscopic hemithyroidectomy is safe, offers excellent cosmesis and a feasible alternative to the traditional open surgical approach. It has an acceptable learning curve with operating time and spacial orientation improving with every case.

13.141 Gynecology

The Clinical Applications of LUOHU Operation II Laparoscopic Peritoneal Vaginoplasty

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Objective: To investigate the clinical applications of LUOHU operation II (Laparoscopic peritoneal vaginoplasty) for congenital absence of vagina syndrome.

Methods: 284 cases with congenital absence of vagina were investigated, all were reconstructed vagina with peritoneum by peritoneoscopy (hereinafter referred to as LUOHU II Group) and 15 patients with abdominal sigmoid vaginoplasty (hereinafter referred to as Colon Group) were compared.

Results: The LUOHU II Group: the vagina length of 269 cases are more than 9cm, 15 cases are 8 cm. All the reconstructed vagina can be inserted into the vaginal speculum, vaginal mucosa are pink, moist and good elasticity. 230 cases have sex life, among them, 221 cases said their sex life was satisfactory, 9 cases had shorter vagina, 38 cases had polyp formation on the top of vaginal. In the Colon Group, all the vagina lengths are more than 9cm. 15 cases had a normal sex life. 3 women did not have satisfactory sex life. The reason: excessive vaginal discharge in 2 cases, an aversion sense of vaginal replaced by bowel in 1 case.

Conclusions: Aparoscopic peritoneal vaginoplasty(LUOHU operation II) has the advantages of being simpler, causing less trauma, less bleeding, more rapid postoperative rehabilitation and it is difficult to damage the bladder and rectum. Laparoscopic peritoneal vaginoplasty does not destroy the vulva form. Artificial vagina have the physiological and anatomical aspects of near normal vagina after laparoscopic peritoneal vaginoplasty. It is the most ideal type of a vaginoplasty and it is worthy of promotion.

13.142 Multispecialty

Comparison of Robotic Adrenalectomy to Traditional Laparoscopic Adrenalectomy with a Lateral Transperitoneal Approach: A Single-Surgeon

Experience

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Background: Although several recent studies have demonstrated the feasibility and safety of robotic adrenalectomy, it is unknown whether this procedure has advantages over the traditional laparoscopic approach. This study compared our initial experience using the da Vinci-S® robotic surgical system during laparoscopic adrenalectomy to our experience with traditional laparoscopic adrenalectomy.

Methods: From October 2009 to May 2012, 23 consecutive patients (13 women, 10 men) underwent laparoscopic adrenalectomy by the same surgeon at Anam Hospital, Korea University Medical Center. Fifteen patients (9 women, 6 men) underwent robot-assisted adrenalectomy (right-sided, 4 patients; left-sided, 11 patients). Eight patients (4 women, 4 men) underwent traditional laparoscopic adrenalectomy (right-sided, 5 patients; left-sided, 3 patients). The lateral transperitoneal approach was used for all patients.

Results: There were no cases of conversion to traditional laparoscopic or open surgery. The mean operative time was longer in the robotic group (208.2 minutes, range 120-320) than the laparoscopic group (181.13 minutes, range 75-270). There were no cases of intraoperative complications or mortality. The mean hospital stay did not differ significantly between groups (robotic group, 5.86 days (SD 1.16); laparoscopic group, 6.71 days (SD 1.38)).

Conclusions: With its magnified stereoscopic three-dimensional vision, elimination of tremor, and ability to articulate and rotate surgical instruments, the da Vinci-S® robotic system may be an ideal surgical tool for the operation of adrenal lesions. Robotic adrenalectomy appears to be a safe and effective alternative to traditional laparoscopic adrenalectomy.

13.143 General Surgery

Robotic Transoral Periosteal Thyroidectomy (TOPOT): The Report of 1st Human Series of Robotic Transoral Thyroidectomy

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Korea University Medical Center

Background: Although endoscopic thyroid surgery is gaining wide acceptance, existing endoscopic methods for thyroidectomy have been blamed for necessity of more flap dissection and longer operative time. Recently, transoral endoscopic thyroidectomy have been reported to overcome the limitations of previous approaches. However, previous transoral approaches have also shown limitations. We have developed a new transoral periosteal thyroidectomy (TOPOT) in cadaver

studies and safety and feasibility were demonstrated in swine studies. Herein we present our initial experience of new robotic TOPOT in humans.

Method: Between September and October 2012, three patients underwent robotic thyroid surgery using TOPOT, with da Vinci® surgical system, at the Korea University Anam Hospital. All patients were evaluated regarding recurrent laryngeal nerve function, intra- and postoperative complications, and postoperative outcome.

Results: Two lobectomy of thyroid for a follicular neoplasm and a nodular hyperplasia and a lobectomy of thyroid with central neck dissection for a papillary thyroid microcarcinoma were performed using a robotic TOPOT. There was no intraoperative bleeding necessitating conversion to open surgery. In one case, right mental nerve was stretched and torn during operation, so we performed the reconstruction of the mental nerve. This patient suffered from a paresthesia of the mental nerve, but it improved within 4 weeks. During postoperative course, there was no local infection at the incision site or within the anterior neck area. All three patients had no temporary vocal cord palsy.

Conclusion: Robotic TOPOT might be feasible method of natural orifice transluminal endoscopic surgery for thyroid gland.

13.144 General Surgery

A Rare Case 8-Week Old Presenting with Symptomatic Cholidocholithiasis Who Underwent ERCP

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8 week old female born at full term, had complex congenital cardiac malformations requiring heart surgery and placed on TPN for 20 days. Later patient had acholic stools, emesis for 2 days, without fever. Liver function tests showed obstructive pattern. Abdominal Ultrasound showed a large single stone in common bile duct with dilatation. ERCP was attempted. Olympus PJF scope was used but the down side is that it has a 2.0 mm channel. Only two or three equipment fit that channel. Cook medicals minitome was used. During first attempt, two available sphinctertomes broke, so procedure was aborted. In the second attempt, CBD was successfully cannulated and a small sphincterotomy was performed. Olympus makes an extraction balloon that could be used for CBD clearance. This balloon was not available, so sphincterotomy was extended by 6 mm balloon dilation using an endovascular balloon dilator that fits the 2.0 mm channel. Two 5 Fr X 7 cm single pigtail Hobbs PD stents were placed into the CBD. The channel size allows only 5 Fr stent deployment. Patient tolerated the procedure well and the total bilirubin returned to normal. Repeat ERCP will be attempted with sphincteroplasty and balloon sweeps. Its well know that TPN can have significant complications in adults. It is important to recognize its complications in infants and pediatric population. Early recognition of cholilithiasis and choledocholithiasis is highly important as therapeutic treatment in them with ERCP is very challenging, not only given the size of the patient but also due to the channel size of the scope.

13.145 Gynecology

Total Laparoscopic Hysterectomy with Rumi II

Richard Haines Demir MD

Arizona Regional Medical Center

Objective: To demonstrate the benefits of the Rumi II device in performing Total Laparoscopic Hysterectomy. Improved methodology to speed device insertion and placement is demonstrated in this video along with intra-operative benefits including improved visualization, particularly in performance of the posterior colpotomy, large range of uterine articulation and lateral displacement of the ureters with cephalad pressure.

Methods: Rumi II is used to perform a Total Laparoscopic Hysterectomy in this video.

Results: Safety and speed of Total Laparoscopic Hysterectomy procedure are enhanced with Rumi II.

Conclusions: Use of Rumi II confers clear benefit during Total Laparoscopic Hysterectomy.

13.146 Gynecology

Space of Retzius Fibroma

Richard Haines Demir MD

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Objective: Differential diagnosis of a suspected adnexal mass in women should include a space of Retzius neoplasm. Such lesions can cause pain, urinary frequency secondary to extrinsic bladder compression and be palpable on pelvic examination. Diagnosis and surgical management are demonstrated in this video.

Methods: A patient presenting with pelvic pain and a suspected adnexal mass is evaluated with conventional imaging modalities including ultrasound and CT scan. Laparoscopic evaluation and excision is demonstrated.

Results: After pre-operative work-up a benign fibroma is found in the space of Retzius. Laparoscopic excision is un-eventful. Patient is discharged to home a few hours later.

Conclusions: Differential diagnosis of a suspected adnexal mass should appropriately include of space of Retzius neoplasm. Laparoscopic treatment is a safe and appropriate alternative.

13.149 Pediatric Surgery Laparoscopic Adrenalectomy in Children

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Purpose: The use of laparoscopic adrenalectomy is poorly defined in children, although laparoscopic approach is considered standard procedure for adrenalectomy in adults. Our study aims to describe the safety and feasibility of minimally invasive adrenalectomy in children based on surgical skills and results. Methods and

Procedures: This is a retrospective review of four paediatric laparoscopic adrenalectomies performed in our centre between 2009 and 2012. All patients underwent transperitoneal lateral laparoscopic adrenalectomy; two of which were right adrenalectomies and two were left. Indications for surgery were neuroblastoma in two patients, an adrenocortical tumour in one patient and adrenocortical nodular hyperplasia in one patient.

Results: Four children were treated for adrenal gland diseases with a mean age of seven years (range 1-13) at presentation and an average lesion size of 2.93 cm (range 1-4.8). All laparoscopic adrenalectomies were successful, no conversions to open surgery were required and no postoperative complications or deaths occurred. The average operating time was 123.75 minutes (range 100-150), blood loss during surgery was minimal and the mean postoperative hospital stay was 3.75 days (range 3-5). None of the patients showed signs of recurring disease at the one-year follow-up.

Conclusions: Laparoscopic adrenalectomy is a safe, feasible and reproducible technique offering numerous advantages including shortening of operating times and postoperative hospital stays, as well as reduction of blood loss and complications. It also provides good visibility and easy access to other organs. However, long-term follow-up is required to assess the real efficacy of the technique in malignant lesions

13.150 General Surgery Gastro-esophageal Reflux Disease (GERD) Due to Adhesion Ileus and Hiatal Hernia After Laparoscopic Sleeve Gastrectomy (LSG)

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As the pouch volume has decreased in sleeve gastrectomy to improve weight loss, the pouch has become a higher resistance gastric tube, and the lower esophageal sphincter (LES) may be anatomically compromised by the disruption of the phrenoesophageal ligament. Narrowing at the angularis may also create a functional obstruction that presents symptomatically with a complaint of reflux.

The occurrence of esophageal erosion after LSG was said to be related to the presence of a hiatal hernia after the operation. Current data are very limited for the necessity of hiatal hernia repair with a sleeve gastrectomy in those patients who have even minimal hernias. Here we present a 50 year-old gentleman who did not have a significant reflux disease and hiatal hernia before bariatric surgery suffered from de novo GERD after LSG probably due to gastric tube narrowing and obstruction following its adhesion to liver undersurface with rotation.

His body weight reduced markedly and quickly to BMI of 19 from >40 kg/m² within one year. The condition improved after laparoscopic adhesiolysis and the GERD was fairly controlled with PPI. Unfortunately, the second episode of GERD with more progressive manifestations occurred about another one and half year later and it was associated with herniation of gastric pouch into hiatal defect with partial obstruction of esophagus (CT image). Reduction of hernia content, herniorrhaphy and bypass surgery were done and the postoperative course was uneventful with complete remission of GERD after surgery.

13.152 General Surgery **Is Laparoscopic Colectomy Superior to Open Colectomy?**

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Objective of the study: During these five years, we introduced laparoscopic colectomy and we contributed to improve postoperative course. Our objective was to demonstrate that laparoscopic colectomy is superior to open colectomy.

Methods and procedures used in the study: 36 patients without inflammation and malnutrition undergoing sigmoidectomy or anterior resection of the rectum with two or three-field lymphadenectomy in these five years were divided into two groups: patients performed open surgery (the O group); patients performed laparoscopic surgery (the L group). We compared the O group with the L group based on blood exam and postoperative course.

Results of the study: There was no significant statistical difference in age of patients and preoperative risk. Operating time of the L group was longer statistically ($p=0.034$), but no significant statistical difference was seen in bleeding volume. The rate of complications was 20.0% in the O group and 6.5% in the L group respectively. The rate of increase of [the number of leukocytes](#) was lower in the L group at 1 and 7 postoperative days ($p=0.016$ and 0.034 respectively). There was no significant statistical difference, but in the O group, more days were required to use analgesic, begin oral intake, passing gas and walking, and leave hospital.

Especially for patients performed laparoscopic surgery within 240 minutes, more days were not required to begin oral intake and leave hospital statistically ($p=0.007$ and 0.001 respectively).

Conclusions based on these results: Laparoscopic colectomy was superior to open colectomy in surgical stress and postoperative course.

13.153 General Surgery Metabolic Aspects in Obesity Surgery

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Obesity and metabolic syndromes are strongly correlated suggesting common factors. Bariatric surgery for long term obesity treatment is known, but for diabetes and various metabolic syndromes recovery, is less understood.

Patients and methods: Two groups of morbidly obese diabetic (type 2 DM) patients were analyzed. First group included 79 patients 3 ± 2 years after surgery and second group included 70 patients 5.13 ± 0.85 years after surgery. Data included: weight, lipid profile, fasting glucose, hemoglobin A1C, blood pressure and treatment before and after surgery. Mean age: 46.9 ± 9.8 and 55 ± 9.9 , mean BMI 44 ± 7.6 and 43.7 ± 5 respectively. Diabetes: 5.8 ± 4.1 years before operation. Mean fasting glucose before surgery: 177.4 ± 63.0 mg%. HB A1C was 7.7% and 8.7% respectively.

Results: Mean BMI was reduced to 33.0 ± 5.7 in first group and 31.16 ± 4.8 in second group. Mean glucose was reduced to 119.8 ± 41.3 mg/dl, and 111.7 ± 32.9 mg% respectively. HB A1C declined to $6.2 \pm 1.4\%$ and $6.6\pm 1.1\%$ respectively. Oral antibiotics and insulin treatment was reduced by 44% and 78% respectively. Mean LDL and Triglycerides values were reduced to normal while HDL cholesterol levels improved.

Conclusions: Although gastric banding does not cure diabetes, it enables long term remission, which is achieved by low caloric and carbohydrate diet, suggesting that obesity and metabolic syndrome are different phases of the same disease.

13.154 Pediatric Surgery Single Port Laparoscopic Approach to Waugh Syndrome

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Objective: Waugh syndrome is a rare association of intussusceptions and malrotation. This report describes the first simultaneous reduction of intussusception and performance of Ladd's procedure for malrotation via a single port laparoscopic

approach.

Case and Methods: An otherwise healthy 9-month-old boy presented with one week of vomiting, abdominal pain, diarrhea, and fever. A focused abdominal ultrasound performed on presentation revealed normal appearing bowel loops and no evidence of ileocolic intussusception in typical location. Diagnosed with presumed gastroenteritis, he was admitted to the pediatric service for hydration. On repeat ultrasound performed for persistent colicky abdominal pain the next day, a target sign in the epigastrium was noted. A contrast enema confirmed but failed to reduce the intussusception. The patient was prepared for a single port laparoscopic exploration. Intraoperatively, the ascending colon was notably absent in the right peri-colic gutter. An ileocecal intussusception was encountered just below the left lobe of the liver and laparoscopically reduced. The malrotation was addressed by a Ladd procedure.

Results: The patient had an uncomplicated postoperative recovery and was discharged on postoperative day one after tolerating regular diet. At two week follow up, the patient was noted to be nursing well, having regular bowel movements, and thriving.

Conclusions: Waugh syndrome is rare but may be missed if the ultrasound exam to rule out intussusception focuses on the right abdomen only. Once the correct diagnosis is made, reduction of the intussusception and a Ladd procedure can be performed via a laparoscopic single-port approach.

13.155 General Surgery

Transvaginal Laparoscopic Sigmoidectomy for Sigmoid Colon Cancer: Report of a Case from China

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We report here the first clinical transvaginal laparoscopic sigmoidectomy in China. The patient was a 76-year-old woman with early stage sigmoid adenocarcinoma who had no previous surgery.

The approach was a transvaginal laparoscopic-assisted sigmoidectomy. The laparoscope was inserted through a 10-mm trocar placed transumbilically and laparoscopic retractor, 5mm harmonic scapel and 5mm intestine grasper were placed through vaginal port. The sigmoid colon was fully mobilized and drained mesenteric lymph nodes were resected with established laparoscopic technique, followed by colonic resection extracorporeally through the colpotomy and transvaginal anastomosis intraabdominally.

The operating time was 168 min with 200 ml blood loss. Less postoperative pain and rapid recovery of gastrointestinal function were observed. No vaginal bleeding or other postoperative complications associated the transvaginal approach occurred. The patient was discharged home on postoperative day 8. Postoperative pathology

examination confirmed a T2N0 moderately differentiated adenocarcinoma. The follow-up was 21 months with no any complications and tumor free.

Conclusion: Transvaginal laparoscopic surgery for sigmoid colon cancer is technically feasible and oncologically safe. This transvaginal approach may provide the best way to further perform “pure” natural orifice colon surgery.

13.156 Gynecology

Comparison of Outcomes for Patients Undergoing Minimally-invasive Surgery for Advanced-stage Endometriosis

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Objective: To determine outcome differences in patients undergoing robotic-assisted versus conventional laparoscopy for advanced-stage endometriosis.

Methods: Cases were selected from our prospectively-maintained computerized database of robotic-assisted (RALS; da Vinci ® Surgical System) and conventional laparoscopic surgery (CLS) for endometriosis. The study included 118 patients who were treated by one surgeon (F. R. N.) skillful in both techniques between July 2009 and October 2012 for endometriosis stage 3 or 4, according to the American Society for Reproductive Medicine criteria. Median age, body mass index (BMI), race, type of surgery and extent of surgery were compared, as well as median estimated blood loss (EBL), operating room time (ORT), length of stay (LOS), intraoperative complications, and postoperative complications. For continuous variables, medians and first and third quartiles were calculated. Medians between groups were compared via Wilcoxon rank-sum test. Distributions of categorical variables between groups were compared via Chi-square or Fisher's exact tests. In all analyses, $p < 0.05$ was considered significant.

Results: 86 CLS and 32 RALS cases were included. Compared to the CLS patients, those who underwent RALS had higher BMI (27.36 [23.90-34.09] vs. 24.53 [22.27-26.96]; $p < 0.0079$) and ORT (250.50 [176-328.50] vs. 173.50 [123-237] minutes; $p < 0.0005$). No significant difference was noted between the two groups in age, race, hysterectomy rate, EBL, LOS or in rates of intra-operative or postoperative complications.

Conclusions: Despite higher ORT in the RALS group compared to the CLS group, implementation of this new technology might allow a safe minimally-invasive surgical approach for obese patients, with clinical outcomes comparable to those in non-obese patients undergoing CLS.

13.157 General Surgery

Robotic Right Colectomy with Intracorporeal Anastomosis Using a Vessel Sealing Device

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This video demonstrates the surgical technique of robotic right colectomy with intracorporeal anastomosis. A 3-arm technique with medial to lateral dissection is shown. A new Vessel Sealer instrument, which enables robotic surgeons to fully control vessel sealing with, enhanced surgical precision, stability, and 3D HD visualization is highlighted.

The Vessel Sealer instrument is used for bipolar coagulation and mechanical transection of vessels up to 7 mm in diameter and tissue bundles that fit in the jaws of the instrument. The ileocolic vessels can safely be transected with the Vessel Sealer.

Creation of a side-to-side, isoperistaltic, intracorporeal anastomosis is also demonstrated. An endoscopic stapler is used to create a common channel with terminal ileum and transverse colon. The remaining common enterotomy is closed in two layers with 2.0 vicryl suture. With this technique, specimen extraction can be performed at any site.

Minimally invasive surgery has seen significant technological advancement. The da Vinci robot has been safely and successfully used in a variety of colorectal procedures. Robotic right colectomy is safe and feasible. The robot may facilitate complex tasks like intracorporeal anastomosis. Thus, the da Vinci robot may expedite transition from an extracorporeal technique to a fully robotic right colectomy with intracorporeal anastomosis.

13.158 Gynecology

Excision of a Large Liquefied Myoma via a Robotic Approach

Gerald Feuer MD, Nisha Lakhi, MD

Northside Hospital, Atlanta Georgia

Objective/Background: To excise a 18 cm liquefied myoma via a robotic approach.

Procedure: Laparoscopic assessment confirmed a large mass occupying the abdominal cavity. The ovaries were visualized and noted to appear normal. The mass arose from the uterus and was consistent with a liquefied myoma. An incision was made in the mass and the fluid content aspirated. Adhesions from the myoma to the anterior abdominal wall were dissected. Vascular control of the infundibulopelvic ligament and the round ligament were then obtained bilaterally. The bladder flap was approached laterally and control of the uterine vessels was achieved. Having secured all vascular pedicles, a robotic scalpel was used to amputate the myoma from the uterine corpus. The liquefied myoma could then be mobilized, allowing us to dissect adhesions adjacent to the bladder. The robotic scalpel was then used to bi-valve the

mass, thereby making vaginal extraction possible.

Results: The patient had an uneventful post-operative course and was discharged home on post-operative day one. Final pathology was consistent with a liquefied myoma.

Conclusion: A large liquefied myoma can be approached robotically. Evacuation of the myoma is the necessary first step. Early control of vascular pedicles is followed by a lateral approach to the the bladder flap. Subsequent amputation of the myoma from the uterine body allowed us to establish a tissue plane for further adhesiolysis between the myoma and the paravesical space. The use of a robotic scalpel to bi-valve the myoma allowed for vagina extraction.

13.159 Gynecology

Excision of a Rudimentary Imperforate Uterus via a Robotic Approach

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Objective: To robotically excise a non-communicating uterine horn in a 19 year old patient that presented with chronic pelvic pain since menarche. MRI confirmed duplication of the uterus, cervix, and upper vagina. Her anatomy was not classic for uterine dydelphesis. Pelvic exam revealed a normal right vagina and right cervix. The left cervix and the apical portion of the left vagina were not visible. Sonogram confirmed a fluid filled left uterine cavity and complex left adnexal mass.

Procedure: Vascular control of the left infundibulopelvic ligament and the round ligament were obtained initially. The bladder flap of the left uterus was mobilized and vascular control of the left uterine vessels was achieved. As the anatomy was distorted, we felt a safer approach for excision of the horn was to incise around the cervical stroma. Due to the thinned out nature of the stroma, we entered the uterine horn and were able to evacuate the hematometria. Colpotomy was performed from this entry site and with a better visualization of the anatomy the left uterus and cervix were excised. An incision was made in the vaginal and the specimen was extracted vaginally.

Results: The patient had an uneventful post-operative course and was discharged home on post-operative day one. She has had complete resolution of her pelvic pain.

Conclusion: Early control of vascular pedicles followed by incision into the cervical stroma allows for evacuation of hematometria and establishes a safe technique to remove an obstructed uterine horn.

13.160 Gynecology

Robotic Excision of an Ischio-Rectal Mass

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Objective: To robotically excise a cystic mass located adjacent to the inferior aspect of the distal one-third of the ischio-rectal fossa.

Procedure: We used a bi-incisional technique to dissect the mass. The mass was initially approached by opening the pelvic sidewall and developing the obturator and the paravesical space. This allowed for dissection of the anterior and lateral surfaces of the mass. The rectovaginal space was then entered via a second incision. We developed the rectovaginal and pararectal space in order to access the posterior and lateral surfaces of the mass. The resected mass was placed in an endobag and extracted per vagina after the completion of a total robotic hysterectomy.

Results: Final pathology was consistent with a dermoid cyst. The patient was discharged home on post-operative day one without sequelae.

Conclusion: Masses within the ischio-rectal fossa can be excised robotically. A bi-incisional approach to access the paravesical and the pararectal respectively allows for access to all surfaces of the mass.

13.161 Gynecology

Laparoscopic Marsupialization of a Recurrent Pelvic Lymphocyst

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Objective/Background: To laparoscopically marsupialize a recurrent pelvic lymphocyst. Historically pelvic lymphocysts have been treated with needle aspiration, percutaneous drainage, and open surgical marsupialization. Open surgical marsupialization has been the gold standard for management of persistent or recurrent pelvic lymphocysts, as the other techniques are associated with high recurrence rates.

Procedure: This video demonstrates the laparoscopic marsupialization of a pelvic lymphocyst. The patient initially presented five years previously, with stage IB, grade 2 endometrial cancer and underwent laparoscopic staging. She had a symptomatic lymphocyst that continued to persist after interventional radiology guided percutaneous drainage. We laparoscopically excise a portion the cyst wall, drain the cyst, and marsupialize the cavity.

Results: The patient was discharged home the same day and experienced complete resolution of her lymphocyst.

Conclusion: Laparoscopic marsupialization of pelvic lymphocysts is an excellent modality as it delivers the most effective treatment with minimal surgical morbidity.

13.162 Gynecology

Laparoscopic Management of Focally Recurrent Granulosa Cell Tumor

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Objective/Background: The patient initially presented with pelvic mass and underwent surgery staging via an open approach. Pathology was consistent with Stage IA granulosa cell tumor (GCT). No adjuvant therapy was administered. Eight years later the patient's pelvic exam was consistent with a right pelvic recurrence. PET CT scan was suspicious for nodal recurrence as well as demonstrated two soft tissue masses in the anterior abdominal wall.

Procedure: We performed a diagnostic laparoscopy, tumor debulking, pelvic lymph node dissection along with peritoneal washings and multiple biopsies. The pelvic masses were excised, placed in endoscopic bags, and extracted without spillage via a 3 cm mini-laparotomy incision.

Results: Complete gross cytoreduction was achieved via the laparoscopic approach. Pathology of the mass was consistent with recurrent granulosa cell tumor. Lymph nodes were negative for disease. The patient had no evidence of disease at two year follow-up.

Conclusion: We feel that for patients with local recurrence, laparoscopy can be safely employed. Spillage can be avoided by placement of specimens in endoscopic bags. As patients with GCTs can have multiple recurrences, requiring subsequent re-operations, minimally invasive surgery for localized recurrent disease may have a role in reducing morbidity.

13.163 Pediatric Surgery Laparoscopic Inguinal Hernia Repair Using the Hydrodissection-Lasso Technique - Safe in Any Hands?

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Objective: Laparoscopic inguinal hernia (LIH) repair using the hydrodissection-lasso technique (HLT) was introduced several years ago. Since then, we have standardized the technique as a procedure that can be performed under supervision by junior residents. This study evaluates the efficacy and outcomes of the procedure.

Materials and Methods: HLT entails placing a camera port in the umbilicus, and passing a loop of 4-0 polypropylene around the internal inguinal ring in the subperitoneal plane using a 17g Tuohy epidural needle. In some patients, a separate 2/3 mm instrument is placed to aid in the dissection. Patients who underwent the procedure were retrospectively analyzed in terms of demographics, number of incisions, operating times, conversions, other simultaneous interventions, postgraduate year of the assisting resident, complications, and outcome.

Results: From 2010 to 2013, 108 patients (age 3.2+/-3.7y, median 1.5y, range 3d-15y; 86 males, 23 ex-premies) underwent LIH repair by HLT using a single (n=37) or dual (n=71) incision approach. There were 45 right, 29 left, and 34 patients with bilateral hernias. Operating times ranged from 21 to 94 minutes, and 7 patients were converted to open surgery. Simultaneous operations were circumcision (5), umbilical hernia repair (5), hydrocelectomy (2), oophorectomy, ovarian cystectomy, bowel resection, orchidopexy, and dermoid cystectomy (1 each). Interns performed two thirds of the procedures. There was one recurrence, one suture granuloma, one wound infection, and no mortality.

Conclusions: Laparoscopic IH repair using the HLT can be performed safely by junior residents under supervision with excellent outcome.

13.164 General Surgery Outpatient Laparoscopic Hernia Repairs in Older Patients

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Objective: To evaluate whether it is reasonable to routinely offer a variety of laparoscopic hernia repairs to patients older than 65 years of age as an outpatient procedure.

Methods and Procedures: A retrospective review of 740 consecutive laparoscopic hernia repairs performed by a single surgeon in the outpatient setting over 61 month period was reviewed. Patients ranged in age from 16 to 94. Procedures evaluated included inguinal, incisional, ventral and parastomal hernia repairs. Approximately 30% of these patients were older than 65 year of age. This group was broken down into four subgroups for evaluation; 65-69 years old (N60), 70-79 years old (N106), 80-89 years old (N45) and 90-older (N6).

Results: When compared to patients less than 65 years of age we saw a decreasing ability to discharge patients to home on the same day of surgery. We noted that 518 of 522 (99.2%) patients younger than 65 were discharged on the day of surgery. Same day discharge rates for the remaining subgroups were: 65-69 years old (93%), 70-79 years old (81%), 80-89 years old (64%) and 90-older (50%).

Conclusion: Despite the fact that all proposed procedures were completed laparoscopically the need the need to admit patients for at least a minimal overnight observation increased in a manner that seemed proportional to the patient's age. Although older patients may ultimately derive the same benefits of laparoscopic hernia repair as their younger counterparts that does not mean that we should maintain the same short-term expectations for early discharge.

13.165 General Surgery TAMIS: Challenges and Triumphs

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Objective: This video demonstrates a problem based approach to handling a full thickness excision of a rectal tumor utilizing TAMIS technique. Specifically, fluctuations of pneumorectum, smoke from cautery devices, and closure of the rectal defect are addressed.

Methods: A TAMIS excision for a rectal tumor was recorded using the laparoscopic camera. Our techniques for dealing with fluctuations in pneumorectum, smoke from cautery devices, and closure of the rectal defect were highlighted during the video. Utilizing footage from previous TAMIS cases performed by the same surgeons, the problem based approach to TAMIS is examined.

Description: Transanal Minimally Invasive Surgery, or TAMIS, is a technique that is used to excise benign rectal polyps and early stage rectal cancers. This method avoids the need for major abdominal surgery in suitable candidates. Since its adoption, various modifications have been attempted to refine the use of TAMIS. These have aimed to solve the difficulties associated with three major obstacles to this procedure: proper maintenance of pneumorectum; smoke from cautery devices; and closure of the rectal defect. These problems are directly targeted during a TAMIS full thickness excision of a rectal tumor in a 55 year old female, including a novel method of maintaining pneumorectum.

Conclusions: Fluctuations of pneumorectum, smoke from cautery devices, and closure of the rectal defect can be considerable obstacles during TAMIS procedures. Utilizing a problem based approach, these problems can be successfully overcome.

13.166 General Surgery Laparoscopic Binding Pancreaticogastrostomy After Laparoscopic Central Pancreatectomy

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Laparoscopic pancreaticoduodenectomy(PD) or laparoscopic central pancreatectomy(CP) are technically challenging because the reconstruction part is technically demanding for laparoscopy with the related high risk of postoperative pancreatic fistula (POPF), which has been regarded traditionally as the most frequent major complication and is a potentially serious, life-threatening event. Various pancreatic reconstruction techniques either for pancreaticojejunostomy(PJ) or pancreaticogastrostomy(PG) have been reported yet few methods with a satisfaction leakage rate are seen. In addition, few literatures on modified such techniques specifically suitable for laparoscopic manipulation are reported. We applied a specific

binding technique and accumulated our experience both in binding PJ(BPJ) and binding PG (BPG) which was initially invented by Dr. Peng and was called as Peng's BPJ and Peng's BPG, now widely accepted for their significant advantages in teams of reducing the rate of POPF. Recently, we further modified the Peng's BPG, ie. the one layer BPG and applied it in 3 laparoscopic CP cases, which we found it simplified the laparoscopic procedure and the result was satisfactory, with no POPF found. In this video, the crucial steps of both resection part of laparoscopic CP and reconstruction part as laparoscopic BPG were detailed illustrated.

13.167 Multispecialty

Developing a Group Training & Evaluation System for Minimally Invasive Surgical Skill

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Object: The aim of this research was to develop an integrated system of group training and evaluation platform for minimally invasive surgeons.

Method: This group training and evaluation system was consisted of 7 or 13 stations based on an integrated computing local area network. Each station included of a computer, a simulator and laparoscopic instruments (a dissector, a grasper, a scissor, a needle holder and other affiliated training instruments). One Trainer and 6 or 12 Trainees were in a group. There were 5 programs including carrying rubber stoppers on chessboard, picking up specimens into the bag, shifting the triangles of rubber band, cutting the rubber triangle, and suturing-knotting technique. The evaluating criteria were mainly on accuracy and efficiency of each technique.

Result: This system has been applied in 3 hospitals from March 2010 to November 2012, and 400 surgeons (including general surgeon, gynecologist, urologist, thoracic surgeon, etc.) have been trained and evaluated. The first pass rate was 72%, and the final pass rate was 82% in total for all trainees. In addition, this system has been awarded a Chinese patent (ZL 2012 2 0011893.6).

Conclusion: The group training and evaluation system which was developed by the author showed a practical value for minimally invasive surgeons in China.

13.168 Gynecology

Total Laparoscopic Hysterectomy Making Easy – Technique, Tools and Video Presentation

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Introduction: Laparoscopic techniques are being used increasingly more in gynecological surgery and the introduction of modern laparoscopic instruments has allowed complex operations to be performed laparoscopically. The aim of this study is to evaluate video surgical technique with regard to the success of total laparoscopic hysterectomy (TLH) for the removal of the uterus, by analyzing its intraoperative and postoperative surgical outcomes and complications in the hope of reducing their occurrence.

Methods: A retrospective observational study was carried out at Feni Pvt. Hospital Bangladesh based on TLH operations performed from January 2007 to December 2011. The colpotomizer, a very simple device with uterine manipulator, was used during cervical traction to cut the vaginal vault. The pneumoperitoneum was maintained by sterile wet sponge vaginal pack.

Results: Of 1024 women consented for TLH, 99.4.% had successful TLH with three mini-laparotomy and three laparotomy conversions (0.6% failure rate). Gas leakage was very minimum and mean operating time was 72 min (28 –155). Mean blood loss was 172 ml (50–800). Forty one patients (4%) required blood transfusion. Injuries include, bladder (1) and ureterovaginal fistula (1). Post-operative complications include pyrexia (13), umbilical wound infection (1), urinary tract infection (18) and vault haematoma (1). Mean hospital stay was 2.3 days (1–5). Six patients (0.6%) were readmitted for vaginal bleeding(1), vault haematoma (1), UTI (1), anxiety (2), and ureterovaginal fistula (1).

Conclusion: TLH can be carried out successfully with very simple equipment.

13.169 Gynecology

The Significance of Constructing the Digital Three-dimensional Model of Cervical Cancer In Vivo Based on CT Angiography

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Objective: To explore the method and significance for constructing the digital three-dimensional model in vivo for arterial network of cervical cancer based on computed tomographic angiography (CTA).

Methods: A series of Dicom 3.0 images were obtained from a woman with cervical cancer by utilizing dual source CTA from Nanfang Hospital in May 2012. Then the software was used to construct the pelvic, arterial network and lymph node of cervical cancer.

Results: The digital model not only provided the 3D overview from multi-direction and multi-angles for doctors, but also clearly showed the anatomical characteristic of pelvic, the location of lymph node and the distribution of arterial network. By using the 3D measure tools, the dimensions and angles of the vessels, the relationship between vessels and lymph nodes could easily be measured.

Conclusion: Using related 3D software with database collected through CTA, the cervical cancer's arterial network model in vivo could be successfully constructed, which may contribute to the materialization of digital models and be used for individualization evaluation and to guide inter-arterial chemotherapy, lymphadenectomy and radical hysterectomy.

13.170 Gynecology

Aqua Dissection in Non-descent Vaginal Hysterectomy (200 cases) - An Experience of Feni Pvt. Hospital, Bangladesh

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¹Feni Pvt. Hospital

²Comilla Medical College

Objectives: To study the feasibility and outcome of performing the aqua dissection in non-descent vaginal hysterectomy.

Material and Methods: Two hundred patients requiring hysterectomy with benign gynaecological disorders of the uterus without descent were taken up for the study, providing the uterus was mobile, its size did not exceed 20 weeks gestational size, and there was adequate vaginal access. About 200 ml of normal saline, with or without adrenaline, is injected beneath the vaginal mucosa making the operative area bloodless for dissection. Morcellation techniques like bisection, myomectomy debulking or combination of these were employed in bigger size uterus.

Results and Observations: In the total 200 cases, the mean age was 35.2 ± 5.2 years and mean parity was 4.17 ± 1.5 . The indications was chronic PID, DUB, and Fibroid uterus etc. Uterus was mostly 8–10 weeks size. Only hysterectomy was done in 86% cases; hysterectomy with salpingo oophorectomy was in 14% cases. The time needed was 35.5 ± 15.3 minutes and the mean hospital stay was 3.5 ± 1.1 days. The blood loss was 100–300 ml. Adhesions were seen in 14% of cases and TO masses on 7% of cases. Nine percent of cases required diagnostic and operative laparoscopy. No cases required laparotomy.

Conclusion: Aqua dissection in non-descent vaginal hysterectomy is easy, fast and safe.

13.171 General Surgery

Bilateral Axillo-Breast Approach (BABA) Endoscopic Sistrunk Operation in Patients with Thyroglossal Duct Cyst: Technical Report of the Novel Endoscopic Sistrunk Operation

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Objective of the study: A traditional Sistrunk operation for thyroglossal duct cyst (TGDC) inevitably results in an external scar. We developed an endoscopic Sistrunk operation via bilateral axillo-breast approach (BABA) to obtain good postoperative and excellent cosmetic outcomes.

Methods and Procedures used in the study: A 23-year-old woman and a 52-year-old woman with TGDC were chosen. All surgical procedures were performed in concordance with the traditional Sistrunk operation and we used ultrasonic shears (Harmonic®), hook scissors and metal clips for that.

Results of the study: All procedures were technically successful with no skin incisions on neck. The total operation time; 120 and 140 minutes, the total blood loss; 100ml and 80ml, respectively. Neither conversion to open surgery nor significant intraoperative complications were experienced. The operative scars by BABA endoscopic method became inconspicuous in a few weeks.

Conclusions based on these results: BABA endoscopic Sistrunk operation is technically feasible, safe, and effective. This new technique can be a good alternative option, particularly for young female patients who opt for the better cosmetic outcome.

13.172 General Surgery

Reversal of Ileostomy Using Laparoscopic Assistance

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Liaquat University Of Medical & Health Sciences

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 undergoing second laparotomy.

13.173 General Surgery

The Exploratory Research of Endoscopic Diagnosis and Treatment of Biliary and Pancreatic Disease in Patients After Complex Gastrointestinal Surgery

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Abstract AIM: To explore the strategy and method of endoscopic diagnosis and treatment of biliary and pancreatic disease in the patients after complex gastrointestinal surgery

Methods: Retrospective analysis of 13 patients with long-limb surgical bypasses who underwent ERCP because of suspected pancreaticobiliary diseases. Small-bowel intubation was performed by per oral colonoscopy or single-balloon enteroscopy (SBE). In patients using SBE, a slim colonoscope must be used to replace enteroscope if the SBE success was achieved. ERCP was performed with the conventional accessories after the replacement was successfully done.

Results: A total of 18 ERCP procedures were performed in 13 patients. Colonoscopy was used in 9 ERCPs and all achieved ERCP success. SBE success was achieved in 8 of 9 (88.9%) ERCPs, of which 5 of 8 (62.5%) achieved ERCP success. The overall success rate of endoscopy and ERCP was 94.4%(17/18) and 77.8%(14/18), respectively. Interventions included anastomotic stricturoplasty, stone extraction, endoscopic nasal biliary drainage (ENBD) and biliary stent placement.

Conclusions: Both of the adult colonoscope and single-balloon enteroscope can be attempted to perform ERCP in patient with long -limb surgical bypass without serious complications. By using the facilitated method for endoscopic interventions at pancreaticobiliary disease after Whipple or Roux-en-Y reconstruction, SBE-ERCP can be attempted when long length ERCP accessories can not be available.

13.174 General Surgery

Bilateral Axillo-breast Approach Robotic Thyroidectomy for Graves' Disease: An Initial Experience in a Single Institute

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Kyu Eun Lee MD¹, Yeo-Kyu Youn MD¹

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Objective: Bilateral axillo-breast approach (BABA) robotic thyroidectomy has shown excellent cosmetic and surgical outcomes. The aim of this study was to evaluate the safety, feasibility, and initial outcome of this procedure in patients with Graves' disease.

Methods: From June 2008 to July 2001, a total of 30 patients with Graves' disease were reviewed retrospectively. Patient demographics, operative indications, and surgical variables, including operation time, blood loss, excised thyroid weight, and complications, were collected and investigated.

Results: The thyroidectomies were classified as total (n = 21), near-total (n = 6), or subtotal (n = 3). There were five indications for surgery: concomitant thyroid carcinoma or suspicious nodule (n = 22), recurrence after antithyroid medication (n = 2), local compressive symptoms (n = 1), patient's preference (n = 4), and side effects of antithyroid medication (n = 1). The mean operative time, console time, blood loss, and excised thyroid weight were 190 min (range 105–298 min), 113 min (range 60–227 min), 229 mL (range 50–550 ml), and 36.6 g (range 7.8–123.0 g), respectively. There were no cases of postoperative bleeding or conversions to open surgery. Postoperative transient hypoparathyroidism and vocal cord palsy occurred in 13 (43.3%) and 4 (13.3%) cases. Permanent hypoparathyroidism occurred in 1 (3.3%) case. All patients were satisfied with the cosmetic outcomes.

Conclusions: BABA robotic thyroidectomy is a feasible and safe treatment for Graves' disease. It is recommended as an alternative for patients who are concerned by the cosmetic effects of traditional thyroidectomy.

13.176 General Surgery

Laparoscopic Antrectomy and Roux-En-Y Reconstruction for Ulcer Disease

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Background: Since the advent of proton pump inhibitors, the surgical treatment of peptic ulcer disease has become increasingly rare. Infrequently, patients experience ulcer disease refractory to optimal medical management and require surgical intervention. Traditionally, these operations are performed via open laparotomy; however, laparoscopic procedures are also safe and effective for the surgical treatment of peptic ulcer disease.

Method: The patient is a 32 year old female who was referred to our clinic for a medically refractory peptic ulcer disease. She was hospitalized multiple times for ulcer perforation, bleeding, and subsequently developed gastric outlet obstruction.

Her past medical history was significant for lupus, arthritis, and tobacco abuse. Her past surgical history was significant for exploratory laparotomy with Graham patch for a perforated duodenal ulcer 1.5 years prior to presentation. The patient was treated with maximum medical therapy. She underwent extensive preoperative work up, including: gastrin level/secretin stimulation test, gastric pH probe, upper endoscopy, colonoscopy, and upper GI contrast study. EGD was significant for ulceration in the prepyloric region. The endoscope could not enter the duodenum due to gastric outlet obstruction from chronic inflammation in the prepyloric region. Therefore, patient was offered surgical intervention. She was consented for laparoscopic antrectomy, truncal vagotomy and Roux-En-Y reconstruction. The surgery consists of patient positioning, trocar placement, identification and resection of the anterior and posterior vagus nerves, closure of the hiatus, dissection of the antrum and duodenal bulb, antrectomy and creation of Roux-En-Y gastrojejunostomy.

Results: The patient's immediate postoperative course was uneventful and she was discharged on postoperative day five.

13.177 General Surgery

Endoscopic Retrograde Cholangiopancreatography Using a Dual-lumen Endoscope for Patients with Billroth II Gastrectomy

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Peking University Third Hospital

Background: Billroth II gastrectomy alters the gastrointestinal anatomy of patients, and thus increases the challenges of endoscopic retrograde cholangiopancreatography (ERCP) for biliary and pancreatic disorders. The major challenges come from the long afferent loop, sharp angle, and reversed papilla position. A dual-lumen forward viewing endoscope, which allows double instruments to enter the body at the same time and has been used in clinics for years, may overcome these difficulties. The present study evaluates the safety and efficacy of a dual-lumen forward-viewing endoscope to perform ERCP in patients with a Billroth II gastrectomy.

Methods: In total of 46 patients with biliary and pancreatic disorders after Billroth II gastrectomy were enrolled from 2007 to 2012. A dual-lumen forward-viewing endoscope was used to perform ERCP and all procedures including afferent loop intubation and selective cannulation. After successful selective cannulation, cholangiopancreatographic diagnosis, endoscopic sphincterotomy (EST), endoscopic papillary balloon dilatation (EPBD), and bile duct stone removal were conducted.

Results: The success rate of selective cannulation was 82.6% (38/46). Of the 38 cases with successful selective cannulation, EST was achieved in 23 cases with the entry of the needle-knife through the 2nd lumen, while EPBD was conducted in the other 15 cases. Of the 8 failed cases of selective cannulation, 6 had failed afferent loop intubation, and 3 of these 6 patients had Braun's anastomosis.

Conclusions: A dual-lumen forward-viewing endoscope can be safely and effectively used to perform ERCP in patients with a Billroth II gastrectomy, except for patients

with additional Braun's anastomosis.

13.178 General Surgery

Effects of CO₂ Pneumoperitoneum Pressure on CD44v6 and ICAM-1 mRNA Expression of Endometriosis Lesion

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²North Huashan Hospital, Fudan University, Shanghai, China

Objective: To evaluate the effect of different CO₂ pneumoperitoneum pressure on cytokines level (CD44v6 and ICAM-1 mRNA expression) of endometriosis lesion and serum and the correlation factors with post-operation recurrence.

Methods: The rats were divided randomly into three groups (control group, 10mmHg and 20mmHg CO₂ pneumoperitoneum, 1h) after EMs model was founded successfully. The correlated cytokines of adhesion (CD44v6 and ICAM-1) of EMs lesion and serum were determined at 1w, 2w and 6w after pneumoperitoneum intervention. Then to evaluate the effect of different CO₂ pneumoperitoneum pressure on cytokines level of EMs lesion and serum and to analyze the correlation factors with post-operation recurrence.

Results: Compared with control group, the cytokine level correlating with adhesion in the two CO₂ pneumoperitoneum groups decreased significantly in early post-operation ($P \leq 0.05$). Moreover the cytokines level in 10mmHg group was lower than group with 20mmHg pneumoperitoneum ($P \leq 0.05$), and this effect can be continued until two weeks after pneumoperitoneum intervention. The level of cytokines increased gradually with time after CO₂ pneumoperitoneum intervention, but there was no difference compared with control group ($P \leq 0.05$).

Conclusion: The low CO₂ pneumoperitoneum pressure group is superior to the high pressure group in inhibition of CD44v6 and ICAM-1 mRNA expression, which may be one of the factors that correlate with the low post-laparoscopic recurrence.

13.179 General Surgery

Clinical Analysis of 62 Cases of Gynecological Laparoscopic Ambulatory Surgeries

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³Shanghai Worldpath Clinic International Center

Objective: To investigate the feasibility and safety of the gynecological laparoscopic

surgery in the ambulatory surgery center.

Methods: From September 2010 to January 2013, 62 patients received laparoscopic surgeries under general anesthesia for benign gynecological diseases in the ambulatory operation room of Shanghai Worldpath Clinic International Center. We studied the operation time, blood loss, post-operation pain, nausea and vomiting score and the patient's satisfaction.

Results: The operation time was (38.06 ± 15.50) min (10~88 min), the blood loss was (30.40 ± 18.98) ml (5~90 ml), the post-operation pain was (4.68 ± 1.72) (1~9), the nausea and vomiting score was (1.81 ± 0.94) (1~4), and the patient's satisfaction was (95.21 ± 3.74) (84~100). All the patients were discharged home before 5 p.m., and resumed work within 4 days.

Conclusion: It is feasible and safe to perform gynecological laparoscopic ambulatory surgeries. The shortened operation time, less blood loss, good analgesia and right antiemetics may improve the patient's satisfaction.

13.180 Gynecology Transvaginal Appendectomy with Gasless Laparoscopy

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Shengjing Hospital of China Medical University

Objective: To establish the technique and methodology of appendectomy through transvaginal natural orifice transluminal endoscopic surgery under gasless laparoscopy.

Methods: Five cases of chronic appendicitis were selected to receive laparoscopic transvaginal resection of appendixes with concurrent vaginal hysterectomies or transvaginal ovarian teratoma enucleation, performed by applying an abdominal wall lifting device and removing the appendix transvaginally. The clinical data such as operative duration, bleeding volume, morbidity and stay duration were collected and analyzed.

Results: All procedures were performed successfully without intraoperative or major postoperative complications. The appendectomy portion of the procedure took approximately 20 minutes to 30 minutes. And the blood loss volume was minimal. All the patients were discharged scar-free after 3 days.

Conclusions: Transvaginal appendectomy with gasless laparoscopy following vaginal hysterectomy or after a colpotomy incision appears to be both feasible and safe modification of established techniques with acceptable outcomes. As an emerging innovation, natural orifice transluminal endoscopic surgery is mini-invasive, better tolerated and more respectful of esthetics.

13.181 General Surgery The Current Role of VATS in the Czech Republic and Our Experience with the

Treatment of Malignant Pleural Exudation

Jan Flasar MD, Lukas Sakra MD PhD, Jiri Siller MD PhD
General Hospital Pardubice

Introduction: VATS represents relatively new methods that can be used for diagnostic procedures in the field of thoracic surgery. There are 20 departments in the Czech Republic that deal with thoracic surgery. 17 of them provide video-assisted thoracoscopic surgery.

Objective: Our presentation will therefore focus on a detailed description of the situation with VATS in the Czech Republic and we will highlight our experience with VATS pleurodesis.

Method and Results: Diagnostic VATS, VATS cuneiform resections, VATS pleurodesis etc. are standard part of the spectrum of thoracic surgeries in the above-mentioned departments. More difficult procedures like an anatomical VATS resection represent only 4% of thoracic surgeries. Only 4 departments in the Czech Republic perform these thoracic surgeries. 45 patients underwent VATS pleurodesis in our department in the period from January 1, 2010 to December 31, 2012. We describe our indications, procedures, results and complications.

Conclusion: Our long term results and low rates of perioperative and pooperative morbidity (4.5%) and mortality (0%) proved that this method is suitable and cost-effective. These procedures significantly improve the quality of life of those patients who cannot undergo radical surgical treatment.

13.182 Gynecology

The Novel Use of Minilaparoscopy in Gynecologic Surgery

Lindsay Malone MD, Jessica A. Shepherd MD MBA

University of Illinois at Chicago

Objective: Laparoscopic myomectomy offers a minimally invasive approach to treat myomas less than 9 cm rather than laparotomy. Now as laparoscopy advances, the cosmetic benefits for the patient can be enhanced as well. We present a case of a large symptomatic uterine myoma both removed and successfully managed using mini laparoscopic instruments. These instruments are 3 mm in diameter and 36 cm long. The trocars are 3.5 mm in diameter and 15 cm long.

Methods and Procedures: This is a single patient case report with the use of 2 Storz 3.5 mm instruments and trocars in a laparoscopic myomectomy. Two 5 mm trocars were also placed in the left and right upper quadrant and a 10 mm trocar was placed in left lower quadrant for morcellation in order to maintain cosmetic benefit. A total of 7 fibroids were removed from the uterus with the largest being 6-7 cm in size.

Results: The operative time was 5.5 hours and estimated blood loss was 1000 cc. There were no intraoperative complications. The patient was discharged after 48

hours and there were no postoperative complications. There were no late complications or readmissions. Weight of the myoma was 501 gm.

Conclusions: Mini laparoscopy is a valid alternative to 5 mm trocars for difficult minimally invasive procedures and has been proven to be an easy surgical technique to learn by surgeons. Patient satisfaction improves with 3mm incisions and do not require any suturing for closure. The incisions are undetectable within weeks after surgery.

13.183 Gynecology Novel Use of Minilaparoscopy in Gynecologic Surgery

Lindsey Malone MD
University of Illinois at Chicago

Jessica Shepherd M.D. MBA
University of Illinois at Chicago

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13.185 Gynecology Long-Term Patient Satisfaction with Thermal Balloon Ablation for Treatment of Menorrhagia

Lindsey Alison Penezic MD, Gerald Harkins MD, Danielle Hazard MD

Penn State Hershey Medical Center

Objective: The purpose of this study was to determine long-term patient satisfaction following thermal balloon endometrial ablation 7-10 years postoperatively in a patient population previously surveyed 1-5 years postoperatively at the Penn State Milton S. Hershey Medical Center and to compare rates with the previous study. Secondary outcomes included hysterectomy rate. We hypothesized that patient satisfaction rates would decrease and hysterectomy rates would increase over the extended followup period.

Methods: Two hundred fourteen patients were identified who underwent thermal balloon ablation at our institution between January 01, 2001 and December 31, 2004. Patients were mailed a 2-page survey regarding demographics, patient satisfaction, postoperative bleeding patterns, and need for subsequent surgery. Satisfaction rates, amenorrhea rates, and hysterectomy rates were calculated as percentages. Fishers exact test was used to compare satisfaction rates and hysterectomy rates and the FREQ procedure in SAS was used to calculate odds ratios.

Results: The survey response rate was 62%, excluding 57 surveys returned as undeliverable. Eighty-seven percent of respondents were satisfied with the results of their procedure, compared with 88% in the initial study ($P= 0.84$). Subsequent hysterectomy was required in 21.6% of women after 7-10 years, compared to 9% in the 1-5 year followup period ($P= 0.005$, OR 2.8 with 95% CI 1.3-6.1). Out of the 76 women not requiring hysterectomy, 58% reported amenorrhea and 35.5% reported minimal to light bleeding.

Conclusion: This study demonstrates a consistently high satisfaction rate at our institution with significantly increased hysterectomy rate at 7-10 years following thermal balloon ablation compared to 1-5 years postoperatively.

13.186 General Surgery Multi-port versus Single-site Robotic Assisted Cholecystectomy: A Single Surgeons Experience

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The Jewish Hospital Cincinnati

Introduction: Surgeons are offering multiport (MP) robotic assisted cholecystectomy on the basis of less pain from trocar movement, better optics (3D) and wristed instruments over traditional laparoscopic cholecystectomy. Although there have been numerous feasibility studies, our group is performing an analysis of single-site (SS) robotic assisted cholecystectomy outcomes.

Methods: A single single surgeon study compares (MP) and (SS) cholecystectomy. Data points were collected for one year at a single institution.

Results: There were 32 SS and 45 MP patients. Body mass index showed an average of 32.64 (MP) versus 26.50 (SS) (p -value = 0.0000071). Average time from incision to console was 11.71 minutes (MP) and 17.65 (SS), with no significant difference ($p = 0.50$). Average time in console was 30.35 minutes (MP) versus 26.75

(SS) ($p=0.048$). Average time in the recovery unit was 215.87 minutes (MP) versus 199.78 (SS) ($p=0.16$), not significantly different. No complications were demonstrated.

Conclusion: Preliminary data shows no significant difference between SS versus MP cholecystectomy in procedure completion time, recovery or complications. In incision to console time declined as more procedures were completed and team proficiency improved. A 16 minute shorter stay was seen in the SS group, but not found to be significant. Nurse variability may account for the shorter stays. The majority of MP underwent a cholangiogram as compared to SS adding time to the operation. BMI was lower in the SS group due to selection criteria in this group being a BMI less than 30.

13.187 General Surgery Laparoscopic Retrieval of a Retained Surgical Pad after an Open Appendectomy

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¹Fundacion Santa Fe de Bogota

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Objective: Surgical cases where instruments or sponges (gossypbipoma) are left after surgery are uncommon. These preventable events usually required a second laparotomy to remove the element. Even though there are techniques such as counting sponges or radiopaque strips, surgical elements are still being forgotten. We present a case of the laparoscopic retrieval of a retained surgical pad.

Methods: We report a case of a 45-year-old man who was brought to the emergency department because of abdominal pain and purulent drainage through the surgical wound. He had history of an open appendectomy with peritonitis and secondary wound closure performed in another country 45 days ago. An abdominal CT Scan revealed a foreign body near the ileum with a possible fistula.

Results: The gossypbipoma retrieval was performed laparoscopically with a 25 cm intestinal resection of the distal ileum. There were no intraoperative complications. The operative time was 153 minutes, with a hospital stay of 7 days.

Conclusion: Most reported cases of gossypbipoma occur in the presence of a normal pack count and emergency surgery. The case presented shows that laparoscopic management is a feasible option with potential benefits such as less surgical site infection and trauma. Continuous medical education and strict adherence to security protocols should reduce the incidence of this event to a minimum.

13.188 Gynecology Comparison of Outcomes for Patients Undergoing Minimally Invasive Surgery for Advanced-stage Endometriosis

Ido Sirota MD MHA, Tamara Finger MD, Susan Khalil MD, Mario Vega MD, Ana Mrkaic MD, Farr R. Nezhat

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Objective: To determine outcome differences in patients undergoing robotic-assisted versus conventional laparoscopy for advanced-stage endometriosis.

Methods: Cases were selected from our prospectively-maintained computerized database of robotic-assisted (RALS; da Vinci ® Surgical System) and conventional laparoscopic surgery (CLS) for endometriosis. The study included 118 patients who were treated by one surgeon (F. R. N.) skillful in both techniques between July 2009 and October 2012 for endometriosis stage 3 or 4, according to the American Society for Reproductive Medicine criteria. Median age, body mass index (BMI), race, type of surgery and extent of surgery were compared, as well as median estimated blood loss (EBL), operating room time (ORT), length of stay (LOS), intraoperative complications, and postoperative complications. For continuous variables, medians and first and third quartiles were calculated. Medians between groups were compared via Wilcoxon rank-sum test. Distributions of categorical variables between groups were compared via Chi-square or Fisher's exact tests. In all analyses, $p < 0.05$ was considered significant.

Results: 86 CLS and 32 RALS cases were included. Compared to the CLS patients, those who underwent RALS had higher BMI (27.36 [23.90-34.09] vs. 24.53 [22.27-26.96]; $p < 0.0079$) and ORT (250.50 [176-328.50] vs. 173.50 [123-237] minutes; $p < 0.0005$). No significant difference was noted between the two groups in age, race, hysterectomy rate, EBL, LOS or in rates of intra-operative or postoperative complications.

Conclusions: Despite higher ORT in the RALS group compared to the CLS group, implementation of this new technology might allow a safe minimally invasive surgical approach for obese patients, with clinical outcomes comparable to those in non-obese patients undergoing CLS.

13.189 Gynecology

The Successful Implementation of Robotics and Its Impact on a Private Obstetric and Gynecology Practice at a Community Hospital

Evelyn S Felluca MD
Reston Hospital

Hypothesis: If minimally invasive surgery is the ultimate goal for our patients, then successful implementation of a robotics program should have a positive impact on our patients, hospital, and private practice.

Objective: Determine the impact of implementation of a robotics program as a benign gynecologist at a community hospital.

Methods: A retrospective review of all robotic cases performed from July 31, 2009 to February 19, 2013, totaling 293 cases; 245 hysterectomies; 233 RTLH+/-BS+O and 12 RSLH+/-BS+O, 26 myomectomies, 10 adnexectomies, 42 endometriosis resections, and 119 concomitant adhesionolysis. Case selection, complexity, prior abdominal and concurrent surgeries, BMI, specimen weights, complications, conversion rates, and OR efficiency reviewed. The impact of robotics on surgical case volume growth and a surgeon's progressive experience with robotics discussed. Data obtained from patient charts and Reston Hospital records.

Results: When 293 robotic cases were categorized for prior abdominal surgeries, 137(47%) had 0, 73(25%) - 1, 50(17%) -2, 34(11%)->/=3. BMI was determined as <25, 25-35, or >35 with 117(40%), 137(47%), and 39(13%) respectively. Total uterine weights revealed 168(69%)<200gms, 56(23%)200-500gms, 17(7%)500-1000gms, and 4(2%)>1000gms. Myomectomy weights showed 16(79%)<200gms, 3(13%)200-500gms, and 4(17%)>500gms. Complication rates were below reported averages and conversion rate equaled 2(0.7%). Surgical case volume increased greater than 3-fold with robotics implementation and the progressive complexity of the cases being successfully performed advanced the use of MIS in benign gynecology.

Conclusion: Successful implementation of robotic assisted technology in a benign gynecology private practice at a community hospital has a positive impact with excellent quality outcomes resulting in advancing minimally invasive surgery for our patients.

13.190 General Surgery Perforated Appendicitis Within a Morgagni Hernia: A Laparoscopic Repair

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Laparoscopic repair of a Morgagni hernia is a well-described technique in children or adults who present well beyond the neonatal period. However, it is still most often being repaired via an open approach. This repair can be more challenging when a concomitant infectious process is present, which in this case was a perforated appendicitis. A 22-year-old male presented with typical appendicitis, but was found to have a perforated appendicitis contained within a congenital diaphragmatic hernia. We demonstrate the safety and efficacy of using laparoscopy to repair a Morgagni hernia with primary suture repair due to a contaminated field. Our patient was able to have both his appendectomy and his Morgagni hernia repair with a single operation, and no recurrence of the diaphragmatic defect.

13.191 General Surgery Retrospective Analysis of Laparoscopic and Open Colectomies Performed by a Colorectal Surgeon

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Objective: To determine the benefits and shortcomings of laparoscopic large bowel resection, by analysing a consultant surgeon's past surgical performance of open and laparoscopic colon resections. Are laparoscopic colectomies reducing post-operative morbidity and hospital stay?

Method: The consultant surgeon's logbook was used to retrospectively analyse colectomy outcomes since January 2008. All operations were performed at a surgical unit in a district general hospital. No colectomies were excluded from the study. The Students T-test and the Fisher exact test were used for data analysis.

Results: 200 colectomies were analysed (137 laparoscopic and 63 open). Hospital stay was shorter following laparoscopic surgery (5.3 days vs. 13.6, $p = < 0.0001$). 71.8% of laparoscopic colectomy patients for cancer were discharged by day 4, compared with 16.7% of open patients ($p = < 0.0001$). The incidence of anastomotic leak was equal between open and laparoscopic surgery (1.59% vs. 1.46%; $p = 0.998$). Wound infections were a complication in 8.1% of laparoscopic patients, compared with 15.9% of open patients ($p = 0.0786$). Major complications were less common in laparoscopic surgery (9.5% vs. 17.5%, $p = 0.086$). 45/137 laparoscopic patients and 35/63 open surgery patients had either a minor or major complication ($p = 0.002$). 2 laparoscopic patients and 5 open patients had an ACS event post-operatively ($p = 0.0316$).

Conclusion: This retrospective study shows that laparoscopic surgery significantly shortens hospital stay. It also has a lower incidence of post-operative complications especially wound infections and cardiac complications, with no increase in risk of anastomotic leak.

13.192 Multispecialty

Assessing the Quality of Single-site Laparoendoscopic (LESS) Surgery Information on the Internet

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Objectives: Patients are increasingly interested in laparoendoscopic single-site (LESS) surgery. Often, patients access health information on the Internet, however the quality of information varies greatly among sources. The purpose of this study was to evaluate the quality of Internet-based LESS information.

Methods: On 2/19/2013, we searched Google for the five most common LESS-related terms. We collected first page results for each query (51 total sites), from which we excluded videos, duplicates and/or irrelevant sites. Sites were evaluated based on Flesch-Kincaid reading level and criteria including procedures referenced,

advantages/disadvantages, and overall positive/negative opinion.

Results: A total of 39 sites were analyzed. Most sites were from journals (51.3%) followed by hospitals (23.1%). Sites were difficult to read with average grade level 11.8 (range 8-12). The most common procedures referenced were cholecystectomy (55.3%) and urologic procedures (47.4%). Many articles cited cosmetic advantages (97.1%), decreased pain (70.6%), and faster recovery time (50.0%) associated with LESS. Few cited the disadvantages of increased difficulty (44.1%) and risk of conversion to standard techniques (14.7%). Overall, 38.5% of sites expressed a positive opinions toward LESS, with patient-oriented (non-journal) sites significantly more likely to express a positive opinion than physician-oriented sites (57.9% vs. 20.0%, $p=0.015$).

Conclusions: Patient-oriented information about LESS on the Internet is difficult to read and often incomplete. Patients are most likely to encounter pages that express positive opinions about LESS and focus on the advantages of these procedures. Patients need to be educated to become critical consumers of health information on the Internet.

13.193 General Surgery Laparoscopic Resection of Meckel's Diverticulum

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Background: Meckel's diverticulum represents the incompletely obliterated omphalomesenteric duct, that occurs in about 2% of the population. Presentation varies based upon type and severity of pathological lesion, including but not limited to abdominal pain, bleeding, perforation, or bowel obstruction.

Objective: We report a case of Meckel's diverticulum initially managed as symptomatic anemia of unknown etiology.

Methods: The patient was referred to Digestive Disease Institute at Cleveland Clinic Foundation for further work up of obscure occult gastrointestinal bleeding.

Results: The video depicts the pre-operative work up in multidisciplinary approach as well as laparoscopic resection of Meckel's Diverticulum and intra-corporeal small bowel anastomosis, demonstrating the involved laparoscopic skills in such procedure.

Conclusion: Although Meckel's diverticulum is a common GI congenital anomaly, it is usually asymptomatic, and encountered as incidental finding intra-operatively. Furthermore, it usually mimics other conditions upon presentation which adds challenge for the diagnosis. Laparoscopic small bowel resection with intra-corporeal anastomosis is safe and feasible.

13.194 Gynecology Supracervical Hysterectomy with Transcervical Removal of the Uterus,

Adnexa, and Appendix Using a Microlaparoscopic Technique

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Objective: To describe a microlaparoscopic supracervical hysterectomy with a transcervical approach for removing the uterus, fallopian tubes, ovaries, and appendix.

Procedure: Laparoscopic supracervical hysterectomy was performed with microlaparoscopic (3 and 5 mm) instruments. A 5 mm monopolar endoscopic loop was used to amputate the uterine corpus. The upper endocervix was excised in a reverse cone. The cervix was externally dilated and a 12 mm port introduced transcervically. An appendectomy was performed by first introducing an endoGIA stapler through the 12 mm cervical port, amputating the appendix at its base, and removing it transcervically. The adnexa were separately amputated and removed with an endoscopic specimen retrieval bag through the cervical port. The patient was placed in Trendelenberg and under direct visualization, the uterus was extracted with a 12 mm rotary morcellator placed transcervically. The dilated cervical os was closed with a single endoscopic stitch. Finally, a modified Moschowitz procedure was performed, leaving the pelvic floor well supported.

Results: The procedure was performed with minimal blood loss, the patient was discharged within 23 hours after surgery, and had excellent cosmetic results.

Conclusion: Use of microlaparoscopic instruments in conjunction with transcervical removal of the uterus, fallopian tubes, ovaries, and appendix can be performed safely and with good cosmesis.

13.195 Gynecology

Robotic-Assisted Laparoscopic Para-Aortic and Pelvic Lymph Node Debulking in Advanced Cervical Cancer with Management of Laceration of Inferior Vena Caval Injury

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Objective: The purpose of this video is to demonstrate robotic-assisted laparoscopic debulking for metastasis involving the pelvic and para-aortic lymph nodes, and the right obturator nerve, with repair of an inferior vena cava injury.

Methods and Procedures: Robotic-assisted laparoscopic para-aortic and pelvic lymph node debulking was performed in a 61 year-old female with stage IIIB cervical carcinoma (squamous cell carcinoma), with right hydroureteronephrosis. Pelvic lymph node debulking included dissection and resection of tumor encasing the right

obturator nerve. The left obturator lymphatics group was also dissected and resected. A para-aortic lymphadenectomy was performed over the vena cava, targeting clinically enlarged para-aortic lymph nodes. A small vena cava perforation was managed by the application of pressure and then a surgical clip.

Results: Total operating time for the procedure was four hours and ten minutes, with an estimated blood loss of 150 milliliters. The patient recovered well, had a percutaneous nephrostomy tube placed, and then was discharged home on post-operative day #3, and started her chemoradiation 7 days post-operatively. She had an uncomplicated surgical course, and post-operative course. All the resected lymph nodes were positive with final pathology for metastasis. She returned for follow-up two months after surgery, and is doing well. She completed her external beam radiation and chemotherapy, and is status-post two low dose brachytherapy treatments.

Conclusions: Tumor debulking with robotic-assisted laparoscopy in advanced cervical cancer can be utilized to optimize targeted post-surgical radiation and chemotherapy.

13.196 General Surgery

Routine Postoperative Contrast Study After Laparoscopic Heller Myotomy: Is It Really Necessary?

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Introduction: Laparoscopic Heller myotomy (LHM) is a safe and durable treatment for achalasia. Traditionally, contrast studies are routinely obtained in the early postoperative period to rule out esophageal leak. Early in our experience, our group would rely on postoperative studies; however, after a false positive exam we moved away from routinely performing postoperative contrast studies. Herein, we report our experience.

Methods: All patients undergoing LHM from 2002 until 2012 at our institution were retrospectively reviewed. Patient demographics, preoperative studies, operative reports, and postoperative data were collected and analyzed. In order to review our recent routine experience, patients who underwent postoperative contrast studies were excluded.

Results: During the 10 year study period, 163 patients underwent LHM with Dor fundoplication. Sixty-two patients underwent contrast studies postoperatively and were excluded. Of the remaining 101 patients, 82 (81%) underwent preoperative endoscopic intervention. The mean age of the cohort was 52 years, with 49.5% male. The average length of stay was 2.29 days with no 30-day readmissions. Complications were seen in 3 (3%) of patients, and no patients (0%) suffered clinically relevant leak.

Conclusion: In our series, LHM can be performed safely by experienced surgeons.

In routine cases, postoperative contrast imaging may be unnecessary.

13.197 General Surgery

Dexterity of Single-incision Endosurgery Using the SPIDER® Platform Versus Conventional Instrumentation in an Experimental Laboratory Setting

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Objective: Single-incision Endosurgery has gained popularity for many routine surgical procedures. Companies have developed improved platforms to improve inline configuration, for example, by using intracorporeal instrument triangulation. To date, the ease of use for each of these technologies has not been compared head-to-head. This study analyses the learning curve of a mechanical single-incision platform (SPIDER®) vs conventional single-incision (SI) endosurgery.

Methods: We recruited volunteers among surgical residents at WCMC-NYPH. All participants viewed a demonstration of PEG transfer according to Fundamentals of Laparoscopic Surgery (FLS™) using both the SPIDER® platform and conventional SI endosurgery. Participants were given two minutes to complete as many PEG transfers as possible and alternated between both platforms to complete five trials each. The learning curves were analyzed for each system.

Results: To date, ten surgical residents have participated in the study. The mean number of transfers using conventional SI endosurgery was higher in the first round compared to SPIDER (9.4 vs 5.40, $p=0.04$). The mean number of transfers in the fifth round was still higher in the conventional group (11.5 vs 6.4, $p=0.01$). We plotted the number of peg transfers for each trial and found a higher learning curve using conventional SI endosurgery ($R=0.7$) vs SPYDER ($R=0.2$).

Conclusions: Regarding the isolated task of peg transfer, the SPIDER fails to confer a benefit in terms of dexterity or efficacy over conventional SI endosurgery. It may provide an advantage with more complex tasks such as circle cutting or intracorporeal knot-tying, which we plan to evaluate in future studies.

13.198 Gynecology

Strategic LESS Hysterectomy with Retroperitoneal Approach

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Laparoendoscopic single-site surgery (LESS) has been popular in Korea because of its excellent cosmetic outcome. Many gynecologic surgeons are challenged by LESS

techniques because of patients' need. However, LESS has some limitations such as loss of triangulation, difficulty in suturing. In addition, bleeding control may be difficult in LESS. In laparoscopic hysterectomy, ligation of uterine arteries and vault closure are important procedures. Uterine arteries in lateral side of the uterus with a huge myoma are large and very susceptible to bleed during ligation procedure. Ligation of an uterine artery at its origin from an internal iliac artery can be a good option to avoid bleeding near the ureter. Vault closure in LESS is the most challenging procedure. Endostitch or barbed suture material makes vault closure easier. However, we can also do vault closure by vaginal approach easily. This video of strategic LESS hysterectomy shows the retroperitoneal approach for reproducible uterine arteries ligation with multifunctional advanced bipolar device, articulating grasper and vaginal vault closure after vaginal knife morcellation for removal of the uterus. This video also includes umbilical opening and closure in detail.

13.199 General Surgery Transoral Incisionless Fundoplication

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This video is of a Transoral Incisionless Fundoplication (TIF) undertaken in a 60 year old woman presenting with heartburn and an elevated DeMeester score. Preoperative endoscopy and esophagography with a barium-laden food bolus documented no hiatal hernia and profound esophageal dysmotility. TIF was chosen after informed consent because of GERD with profound esophageal dysmotility and the absence of a hiatal hernia.

First, intra-operative endoscopy is undertaken to ensure candidacy (e.g., no hiatal hernia) for TIF. Then, with constant endoscopic guidance, the TIF device is advanced per os over the endoscope, down the esophagus, and into the stomach. Utilizing a helical screw, the gastroesophageal flap valve is pulled into the stomach and into the device and the first H-fasteners are deployed at the 6 o'clock position to augment the gastroesophageal flap valve. The device is then rotated and multiple H-fasteners are placed from 1 to 11 o'clock until a robust gastroesophageal flap valve approximately 3cm in length is constructed. The robust nature of the valve and hemostasis is confirmed via endoscopy after the TIF device is withdrawn.

The TIF procedure is suitable for patients with GERD and no hiatal hernia; we believe it is particularly applicable for patients with profound GERD and esophageal dysmotility, patients with GERD who have had numerous previous abdominal operations, and patients who have failed previous funduplications when their anti-reflux "valve" needs augmentation in the absence of a hiatal hernia.

13.200 General Surgery Laparo-Endoscopic Single Site (LESS) Nissen Fundoplication: Applying Revolutionary Technology

Sharona Ross MD, Ty Bowman BS, Julia Francoeur BS, Kimmerle Cohen MD,

Alexander Rosemurgy MD

Florida Hospital Tampa; Tampa, Florida

This video demonstrates a Laparo-Endoscopic Single Site (LESS) Nissen fundoplication with repair of hiatal hernia in a 60-year-old gentleman with GERD. Local anesthetic was inserted into the umbilicus. Four 5 mm trocars were utilized in a single multi-trocar port placed through a single 1.2 cm vertical incision at the umbilicus. A 5 mm deflectable tip laparoscope was used. The gastrohepatic ligament was opened in a stellate fashion and the dissection was carried up the right crus and into the chest. The gastric fundus was mobilized by dividing the short gastric vessels. The gastroesophageal fat was excised. The distal esophagus was circumferentially dissected from surrounding tissue, preserving both anterior and posterior vagus nerves. A suturing device (EndoStitch™) was then utilized to reconstruct the esophageal hiatus with interrupted sutures. The posterior fundus was then brought behind the esophagus and the fundoplication was constructed utilizing unidirectional barbed suture (V-Loc™) in a running fashion. Intraoperative endoscopy confirmed the appropriate location of the fundoplication. The fundoplication was anchored to the right crus to avoid tension and to prevent twisting of the lower esophagus. The diaphragm was irrigated with bupivacaine solution to minimize postoperative pain. Finally, the umbilicus was closed with monofilament absorbable suture in a figure-of-eight fashion.

The V-Loc™ wound closure device is a revolutionary technology that eliminates the need to tie knots without compromising strength and security. LESS Nissen fundoplication is a safe and efficacious approach for the treatment of gastroesophageal reflux disease. As technology in surgery evolves, safe application of new technology will transform laparoscopic surgery.

13.201 General Surgery

1000 Laparo-Endoscopic Single Site (LESS) Operations: A Thoughtful Reflection on Safety, Efficacy, and Learning Curve

Sharona Ross MD; Kenneth Luberic BS; Alexandria Ware BS; Kayla Bala; Charles Tkatch BS; Franka Co BS; Alexander Rosemurgy MD

Objective: This study was undertaken to review our experience with our first 1000 Laparo-Endoscopic Single Site (LESS) operations. We hypothesized that laparoscopic surgeons can easily master LESS techniques and the learning curve for LESS surgery is short, safe, and definable.

Methods: With IRB approval, patients undergoing LESS operations at our institution were prospectively followed. Among many operations, the learning curves for patients undergoing cholecystectomy, fundoplication, and Heller myotomy were identified by operative duration, addition of trocar sites, and conversions to "open."

Results: The 1000 LESS operations included: 576 cholecystectomies, 220 fundoplications, 140 Heller myotomies, 32 inguinal hernia repairs, 13 distal pancreatectomies / splenectomies, 5 adrenalectomies and 14 other abdominal operations. Overall, 9% of operations had additional trocars and 0.3% of operations were converted to "open". A significant reduction in operative times ($p < 0.001$) after completion of 75 LESS cholecystectomies was observed. Additional trocars were

placed in 27% of patients who underwent funduplications, 90% were in the first 40 patients, and in 10% of patients who underwent Heller myotomies, all in our early experience. There were no conversions to “open” procedures for either funduplications or myotomies. Over 80% of patients who had a Heller myotomy or fundoplication noted symptoms \leq 1/ month.

Conclusions: LESS surgery is applicable for a wide variety of operations. Ameliorated symptoms without apparent scars document the salutary and cosmetic benefits of the LESS technique. The learning curves of LESS surgery are definable, short, and safe. Patients will seek LESS surgery because of efficacy and superior cosmetic outcomes.

13.202 General Surgery

Cost Analysis of Approaches for Cholecystectomy Favors LESS Cholecystectomy with Epidural Anesthesia

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Objective: The advent of healthcare reform has highlighted the importance of analyzing cost associated with Surgery. At our institution, cholecystectomies are most commonly undertaken via three approaches: Laparo-Endoscopic Single Site (LESS) with general anesthesia, LESS with epidural anesthesia, and robotically with general anesthesia; we undertook this study to determine the costs associated with each approach.

Methods: With IRB approval, all patients undergoing cholecystectomy in 2012-13 are followed. Data were collected on supply, anesthesia, case level, and pharmacological costs, as well as operative duration, time spent in the O.R., and length of stay. Median data are reported.

Results: Median BMI was 29 and length of stay was 0 days. All operations were undertaken without complications. When compared to robotic cholecystectomy, cholecystectomy via LESS with epidural anesthesia had significantly shorter operative duration (60 minutes vs. 105 minutes; $p = 0.001$) and less time in the O.R. (108 minutes vs. 162 minutes, $p < 0.0001$). Cholecystectomy was significantly less expensive when undertaken via LESS with epidural anesthesia (\$22,508 vs. \$33,483 for LESS cholecystectomy with general anesthesia, $p = 0.002$; \$22,508 vs. \$36,432 for robotic cholecystectomy, $p < 0.0001$). LESS cholecystectomy with epidural anesthesia was less expensive than the other two approaches in every category measured: supplies, anesthesia, case-level, and pharmacy.

Conclusions: LESS cholecystectomy with epidural anesthesia is the most efficient and cost effective with the least resource consumption. This study strongly supports application of LESS cholecystectomy with epidural anesthesia.

13.203 Gynecology

Robotic-assisted Laparoscopic Resection of Deep Infiltrating Vaginal Endometriosis

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Objective: The purpose of this video is to demonstrate robotic-assisted laparoscopic recto-vaginal endometriosis resection.

Methods and Procedures: Robotic-assisted laparoscopic resection of vaginal endometriosis was performed in a 31 year-old female with dysmenorrhea, dyspareunia, and abnormal uterine bleeding. On physical examination, a lesion was noted in the posterior fornix that was suspicious for endometriosis. She was initially given a trial of medical treatment, consisting of progesterone and a GNRH-agonist, but did not have improvement of her symptoms. She then underwent a robotic-assisted laparoscopic resection of recto-vaginal endometriosis, partial vaginectomy, chromopertubation, and treatment of pelvic and abdominal endometriosis.

Results: Total operating time for the procedure was two hours and twenty-seven minutes, with an estimated blood loss of 50 milliliters. The patient recovered well, and was discharged home on the same day as surgery. She had an uncomplicated intra-operative and post-operative course. All resected tissue samples had a final pathology consistent with endometriosis. The vaginal lesion resected had a finding of deep infiltrating endometriosis that involved full thickness through to the posterior cul-de-sac. Follow-up with the patient six months later revealed improvement with her pelvic pain, dysmenorrhea, and dyspareunia. She reports that she is trying to get pregnant.

Conclusions: Robotic-assisted laparoscopic surgical techniques are useful in dissection and resection of deep infiltrating endometriosis of the recto-vaginal septum.

13.204 General Surgery

Laparo-Endoscopic Single Site (LESS) Adrenalectomy for Left Adrenal Adenoma

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Laparo-Endoscopic Single Site (LESS) surgery is evolving as a safe, expeditious, and efficacious minimally invasive technique. By reducing the number of incisions to a single incision at the umbilicus, this approach offers improved cosmesis and potentially faster patient recovery. Only a limited variety of LESS operations have been reported. Nonetheless, LESS surgery is progressively being applied to advanced laparoscopic procedures such as resection of an adrenal adenoma, as demonstrated by this video.

This video is of a LESS adrenalectomy for left adrenal adenoma. A 12 mm vertical incision is made preserving the umbilical ring and a single multi-trocar port is inserted. The adrenal gland is freed from the kidney; arterial and venous tributaries are divided using a bipolar energy device. The tumor and adrenal gland are freed from the left renal vein and dissected off the tail of the pancreas and spleen. Hemostasis in the operative field is ensured; the specimen is placed into an extraction bag. Water-soluble lubricating gel facilitates extraction of the tumor and adrenal gland through the umbilical incision. The incision is closed with absorbable suture in a figure-of-eight fashion.

LESS surgery allows for adequate access to all quadrants of the abdomen and pelvis, promoting its application to many surgical disciplines. This video documents that the LESS approach allows for sufficient visualization of and access to the peritoneal cavity for operations such as adrenalectomy for adenoma. LESS surgery is an approach that patients will embrace, promising no scar, less pain, and a quicker return to daily activities.

13.205 General Surgery

Early Experience with Robotic Rectopexy: A Single Institution's Comparison to Laparoscopic and Open Techniques

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Purpose: Minimally invasive colorectal surgery is beneficial in decreasing post-operative pain and hospital length of stay. Despite offering superior visualization, laparoscopy restricts the surgeon's range of motion. Robotic surgical instrumentation may alleviate this limitation by offering 7 degrees of freedom and three-dimensional visualization, which is especially crucial in the restricted space of a narrow bony pelvis when performing rectopexy procedures for prolapse. We review our early experience with robotic rectopexy and compare it to both laparoscopic and open techniques.

Methods: We conducted a retrospective review of all rectopexy cases for prolapse performed by colorectal surgeons at our institution from 2007 to 2013. We analyzed patient demographics, operative details, short and long-term complications. Comparisons of means and frequencies were performed by STATA 10 with significance at $p < 0.05$.

Results: We found no significant differences in operative time, time to incision, blood loss, hospital length of stay, 30-day postoperative complications, or long-term complications between or within laparoscopic, open, and robotic groups ($n=15, 7,$ and $4,$ respectively). Interestingly, sex, BMI, resection rectopexy, or concomitant urogynecologic procedure did not significantly influence operative time, regardless of operative approach. Hospital length of stay was significantly longer in patients with $BMI > 35$ ($p=0.03$).

Conclusions: Our early experience with robotic rectopexy is shown in this study to

be as safe a procedure as laparoscopic and open approaches, and does not confer significantly longer set up and operative times as many believe.

13.206 General Surgery Facelift Robotic Assisted Thyroidectomy

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We are presenting here facelift robotic assisted thyroidectomy which was recently reported as new remote access technique. This was performed in a 39 year old female patient who was referred for management of suspicious thyroid nodule. The patient was concerned about a visible neck scar, she elected to go for robotic assisted thyroidectomy using retroauricular approach. The postoperative course was uneventful. The patient discharged home on the same day of surgery. This new approach showed to be safe and feasible.

13.207 Gynecology Laparoscopic-assisted Surgery and Irradiation of an 87 Year Old Woman with a Large Ovarian Cystic Tumour and Uterine Cervical Cancer

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Introduction: Recently, an increasing number of laparoscopic surgical procedures in the elderly have been reported. We describe here a case of a large ovarian cystic tumor with cervical cancer in an 87-year-old-patient, who underwent laparoscopic-assisted surgery for the tumor and was treated with irradiation for the cervical cancer, as a minimally invasive therapy.

Case Reports: An 87-year-old woman was admitted to our hospital because of abdominal distension and genital bleeding. Pelvic examination showed a soft tumor of full-term gestation size in the abdomen and macroscopic cancer of the uterine cervix, of clinical stage IIb (squamous cell carcinoma). Magnetic resonance imaging (MRI) showed a large bicornuate tumor in the abdomen and no enlarged uterus. We received informed consent, we performed surgical treatment and irradiation. A large ovarian cystic tumor was removed by laparoscopic-assisted oophorosalingectomy through a 2.5-cm incision in the abdominal wall. The patient had no complaints of postoperative pain and could walk 12 h after the surgery. Subsequently, she received irradiation for cervical cancer (cobalt; 2 Gy/day, 60 Gy in total). At the time of her discharge, there were no symptoms. She returned to normal activities, and there was no recurrence of the ovarian tumor or of genital bleeding. Nevertheless, the patient gradually became weakened by age and died 19 months after the surgery.

Conclusions: Laparoscopic-assisted surgery and irradiation are useful, minimally

invasive therapies in elderly patients with large ovarian cystic tumor and uterine cancer.

13.208 General Surgery

A Comparative North American Experience of Robotic Adrenalectomy for the Treatment of Benign Adrenal Tumors

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Objective: We hypothesize that robotic adrenalectomy (RA) would be a better option than laparoscopic surgery in facilitating the procedure in obese patients.

Methods: Radiological and surgical reports were reviewed in 67 patients with benign adrenal tumors who underwent unilateral adrenalectomy at a university based tertiary care center. Patient demographics, pathological and surgical data were recorded. In addition, tumor size, the distance from Gerota's fascia to the skin and perinephric fat were measured from the patients' preoperative abdominal computed tomography (CT) scans, Clinical and perioperative parameters were analyzed using Student t test and Generalized linear model.

Results: Of these patients, 29 (41%) were obese (BMI ≥ 30 kg/m²); mean 35.6 ± 5.3 kg/m². Sixteen patients had RA and 13 had LA. The groups were similar in terms of age, gender, tumor size and side ($p > 0.05$ for all). BMI was 35.9 ± 1.12 kg/m² in the robotic group versus 34.9 ± 1.52 kg/m² in the laparoscopic ($p = 0.57$). The distance from Gerota's fascia to the skin (4.98 ± 1.48 cm vs. 2.91 ± 0.35 cm; $p = 0.22$), estimated blood loss (30 ± 41.7 ml vs. 113 ± 89.9 ml; $p = 0.22$). The Total operative time was significantly longer in robotic group (211 ± 22.35 min vs. 142 ± 18.62 min; $p = 0.046$), whereas the same group has a shorter post operative hospital stay (1.28 ± 0.34 days vs. 3 ± 0.37 days; $p = 0.04$). Mean follow-up was 3.4 ± 2.7 months. No major complications or mortalities were reported in both groups of patients.

Conclusion: Robotic adrenalectomy a safe and effective alternative to traditional laparoscopic adrenalectomy. Although, our study showed that robotic adrenalectomy has significant longer total operative time, it was associated with lengthy learning curve.

13.209 General Surgery

Is Robotic Hemithyroidectomy Comparable to its Conventional Counterpart?

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Objective: We aimed to compare the outcomes of robot-assisted transaxillary thyroid surgery (RATS) to conventional cervical approach when performing hemithyroidectomy.

Materials and Methods: A retrospective review of a prospectively collected database identified all patients who underwent hemithyroidectomy during a three-year period. Patients were divided into two groups; the robotic and conventional cervical groups. Clinical characteristics, pathology data, total operative time, blood loss, surgical outcomes, and length of hospital stay were evaluated.

Results: Of the 242 total patients, 115 patients underwent RATS and 127 patients underwent conventional hemithyroidectomy. Patients offered the robotic approach were of younger age (44.3 ± 12 vs. 52.0 ± 14.1 years), had a lower BMI (27.81 ± 8.19 vs. 31.39 ± 9.0), and smaller nodule size (23.4 ± 22.5 vs. 70.57 ± 194.5 cm³) ($p < 0.001$ for all). The total blood loss was comparable in both groups ($p = 0.148$). The average total operative time was longer in the robotic group compared to the conventional group (197 ± 41.8 minutes vs. 178 ± 46.1 minutes, ($p = 0.002$). In the robotic group, 79.1% of patients were discharged the same day of the procedure compared to 33.8% in the conventional group ($p < 0.001$). There were no instances of permanent vocal cord palsy on postoperative laryngoscopy in all patients.

Conclusion: In a very carefully select group of patients, RATS offers comparable surgical outcomes to conventional hemithyroidectomy. Further studies are warranted to examine the associated cost, and patient-reported satisfaction in a North American population.

13.210 Gynecology

Computer-aided Three-dimensional Reconstruction of Female Pelvic Floor Musculature

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Objective: This aim of this study was to develop a computerized three-dimensional model of female pelvic floor muscular system based on the method of computer aided three-dimensional (3D) reconstruction techniques and high-resolution MRI data sets, which could be used in anatomic study, clinical diagnosis and gynecological surgery.

Study Design: Thin-slice high resolution magnetic resonance imaging was performed in a 20 woman with 3.0T MRI scanner. The MR images were imported into interactive medical image control system for 3D reconstruction.

Results: Detailed 3D models of female pelvic floor muscles, including the levator

ani, coccygeus, obturator internus, ischiocavernosus, bulbocavernosus, superficial transverse perineal, external anal sphincter, compressor urethrae, urethrovaginalis and adjacent structures were successfully created. The reconstructed models can be displayed singly, partially, wholly and could be observed from every aspect. The shape, size and surrounding structures of each muscle could be visualized straightforward. Furthermore, with measuring function of Mimics 10.01, the morphological features of each muscle could be precisely calculated.

Conclusion: Computerized three-dimensional reconstruction techniques enable visualization of the whole female pelvic floor musculature and facilitate the understanding of anatomy and physiology of female pelvic floor disorders.

13.211 Multispecialty

Robotic-assisted Surgery Teaching: An Innovative Experience in a European Academic Center

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Introduction: Explosion of robotic surgery (2500 Da Vinci robots installed worldwide) raises the question of the quality of surgeon training for this new technique, very different both from open and laparoscopic surgery. Currently the basic training is provided by INTUITIVE SURGICAL®. We report a 5-year experience of an innovative multidisciplinary and multimodal academic training program.

Methods: This training is multidisciplinary and open to surgeons and OR nurses. The program is multimodal and combines theoretical courses which are available in e-learning and practical training based on several progressive steps: training on 5 simulators dV-Trainer® (20 h), training on laparoscopic simulators for nurses (10h), training in microsurgery (10 h), training on a da Vinci Si® robot, dry lab (1 h) and then wet lab (4 h). A team-training module is carried out at the end of training. Trainees' performances are continuously evaluated by simulator software or by teachers for the robot surgery.

Results: Since 2008, more than 100 surgeons and 30 nurses trained for a period of 8 days. The results of the questionnaires showed a very important satisfaction. All trainees did acquire the proficiency level (defined by expert mean level – 1sd). Experience in laparoscopic surgery did not improve the speed of learning in contrast to the experience in microsurgery and video games.

Conclusion: The multidisciplinary and multimodal academic training program brings all trainees, (with a variable learning time) to a proficiency level. It is scalable, taking advantage of acquired experience with for example the recent introduction of team training.

13.212 Multispecialty

Determination of the Effects of Latency on Surgical Performance and the Maximum Acceptable Latency in Telesurgery Using the dV-Trainer® Simulator

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Background: One key problem in telesurgery is telecommunication latency. Detailed and accurate data are still lacking to reveal the influence of latency on telesurgical performance, and to determine the acceptable upper limit of latency.

Methods: Quantitative and qualitative data were recorded in 15 medical students performing an energy dissection exercise (ex.1) and a suture exercise (ex.2), with different latencies on the robotic simulator dV-Trainer®. After a training stage without and with latency, latencies differing from 0ms to 1000ms with an interval of 100ms were randomly and blindly applied.

Results: Training and tests required 22 hours for each participant. The 15 participants succeeded to complete all the tasks under latencies differing from 0ms to 1000ms. Criteria of time and movement, for the 2 exercises, increased linearly with the latency and differences became statistical significant at 200ms. For errors, an increasing tendency was also observed at Ex.1 and Ex.2, slowly from 0ms to 600ms and then sharply from 700ms to 1000ms. Subjective evaluation demonstrated similar result for both exercises: quality of manipulation decreased gradually with the augmentation of latency, latencies of 100~200ms having a mild, 300~600ms a moderate, and 700~1000ms an important impact. Finally, for the majority of subjects, the maximum acceptable latency was 700ms for ex.1 and 500ms for ex.2.

Conclusions: Surgery may be possible at various latencies up to 1000ms, while latency augments the operation time and decreases the quality of manipulation. Maximum acceptable latency for most people during telesurgery could be 500~700ms depending on the complexity of the task.

13.213 Urology

Robot-assisted Laparoscopic Partial Nephrectomy: Oncological and Functional Outcomes of 100 Cases

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Objectives: Partial nephrectomy (PN) is currently the reference treatment for renal tumors of less than 4 cm (T1a). This technique achieves comparable oncological outcomes to those of radical nephrectomy, while ensuring nephron preservation. Laparoscopic PN is difficult to perform, with the main consequence being an increase in warm ischemia time. It is undertaken only by trained teams. In facilitating the surgical procedure, robotics combines the benefits of minimally invasive and conservative surgery. We report here 7 years of experience with 100 robot-assisted laparoscopic partial nephrectomies (RALPN) performed.

Method: Between March 2005 and October 2012, 100 patients underwent RALPN for a suspect solid renal mass amenable to conservative treatment. The epidemiological and surgical data and the oncological and functional outcomes were collected and analyzed.

Results: Sixty-eight men and 32 women underwent surgery. The mean age was 59.6 years. Mean operative time was 141.3 minutes with a warm ischemia time of 21.2 minutes. Mean tumor size was 27.4 mm with 81% malignant tumors, of which 60% were clear cell carcinomas. Surgical margins were healthy in 100% of cases. After a mean follow-up of 25.7 months, no recurrence was noted. On a functional level, there was no short-term or long-term impairment of renal function. The frequency of postoperative surgical complications was 8%: 3 arterial pseudoaneurysms, 4 secondary bleeding and 1 conversion to laparotomy.

Conclusion: Robotics enables the surgeon to operate with dexterity, meticulousness and precision. These qualities are essential in conservative renal surgery and make RALPN a safe and effective technique.

13.215 Gynecology

Staging and Cytoreductive Surgery for Early, Advanced and Recurrent Ovarian Cancer via a Combination of Conventional and Robotic-assisted Laparoscopy: A Hybrid Technique

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Objective: To describe a hybrid technique of conventional and robotic-assisted laparoscopy in the surgical management of early, advanced and recurrent ovarian, fallopian tube and peritoneal cancer.

Materials and Methods: A retrospective analysis of a prospectively maintained database of our hybrid technique of conventional (CL) and robotic-assisted (RALS) laparoscopy.

Results: Twenty-one women underwent 22 surgeries; 10 for early and 12 for advanced and/or recurrent disease (7 advanced and 5 recurrent). In the early group, estimated blood loss (EBL) was 115.9ml, OR time was 264.5min and length of stay (LOS) was 1.3 days. Five had hysterectomies, 7 oophorectomies, 7 omentectomies, 6 pelvic node dissections (average:10.3, range:5-18), 5 paraaortic node dissections (average:8.6, range:3-12), 10 upper abdominal and diaphragmatic biopsies. There

were no intraoperative complications, 1 intraoperative transfusion and 2 postoperative complications.

In the advanced/recurrent group, EBL was 201.7ml, OR time was 238min and LOS was 3.8 days. Seven had hysterectomies, 6 oophorectomies, 9 omentectomies, 3 pelvic node dissections (average:10.7, range:4-18), 3 paraaortic node dissections (average: 5, range: 1-9), 9 upper abdominal and diaphragmatic biopsies and 1 resection of a porta hepatis mass. There were no intraoperative complications or transfusions and 3 postoperative complications. There was 1 second look, 10 cytoreductions to microscopic disease and 1 to <0.5cm.

Conclusion: With the advent of minimally invasive surgery, surgeons are beginning to perform comprehensive staging and cytoreduction using CL or RALS in selected patients. There are, however limitations with both techniques; therefore we describe the feasibility of a hybrid of CL and RALS in this arena.

13.216 General Surgery

Robot-assisted Laparoscopic Repair of a Giant Paraesophageal Hernia

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Introduction: Paraesophageal hernia repair is one of the most challenging procedures in minimally invasive surgery, mostly due to the small space for peri-esophageal dissection. Robotic surgery may benefit in the mediastinal dissection. We present a video of a robot-assisted repair of a paraesophageal hernia.

Methods: A 72 year old man with a long lasting giant paraesophageal hernia underwent robotic-assisted repair of a paraesophageal hernia with mesh.

Results: The pneumoperitoneum was achieved and a diagnostic laparoscopy was performed showing a large hernia with almost 70% of the stomach entrapped and slipped into the chest. Once the stomach and the distal esophagus were completely mobilized, closure of the crus was done with interrupted stitches and reinforced with a matrix biological mesh. A Nissen fundoplication was later performed tutored with a 56 Fr bougie. During the procedure an endoscopy was performed to identify the anatomy and indemnity of esophagus and stomach after dissection. The operative time was 220 minutes and blood loss minimal. There was no peri-operative complication and patient was discharged on PO day 2.

Conclusions: This video highlights the technical details and issues performing a robotic paraesophageal hernia repair. The robotic system allows fine dissection and challenging sutures in a narrow space avoiding complications as esophageal perforation, pleural or vascular injury.

13.217 General Surgery

Laparoscopic Placement of Gastric Neuroestimulator for the Treatment of Gastroparesis

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Introduction: Gastroparesis is a chronic disorder of gastric motility characterized by non-obstructive delayed gastric emptying, can lead to symptoms of nausea, vomiting, bloating, abdominal pain, postprandial fullness and weight loss. The primary causes are diabetes or idiopathic. The mainstay of treatment is dietary and drug therapies. Many patients with drug-refractory gastroparesis may benefit with the implantation of Gastric neurostimulator that produces pulses of electrical stimulation delivered to the stomach continuously.

Aim: The purpose of this study is to assess patient's outcome after the placement of this gastric pacemaker.

Materials and Methods: All patients who underwent laparoscopic placement of a gastric stimulator between January 2010 and February 2012 were included. Demographics data, 30-day morbidity and mortality, symptom control, supplemental nutrition support, BMI and gastric emptying were analyzed.

Results: Gastric stimulator device were placed laparoscopically in 14 patients. There were 12 women and 2 men, with a median age of 37 years. 8 patients (57%) had diabetes and 6 (43%) had idiopathic gastroparesia. The median hospital stay was 2.1 days. All of the patient tolerate oral intake at discharge and improve symptoms of nausea and vomiting. The number of nausea and vomiting episode as well as ER admissions improved in all the patients. Only one patient required percutaneous Jejunostomy and gastrostomy for persistent symptoms.

Conclusions: Gastric electrical stimulation significantly improves subjective symptoms, help patients return to normal oral diet, increase BMI and gastric emptying rates. This procedure is a good alternative in patients with drug-refractory gastroparesis.

13.218 General Surgery

Is Laparoscopic Splenectomy Safe for Massive Splenomegaly? Report of a Case

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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.

13.221 Gynecology

Surgical and Obstetric Outcomes of Laparoscopic Management for Women with Heterotopic Pregnancy

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Objective: To investigate the obstetric outcomes and clinical efficacy of laparoscopic surgery for women with heterotopic pregnancy.

Methods: We conducted a retrospective study of women who had undergone laparoscopic surgery for heterotopic pregnancy. The primary outcome was the feasibility of laparoscopic surgery for the treatment of heterotopic pregnancy and the secondary outcomes were obstetric outcomes.

Results: Seventeen women underwent laparoscopic surgery for heterotopic pregnancy: 14 with tubal heterotopic pregnancies and three with cornual heterotopic pregnancies. There were no intraoperative and postoperative complications. Of these women, 13 delivered 14 healthy babies, whereas two failed to maintain their pregnancies; one had a missed abortion two weeks after the surgery and the other had a miscarriage due to preterm premature rupture of the membrane at 16 gestational weeks. The remaining two women have ongoing pregnancies.

Conclusion: Laparoscopic surgery performed by experienced surgeons is a feasible and beneficial surgical modality for treating heterotopic pregnancy.

13.222 Gynecology

Surgical Technique in Laparoscopically Assisted Vaginal Hysterectomy for Women with Anterior Wall Adherence after Cesarean Section

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Objective: To share and report experiences of using lateral approach technique to perform laparoscopically-assisted vaginal hysterectomy (LAVH) for women with anterior wall adherence after Caesarean section.

Methods: We analyzed a retrospective chart review of forty-seven women with anterior wall adhesion after a Caesarean section who underwent LAVH from March 2003 to March 2012, selected from a total of 1,967 women who underwent LAVH during that period.

Results: The median age of the patients was 42 years (range, 34-56 years). The median operating time was 120 minutes (range, 85-240 minutes), and the median weight of the removed uterus was 247 g (range 50-896 g). The median change in hemoglobin level was 2.0 g/dL (range 0-3.0 g/dL). The median hospital stay was 3.0 days (range 2-6 days). There were complications in two cases; bladder injury in one and postoperative ileus in the other. There were no conversions to laparotomy.

Conclusion: Lateral approach to make a pneumoperitoneum and a dense adhesion between the anterior wall and the uterus is effective in LAVH for women with anterior wall adherence after Caesarean section.

13.223 General Surgery Laparoscopic Cholecystectomy in Developing Countries – 20 Years Experience

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In the beginning of laparoscopic surgery in 1992, the pioneer surgeons were doubtful that this newer technique would be successful, acceptable and feasible in developing countries. The surgical unit introduced this technique in 1992 in the northern part of India with the aim and objective of evaluating its feasibility, acceptance and cost-effectiveness in developing countries.

In the first five years, the patients selection criteria was to exclude complicated cholecystitis. Thereafter our policy has been to take up each and every patient for laparoscopy, who merits cholecystectomy. The acute cholecystitis patients were taken up within 48-72 hrs. In the last 20 years, a total of 8720 cases of laparoscopic cholecystectomy were undertaken, out of which we had acute (1520), gangrenous (46), empyematous (592) and (57) other complicated cholecystitis.

We followed the standard surgical guidelines, anatomical landmarks for dissection and modified our technique to sub total cholecystectomy and leaving the posterior wall of GB in difficult cholecystectomies. The overall conversion rate in the series has been 0.76% and it was 1.64% in acute, gangrenous, empyematous and complicated cholecystectomies with 04 bile duct injuries. These results are comparable to the best series quoted in the literature in terms of conversion and bile duct injuries.

To conclude, laparoscopic cholecystectomy is the treatment of choice and is feasible, acceptable and cost effective in developing countries. The best results can be achieved if one follows standard surgical guidelines and reproduces the conventional surgical steps of Langenbuch technique by laparoscopic method.

13.224 General Surgery Splenic Artery Embolization for Post Gastric Bypass Marginal Ulcer

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With the increasing prevalence of obesity, bariatric procedures are becoming more common. The most popular treatment, the roux-en-y gastric bypass, is relatively safe and effective but can be complicated by the development of marginal ulcers at the anastomotic sites. Typically these ulcers can be managed medically and do not pose a major health risk. We describe the case of short gastric arterial erosion by marginal ulcers in RYGB successfully managed by IR embolization after failure of endoclipping.

A 62 year old woman, 6 months post roux-en-y gastric bypass at an outside facility was admitted to the ICU for severe upper GI bleed. She also reported chronic NSAID and aspirin use. A bedside EGD identified a 2cm ulcer at the gastro-jejunal anastomotic site with bleeding vessel controlled with endoclip. The patient developed recurrent severe bleeding a few hours after the procedure. Decision was made to tackle this problem with radiological intervention.

Emergency angiography revealed prominent extravasation from the short gastric artery branches into the roux limb of the jejunum. The patient became unstable while undergoing procedure. Placement of two 5mm embolization coils in the splenic artery demonstrated a cessation of bleeding and resulted in an immediate stabilization of pressure. Serial exam and hemoglobin monitoring showed that the patient had stabilized and she was discharged four days after embolization. Repeat EGD revealed healing ulcer.

IR embolization is a viable therapeutic option for GI bleeding in patients with RYGB and should be considered as an alternative to surgery after failure of endoscopic interventions.

13.225 General Surgery

Dual Mesh Technique for Laparoscopic Preperitoneal Inguinal Hernia Repair – A New Perspective

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Objective: There is a scarcity of data comparing the laparoscopic transabdominal preperitoneal approach with the totally extraperitoneal and questions remain about their relative merits and risks. Both techniques are the most used in laparoscopic inguinal hernia treatment. We evaluated a dual mesh laparoscopic preperitoneal approach in a series of 300 patients in the last 10 years.

Methods and Procedures: In our institution we carry out now, more than 60 cases/year. We routinely perform the laparoscopic transabdominal preperitoneal approach using a prolene 15 x 15 cm mesh not preformatted. This mesh is divided in two parts. The first one is shaped in order to be placed underneath the spermatic cord and vessels. The second one is used to cover these structures and the opening of the underneath mesh as an on top layer. Both pieces are fixated by using an absorbable stapler.

Results: There was one recurrence reported by a patient from telephone survey . Postoperative complications such as hematoma or seroma formation occurs in a 3 % usually in patients with large scrotal hernias. Persistent postoperative pain in 0.33%, mean time to return to work is 4-5 days and it is a one day hospital stay.

Conclusions: There is insufficient data to allow conclusions to be drawn about the relative effectiveness of laparoscopic transabdominal preperitoneal with the laparoscopic totally extraperitoneal approach. Efforts should be made to start and complete adequately powered randomized controlled trials, which compare the different methods of laparoscopic repair. The presented technique is well evaluated with outstanding results.

13.226 General Surgery Hemorrhage Management During Laparoscopic Colectomy Due to a Stapler Malfunction

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Objective: This is a case of an 83 year old male patient diagnosed with melanoma of the rectoanal junction that underwent a laparoscopic abdominoperineal resection.

Methods and Procedures: During the operation and once the inferior mesenteric vessels were dissected at the level of the aorta the stapler was introduced. Unfortunately once it was fired, bleeding occurred.

Results: The reaction was first to tamponade the source of the bleeding. Then we tried to coagulate and once it was almost controlled, we dissected the area and applied endoloops.

Conclusions: Bleeding due to malfunction of a stapler is a rather unpleasant and risky situation that can be dealt with laparoscopically.

13.227 General Surgery

Laparoscopic Hiatal Hernia Repair After Halo – RF Sessions for Barrett's Oesophagus. Is It Feasible and What are the Controversies?

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Objective: The aim of this presentation is to assess the efficacy and safety of laparoscopic antireflux surgery after endoscopic treatments (radiofrequency ablation) for gastroesophageal reflux disease.

Methods and Procedures: In our institution we routinely carry out laparoscopic operations for giant hiatal hernias and antireflux procedures. In one case the patient had received endoscopic Barrett ablation before being subjected to laparoscopic antireflux surgery between March 2010 and March 2013, we did realize a significant difficulty during the procedure.

Results: This 44 year old male patient suffering from gastroesophageal reflux disease received three sessions of radiofrequency ablation in order to eliminate Barrett's metaplasia. In contrast to the patients who were not subjected to endoscopic ablation, this case presented serious problems during laparoscopic antireflux surgery such as severe difficulty in dissection of the esophagus from the diaphragmatic hiatus, mediastinum and underlying aorta and in visualizing the diaphragmatic crura. After careful and meticulous effort the procedure was completed successfully.

Conclusions: Laparoscopic fundoplication was feasible and safe after endoscopic ablation procedure, but the question raised is whether there is an association between these endoscopic procedures and the formation of stable adherences around the esophageal body due to energy spread.

13.228 Urology

Successful Ureteroscopic Ho:YAG Laser Lithotripsy Monotherapy for Multiple and Bilateral Ureteral Stones

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Aim: Multiple and bilateral ureteral stones pose therapeutic challenges to the Urologist. We review our experience with ureteroscopic Ho:YAG laser lithotripsy as monotherapy for patients with obstructive bilateral and multiple unilateral ureteral

calculi.

Materials: Prospective data collection was performed on all patients diagnosed with multiple unilateral or bilateral ureteral calculi from July 2009 to May 2012. All stones were diagnosed using a multi slice unenhanced CT scan. A 9.5 Fr semi rigid ureteroscope (Storz) was used and intracorporeal lithotripsy was performed using a Ho:YAG laser machine (Sphinx). Stone free status was defined as total stone residual of <3mm based on a repeat ultrasound or CT scan.

Results: A total of 64 ureteroscopic laser procedures were performed on 63 patients diagnosed to have multiple unilateral (45) or bilateral ureteral (16) stones. There were a total of 138 stones that were fragmented. The stones were located in the proximal (42%), middle (15%), distal ureter (42%). The mean stone number per patient was 2.46 +1.71 (2 to 7) and the mean stone burden was 1.36 +0.91 cm (0.3 to 3 cm). Overall, the stone free rate after a single session was 98%. The stone free rate after the repeat was 100%. There was only one patient who needed a repeat ureteroscopic laser lithotripsy. The complications seen were low grade fever (19%) and flank pains (8%). The stone location, size and number did not affect outcome.

Conclusion: Ureteroscopic Ho:YAG laser lithotripsy is effective and safe as monotherapy for multiple or bilateral ureteral stones.

13.229 Gynecology

Retained Vaginal Foreign Body in Minimally Invasive Gynecological Surgeries

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Background: Retention of a surgical object in a patient's body is a preventable human error that is rare but can cause serious clinical complications, lead to malpractice lawsuits and be a devastating event both for the patient and the care provider. With the rise of the minimally invasive surgery, incidents of retained foreign body in the abdomen tend to decrease but an increase in the incidence of retained surgical object in the vagina might be arising.

Cases: We describe 2 cases of minimally invasive surgeries that were complicated by retained surgical object in the vagina and occurred within 2 consecutive years in the same institution. The first case is a retained asepto bulb after a robotic-assisted total laparoscopic hysterectomy and the second is a retained surgical sponge after a laparoscopic ovarian cystectomy. Both patients did well after removal of the foreign body without major complications.

Conclusion: Unfortunately, the counting system and radiographic screening for high risk cases are not reliable methods to prevent retained foreign objects. Communication is always key and standardization of the language in the operating room is essential. Performing two separate counts for the vaginal and the abdominal procedures as well as applying a routine systematic digital vaginal exam at the end of the procedure are two easy steps that could decrease the risk of retained surgical items in a patient's body.

13.230 Gynecology

Oxidized Regenerated Cellulose Resembling Vaginal Cuff Abscess Case Reports

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Objective: We present three patients that underwent oxidized regenerated cellulose placement during laparoscopic gynecologic surgery and subsequently presented with signs and symptoms resembling an abscess. Using computed tomographic (CT) imaging, we describe differentiating characteristics between resolving oxidized regenerated cellulose and abscess formation on the vaginal cuff.

Methods and Procedures: Three patients presented within 2 weeks after surgery with signs and symptoms concerning for pelvic abscess. Distinguishing characteristics on imaging studies are described to differentiate abscess formation from oxidized regenerated cellulose. This facilitates proper interpretation of CT scans and prevent inaccurate diagnosis of abscess formation.

Results: Radiologic examinations from the three patients presented showed the imaging differences between the hemostatic material and an abscess. The first patient did not have an abscess, the imaging showed features of a confined, punctate and irregular collection of gas without air-fluid level. The second and third patients did have pelvic abscesses characterized through imaging as rim-enhancing fluid collections with scattered air bubbles. These findings are consistent with those previously described in the literature as being distinguishing characteristics of oxidized regenerated cellulose versus an abscess.

Conclusion: Application of oxidized regenerated cellulose is commonly performed in laparoscopy to achieve hemostasis during surgery. But this hemostatic agent has an appearance that often mimics post-surgical abscess formation. There are distinct characteristics that distinguish both findings, facilitate medical diagnosis, and guide clinical management. It is essential that patients' records accurately describe the presence and location of regenerated oxidized cellulose when placed intra-operatively and this information relayed to the interpreting radiologist.

13.231 Gynecology

Simplified Laparoscopic Benson Cerclage: A 15 Cases Continuous Series

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It is usually admitted that Benson cerclage may be proposed in patients with

repeated history of late miscarriages. The use of laparoscopy in a simplified technique associated with the good results of this approach allow us to propose this technique for prevention of late miscarriage to patients having had only one late miscarriage. This paper describes the simplified laparoscopic technique which doesn't require lateral dissection of the uterine isthmus leading to a very atraumatic and not hemorrhagic approach .

Results: 14 patients were operated between 2009 and 2011. 13 of them before pregnancy and these 13 patients have had C-section between 33 and 38 weeks of pregnancy. One was operated during the pregnancy, for a unicornual uterus and twin pregnancy. A miscarriage at 18 weeks occurred. The patient was then reoperated before a subsequent surgery and gave birth to a healthy newborn at 38 weeks of gestation.

Conclusion: This series demonstrates that laparoscopic Benson cerclage is an effective way to prevent late miscarriage and may be proposed more widely than before. Indeed information is critical since a C section is then required, but it appears that patients having had the distressful history of late miscarriage are usually very keen to have a procedure which may prevent recurrence of such drama.

13.233 Gynecology

A Case of an Aggressive External Endometriosis with Multiple Repeated (>160) Surgical Procedures During 12 Years

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Objective: To demonstrate a possible mechanism of an aggressive external endometriosis on the basis of continuous follow up for 12 years of repeated attempts of surgical and conservative treatments with clinical and laboratory investigations.

Study design: A case report of a 35 year old woman with severe repeated relapses of endometriosis, supplemented with a brief literature review. Patient signed a written agreement for publication of here clinical and laboratory results.

Methods: A clinical course of severe external endometriosis with permanent relapses, and findings of multiple repeated surgical procedures, as well as results of a histological evaluation of surgical specimens, blood hormonal and biochemical analysis and conservative treatment attempts were described.

Results: The first resection of ovary due to endometriosis was performed in 2000. Since then, multiple repeated inefficient surgical procedures (> 160) have been done. In addition, local and systemic treatments with GnRH-a, testosterone derivatives, danazol, dienogest, norethisterone, NSAIDs, antibiotics, and repeated blood transfusions were also ineffective. Only a recent high dose letrozole (a highly potent aromatase inhibitor) treatment (7.5 mg/day) was beneficial with a substantially dropped estradiol value. Decreased dose of letrozole to 5 mg/day, due to obesity, severe systemic concomitant liver, kidney, pancreas, heart and lung diseases, was accompanied with severe relapse of external abdominal wall and vulvar endometriosis, which was subsequently cured with increased letrozole dose after another ineffective surgery.

Conclusions: A cause of an aggressive relapses of external endometriosis in this patient is probably related with an activated pathway of aromatization of androgens to estrogens.

13.234 Multispecialty

A Hypothesis Building and Testing Model in Surgical Experimental Researches

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An increased amount of information in the era of translational medicine and globalization is required to apply the-state-of-the art methods based on results of evidence-based medicine in the surgical theatre. Experienced surgeons-practitioners and residents have also involved in clinical trials of the-state-of-the art technologies and evaluation of new surgical techniques worldwide. Key steps in acquisition of clinically relevant results are statement of question and hypothesis building to set research goals as well as elaboration of a study design. Therefore, the purpose of this study was to demonstrate these key steps of surgical research, namely selection

of research question, hypothesis building to set goals as well as elaboration of a study design and interpretation of results based on our experimental studies and systematic review of literature. English language sources were searched in pubmed.com and other internet databases concerning the methodology of the key steps in acquisition of clinically relevant results in the surgical field. We used also results of our experimental researches aimed to study an impact of surgical trauma and CO2-insufflation on postsurgical adhesion formation to demonstrate research questions developing, hypothesis building to set goals and elaboration of a study design as well as interpretation of results. In conclusion, the authors based on their own experience and literature review summarized that surgeons involved in research should understand key steps of research, based on results of evidence-based medicine, which included developing research questions, hypothesis building to set goals and elaboration of a study design as well as interpretation of results.

13.235 Multispecialty

Training Toward a Target, A Necessity or a Luxury ?

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Guaranteed sufficient exposure in training is not always feasible, and achieving the balance between mentoring and patient safety in an increasingly busy schedules, can be overwhelming. In the quest toward better healthcare, the medical society in general, and the surgical society in particular, is required to pursue novel alternative to ensure the continuity of training quality, and patient care excellency. In the era of minimal invasive surgery, in addition to sound knowledge, superior reasoning, efficient decisiveness, and effective communication along with the competency of skills, a wide variety of whole new expertise have become necessary. Dimensional awareness, eye hand coordination and depth perception among many others skills are indispensable. Virtual reality simulated training has been proven effective but various elements still under investigation. In our study we investigate the effectiveness of training with objective metric assessment of time, economy of movement and total path length and conduct a comparative randomized two-tailed study to explore the relation between training toward and without a goal. We use a validated curriculum and expert performance in this case used as a benchmark. It is our hypothesis that training toward a goal accelerates the learning curve and create a more suitable training environment. The preliminary data supports our hypothesis.

13.236 Multispecialty

CO2-Pneumoperitoneum Pathophysiology: Mechanisms of Respiratory and Cardiovascular Disturbances

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Objective: To systematically review mechanisms of respiratory and cardiovascular disturbances associated with CO₂-pneumoperitoneum during laparoscopic procedures.

Methods: Original manuscripts published since 1990 were acquired from PubMed and other internet databases in English language according to relevant key words. 3 reviewers screened abstracts using pre-defined criteria and obtained full-text manuscripts. 4 reviewers selected relevant studies and analyzed them. Disagreements were resolved by consultation with all other coauthors and by consensus. The outcome of interest was mechanisms of respiratory and cardiovascular disturbances during laparoscopic procedures and postsurgical complications. Among sources we found reviews summarizing CO₂-pneumoperitoneum pathophysiology, and 50 of 128 original papers concerning clinical impact of CO₂-pneumoperitoneum on conditions of patients and 37 of 154 studies on experimental models were analyzed: 15 in pigs; 4-dogs; 7-rabbits; 9-rats; 2-mice.

Results: Broad spectrum of questions and hypotheses were explored to investigate an impact of CO₂-pneumoperitoneum during laparoscopic surgery. An impact of CO₂-gas, its physical and chemical properties, including humidity, temperature, desiccations, insufflation pressure and time on systemic blood gas, acid base and oxygen/oxyometry parameters, cardiovascular/respiratory functions, as well as local intraperitoneal disturbances in peritoneal tissue, parenchymatous organs and blood circulation were extensively studied in terms of course of laparoscopic surgery and recovery of patients as well as the rate of intraoperative and postsurgical complications.

Conclusion: On the basis of analysis of clinical and experimental studies, the authors summarized that carbon dioxide is the most convenient and physiologically optimal gas for pneumoperitoneum when it applied in accordance with safety regulations.

13.237 Urology

Robotic Nephrectomy with Ureteral Stone Removal for a Non-functioning Hydronephrotic Kidney

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UMDNJ-SOM

Introduction: We report a case of a 69 year-old male who presented with right flank pain for one week. His past medical history included an anatomic nephrolithotomy on the left side 25 years prior and two recent urinary tract infections. Computed tomography demonstrated a 2.0 cm X 1.0 cm proximal obstructing ureteral stone with a severely cystic hydronephrotic kidney. Renal function studies demonstrated only 9% function on the affected side.

Objective: We elected to perform a robotic assisted laparoscopic nephrectomy with ureteral stone removal in order to remove the non-functioning kidney and stone.

Methods: Robotic ports were placed in a standard midline nephrectomy template. The white line of Toldt was identified and incised reflecting the colon medially. The ureter was identified at the level of the iliac vessels, dissected gently cephalad including the bulge of the ureteral stone. This dissection was carried towards the hilum. Using the Kocher maneuver, the duodenum was peeled away from the kidney exposing the renal hilum. The hilum was secured with an Endo-GIA vascular stapler in a standard fashion. Upper pole dissection was somewhat difficult due to the massive size of the kidney. The kidney was isolated and brought out through an 8 cm midline incision incorporating the camera port incision.

Results: Total operative time was 138 minutes. The patient recovered well without any complications and was discharged home on the morning of post-operative day # 2.

Conclusion: Minimally invasive approaches may be used to treat large non-functioning kidneys with large proximal ureteral calculi causing pain and recurrent infections.

13.238 General Surgery

Left Upper Quadrant (Palmer's Point) Entry Site: A Safe Site of Initial Entry During Laparoscopic Cholecystectomy

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Laparoscopic cholecystectomy is one of the most frequently performed procedures with more than half a million procedures performed annually in USA. Therefore, it is important to use a safe technique of entry into the peritoneal cavity as access related complications are a common cause of complications in laparoscopic surgery. There is a multitude of techniques described for safe access into the peritoneum, like open vs closed entry, Veress needle vs optical trocar, umbilical insertion vs other locations etc. Amongst these, left upper quadrant (Palmer's Point) has been shown to be one of the safest locations for initial access, especially in patients with history of previous abdominal surgery and adhesions. The usual location of ports in laparoscopic cholecystectomy is umbilical, subxiphoid and two right upper quadrant ones with umbilicus usually being the initial site of entry. Due to this, left upper quadrant is a less often utilized site for initial entry in laparoscopic cholecystectomy. We reviewed 135 cases of laparoscopic cholecystectomy performed over a 2 year period, where the initial site of entry was in the left upper quadrant either using Veress needle or optical trocar or optical trocar in cases with failed Veress insertion. In our study, there were no major bowel or vascular injuries seen during any of these procedures even in patients with previous abdominal surgery. Therefore, we would like to suggest that left upper quadrant (Palmer's Point) is as a safe site for initial entry in laparoscopic cholecystectomy and should be used more often especially in patients with previous abdominal surgery.

13.240 Gynecology

Hysteroscopy in Women with IVF Cycles, Dual Benefit

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Recurrent implantation failure (RIF) may be due to unrecognized uterine pathology to assess the inner architecture of the uterus. Hysteroscopy is considered to be the gold standard; injury of the endometrium during in IVF cycle may increase the implantation rate, this can be done site specific by hysteroscopy. This review aims to evaluate the validity of office hysteroscopy plus a site-specific hysteroscopic endometrium injury in IVF cycles

Methods: 210 patients participated in this prospective randomized study and were classified into two groups. Group I (n = 132) without office hysteroscopy. Group II (n = 68) had office hysteroscopy was sub classified into Group II a and Group II b. Group II a (n = 49) had normal hysteroscopic findings whereas Group II b (n = 19) a site-specific hysteroscopic induced injury in the endometrium during the controlled ovarian hyperstimulation cycle had abnormal office hysteroscopy findings, which were corrected at the same time.

Results: There was no difference in the mean number of oocytes retrieved, fertilization rate, and number of embryos transferred among the patients in different groups. Statistically significant difference was observed in terms of clinical pregnancy rates between Group I and Group II a (28.2 and 46.44%, $P < 0.05$), and Group I and Group II b (28.2 and 41.55%, $P < 0.05$), respectively.

Conclusions: Patients with IVF cycles should be evaluated by using hysteroscopy and site specific hysteroscopic biopsy- considered to be a dual benefit during the ongoing in vitro fertilization (IVF) , significantly improves pregnancy rates in patients with IVF cycles

13.241 Gynecology

Iatrogenic Laparoscopic Bowel, Ureteric and Vascular Injuries in Gynaecological Procedures

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The available literature lacks comprehensive studies that investigate the link between iatrogenic laparoscopic injuries and treatment modalities to diagnostic time are rare. We conducted a systematic review focussing on the prevalence and management of iatrogenic injuries in gynaecologic laparoscopic surgery; from January 2000 to January 2013.

Methodology: Data extractions with quantitative and qualitative analysis conducted

independently by two independent reviewers.

Results: 87 studies met the inclusion criteria .In bowel-related literature, 38 studies were identified with sample sizes of 39,751 patients and 104 injuries reported, 35 publications discussing ureteric injury were identified with sample size of 61,523 patients and 60 reported injuries. The search for Iatrogenic vascular injuries resulted in 14 publications reporting vascular damage with sample size of, 6,114 patients and 30 reported injury. Injury rates were 0.28% bowel, 0.09 % ureter and 0.49% vascular. Uterine fibroids associated with 28.07% of bowel injuries and 27.45% of ureteric injuries; majority of vascular injuries linked to ovarian cysts. Laparoscopic assisted vaginal hysterectomy, diathermy and trocar (10mm) associated with highest levels of injuries. Large bowel, mid to lower third of ureter and abdominal aorta were anatomic sites most injured. Bowel injuries diagnosed in 2-6 days, ureteric injuries in 7-16 days with vascular being intra-operatively and within 24 hours of surgery.

Conclusions A steady decline in iatrogenic laparoscopic injuries is evident however less dramatic improvement was observed in the time from injury to diagnosis.

13.242 Multispecialty

A Two Day Course Focused on Manual Skills and Safe Practices in Laparoscopic Surgery Can Improve Exam Scores on FLS Exam.

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Objective: The American Board of Surgery has required completion of the Fundamentals of Laparoscopic Surgery as a prerequisite for board certification since 2009. This study examines whether residents enrolled in a two day course designed to improve intellectual understanding of laparoscopy and speed of FLS tasks will perform manual FLS skills better than their peers.

Methods: The Penn Medicine Clinical Simulation Center has tested 118 University of Pennsylvania (Penn) and Non-Penn residents since 2008. These residents were grouped into four categories: External residents who did, or did not, complete the course (n=31, External+) (n=39, External-), and Penn residents who did, or did not, complete the course (n=20, Internal+) (n=28, Internal-). Each group was then compared via unpaired one tailed t-Tests.

Results: When comparing +groups with -groups, +groups scored significantly higher in three of SAGES manual tasks($p < .05$). When comparing internal residents with externals, internals scored significantly faster times on three tasks ($p < .05$). External+ performed all tasks (25-41%) faster than External- ($p < .05$). Finally when comparing total times, External+ scored statistically the fastest, followed by both internal groups who were not found to be statistically different from each other, and finally the External-.

Conclusions: External+ achieved significantly faster times over External- in manual skills on FLS exams. Internal+ did not gain as much of an advantage as External+

over their un-enrolled peers, suggesting internal residents begin more familiar with test skills. Thus external residents can significantly improve their FLS scores in all manual tasks by enrolling in a two-day training course.

13.243 Gynecology

Single Port Hysterectomy (SPH), First Experiences in Hospital Ángeles del Pedregal, Mexico City

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Objective: Analyze the first 30 cases of single port hysterectomy (SPH) at Hospital Ángeles del Pedregal in Mexico City, efficacy, security, operative time, blood loss, postoperative pain and cosmetic satisfaction in the patients.

Methods: All the patients presented benign uterine disease; received all the information about the new procedure and signed the authorization for the surgery. In all the cases we used single port to the abdominal wound access, 5 mm and 30° laparoscope, 5 mm all the surgical instruments, uterus manipulator and removed the uterus by vagina; 90% vaginal suturing and 10% laparoscopic suturing of the vaginal cuff. The efficacy and security was evaluated by conversions to other techniques. The operative time and bleeding was measured in minutes and cc (cubic centimeters). The postoperative pain and cosmetic results with subjective scales.

Results: The main outcomes about the efficacy and security of procedure was perfect, the operative time was between 2:30 to 3:45 hours, blood loss average 250 cc., less analgesic dosis, less time in hospital, wonderful cosmetic results and total satisfaction.

Conclusions: Actually the minimally invasive surgery offers less pain, bleeding and quick return to daily lives in all the patients; the single port hysterectomy (SPH), added better self-esteem "without scars".

13.244 Multispecialty

Fundamentals of Robotic Surgery Psychomotor Skills Prototype Development

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Objective: The fundamentals of laparoscopic surgery (FLS) is a known comprehensive surgical assessment and teaching module that has been incorporated into laparoscopic surgery training curricula. With the rapid advancement of robotic surgery, there is a need to develop similar methods to provide effective training in the Fundamentals of Robotic Surgery (FRS), as there is currently no validated robotic

surgical curriculum to date. The objective of this video is to demonstrate the development of a psychomotor robotic surgery skills training device.

Method: A dome shaped, all-in-one prototype was created from simple household materials. This prototype device evaluates seven skills, including: docking and instrument insertion, arm and wrist manipulation, knot tying, suturing skills, utilization of arm four, cutting and dissection, energy use and dissection.

Results: The total time for a novice to intermediate learner to complete all exercises was fifteen minutes. The total cost for this prototype was approximately fifteen dollars. This model proved to be largely reusable with only the skin of the dome needing to be removed and replaced for the next learner. Magnets used allowed for easy placement and removal of devices on the outside of the surface skin.

Conclusion: This prototype demonstrates the feasibility of developing an economical all-in-one model to teach and evaluate an array of basic robotic surgical skills. With further development and modifications, this prototype will identify design details necessary for a finished product to be used in a robotic surgical curriculum. Future models should incorporate the ability for objective measurement and evaluation of user performance.

13.245 General Surgery Advanced Single Incision Robotic Surgery

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Objective: Advance the technique of single incision robotic surgery to more complex abdominal operations. Cholecystectomy has been performed with single incision robotic surgery. The robot allows the operator to overcome the awkward hand placement and paradoxical instrument motion that is seen with single incision laparoscopic surgery. We hypothesized that these same benefits of the robot could be seen in more advanced single incision operations.

Methods: The da Vinci surgical system was used to perform a left adrenalectomy through a single incision. A Gelport was used for single site access to the abdomen. We used a hybrid technique incorporating both a standard articulating robotic instrument and a da Vinci single site robotic instrument.

Results: Although done through a single incision, the operation was performed with little variation from a standard multiport procedure. The patient did well postoperatively and was discharged home on post-operative day number one. Patient was left with a limited 3.5 cm skin incision with superior cosmetic results.

Conclusion: By combining standard articulating instruments with the single site robotic surgery system we were able to improve cosmesis, enhance surgeon ergonomics, and execute complex surgical maneuvers through a single incision.

13.246 General Surgery Retrospective Analysis of Laparoscopic and Open Colectomies Performed by

a Colorectal Surgeon

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Objective: To determine the benefits and shortcomings of laparoscopic large bowel resection, by analysing a consultant surgeon's past surgical performance of open and laparoscopic colon resections. Are laparoscopic colectomies reducing post-operative morbidity and hospital stay?

Method: The consultant surgeon's logbook was used to retrospectively analyse colectomy outcomes since January 2008. All operations were performed at a surgical unit in a district general hospital. No colectomies were excluded from the study. The Student's T-test and the Fisher exact test were used for data analysis.

Results: 200 colectomies were analysed (137 laparoscopic and 63 open, 160 elective and 40 emergencies). Hospital stay was significantly shorter following elective laparoscopic surgery compared with elective open surgery (5.35 vs. 8.88, $p = 0.0042$). Overall the incidence of anastomotic leak was 2/129 for elective laparoscopic surgery vs 0/31 for elective open surgery. Wound infections were a complication in 6.98% of laparoscopic elective patients (9/129), compared with 12.9% of open elective patients (4/31), ($p = 0.227$). 39/129 elective laparoscopic patients and 12/31 elective open surgery patients had either a minor or major complications ($p = 0.3943$). 12/129 (9.3%) laparoscopic patients and 5/31 (16.1%) open patients had a major complication event post-operatively ($p = 0.3274$).

Conclusion: This retrospective study shows that elective laparoscopic surgery significantly shortens hospital stay. Elective laparoscopic surgery produces a lower incidence of both minor and major complications compared with elective open surgery. A continued record of our surgery is necessary to produce a larger sample population, which may in future produce statistically significant results.

13.247 General Surgery

Laparoscopic Drainage of Retroperitoneal Hematoma : A Case Report

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Background: The management of retroperitoneal hematomas is usually achieved nonoperatively with correction of coagulopathy, blood transfusion, and intensive care (ICU) monitoring. Patients who have persistent bleeding are treated with coil embolization of the culprit vessel. In rare cases, operative intervention is necessary; laparoscopic treatment of has never been described.

Method: The patient is a 75 year old male who underwent emergent Hartmann's procedure for hemorrhagic sigmoid volvulus. He was discharged home on Warfarin for atrial fibrillation. Four days after discharge, he presented with a large left-sided

retroperitoneal hematoma, supratherapeutic INR, and acute renal failure. After reversal of his INR, he continued to have drops in hematocrit and repeat imaging revealed an enlarging retroperitoneal hematoma. Give the acute renal failure, interventional radiology procedures were deferred and the patient was taken to the operating room. The surgery consisted of positioning the patient in the right lateral decubitus position. Ports were placed as follows: 12mm port in the midaxillary line below the 12th rib, 5mm port in the midaxillary line above the anterior superior iliac spine, and a 5mm port in the anterior axillary line in triangulation with the first two ports. Using a combination of suction and direct drainage through the first port, approximately 1500cc of blood was evacuated. Three areas of active bleeding were identified and hemostasis was achieved with electrocautery. Fibrin sealant was sprayed throughout the retroperitoneal space.

Results: The patient's hemoglobin stabilized, he did not require any further blood transfusion, and his creatinine normalized. He was discharged home on postoperative day seven.

13.248 Urology

Complex Robotic Partial Nephrectomy for Anterior/Centrally Located Tumor

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UMDNJ-SOM

Introduction: We report a case of a 76 year-old female who presented with an incidentally discovered 2.0 cm complex cystic left renal mass on a lumbar spine MRI. The lesion was followed for 6 months and on follow-up MRI the size increased to 3.0 cm. The lesion was anterior, endophytic and in close proximity to the renal hilum with a Nephrometry score of 10a (highly complex).

Objective: We elected to perform a robotic assisted laparoscopic partial nephrectomy with initial cystoscopy and placement of a ureteral catheter.

Methods: We encountered complex vascular anatomy including an accessory lower pole artery in addition to the main renal artery and vein. Collecting system entry was confirmed with methylene blue injection through our ureteral catheter. We employed a novel technique of collecting system repair with a combination of suture and hem-o-lock application. Venous bleeding was oversewn with additional Vicryl sutures. Renorrhaphy was completed with a surgicell bolster and the hem-o-lock slip-clip technique. The tumor was placed in a endocatch bag and a Jackson-pratt drain was placed.

Results: Total operative time was 119 minutes. The ureteral catheter was removed on post-operative day # 2 and the Jackson-pratt drain was removed after fluid creatinine levels matched serum levels. Her serum creatinine levels never changed from baseline.

Pathology: T1a clear cell renal carcinoma Fuhrman Grade 2, margin negative

Conclusion: Minimally invasive approaches may be used to excise highly complex

endophytic renal masses involving the collecting system. Ureteral catheters and hem-o-lock clips can be used safely to identify and repair any collecting system entry.

13.249 Gynecology

Lost Needle in a Robotic Case-Pointers For Prevention

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Staten Island University Hospital

Background and Objectives: As more and more cases of Robotic Assisted Laparoscopic surgeries are being performed, there are complications unique to this procedure which are being identified

Methods: A 30 year old G0P0 presented with pelvic pain and a 10 cm fundal intramural myoma . She requested definitive surgery. She underwent a DaVinci Robotic Assisted Laparoscopic Myomectomy of a single large Myoma. The deep incision was repaired in 3 layers with very good hemostasis. On the last exchange of needle after suturing the needle was dropped in the abdomen. Attempts at finding the needle with robotic camera failed. Immediately, the robot was undocked and after extensive laparoscopic search with the Gyn and a General Surgeon, x-rays, c-arm, magnets, and 2 hours of elapsed time, the needle was still missing! Then an experienced Laparoscopic General Surgeon was summoned. He meticulously ran the bowel for 30 minutes and found the needle lodged in the root of the mesentery. Patient had an uneventful post operative recovery and left the hospital as scheduled. She did conceive within 6 mos and had a full term elective C-section of a healthy infant!

Results: After the conclusion of the case, we brainstormed the events that led to this avoidable complication that led to use of several extra hours of OR time, personnel and resources such as xray/c-arm and may have contributed to medicolegal ramifications if the needle had remained undetected /irretrievable .

Conclusion: We will detail simple strategies which will prevent this complication.

13.250 Gynecology

A Major Vascular Injury with a New Motorized Morcellator-Thoughts on Etiology and Prevention

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Staten Island University Hospital, New York

Background and Objectives: Use of new instrumentation/technology in laparoscopy needs orientation and education of surgeons and residents. Similar technology may carry nuances which need to be learned prior to its use

Methods: A 52 Y/O G3P3003 post menopausal patient presented with a symptomatic Pelvic Organ Prolapse and Stress Urinary Incontinence. During

routine work up for pelvic pain prior to surgery, a CT scan of the abdomen showed suspicious nodules in lung bases. She underwent lung biopsy and then went on to have VATS for left lung cancer without need for RT or ChemoRx. 3 months later, patient underwent DaVinci Robot Assisted Supracervical Hysterectomy, BSO, Y Mesh Sacrocervicopexy. The procedure was uneventful with 70cc blood loss. The Robot was un-docked. A new Morcellator (Lina) was handed to us on the table. The PGYII professed knowledge and usage of the new instrument. The resident introduced the Morcellator through the enlarged Assistant port without waiting to be monitored by the laparoscope. The Gyn surgeon was retrieving the uterus specimen from pelvis and heard the motor go off. Laparoscopic visualization confirmed the worst fears. A major vascular injury was quickly diagnosed, abdomen opened and the vascular team repaired an avulsed Rt Iliac artery, vein and a rent in IVC.

Results: After 7 units of blood, a DVT episode requiring IVC filter, patient went home on the 13th post-op day and is doing well.

Conclusion: Orientation and education is the key to prevent disasters in the OR. Strategies to prevent Morcellator injuries will be presented.

13.251 Multispecialty Enhancing Surgical Safety by Combining Mobile Technology with Patient Participation

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The WHO surgical safety checklist developed by Haynes, Gawande, et al and adopted by JCHAO, and other professional societies including the ACS, the AORN, has reduced but not eliminated occurrence of the "never" errors. The "Time Out" is most often executed as a paper based "checklist". We believe that mandatory reduction of errors below current levels can be achieved using a mobile app at multiple locations to crosscheck and confirm information. A number of Surgical Integration Systems are driving towards an electronic version of the "Time out" but their use is not widespread. Surgical errors may be set in motion through communication and scheduling errors in the surgeon's office. This tablet based surgical safety app bridges the gap between the surgeon's office and OR and provides mobile user with an interactive method to reduce surgical errors by:

- Making the checklist patient specific with ID photo
- Preoperative population of all patient and procedure specific information (correct procedure, site, consent, allergies) while the patient in surgeon's office
- Preoperative secure website patient sign-off on above items
- Real time photographic documentation of correct side and site marking and nurse's sign-off
- Dashboard style of completion preceding archive of the completed checklist
- Secure web site for access by the patient, facility, and surgeon

An additional errors may occur with poor execution of the checklist at the time of the

surgical timeout. The app permits audio/video capture of the time out process. Only complete content can be attached to EMR using HL-7 communication architecture, transmitted and archived using a HIPAA secure server.

13.252 General Surgery Suture Ligation of Bleeding Short Gastric Vessel After Laparoscopic Sleeve Gastrectomy

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This is a video presentation that shows suture ligation of an actively bleeding short gastric vessel hours after a laparoscopic sleeve gastrectomy. The patient was noted to be hypotensive in the PACU after a laparoscopic sleeve gastrectomy with a decrease in the hemoglobin level. She was taken back for a laparoscopic exploration that demonstrated moderate hemoperitoneum and an actively bleeding short gastric vessel. Hemostasis was obtained by suture ligation.

13.253 General Surgery Simultaneous Use of Laparoscopy and Gastroscopy or Ultrasonic Gastroscopy for Minimally Invasive Resection of Gastroduodenal Benign Tumors

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Objective: To investigate the clinical values of laparoscopy combined with gastroscopy/ultrasonic gastroscopy for treating gastroduodenal benign tumors.

Methods: Clinicopathologic features and follow-up results of 33 consecutive patients undergoing a combined laparoscopic-endoscopic approach for gastroduodenal tumors were prospectively analyzed. After localizing with gastroscopy and determining the property and depth, Twenty six tumors were locally resected in minimal invasion by laparoscopy; other five tumors were done by endoscopic mucosal resection or endoscopic submucosal dissection with laparoscopically assisted endoscopic snare resection.

Results: Gastroduodenal benign tumors in 33 cases were localizly resected under laparoscopy combined with gastroscopy successfully. Mean operative time was 15-39 min; There was no any complication. The average postoperative hospital stay was 4 – 7 days.

Conclusions: Combined laparoscopic-endoscopic “rendez-vous” procedures are easy to perform and offer a curative approach for almost all upper gastrointestinal benign

tumors. The technique is reliable and effective in clinical application due to the advantages of accurate and quick localization of tumor.

13.254 Gynecology

The End of the Era of Laparotomy for Obese Patients in Benign Hysterectomy

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Objective: To re-define minimally invasive surgery (MIS)-vaginal, laparoscopic or robotic surgery as the standard of care and preferred method of surgery for obese patients undergoing hysterectomy for benign indications.

Data Sources: We searched PUBMED using the MESH terms of Hysterectomy, Obese, Obesity, surgical procedures, minimally invasive or laparoscopy or robotics identified one hundred and twenty five articles from December 1967 to December 2012.

Methods of Study Selection: We included all abstracts with MESH terms of hysterectomy, obese and obesity as a minimum requirement.

Results: A total of 41 selected articles were reviewed, 2 RCTs, 10 prospective cohort studies and 29 retrospective cohort studies. Outcomes observed included operative time (OT), estimated blood loss (EBL), postoperative complications and length of stay (LOS) in the obese patients who underwent minimally invasive hysterectomy versus laparotomy. Overall, there was not an increased risk in intra- or post-operative complications in obese patients who underwent MIS versus laparotomy.

Conclusion: Benign gynecologic surgery in the obese patient has been problematic in the era of laparotomy with technically difficult surgeries and especially increased rates of wound complications. After the introduction of MIS, conventional and robotic assisted laparoscopy has quickly become the standard of care in non-obese, but not in the obese women. After advancement of MIS techniques and in the hands of experienced surgeons, a growing amount of data now supports less or similar complication rates, shortened length of hospital stay and an acceptable risk of conversion to laparotomy without changing the result or overall success of the surgery in obese women.

13.256 Other

Transoral Robotic Surgery(TORS) for Hypopharyngeal Cancer: 3-year Oncologic and Functional Analysis

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Yonsei University

Objectives: This prospective study evaluated the oncologic and functional results of 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 April 2008 and September 2011, 23 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 cancer. TORS is a valid treatment option as a surgical, organ-preserving strategy for select patients with hypopharyngeal cancer.

13.257 Other Surgical Techniques and Treatment Outcomes of Transoral Robotic Supraglottic Partial Laryngectomy

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Objectives: The objective of this prospective study was to confirm the validity of transoral robotic supraglottic partial laryngectomy as a conservation surgery for treating supraglottic cancer.

Study Design: Prospective case study

Methods: Between December 2009 and November 2011, 16 patients were enrolled in this study. Acoustic waveform analysis was conducted and Voice Handicap Index 10 was measured to assess voice status. Videopharyngogram study and the functional outcome swallowing scale were administered to evaluate swallowing function. Overall survival and disease-free survival were analyzed using the Kaplan-Meier method.

Results: A negative margin was reported in 88% patients. During the follow-up period, distant metastasis occurred in one patient at 6 months. The Kaplan-Meier disease-free survival at 1 year was 91%. Patients exhibited complete recovery of swallowing ability after an average of 8.3 days. Videopharyngogram study showed aspiration in 1 patient. The cannula could be removed at an average 11.2 days. The

average hospital stay was 13.5 days. Concerning the results of the functional outcome swallowing scale and Voice Handicap Index 10, most patients (90.9%) subjectively reported favorable swallowing and voice function.

Conclusions: Transoral robotic surgery was a safe and feasible modality of treating supraglottic cancer. According to our data, transoral robotic surgery demonstrated oncologically and functionally acceptable results in supraglottic cancer patients.

13.258 General Surgery

Clinical Value of Mastoscopic Axillary Lymph Node Dissection (MALND) in Breast Cancer

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The minimally invasive MALND differs from the usual laparoscopic operation known by us. The narrow working space, complicated anatomic layers and lots of blood vessels and nerves add much difficulty to the operation. Moreover, the elaborate anatomy in axilla becomes clearer with the help of the magnifying function of endoscopic system. Some anatomic structures which are difficult to be realized in conventional axillary lymph node dissection uncover under the endoscopic view. This urges us re-realize the local anatomy and also boosts the advance of conventional operation. The routes and features under endoscopy of some anatomic structures such as intercostobrachial nerve, axillary vein, subscapular vessels, thoracodorsal nerve and vessels, lymphatic drainage channels, thoracic epigastric vein, long thoracic nerve, lateral thoracic arteries, axillary vein segment behind minor pectoralis and medial thoracic nerve in the space between major and minor pectoralis are described in detail. MALND has some advantages in operative outcomes, complications reduction, function conservation and cosmetics. It is a choice in the treatment of breast cancer when done by well-trained surgeons.

13.259 General Surgery

Laparoscopic Skills, Like Riding a Bike or You Lose What You Do Not Use!?

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Background: The validity of virtual reality training has been repeatedly proven, However, The ideal time to start training remains a question that still needs to be answered. Is learning laparoscopic skills like riding a bike or you lose what you do not use?

Aim: To investigate the learning curves toward proficiency in laparoscopic cholecystectomy using virtual reality and the to test the retainability of skills after a significant time of no training and no laparoscopic exposure

Methods: We randomly recruited and progressively trained 30 novices toward full laparoscopic cholecystectomy procedure, on a high-fidelity, commercially available Virtual Reality simulator (Lap Mentor, Simbionix) using a validated training

curriculum with expert performance used as proficiency criteria. We re-tested the novices one year after the initial training to investigate the skills retainability.

Results: All novices reached proficiency level in all tasks, ($P < 0.000$) Time taken to finish the full procedure decreased from 9:57 to 7:10 min in MTST of 30:04 minute. Economy of movement improved from 551 to 363 and the Total path length improved from 1368 – 807 cm number in of 3.4 trials. One year after the initial training with no further exposure to laparoscopy or simulation we investigated the retainability of the skills. 90% of the participants kept their time proficiency, 80% kept the economy of movement and 60% remained within the TPL proficiency.

Conclusion: The role of Virtual reality is evident and more prominently the skills obtained using VR were kept even after significant time of no training and no exposure.

13.260 Multispecialty

Is Your XX Genetic Makeup Interfering With Your Surgical Future? Gender is Not Everything

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Unsubstantiated claims suggesting women to be genetically less well equipped to excel in surgery in comparison to their male counterparts exist. Our aim is to evaluate and objectively assess the impact of genetics on the learning curves in skills acquisition and surgical performance.

Methods: 17 males 13 females with no previous laparoscopic exposure were randomly recruited and trained on virtual reality simulator using a validated procedural specific curriculum with expert performance as proficiency threshold. The objectivity of assessment was assured by using automated virtual reality generated data. The results were compared and analysed for men and women using t test.

Results: 17 men and 13 women successfully finished the curriculum and reached proficiency. after progressive training. In full LC Time, NOM and TPL for male were 611/451 sec 573/363 and 1460/822 cm compared to 575/403 sec, 523/362 and 1247/786 cm for females. Both males and females reached proficiency in 4 trials. Improvements in all considered variables for all evaluated tasks were statistically significant ($P < 0.001$) for both genders. Inter-gender comparison did not show any statistically significant difference between the male and female participants. ($P < 0.0001$)

Conclusions: There was no statistically significant data that suggest any gender related or influenced superiority in surgical performance. Gender does not affect the acquisition of laparoscopic skills

13.261 Multispecialty

Laparoscopic Training In Virtual Reality: Haptic Vs. None Haptic

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Simulation training have been proven effective, however the superiority of different simulators is still under investigation. In our study, we examine the effect of haptic feedback on learning processes.

Methodology: 42 novices were recruited and trained using validated training curriculum with proficiency criteria, using commercially available VR simulators, with and without haptic feedback.

Results: Thirty-nine novices completed the training curriculum and reached proficiency levels In the Haptic (HF): In basic tasks 5 proficiency reached in mean total simulator time (MTST) of 12:49 compared to 16:28 minute for none haptic (NHF), with average number trials of 7.3 compared to 7.7 respectively. In basic tasks 6, HF proficiency reached in MTST of 12:20 minute compared to 19:22 minute for NHF with average number of trials of 7.2 compared to 9 respectively. In procedural task 3 HF proficiency reached MTST of 26:42 minute compared to 59:19 minute for NHF with average number of trials of 5.33 compared to 12.4. In procedural task 4 HF proficiency reached in MTST of 27:40 compared to 1:05:25 minute for NHF with average number of trials of 5.2 compared to 8. In full Procedural LC HF proficiency reached in MTST of 30:04 compared to 1:27:43 minute for NHF with average number of trials of 3.4 compared to 8.1.

Conclusion: As the complexity of the tasks increases the superiority of the haptic feedback becomes more prominent. While both groups reached proficiency at rather close averages, the novices trained on haptic feed back simulator demonstrated faster learning curve and required less simulator time.

13.262 General Surgery daVinci Robot-assisted Radical Gastrectomy: A Report of 123 Cases

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Objective: To investigate the feasibility and safety of Da Vinci robot-assisted radical gastrectomy for gastric cancer.

Methods: Forty-one patients with gastric cancer received Da Vinci robot-assisted radical gastrectomy. Radical total gastrectomy was performed in 31 cases and distal gastrectomy in 92 cases.

Results: Three cases converted to alterative surgery, one converted to open surgery, one converted to conventional laparoscopic surgery, Eighty- four cases had Da Vinci robot-assisted radical gastrectomy successfully. The mean operation time was 265 ± 61 min for total gastrectomy, 220 ± 36 min for distal gastrectomy respectively. The mean blood loss was 160 ± 126 ml in total gastrectomy, 140 ± 94 ml in distal gastrectomy respectively. The mean number of harvested lymph nodes was 33.2 ± 14.5 The mean time for gastrointestinal function recovery was 3.1 ± 1.2 days, 2.7 ± 1.5 days for patients taking normal activity, 3.7 ± 1.5 days for taking liquid food.

Two complications occurred; one incision infection and one lung pneumonia. The short-term efficiency was obvious.

Conclusions: Da Vinci robot-assisted radical gastrectomy is a feasible and safe surgical procedure combined with a clear operation field, a precise dissection, minimal trauma and fast recovery.

13.263 Gynecology

Computer Aided Three-dimensional Reconstruction of Female Pelvic Floor Musculature

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Objective: This aim of this study was to develop a computerized three-dimensional model of female pelvic floor muscular system based on the method of computer aided three-dimensional (3D) reconstruction techniques and high-resolution MRI data sets, which could be used in anatomic study, clinical diagnosis and gynecological surgery.

Study Design: Thin-slice high-resolution magnetic resonance imaging was performed in a 20 woman with 3.0T MRI scanner. The MR images were imported into interactive medical image control system for 3D reconstruction.

Results: Detailed 3D models of female pelvic floor muscles, including the levator ani, coccygeus, obturator internus, ischiocavernosus, bulbocavernosus, superficial transverse perinei, external anal sphincter, compressor urethra, urethrovaginalis and adjacent structures were successfully created. The reconstructed models can be displayed singly, partially, wholly and could be observed from every aspect. The shape, size and surrounding structures of each muscle could be visualized straightforward. Furthermore, the morphological features of each muscle could be precisely calculated.

Conclusion: Computerized three-dimensional reconstruction techniques enable visualization of the whole female pelvic floor musculature and facilitate the understanding of anatomy and physiology of female pelvic floor disorders.

13.264 General Surgery

Staple Line as a Cause of Unusual Mechanical Internal Hernia One Week After Routine Laparoscopic Appendectomy

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Background: The use of mechanical stapling devices in laparoscopic appendectomies has become common practice. While utilization of these devices has simplified laparoscopic appendectomy, potential exists for complications. Occasionally, the retained staples have been described to cause bowel obstruction.

Case Report: A 46 year old female underwent a laparoscopic appendectomy for simple uncomplicated appendicitis. A linear endoscopic stapling device was utilized during the procedure. The recovery was unremarkable and the patient was discharged the following day. One week post-operatively, she presented in the emergency department with progressively worsening back and supra-umbilical pain, nausea, vomiting and abdominal cramping. A contrast CT scan showed a partial obstruction in the terminal ileum with surrounding mesenteric edema. The patient was taken to the operating room for exploratory laparoscopy. Upon freeing the mesentery, a single staple at the free end of the staple line was found hooked on the mesentery of an adjacent loop of small bowel, provoking an unusual internal hernia. The offending staple was removed, relieving the obstruction. The appendiceal stump was inspected and found to have no disruptions. The small bowel was edematous, but non-ischemic. Recovery was unremarkable and patient was subsequently discharged on the following day.

Conclusion: While the staple devices are practical in routine laparoscopic appendectomy and have widespread acceptance, occasionally they can cause unexpected complications. The staple line should be inspected at the end of the procedure to ensure that there no free unformed staple edges.

13.265 Multispecialty

Three-dimensional Laparoscopic Imaging Improves Surgical Performance on Standardized FLS Tasks Regardless of Previous Laparoscopic Proficiency

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Background: The recent introduction of novel laparoscopic technology has resulted in significant improvements in surgical precision and image quality and processing. The aim of this study was to compare 2- with 3-dimensional visual systems and their effects on the performance of 3 specific tasks based on the Fundamental Laparoscopic System (FLS).

Materials and Methods: The study was conducted as a cross-over case-control design amongst 30 subjects, some of whom had prior laparoscopic experience in advanced procedures and some of whom were at the commencement of their laparoscopic training. Three basic tasks were assessed (object movement, cutting a shape and suture tying) measuring manual dexterity and the time to task completion comparing 2-dimensional and 3-dimensional (Viking 3D-HD Vision System) methods.

Results: In all tests, the use of the 3D vision system improved the speed of task completion regardless of the level of prior laparoscopic experience. There was an overall improvement in completion of the first task by a mean of 30.5%, of the second task by 20% and of the third task by 18.5%. A small subset of 4 participants

(13.3%) showed a 49.7% lengthier performance in the second and third tasks in when using the 3D imaging compared with the 2D system ($p < 0.0001$)

Conclusions: The use of a laparoscopic 3D vision system improves overall task performance amongst surgeons regardless of the level of their prior laparoscopic experience.

13.266 Multispecialty Surgical Intern "Boot Camp"

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Objective: Develop a three day intense didactic and skills based course for first year surgical residents and evaluate its effectiveness.

Methods: All incoming first year surgical residents at LSU Department of Surgery in New Orleans whether categorical or prelim, participated in the course. It consisted of two parts, lectures on basic surgical knowledge, skills and patient management topics felt to be fundamental to the adequate discharge of their resident duties and a skills portion which included demonstration and evaluation of skills such as; suturing, knot tying, bowel anastomosis, chest tube placement and ultrasound localization and line placement. The effectiveness of the lectures and skills was evaluated using a pre and post training evaluation form with Likert scale assessment of the effectiveness of the educational experience.

Results: Pre-session scores on confidence to perform and understand the topics covered, ranged from 2.09 to 2.72 on a scale of 1 to 5 and post-session scores ranged from 3.94 to 3.81 after the sessions were completed. The teaching effectiveness of the sessions ranged from 4.60 to 4.95 when asked if the sessions were valuable, teaching methods effective and relevant to their professional development.

Conclusion: An intense three day course consisting of didactic lectures and skills based tasks and evaluations was successful in preparing first year surgical residents for their duty requirements and has become an integral part of resident orientation at LSU.

13.267 General Surgery Percutaneous Transhepatic Gallbladder Drainage (PTGBD) Followed by Laparoscopic Cholecystectomy for Acute Cholecystitis

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From 2006 to 2012, a total of 7105 patients underwent LC at Linkou Chang Gung Memorial Hospital, Taiwan.

Among them, 1918 (27.0%) were diagnosed as AC (ICD 9 code). 109 of 1918

(5.7%) underwent emergent PTGBD including 68 males and 39 females with age range from 30-89 years old and median age of 47 years. The associated diseases included diabetes mellitus in 18, hypertension in 10, liver cirrhosis in 4, end stage renal disease in 4 and ischemic heart disease in 4.

All 109 patients underwent interval cholecystectomy 8-12 weeks after PTGBD. All except 2, who needed to be converted to open cholecystectomy, underwent LC. PTGBD cholangiogram showed patent of biliary tree in 94, obliteration of cystic duct (non-visualization of CBD) in 13. ERCP and retrieval CBD stones in 20 including 8 with non-visualization of CBD in cholangiogram. No surgical mortality. Wound infection was found in 2 (1.9%).

In conclusion, PTGBD is a lifesaving and alternative treatment modality for patients with AC. PTGBD followed by LC is a safe procedure and treatment of choice for AC.

13.268 General Surgery

Laparoscopic Marsupialization, Excision and Hepatectomy for Congenital Liver Cysts

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From 2003 to 2012, in Linkou Chang Gung Memorial Hospital, Taiwan, there were 140 patients with congenital liver cysts who underwent surgical treatment (the neoplastic cysts were not included). Through MRCP & ERCP imaging studies, none of the cysts were shown to communicate with bile ducts.

74 patients (42 male and 32 female) underwent various laparoscopic procedures. The age range was 18 to 82 years with a median age of 58. The liver cysts included 18 with solitary and 56 with multiple liver cysts.

Laparoscopic procedures were marsupialization (including drainage, un-roofing and fenestration) in 61, and excision of cysts with/without partial hepatectomy in 13. Post-operative course was uneventful. Abdominal closed drainage tube was removed 5-14 days. Long-term follow up 6 to 96 months showed 12 recurrences by image study. Re-operation was performed in 2 due to repeated symptoms. Laparoscopic marsupialization, excision and hepatectomy for congenital liver cysts with 74 patients was reported. The long-term follow up was satisfied. It was a safe treatment of choice for patients with congenital liver cysts.

13.269 Multispecialty

Dual Console Robotic Platforms as a Training Modality in Practitioner Proctoring, Resident Education, and Dual Specialty Collaborative Surgery

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Dual Console Robotic Platforms as a Training Modality in Practitioner Proctoring, Dual Specialty Collaborative Surgery, and in Resident Education as a Superior Educational and Safety model.

The emergence and explosion of DaVinci assisted surgeons and surgeries has pushed educational and referral centers to examine the way the education of both residents and surgeons alike transit through the well documented steep learning curve. After the mandatory well documented inanimate lab, simulator, and animal lab training there must be the transition to patient procedures with the utmost of patient safety and solid outcomes insured.

A multi year educational residency and faculty proctoring/mentoring program exceeding industry standards was developed and is examined looking at instructor preferences, resident satisfaction and confidence, proctored and collaborative physician confidence and satisfaction, and the safety and outcomes of the patients.

The array of benign and malignant pathology spans the spectrum of Gynecology, Gynecologic Oncology, and Urogynecology at our institution. Modelling our safety and instruction after the FAA pilot training regulations in dual cockpit controls, a teaching method and style is presented. Safety and outcomes as well as learner residents and surgeons satisfaction, teaching faculty satisfaction, and feasibility in University and Community hospital operating rooms is examined and validated.

13.271 Gynecology

Outcome and Prognostic Factors of Laparoscopic Radical Hysterectomy and Pelvic Lymphadenectomy in 148 Patients With Stage IB1 Cervical Cancer

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Objective: To evaluate the surgical, oncological outcome and prognostic factors of laparoscopic radical hysterectomy (LRH) and pelvic lymphadenectomy in patients with stage IB1 cervical cancer.

Materials and Methods: Patients with IB1 cervical cancer undergoing LRH at the First People's Hospital of Foshan between January 2000 and March 2010 were enrolled in this study. Follow-up data were available.

Results: A total of 148 patients were identified. One case converted to laparotomy. Median number of resected pelvic lymph nodes was 23. Median blood loss was 250 mL and median operative time was 257 minutes. Intraoperative and postoperative complications occurred in 5.4% and 6.75% patients, respectively. Other medical problems included 47 cases (31.75%) of bladder dysfunction. Twenty-seven patients (18.24%) had microscopic nodal metastasis. A total of 37 patients received adjuvant therapy. After a median follow-up of 28 months, 21 patients had a recurrence. The overall 5-year survival rate is 82%. Univariate analysis showed the factors affecting the survival rate were nonsquamous histologic type, high grade, deep cervical stromal invasion, lymphovascular space invasion, and lymph node metastasis ($P = 0.016$, $P = 0.045$, $P = 0.021$, $P = 0.038$, and $P = <0.001$). The Cox proportional hazards regression analysis indicated only lymph node metastasis (odds ratio = 6.293, $P < 0.001$) was an independent poor prognostic factor.

Conclusions: Laparoscopic radical hysterectomy can be a safe alternative to abdominal RH for patients with IB1 cervical cancer. Lymph node metastasis was an independent poor prognostic factor.

13.272 General Surgery

The Study of Possibility and Safety of Applying da Vinci Robotic Surgical System in Radical Rectal Cancer Operation

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Object: To discuss the possibility and safety of applying da Vinci robotic surgical system in radical rectal cancer operation and to summarize its short term effects and clinical experiences.

Method: Data collected from 143 cases that underwent da Vinci robotic surgical system associated radical rectal cancer operation from Feb 2010 to Feb 2013 were retrospectively analyzed. Evaluations were focused on general data, operation situation, complication, recovery and pathology.

Results: All 143 cases were through operation safely without turnover to open procedure. In which there were 106 Dixon operations, 37 Miles operations. The average operation time was 203.5 (160-260min). The average blood loss was 60.5 (30-150ml) and no blood transfusing needed.

Lymphadenectomy harvest was 17.2 (8-31). Distal edge to tumor was 5.3 (2-10cm) without cancer cell residue. The complication rate was 7.0% in which there were 3 cases of anastomosis leakage, 3 cases of perineum incision infection, 3 cases of pulmonary infection, 1 case of retention of urine. There was no postoperational mortality. Average following time was 12.4monHS (1-31 months). No local recurrence but 2 cases of distant metastasis was founded.

Conclusion: Applying of da Vinci robotic surgical system in radical rectal cancer operation is safe and fast recovering with promising short term results.

13.273 Gynecology

Laparoscopic Excision of Retroperitoneal Pelvic Mass over Right Iliac Vessels

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Objective: To educate laparoscopic surgeons on the removal of extragenital endometriosis involving the pelvic vessels.

Methods/Procedure: Video assisted laparoscopy for removal of retroperitoneal pelvic mass and aortogram with pelvic runoff and nonselective catheterization of the infrarenal aorta

Results: This is a 49 year old female with history of endometriosis, who presented with right sided pelvic and lower extremity pain. Pelvic imaging showed a 3 cm mass overlying the right iliac vessels. After consultation with vascular surgery, she was taken to the operating room for excision of the pelvic mass, which was pathology confirmed endometriosis.

Conclusion: Extragenital endometriosis of major pelvic vessels has been the subject of incidental case reports. Endometriosis occurring around large pelvic vessels has been reported to cause pain, catamenial edema, and DVT. This is a video presentation of the successful removal of 3cm extragenital endometriosis in close approximation of the pelvic vessels and ureter.

13.274 Gynecology Segmental Bladder Resection for Endometriosis

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Objective of the Study: To educate people on genitourinary endometriosis and how it can be treated.

Methods and Procedures used in the study: This is a case report and video presentation of a patient with recurrent bladder endometriosis. A laparoscopic segmental bladder resection was performed by fully mobilizing the bladder, resecting the endometriotic lesion and making a water-tight closure.

Results of the Study: The patient's endometriosis was completely treated without complication and she remains symptom free.

Conclusion based on these results: Genitourinary endometriosis is difficult to treat. Complete surgical excision of the lesion is a safe and efficacious treatment method.

13.275 General Surgery Single Port Surgery of a Giant Serosal Ovarian Cyst

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A 23 y/o nullipara had a history of abdominal distention and discomfort. Pregnancy was ruled out. She was studied for this complaint and in an abdominal ultrasound and CAT-Scan a left giant simple cyst of pelvic origin was found, reaching up to liver and diaphragm on both sides.

A preoperative work-up directed to rule out a possible malignant origin was

performed and ruled out malignancy. She was scheduled for surgery with a single port laparoscopic approach. At surgery a single transumbilical 2 cm longitudinal incision within the limits of the umbilical scar was performed. A gel platform was employed. After aspiration of approximately 8.5 liters of serous material the resection was started using ultrasonic scissors.

After careful inspection, a dissection plane was found between the external wall of the cyst and the ovarian stroma, left ovarian tube and fimbriae were elongated and distorted by the great volume of the cyst. Resection was limited to the ovarian cyst and the ovarian stroma was resected. It was possible to separate the uterine tube from the cyst, but at the end of the resection it appeared ischemic so it was cut close to the ovary. No uterine manipulator was employed.

Dilation of the fascia and skin allowed us to extract the specimen without prolongation of the incision. POP evolution was uneventful and the patient was discharged from the hospital the following day with a weight loss of approximately 22 pounds. Pathology reported a benign serous cystadenoma of the left ovary.

13.276 Gynecology

Safe Endoscopic Excision and Vaporization of Peritoneal Endometriosis via CO2 Laser

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Stanford University

Video assisted laparoscopy is being used with increasing frequency in the treatment of endometriosis. However, endometriosis of sensitive areas such as the bowel, bladder, ureter and major vessels are often excluded from surgical intervention due to risk of injury. The use of CO2 laser along with hydro-dissection allows for safe excision and vaporization of peritoneal endometriosis over such sensitive areas. This is a video presentation of laparoscopic excision and vaporization of peritoneal endometriosis using the CO2 laser. Vaporization when done properly, will have the same effect for the patient as excision of the endometriosis implants.

13.277 General Surgery

Laparoscopic Drainage of Retroperitoneal Hematoma

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Background: The management of retroperitoneal hematomas is usually achieved nonoperatively with correction of coagulopathy, blood transfusion, and intensive care (ICU) monitoring. Patients who have persistent bleeding are treated with coil embolization of the culprit vessel. In rare cases, operative intervention is necessary; laparoscopic treatment of has never been described.

Method: The patient is a 75 year old male who underwent emergent Hartmann's

procedure for hemorrhagic sigmoid volvulus. He was discharged home on warfarin for atrial fibrillation. Four days after discharge, he presented with a large left-sided retroperitoneal hematoma, supratherapeutic INR, and acute renal failure. After reversal of his INR, he continued to have drops in hematocrit and repeat imaging revealed an enlarging retroperitoneal hematoma. Given the acute renal failure, interventional radiology procedures were deferred and the patient was taken to the operating room.

The surgery consisted of positioning the patient in the right lateral decubitus position. Ports were placed as follows: 12mm port in the midaxillary line below the 12th rib, 5mm port in the midaxillary line above the anterior superior iliac spine, and a 5mm port in the anterior axillary line in triangulation with the first two ports. Using a combination of suction and direct drainage through the first port, approximately 1500cc of blood was evacuated. Three areas of active bleeding were identified and hemostasis was achieved with electrocautery. Fibrin sealant was sprayed throughout the retroperitoneal space.

Results: The patient's creatinine normalized, hemoglobin stabilized, and he did not require any further blood transfusion. He was discharged home on postoperative day seven.

13.278 General Surgery Robotic Ivor Lewis Esophagogastrectomy For Esophageal Cancer

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Background: Ivor Lewis esophagogastrectomy is associated with significant morbidity. Morbidity is greater following induction chemo/radiation therapy. Robot assistance may decrease morbidity.

Methods: 12 patients underwent robotic-assisted Ivor Lewis esophagectomy with intrathoracic esophagogastrostomy (9 men, 2 women, age 37-77). Robotic esophageal dissection, mediastinal nodal dissection and intrathoracic anastomosis were performed via 4 ports in the right chest.

Results: Three patients had induction therapy. Median operative time was 9 hours (range 8 -17 hours). Cell type included: 4 adenocarcinomas, 7 carcinoma in situ, and 1 high grade dysplasia. There was no conversions to thoracotomy. Median hospitalization was 9 days. There was no anastomotic leak. Complications included atrial fibrillation (3), C-Diff colitis (1). There was no mortality.

Conclusion: Robotic Ivor Lewis Esophagogastrectomy is feasible. This technique facilitates esophageal mobilization, intrathoracic anastomosis, and may be better suited to patients with induction chemo-radiation therapy. Greater experience and longer follow-up are necessary to fully assess the role of robotics in the minimally invasive treatment of esophageal cancer.

13.279 General Surgery

Robotic Laparoscopic Modified Lateral Heller Myotomy for Achalasia

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Background: The surgical treatment of achalasia remains controversial. Conventional laparoscopic anterior esophageal myotomy is hampered by the need for an additional antireflux procedure. A lateral esophageal myotomy has been shown to preserve the antireflux mechanism and does not require a fundoplication. Robotics facilitates lateral esophageal myotomy.

Methods: 8 patients underwent robotic laparoscopic lateral esophageal myotomy for achalasia without an antireflux procedure. Diagnosis of achalasia was confirmed by radiography, endoscopy, and manometry. Patients underwent intraoperative EGD. Robotic myotomy was accomplished through 5 ports. 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 was 1 man and 7 women. Mean operative time was 97 +/- 16 minutes. There were no mucosal injuries or conversion to a laparotomy. Median hospitalization was 1 day. All patients reported improvement in dysphagia. Symptom relief was graded as: Viscik I in all patients. No patients reported reflux symptoms. There was no objective gastroesophageal reflux.

Conclusion: The surgical robot facilitates lateral esophageal myotomy. Although greater experience is needed, the preliminary results of this study suggest that robotic laparoscopic lateral Heller myotomy without an antireflux procedure may represent an excellent alternative to the treatment of achalasia.

13.280 General Surgery

Robotic Video-Assisted Segmentectomy

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Background: Anatomic segmentectomy has been advocated as a curative procedure in selected patients with non-small cell lung cancer.

Methods: 50 patients underwent robotic video-assisted thoracic segmentectomy for early stage lung cancer. All patients underwent robotic dissection of the artery, vein, and the bronchus with division of the respective segmental structures. In addition, a complete mediastinal nodal exenteration was performed with removal of subcarinal, paraesophageal, paratracheal, and inferior pulmonary ligament lymph nodes.

Inclusion criteria was a pre-operative clinical T1 disease in a patient with impaired pulmonary function (FEV1 < 800 or DLCO < 50).

Results: There were 26 men, 24 women, mean age 71 +/- 9 years. All patients underwent R0 resection. Operating room time was 125 +/- 18 minutes. Median hospitalization was 6 days. All patients had early stage lung cancer. Histology was squamous cell (11 patients), adenocarcinoma (20), adenosquamous (9), basaloid (1), giant cell (2), bronchoalveolar (5), solitary fibrous tumor (1), and poorly differentiated carcinoma (1). Tumor size was 2.0 cm or less in 26 patients and > 2.0 cm in 24 patients. Complications were seen in 12/50 (24%) of patients. Complications included atrial fibrillation in 5/50 (10%), reintubation in 2/50 (4%), c-diff infection in 2/50 (4%), pneumonia in 1/50 (2%), urinary tract infection in 1/50 (2%), and pericardial effusion requiring pericardial window in 1/50 (2%) patients. There were no mortalities.

Conclusion: Robotic video-assisted segmentectomy is a safe. It may represent a less invasive oncologic procedure to patients with small lung cancers and limited cardiopulmonary reserve.

13.281 General Surgery

Robotic-Assisted Gastroesophageal Valvuloplasty: An Alternative Anti-Reflux Procedure Which More Closely Replicates the Normal Anti-Reflux Barrier

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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 questionnaire, and objective Viscik 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 Viscik 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.

13.282 General Surgery

Robotic Lobectomy for Early Stage Lung Cancer: Results Following the Learning Curve

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Background: Robotic lobectomy has been shown to be feasible. We report the outcomes of a large series of patients that underwent robotic lobectomy.

Methods: 174 patients underwent robotic lobectomy for early stage lung cancer after a learning curve of 20 patients.

Results: There were 71 men and 103 women with a mean age of 65+/-10.3 years of age. Lobectomies were right upper (47), right middle (14), right lower (30), left upper (46), and left lower (27), lingulectomies (8), and bilobectomies (2). Mean operating time was 198 +/-50 minutes. Tumor type was adenocarcinoma (106), squamous cell carcinoma (39), adenosquamous carcinoma (9), bronchoalveolar (4), large cell (4), poorly differentiated (3), carcinoid (7), mucoepidermoid (1), spindle cell (1). Pathologic upstaging was noted in 31/174 (18%) patients. There were 2 /172 (1.2 %) emergent conversions to a thoracotomy for bleeding from the pulmonary artery. There were no intraoperative deaths. Postoperative mortality was 1.7%. There were no deaths among the last 154 patients. Minor complications were seen in 34/174 (19.5%) patients. Median hospitalization was 5 days. At a median follow up of 41 months, 4/174 (2.3%) patients died from their lung cancer, 8/174 (4.6%) patients had metastatic disease, and 2/174 (1.1%) patients had a second lung primary cancer. There was no local recurrence.

Conclusion: Robotic lobectomy is feasible and safe with comparable morbidity to thoracotomy and VATS approaches. The oncologic advantage of robotic lobectomy in upstaging early stage lung cancer may be due to enhanced bronchovascular as well as mediastinal node dissection.

13.283 General Surgery

Robotics Changes the Approach to the Diagnosis and Management of Mediastinal Masses

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Background: The conventional approach to the diagnosis of mediastinal masses is associated with a high level of inaccuracy and the need for multiple interventions. Robotics has the potential of providing a highly accurate approach to the diagnosis and management of mediastinal masses.

Methods: 54 patients were diagnosed with a mediastinal mass and underwent transthoracic robotic biopsy and, if appropriate, robotic resection.

Results: There were 23 anterior, 22 mid, and 9 posterior mediastinal masses. Of the anterior mediastinal masses, 18 were thymic in origin, 2 lymphomas, 2 germ cell, and 1 cavernous hemangioma. Mid mediastinal masses: 12 lymphatic in origin and 10 aerodigestive cysts. Of the posterior mediastinal masses: 3 neurogenic, 1 thyroid goiter, and 5 benign cysts. The robotic approach was from the right pleural space in 37 patients and from the left pleural space in 17 patients. The sensitivity of the robotic technique was 98% and specificity was 100%. 34 patients underwent simultaneous robotic resection of the mass. Two patients required conversion to an open procedure. Mean operative time was 187 +/- 41 minutes. Postoperative complications were seen in 9% of patients which included pneumonia, atrial fibrillation, ileus, hemothorax, and pneumothorax. There was no mortality. Median length of hospital stay was 4 days.

Conclusion: 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.

13.284 Multispecialty

Laparoscopic Assisted Peritoneal Shunt Insertion in Ventriculoperitoneal and Lumboperitoneal Shunt Placement: an Institutional Experience with 54 Consecutive Cases.

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Background: Laparoscopic placement of the peritoneal catheter in ventriculoperitoneal (VP) and lumboperitoneal (LP) shunt insertion allows for accurate peritoneal placement unlike traditional minilaparotomy surgery. This study evaluated the outcomes of laparoscopic placement of the peritoneal catheter in shunt surgery at a single institution.

Methods: A retrospective review was performed for 54 consecutive patients who underwent a laparoscopic assisted VP/LP shunt from July 2007 to August 2011. Independent variables include age, sex, race, body mass index, ASA score, previous abdominal procedures, and indication for placement. Dependent variables included mean operative time, complications, and causes of shunt failure. All patients were operated on by a single general surgeon in conjunction with the neurosurgical team.

Results: The study included 54 consecutive patients (36 women, 18 men) who underwent laparoscopic VP/LP peritoneal shunt placement. The mean age was 51

(16-83), the mean BMI was 27.6 (16-54), and 35% (19) of the patients had undergone a previous abdominal operation. The mean operative time for VP shunt placement was 68.2±19.0 minutes, and for LP shunt placement 84±12.4 minutes. There were no intraoperative complications and no open conversions. In follow-up, there were 2 instances of distal catheter malfunction (1 infection, 1 obstruction).

Conclusion: The laparoscopic approach to VP/LP shunt placement is associated with a low incidence of distal catheter malfunction. The direct visualization of the shunt placement into the peritoneal cavity is a major advantage making it a viable alternative over traditional techniques.

13.285 General Surgery

The Effect of the Surgical Skin Trauma in the Postoperative Inflammatory and Immune Reaction

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Introduction: Surgery provokes inflammatory and immune responses; thus in recent years an effort was made to reduce host response using less invasive surgical techniques. Aim of this experimental study was to investigate the surgical stress induced by surgical skin trauma and to examine the role of liver in this process.

Methods: Sixty male anaesthetized Wistar rats were subjected to a midline incision confined strictly to the skin level [dermis] of either 10-cm long [n=20]; or 1-cm long [n=20]; or no incision [n=20]. Skin trauma was left open for a 20-min period, and then was meticulously sutured. Three and 24hrs later, laparotomy was performed to half the rats of each group respectively, for blood and liver sampling. In serum and liver homogenates, CINC1/IL-8 and TNF- α were measured using ELISAs and nitric oxide using a Griess reaction.

Results: Surgical trauma was found to significantly ($p<0.01$) increase all inflammatory mediators tested (CINC1/IL-8, TNF- α , nitric oxide) in serum of operated rats vs controls. This increase was depended on skin trauma extension. In liver homogenates, CINC1/IL-8 was found significantly ($p<0.01$) increased in operated animals vs control, in a similar pattern to serum levels. In contrast, liver TNF- α levels were inversely to serum levels, and a significant ($p<0.01$) decrease of TNF- α was observed in liver homogenates of operated animals compared to the constitutive levels of the controls, indicating that increased TNF- α in blood reflects liver TNF- α secretion.

Conclusions: Our findings suggest that inflammatory and immune reactions induced by skin-only surgical trauma are depended on trauma extension.

13.286 General Surgery

Unusual Cause of Bowel Obstruction after Laparoscopic Sleeve Gastrectomy

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A 52 year-old male s/p laparoscopic sleeve gastrectomy one year prior presented to the emergency department with complaints of abdominal pain, nausea and emesis. The patient underwent a CT scan which demonstrated abnormal dilatation of his gastric sleeve as well as his small bowel in the left upper quadrant with two different transition points. He subsequently underwent a small bowel follow-through which showed a partial obstruction of the distal half of the jejunum in the left upper quadrant with a loop formation.

He went to the operating room for a diagnostic laparoscopy. Dilated loops of small bowel were visualized in the left upper quadrant. The sleeve gastrectomy was examined and an omental attachment became adherent to the cut edge of the sleeve gastrectomy creating a band that caused an obstruction. Lysis of adhesions was performed and once the band had been taken down the obstruction had been relieved.

This highlights an unusual cause of small bowel obstruction after laparoscopic sleeve gastrectomy. Clinicians treating patients with a small bowel obstruction after a laparoscopic sleeve gastrectomy should consider earlier operative intervention when compared to other patients.

13.287 Gynecology

Impact of a Robotic Surgical System on Hysterectomy Trends in Gynecologic Subspecialties

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Study Objective: To determine the changes in hysterectomy trends following the addition of a robotic surgical system in gynecologic oncology and urogynecology.

Methods and Procedures: Using longitudinal medical records from a large tertiary care medical center, we performed a retrospective cohort study. All women who underwent a hysterectomy by a fellowship trained gynecologic oncologist or urogynecologist were included. Our primary outcome was the surgical approach to hysterectomy. For the purposes of analysis, surgical approaches were categorized as robotically assisted, laparoscopic, laparotomy, vaginal, or laparoscopically assisted vaginal. The exposure of interest was year of surgery, beginning in 2007 when the robot was introduced.

Results: A total of 1,313 women underwent a hysterectomy performed by a subspecialist (gynecologic oncology N=1,001, urogynecology N=312) between January, 2007 and December, 2012. Amongst gynecologic oncologists, during the five years following introduction of the robot, the rate of hysterectomy performed via

laparotomy decreased from 75.00-90.48% (2007) to 11.32-25.40% (2012), p-value <0.001. In contrast, the rate of robotically assisted hysterectomy increased from 16.67% (2007) to 73.02-88.68% (2012), p-value <0.001. Amongst urogynecologists, the rate of hysterectomy performed vaginally decreased from 80.00% (2007) to 33.64% (2012), p-value <0.001, while the rate of robotically assisted hysterectomy increased from 0.00% (2007) to 54.21% (2012), p-value <0.001.

Conclusion: The percentage of robotically assisted hysterectomies has dramatically increased and is now the primary modality for performing hysterectomy amongst gynecologic oncologists and urogynecologists.

13.288 General Surgery

Robotic-Assisted Hyperthermic Intrathoracic Perfusion Chemotherapy for Treatment of Pleural Metastases of Ovarian Serous Carcinoma

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Introduction: Ovarian serous carcinoma is an aggressive malignancy, often with metastasis at presentation. Cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) has been studied as a treatment option for intraperitoneal spread of ovarian cancer. Hyperthermic intrathoracic chemotherapy (ITH), the thoracic counterpart to HIPEC, is emerging as a treatment option for both primary and secondary pleural cancers, but has not previously been reported for treatment of ovarian metastases. The use of minimally invasive thoroscopic techniques, including robotic assistance for ITH is rare. We present a case report of a patient with pleural metastases of ovarian serous carcinoma treated with CRS and ITH.

Case: A 55 year-old female underwent a TAH/BSO with cytoreduction in July 2011 for ovarian cancer developed a right pleural effusion on post-operative X-ray. After chemotherapy treatment she had a seven month remission until PET/CT scan identified an isolated pleural metastasis. Diagnostic laparoscopy was negative for occult abdominal disease.

Procedure: Robotic-assisted Right VATS procedure, partial pleurectomy and resection of pleural, diaphragmatic, mediastinal and pericardial nodules followed by perfusion with heated cisplatinum for 60 minutes.

Results: Surgery was uncomplicated, and the patient was discharged on post-operative day three. Serum creatinine remained normal. Pathology was poorly differentiated/high grade adenocarcinoma consistent with the patient's ovarian primary. She has no evidence of early recurrence, and normal (100) Karnofsky Performance Score.

Conclusions: We report the first such case of robotic-assisted hyperthermic intrathoracic chemotherapy to treat ovarian carcinoma. ITH may be an important tool in the treatment of ovarian metastases in the chest.

13.289 General Surgery
Laparoscopic Management of Small Bowel Obstruction Caused Due to an Unusual Presentation of Acute Appendicitis

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Small bowel obstruction is a common surgical condition, often caused by adhesions, hernia, tumors or strictures etc. Acute appendicitis can occasionally present as a very rare cause of SBO, either due to direct formation of adhesions or due to the ileus complicating a case of severe appendicitis. CT findings of acute appendicitis can be difficult to identify because of the SBO, leading to a delay or missed diagnosis. Most often the diagnosis is made intra-operatively, during exploration of a primary or non-resolving SBO. Laparotomy is the usual approach of exploration due to the increased complexity of laparoscopy in patients with SBO.

We present two cases of SBO that were also found to be due to this rare presentation of acute appendicitis. In the first patient the diagnosis was suspected pre-operatively and confirmed intra-operatively but in the second case the diagnosis could be made intra-operative only. Both of these cases were successfully managed laparoscopically.

We would like to conclude that acute appendicitis can occasionally present as a very rare cause of SBO. A very high index of suspicion is required for timely diagnosis. Laparoscopic management is feasible with careful planning and considerations.

13.291 General Surgery
Laparoscopic Management of Type 3 Paraesophageal Hernia in the Setting of Morbid Obesity

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There is an established increase in paraesophageal hernia incidence in morbidly obese population. Standard fundoplication has shown increased failure rates. We present an alternative approach for both severe obesity and hiatal hernia.

59-year-old woman with a long-standing history of GERD and a BMI of 37. Imaging demonstrated a giant hiatal hernia. The abdomen was entered using a 5-mm optical trocar. Other trocars were placed under direct vision in the left lower, right upper and right lower quadrant. The Nathanson retractor was placed the epigastric area.

The peritoneum overlying the right pillar of the diaphragm was opened and dissected. The short gastric vessels were sequentially divided. The retroesophageal space was developed. The hiatus reconstruction consisted of three figure-of-eight #0 silk sutures and reinforcement with porcine dermis mesh. The gastric bypass started

by constructing a gastric pouch with a linear stapler. A 100-cm Roux limb was then measured and a side-to-side jejunojejunostomy fashioned between the biliopancreatic limb and the common channel. The gastrojejunostomy was created with a 21-mm circular stapler.

Our approach offers: paraesophageal hernia reduction with mesh placement, parietal cell separation which prevents acid production, roux limb (100 cm) which prevents bile reflux and gastric bypass which provides a weight loss and reduces the risk of recurrence and comorbidities. This technique proves as a safe alternative for longer lasting prevention of gastroesophageal reflux.

13.292 General Surgery

Gastrobronchial Fistula After Thoracic Spine Neurosurgery

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Objective: A 60 year old female with a history of a thoracic spine procedure presented one year later with chronic respiratory symptoms diagnosed as a gastrobronchial fistula (GBF). The purpose of this presentation is to report a rare care of a GBF as result of a neurosurgical procedure.

Methods: The patient's GBF was repaired laparoscopically via an abdominal approach. Her postoperative course was without complication. She made a full recovery. A literature search was performed and recommended methods of diagnosis were reviewed.

Results: Gastrobronchial fistula (GBF) is a rare surgical complication. Usually associated with bariatric surgical procedures, it has yet to be reported as a complication of a neurosurgical procedure. This case represents a successful diagnosis and treatment of a GBF via a transabdominal laparoscopic approach.

Conclusion: Gastrobronchial fistula is a rare complication. It should be considered any time a patient presents with respiratory symptoms and a history of diaphragm compromise. This case represents an example of this rare complication after a thoracic spine neurosurgical procedure.

13.293 Gynecology

Retroperitoneal Hysterectomy by Laparoendoscopic Single-site Surgery: Perioperative Outcomes of 27 Cases

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Objective: In laparoscopic hysterectomy by laparoendoscopic single-site surgery, ligation of uterine arteries at its origin from an internal iliac artery by retroperitoneal approach can reduce intraoperative blood loss. We present 27 laparoscopic hysterectomies by laparoendoscopic single-site surgery and report the perioperative outcomes.

Methods and procedure: We performed a prospective single-center study. One surgeon trained in minimally invasive surgery performed 27 cases of laparoscopic hysterectomy by laparoendoscopic single-site surgery from September 2012 through February 2013. Laparoendoscopic single-site assisted hysterectomy was performed on 27 patients who have symptomatic uterine myomas (7 menorrhagia; 6 dysmenorrhea; 3 pelvic pressure; 1 palpable mass; 4 increasing size; 5 others).

Results: The mean age and body mass index of the patients were 45 years and 22.9 kg/m², respectively. Twenty-four (88.9%) patients underwent ligation of uterine arteries at its origin by retroperitoneal approach. Four patients were failed to retroperitoneal approach due to huge myomas. Two patients (8.7%) needed vaginal approach to complete posterior vaginal cutting because of difficulties of approach. Total operative time and uterine artery ligation time by retroperitoneal approach were 80.8 and 15.7 minutes as average. The mean estimated blood loss and hemoglobin level changes were 212 mL and 1.78 g/dL. No one was required intraoperative and/or postoperative transfusion and perioperative complications did not occur.

Conclusions: Ligation of an uterine artery at its origin from an internal iliac artery by retroperitoneal approach can be a good option to avoid perioperative blood loss in laparoendoscopic single-site surgery.

13.294 Gynecology

Comparison Between Total Laparoscopic Hysterectomy Versus Abdominal Hysterectomy

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Introduction and aim of the study: Benign uterine disorders like dysfunctional uterine bleedings or solid tumors of the endometrium or myometrium like polyps or leiomyomata are the most common indications for performing hysterectomy. The aim of this study was to evaluate if new endoscopic treatments as the total laparoscopic hysterectomy (TLH) leads to a significant improvement of the post-operative recovery of the patients in comparison to abdominal hysterectomy.

Patients and methods: Between 2005 and 2012 data of 210 patients which underwent a hysterectomy were evaluated. 105 patients underwent a TLH and the other 105 an abdominal hysterectomy. Post-operative haemoglobin values, subjective pain symptoms using the Biberoğlu score, number of days of hospital stay and duration time of the operation were analysed and compared. Statistics were performed with the SAS program and significant differences established by p levels < 0,05.

Results: Statistically significant differences were obtained when comparing the post-operative pain symptoms, the haemoglobin values and the total stay at the hospital. Patients which underwent a TLH had higher haemoglobin values, described to have less pain and the number of days of hospitalization also was shorter in comparison to the patients which underwent an abdominal hysterectomy (p-values < 0,05). There was no difference comparing the time needed for the operation.

Conclusions: Our study confirmed previous data that suggested that the TLH lead to a significant improvement in the well being of patients undergoing hysterectomy. By the same way the costs of the medical care can be reduced significantly with this method.

13.295 Gynecology

Transvaginal Specimen Extraction Device: A Novel Approach to Minimally Invasive Surgery in Women

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Objective: To develop a novel device used to extract specimens, transvaginally during laparoscopic surgery.

Methods and Procedures: Preliminary design of a pilot device

Results: In laparoscopic surgery, small (5-10 mm diameter) incisions are made in the abdominal wall through which instruments dissect and remove specimens that may be several centimeters in diameter. Usually, the removal of these specimens requires either enlarging these incisions or cutting the tissue, called morcellation, to allow removal through the sub-centimeter ports. The Transvaginal Specimen Extraction Device (TVSED) allows the removal of tissues or organs from a woman's abdominal cavity using a novel approach.

In women undergoing minimally invasive laparoscopic surgery, the vagina is the ideal entrance to access the abdominal cavity. Its elasticity allows stretching to accommodate removal of large specimens. The posterior portion of the vagina communicates to the abdomen through few tissue layers, and is distant from vital anatomic structures. Combined with its ease of access and repair, the vagina is the safest and most convenient access site to the abdomen.

Conclusions: The TVSED uses a novel sheath and mechanism to deploy a pouch into a woman's abdominal cavity and extract a large (multiple-centimeter) specimen(s) through the vagina. This device obviates the need for morcellation of tissue or enlarging incisions in the abdominal wall to remove the specimens, thereby minimizing scarring and allowing faster recovery following surgery.

13.296 General Surgery

Double Internal Hernia in Roux-en-Y Gastric Bypass Patients: A Case Series

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Objective: The purpose of this study was to report rare cases of simultaneous internal hernias at Petersen's space and at the jejunojejunal anastomosis in two Roux-en-Y gastric bypass patients.

Methods: The cases were reported and the literature was reviewed to determine the incidence of post Roux-en-Y gastric bypass double internal hernia, while prevention strategies were examined.

Results: Double internal hernia is rare, with few cases previously reported in the literature. The first patient was a 73-year-old female who presented ten years post operatively with nausea, vomiting, and abdominal pain. Intraoperatively, the entire small bowel was seen in the supramesocolic area, secondary to a considerable Petersen's hernia with an additional significant internal hernia at the jejunojejunostomy, resulting in dilation of both the alimentary and biliopancreatic limbs. The second patient was a 26-year-old male, presenting nine months after surgery with intermittent nausea, vomiting, and abdominal pain. Intraoperatively, it was determined that he had a Petersen's hernia and a significant internal hernia at the jejunojejunostomy with subsequent bowel dilation and ischemia.

Conclusions: Laparoscopic Roux-en-Y gastric bypass has increased the incidence of internal hernia over open surgery. Established means to decrease internal hernia include antecolic passage of the alimentary limb and primary mesenteric closure. These cases represent examples of how complications after Roux-en-Y gastric bypass significantly impact the cost and morbidity after surgery, despite employing prevention techniques. Further research is needed on the long-term outcomes of prevention strategies, while identifying additional prevention methods.

13.299 Urology

Robotic Prostatectomy After Ileal Pouch-Anal Anastomosis for Localized Prostate Cancer: Feasibility and Operative Technique

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Introduction: Radical prostatectomy in patients with prior reconstructive intestinal surgery, particularly proctocolectomy and ileal pouch-anal anastomosis (IPAA) presents unique challenges and is conventionally performed using an open retropubic approach. We present our surgical technique, outcomes, and feasibility assessment following robotic-assisted laparoscopic prostatectomy (RALP).

Methods: We examined operative technique, feasibility, estimated blood loss (EBL), procedure length, time to bowel function, surgical margin status, length of stay, urinary and fecal continence in two patients undergoing RALP.

Results: Two patients with IPAA for ulcerative colitis underwent RALP. Mean preoperative PSA was 9.1ng/mL, mean age was 61 years. Operative approach included modified trocars placement under direct visualization, with additional assistant port for extensive lysis of adhesions. Significant adhesions were encountered posteriorly with near-encasement of seminal vesicles. Prostatectomy, nerve sparing and lymphadenectomy were successfully performed in both patients. Integrity of ileal pouch was confirmed with gentle air insufflation under vision. Mean surgical time was 144.5 minutes, EBL was 125 mL. Mean time to flatus was two days, both patients were discharged on postoperative day two. In both patients Gleason score was upgraded to 3+4, negative margins obtained, and fecal and urinary continence were preserved.

Conclusions: RALP in patients with IPAA is feasible, oncologically efficacious, yet technically challenging. Obliteration of Denonvillier's fascia should be anticipated, and care taken to minimize dissection in proximity of ileal pouch. This represents the first report of successful RALP in these patients. RALP may gain increasing utilization by experienced surgeons for patients with inflammatory bowel disease or familial adenomatous with proctocolectomy and restorative IPAA.

13.300 Gynecology

Video Assisted Laparoscopic and Hysteroscopic Management of Didelphys Uterus

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Uterine didelphys represents complete failure of lateral fusion of the Mullerian ducts at 12 weeks gestation, resulting in duplication of the reproductive structures. Most patients are asymptomatic but may present with cyclic pain due to obstructed hemivagina or cervix. Up to 20% of patients with uterine didelphys have unilateral anomalies such as ipsilateral renal agenesis and hemivagina. This is a video presentation of a 31 year old para II female with a known history of didelphys uterus who presented with a worsening right sided pelvic pain. Pelvic imaging showed a right sided intrauterine collection, consistent with hematometra.

13.301 General Surgery

Reduced-port Surgery: Two-port Laparoscopic Gastrectomy for Early Gastric Cancer

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Scarless surgery is a desired goal in the minimally invasive surgery. The likelihood to achieve this goal is abdominal access via a natural orifice. But this procedure is not familiar to surgeons and has not been established in many clinical practices. Reduced port surgery or single port access surgery is the next option, which results in minimal scarring. Usually conventional laparoscopic gastrectomy for early gastric cancer needs 5 to 6 ports. Herein we report on our initial experience with the clinical outcomes of 11 patients who underwent two-port laparoscopic gastrectomy.

Since October 2009, 11 patients underwent two-port laparoscopic gastrectomy for early gastric cancer. A 3 cm transumbilical vertical skin incision was made and the multichannel access port was placed. One additional 3mm trocar was inserted at LUQ abdomen. The operator used two working ports. All procedures were successfully performed without additional port or open conversion. Mean age was 51.8 ± 11.1 . Male was six and female was five. Mean BMI was 21.6 ± 2.8 . Mean operation time was 298.2 minutes. Number of dissected lymph nodes was 35.1 ± 12.7 . Their pathologic stages are all T1N0M0 except one T1N3M0. There was one postoperative complication with duodenal leakage.

The results of our initial experience of two-port laparoscopic gastrectomy for early gastric cancer are encouraging. The concept of reduced-port surgery with reduction in port sites, port size as an all-encompassing field toward where we are headed. This could be promising as an alternative procedure with reduced scars and the "bridge" to single port surgery.

13.302 Pediatric Surgery

Thoracoscopic Lobectomy Improves Outcomes for Congenital Lung Malformations

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Objective: Pulmonary sequestrations and congenital pulmonary airway malformations (CPAM) are rare developmental lung anomalies. Lobectomy via an open thoracotomy has been the traditional surgical approach. Small case series have shown non-inferiority of thoracoscopic resections. We sought to identify the outcomes for thoracoscopic lobectomies (TL) in a national database.

Methods: We studied 348 inpatient admissions for children 20 years of age or younger with congenital lung abnormalities in 2009 using the Kids' Inpatient Database (KID). Patients had a principal diagnosis of a pulmonary sequestration or congenital cystic lung (ICD-9 code for CPAM) and an open or thoracoscopic lobectomy listed as one of the first 5 procedures. Surgical approach and complications (including postoperative pneumothorax, empyema, and pneumonia) were defined by ICD-9 codes. Logistic regression and ANOVA were performed adjusting for lobectomy type, age, gender and complications.

Results: Of the 348 children, 245 had a diagnosis of congenital cystic lung (70.5%) and 103 had a diagnosis of pulmonary sequestration (29.5%). 90 children underwent a TL (25.9%). The average age of children undergoing thoracoscopic resection was greater, but did not reach statistical significance (2.22 vs. 1.45 years, P=0.11). Thoracoscopy decreased the overall risk of complications (OR 0.33, CI 0.15-0.76, P=0.009) and the hospital length of stay by 2.72 days (4.58 vs. 7.30 days, P=0.047). TL had no mortalities.

Conclusions: Children undergoing TL are less likely to develop a complication and spend fewer overall days in the hospital. TL is safe and may provide improved outcomes for pediatric patients with congenital lung lesions.

13.303 Gynecology

Robotic-Assisted Repair of a Vesico-Vaginal Fistula

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Objectives of the study: Fistulae account for a small number of post-surgical complications but also may result from radiation therapy, obstetrical injury, infection, and mesh erosion. Surgical treatment of fistulae can be challenging. We present a case highlighting the enhanced visualization and improved precision of dissection using the daVinci surgical system for repair of a vesico-vaginal fistula.

Methods and procedures used in the study: A case report and descriptive surgical video.

Results of the study: A 48-year-old para 2 complains of continuous urinary leakage following an episode of right-sided abdominal pain. She underwent a laparoscopic-assisted vaginal hysterectomy three weeks prior and routine cystoscopy at completion of the case revealed a bladder abrasion. She underwent outpatient cystoscopy and a necrotic rent was identified in the right posterior bladder wall. A defect was also noted at the vaginal apex consistent with a vesico-vaginal fistula. Following a period of time to allow healing of the fistula tract, she underwent robotic-assisted repair of the vesico-vaginal fistula.

Conclusions based on these results: In this vesico-vaginal fistula repair, the daVinci surgical system offered improved visualization and greater precision of dissection. As expected with laparoscopic surgery, such patients also have quicker recovery times and good cosmetic results compared with traditional open techniques.

13.304 Gynecology

Total Laparoscopic Excision of Retrorectal Tumors: The Optimization of Surgical Approach, Program and the Surgical Outcome

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Background: The retrorectal space tumors are relatively rare lesions. Laparoscopic surgery for retroperitoneal lesions is now improving. Laparoscopic abdominal approach resection (LAAR) of retrorectal tumors has never been prospectively described.

Objective: The aim of this study is to evaluate the feasibility, safety and surgical outcomes of laparoscopic abdominal approach resection (LAAR) with fascia space dissection technique (FSDT) for retrorectal tumors.

Materials and Methods: This was a prospective analysis of the feasibility, safety and surgical outcomes of laparoscopic abdominal approach surgery for 32 patients with retrorectal tumors between 2006 and 2012.

Results: Thirty-two patients underwent laparoscopic abdominal approach resection with fascia space dissection technique (FSDT) of retrorectal tumor. The mean operative time was 154 min (115–328 min), with a mean blood loss of 170 ml (80–320 ml), and the average hospital stay was 5.8 days (5–12 days). Pathological findings included 13 teratomas, 8 dermoid cysts, 6 schwannoma, 3 tailgut cysts and 2 cystic hamartoma. Two patients had rectal injury. No other complication was observed inter-operatively. Two patients with pelvic infection and two patients with transient uroschisis were observed in our series. No other post-operative mortality and complication was seen. The median follow up was 21.14 months (ranging from 3 to 58 months). The post-operative course was uneventful with no recurrence seen.

Conclusion: Laparoscopic abdominal approach resection with fascia space dissection technique (FSDT) of retrorectal benign tumors is feasible and safe. It is suggested that such laparoscopic procedures be reserved as an attractive potential alternative approach for retrorectal benign tumors.

13.305 General Surgery

Bilateral Laparoscopic Totally Extraperitoneal Repair without Mesh Fixation of Inguinal Hernia: Results for 686 Inguinal Hernias

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Kaiser Permanente

Objective: Fixation of the mesh during laparoscopic totally extraperitoneal (TEP) repair is thought to be necessary to prevent recurrence. However, mesh fixation may increase postoperative pain. This study aimed to describe the experience of a single surgeon performing laparoscopic TEP repair without mesh fixation at our institution focusing on the postoperative recurrence and chronic pain.

Methods: A retrospective review of the medical records of all patients who underwent laparoscopic TEP repair without mesh fixation for inguinal hernia from

January 2005 to December 2011. Demographics, operative, and postoperative data was obtained for analysis.

Results: A total of 343 patients underwent laparoscopic TEP repair for 686 inguinal hernias by a single surgeon at our institution from January 2005 to December 2011. The mean operative time was 33 minute. One patient was converted to open (0.3%) and one patient sustained intraoperative bladder injury. Postoperative hematoma/seroma occurred in five patients (1.5%), wound infection in one (0.3%), hematuria in two (0.6%), and acute myocardial infarction in one (0.3%). Nine patient (2.6%) developed chronic pain postoperatively; three of them underwent re-exploration. All patients were discharged home few hours after surgery except three patients. There were a total of 20 recurrences (2.9%) in 18 patients (5.2%). Two of them had bilateral recurrences; whereas 16 developed unilateral recurrences. Twelve of the recurrences occurred after one year (60%). Fourteen recurrences occurred among direct hernias (70%).

Conclusion: In our experience bilateral Laparoscopic TEP without mesh fixation is safe and feasible treatment for bilateral and recurrent inguinal hernia.

13.306 General Surgery Combined Intraperitoneal and Extraperitoneal Colonic Perforation Following Diagnostic Colonoscopy: A Case Report

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Background: Colon perforation may occur as either intraperitoneal or extraperitoneal. Generally, intraperitoneal perforation is common. In contrast, extraperitoneal perforation that can manifest with pneumoretroperitoneum, pneumomediastinum, and subcutaneous emphysema is very rare. Both intraperitoneal and extraperitoneal colonic perforations have been reported after colonoscopy, however, cases with combined types of perforation are rare.

Case report: We present a case of a 55 year-old male with history of Crohn's disease underwent colonoscopy to assess disease activity after worsening abdominal pain. Patchy nodular mucosa was found in the right colon and an ulcer was found in the terminal ileum. Multiple biopsies were taken. After the procedure, patient complained of acute abdominal pain and scrotal swelling. Abdominal computed tomography scan showed pneumomediastinum, and a left Pneumothorax, retroperitoneal gas, and intraperitoneal and subcutaneous gas. Exploratory laparotomy was performed and the patient underwent subtotal colectomy and end ileostomy with placement of left chest drain for the left Pneumothorax. The patient was discharged home postoperatively in good condition.

Conclusion: As the utility of colonoscopy continues to broaden, its complications will also be more common. While intraperitoneal perforation is a known and not uncommon complication, extraperitoneal perforation is. Combined intraperitoneal and extraperitoneal perforation is extremely rare. Early diagnosis and operative management resulted in a satisfactory outcome in this particular case.

13.307 General Surgery

Congenital Absence of the Cystic Duct and Gallbladder in a Patient Presenting with Right Upper Quadrant Pain: A Case Report and Review of the Literature

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Objectives: Anatomic variations of the extrahepatic biliary tree are relatively common, however, complete agenesis of the gallbladder and cystic duct is rare. Preoperative diagnosis is often difficult to ascertain definitively. Thus, definitive diagnosis is often made intraoperatively, with confirmatory postoperative imaging. Our objectives are to present a case report, review the literature, and increase surgeon awareness of this entity and its management.

Methods/Procedures: We present a case of a 31-year-old otherwise healthy female who presented with intermittent right upper quadrant pain consistent with biliary colic. An ultrasound showed poor visualization of a contracted/shrunken gallbladder. A HIDA scan was performed which showed failure of visualization of the gallbladder. This was interpreted as cystic duct obstruction in the setting of chronic cholecystitis.

Results: Upon attempted laparoscopic cholecystectomy, it was noted that the gallbladder was absent with a common bile duct that bifurcated just prior to insertion into the hepatic hilum. The patient was seen in the office postoperatively and reported complete relief of her preoperative symptomatology.

Conclusion: Gallbladder agenesis is rare and preoperative diagnosis is often difficult to ascertain with certainty. If diagnosed intraoperatively, it is imperative that a search for the gallbladder be performed, as it has been described to be in ectopic locations. Care must be taken, however, to avoid extensive dissection of the hilar plate to minimize risk of bleeding and injury to adjacent structures. Increased awareness of this condition among surgeons may lead to less negative operative explorations when a patient presents with equivocal findings on RUQ ultrasound.

13.309 General Surgery

Simultaneous Endo-Laparoscope Heller's Cardio-myotomy Improve the Outcomes of Surgical Treatment of Achalasia

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Background: We prospectively compare the results of with or without intraoperative endoscopic guide laparoscopic Heller myotomy for the treatment of achalasia by a single surgeon to investigate any improvement of the surgical result and to identify the adequacy of total length of myotomy and the length of myotomy at gastric site.

Objective: Between September 2005 and July 2011, a total of 30 cases with achalasia underwent laparoscopic Heller myotomy with Dor's fundoplication.

Methods: Fifteen patients were treated with 7 cm long Heller myotomy with 2 cm at gastric site (group A). Another 15 cases underwent intraoperative endoscope-guided Heller myotomy. The length of myotomy was decided by endoscopic finding (group B). The length of total myotomy and the length of myotomy at gastric site, postoperative dysphagia, chest pain, acid reflux, body weight change and the changing of esophageal diameter were compared between these two groups.

Results: Group A had 7 cm long myotomy with 2 cm at gastric site and group B had $6.69 \pm 0.4 \text{cm}$ ($p=0.004$) myotomy with $1.56 \pm 0.2 \text{cm}$ ($p<0.0005$) at gastric site. Postoperatively, five patients in group A had grade 1 dysphagia and one had grade 2 and only 2 patients in group B had grade 1 dysphagia ($p=0.043$). Chest pain was significantly improved in group B ($p=0.008$).

Conclusions: Simultaneous endo-laparoscopic Heller myotomy for the treatment of achalasia has significantly improved the operation outcome of postoperative dysphagia and chest pain. Complete myotomy at esophago-gastric junction is an important issue for this operation.

13.310 Gynecology

Advanced Laparoscopic Gynecologic Surgery in the Ambulatory Care Setting

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Objective: To evaluate the safety and efficacy of laparoscopic surgery for major gynecologic surgeries in the ambulatory care setting.

Materials and Methods: Retrospective, multi-center review of 223 cases from August 2010 to September 2011. All patients were treated for symptomatic uterine leiomyomas and/or endometriosis. Main outcome measures were discharge within 23 hours and readmissions for postoperative complications.

Results: Of the 223 patients who underwent surgery, 152 patients underwent treatment of endometriosis, 37 patients underwent myomectomy and 34 patients underwent hysterectomy. Of the endometriosis group, 72 cases were for advanced stage disease (Stage III & IV). In the myomectomy group, the average weight of the leiomyomas was 240 grams. In the hysterectomy group, the average weight was 283 grams. The overall complication rate for all the ambulatory care surgeries was 2.7%. Two hundred and twenty patients were discharged home within the 23 hours of surgery. Three patients were transferred to hospital, one patient for post operative anemia requiring blood transfusion and two patients for post operative fever. Of the 220 patients who were discharged home within 23 hours, three were subsequently admitted to hospital. This included one patient for small bowel obstruction, one patient for septic pelvic thrombophlebitis and one for fever of unknown origin.

Conclusion: This analysis demonstrates that advanced laparoscopic gynecologic

surgery can be safely performed in the ambulatory care setting.

13.311 Gynecology

Is it Persistent Endometriosis or Myofascial Pain in Post Surgical Endometriosis Patients?

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Endometriosis is a debilitating, costly illness which imposes significant effects on quality of life, sexual function and general welfare of the affected population. High treatment failure continues to pose formidable challenges in the clinical setting. Women may continue to experience symptoms following surgical and medical intervention.

Objective: Ongoing pain may be the result of myofascial pain and pelvic floor trigger points which create referral patterns into the pelvis and abdomen. Pelvic Health Physical Therapy may assist in relieving pain in patients with endometriosis.

Methods: To support this discussion 5 case studies will be presented of women post excision for endometriosis, including appendix removal, with unresolved right lower quadrant pain. All women were evaluated for pelvic floor trigger points and other myofascial pain by a Pelvic Health Physical Therapist. The women then underwent 12 treatment sessions with a physical therapist using manual therapy to the pelvic floor.

Results: After the conclusion of therapy each woman reported a decrease of pain and an increase of quality of life on an outcome measure taken at session 1, session 6 and session 12.

Conclusions: Pelvic Health Physical Therapy is a multidisciplinary approach that should be integrated into the therapeutic team when treating endometriosis.

13.312 General Surgery

Laparoscopic Revision for Failed Antireflux Surgery: Single Surgeon Experience in 28 Cases

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Tecnologico de Monterrey

Objective of the Study: Determine the main causes leading to a failed antireflux surgery for gastroesophageal reflux disease and the feasibility of a laparoscopic approach for reoperation.

Methods and procedures used in the study: Retrospective and descriptive study was carried out of 27 patients reviewing charts and videos between the years 2007 – 2012 that were reoperated after failed antireflux surgery. Causes that lead to a failed

antireflux surgery were determined.

Results of the Study: 27 patients charts and surgery video were reviewed, 16 women and 11 men. The main cause leading to a failed antireflux surgery (59%) was recurrence of the hernia with sliding fundoplication, other causes were: error in the fundoplication construction (18%) and fundoplication disruption (15%). 4 patients (15%) had 2 or more causes. 2 patients were identified with short esophagus and Collis-Nissen surgery was indicated. Conversion to open surgery was not required. The mortality rate was 0%.

Conclusions: Identification of the causes of failure leads us to understand the importance of an adequate initial technique in order to minimize the need to reoperate. When indicated, reoperative laparoscopic approach for failed antireflux surgery can be achieved with minimal mortality risk.

13.313 General Surgery Totally Extraperitoneal Repair of Bilateral Spigelian and Inguinal Hernias with Mesh, A Case Report

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Spigelian hernias are unusual hernias whose repair in combination with inguinal hernias is not well documented. This paper reviews the repair in a single patient with bilateral Spigelian hernias and left direct and indirect inguinal hernias and right femoral hernia using the totally extraperitoneal, (TEP), approach. The paper addresses reduction of the hernias, mesh size and placement, mesh fixation, and includes photographs of the operation. This technique repaired the hernias with two 10 by 15 cm pieces of mesh, (one on each side), held in place with absorbable tacks and fibrin glue. The intra-operative photographs will be useful for educational purposes. The patient did well post operatively and has resumed his usual activities with minimal pain. In conclusion, this case report supports the ongoing use of the TEP approach for mesh repair of Spigelian hernias, including those in combination with inguinal hernias.

13.314 General Surgery Gallbladder Agenesis. Intraoperative Management

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Objective: To state the intraoperative management when the diagnosis of a gallbladder agenesis is perceived; the importance of performing an intraoperative cholangiogram, its advantages over a postoperative cholangioMRI and for the

general surgeon to know how to deal with this intraoperative surprise.

Methods: Female, 62 years old, with 3 weeks evolution of colicky abdominal pain, in right upper quadrant, moderate intensity, irradiated to the right shoulder, accompanied with nausea and vomiting. She was diagnosed with an ultrasound with cholelithiasis. Normal laboratory values. She was scheduled to undergo a laparoscopic cholecystectomy. Intraoperatively she was diagnosed with a gallbladder agenesis, confirmed with a cholangiogram.

Results: During surgery, there was a difficult dissection of Calot's triangle and identification of normal anatomy, where the structure that is being isolated raised a high suspicion of being the common bile duct. An intraoperative cholangiogram was taken, confirming the diagnosis of the gallbladder and cystic duct agenesis.

Conclusions: All preoperative studies have failed to demonstrate a gallbladder agenesis. Ultrasound tends to be false-positive, concluding in cholelithiasis or scleroatrophic gallbladder. Scintigraphy and ERCP conclude in obstruction of the cystic duct and rarely diagnose an agenesis. So, the surgeon must deal with the diagnosis intraoperatively. Current literature states that once the diagnosis of gallbladder agenesis is perceived, laparoscopy must be terminated and an cholangioMRI done. Nevertheless, the realization of a cholangiogram by puncture is safe, easily performed and permits an immediate solution to this intraoperative surprise, and excludes other pathology that can be treated surgically (e.g., ectopic gallbladder).

13.315 Gynecology

Transvaginal Adhesiolysis using Laparoscopic Instruments

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Intra-abdominal adhesions are a common complication of open or laparoscopic surgeries, often leading to bowel obstruction, infertility, and pain. In this case report, we describe lysis of adhesions performed via a total transvaginal route.

Following a total vaginal hysterectomy, a SILS(TM) port and 30 degree angle scope were inserted through the vaginal cuff, and a harmonic scalpel device was used to lyse multiple periumbilical and omental adhesions. This technique follows the natural orifice transluminal endoscopic surgery (NOTES) approach that has recently attained prominence in the minimally invasive surgery field.

The procedure was tolerated well and did not add considerable overall operating time. Gynecologic surgeons are familiar with both laparoscopic and vaginal surgery and thus are uniquely qualified to combine these procedures with little or no additional training.

13.316 General Surgery

Case Series: Small Bowel Obstruction Due to Tubing of Adjustable Gastric Band Tubing; An Under-Reported Complication

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Objective: To increase awareness that gastric banding tubing maybe the cause of small bowel obstruction.

Methods: Retrospective literature review

Results: Seven cases of bowel obstruction have been reported in the literature from 2004-2012, six female and one male, with an average age of 48. Four of the seven case reports mentioned weight loss after banding, the average pre band BMI was 45.8 and the average post band BMI was 28.4 in these four case reports. Only two of the seven reported cases were from the United States. Five patients had a previous history of abdominal surgery; two patients had no reported surgical procedures other than the gastric band per the case reports. Band placement occurred one to nine years prior to presentation for obstruction. Three of the seven patients had reported symptoms consistent with a partial bowel obstruction prior to definitive diagnosis of the gastric tubing being the cause. Three patients required bowel resection, one closure of an enterotomy caused by the tubing, three required lysis of adhesions only.

Conclusions: The differential diagnosis of abdominal pain after bariatric surgery can be challenging. Although unusual, one should not discount the possibility of the connection tube as a cause of a partial or complete bowel obstruction.

13.317 Multispecialty

The University of Minnesota Automated Fundamentals of Robotic Surgery Psychomotor Skills Simulator

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Objective: The aim of this study is to describe the FRS simulator designed by the UMN for three out of seven tasks as described earlier by the FRS consortium.

Methods: The FRS consortium developed the seven tasks by a series of consensus conferences. These included the Docking and instrument insertion, ring tower transfer, railroad track, cloverleaf dissection, knot tying, UTSW 4th arm cutting, and vessel energy dissection. Out of these, we identified the three tasks (ring-tower transfer, railroad track and knot tying) and developed physical model based simulators capable of assessing the psychomotor skills automatically.

Results: Ring Tower transfer: The task consists of lifting the ring from one of the S wires ($t=0$) at the center of the dome, transferring it mid air to the other hand and placing it on the other S wire on the side of the dome (time stops automatically). The simulator measures the time of contact of the ring with the S wire.

Knot tying task: The tasks consist of approximating the eyelets closely and securing them with a square knot. The mechanism tests the integrity of the knot and

measures the total task time and the distance between the eyelets.

Rail road task: This suturing task consist of closing an incision on an organosilicate model by vertical mattress sutures. wound separation and eversion is measured by means of UV light.

Conclusions: The UMN FRS simulator is a physical model based simulator capable of automatic objective assessment of psychomotor skills. The validation studies for the simulator are still pending.

13.318 General Surgery

Case Study of Two: Laparoscopic Repair of Duodenal Perforation After Gastric Bypass Surgery

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UMDNJ

Introduction: Obesity continues to rise in the global population. Increasingly, patients are turning to surgical procedures for weight reduction and the associated health benefits. Roux-en-Y gastric bypass, performed either open or laparoscopically, remains a popular surgical option for weight loss with mortality rate of only 0.5%. The risk of post-operative complication is higher at 15%. Among the well known complications is a marginal ulcer. However, pneumoperitoneum from a duodenal ulcer is an uncommon etiology of free air after Roux-en-Y. We present a two case series of laparoscopic repair for perforated duodenal ulcer.

Method: Years after a gastric bypass procedure, two patients presented to the ED with the abrupt onset of severe abdominal pain. Both patients showed evidence of a perforated viscus on abdominal CT and underwent a diagnostic laparoscopy.

Results: Both patients were found to have a duodenal perforation which was laparoscopically repaired with a Graham patch. Postoperatively, the two patients progressed well and were discharged home without incident.

Conclusion: In our two cases, we were successfully able to diagnose and repair the perforated duodenum without difficulty. Both patients were spared the complications of a midline laparotomy and were discharged in several days. Laparoscopy is a feasible and safe method to repairing a perforated duodenum in the emergent setting. Though marginal ulcers are more commonly associated with free air after Roux-en-Y, duodenal ulcers can still be the source of perforation and should be carefully inspected.

13.319 General Surgery

Laparoscopic Repair of a Symptomatic Morgagni Hernia in an Adult

Gabriela Gonzalez MD, Maria Danae Reyes Salas MD, Hernan Reyes Sepulveda, Oscar Villegas Cabello, Jose Antonio Diaz Elizondo

Objective of the study: Present a video demonstrating our laparoscopic approach for Morgagni Hernia repair.

Methods and procedures: Video shows a 36 year old female with 2 year history of chest pain and shortness of breath treated as recurrent respiratory tract infections. Chest x-ray revealed herniation of bowel contents into right thoracic cavity. Computed tomography (CT) was indicated. Contrast enhanced CT showed a diaphragm defect and herniation of transverse colon and omentum to the right hemithorax. A laparoscopic repair was performed. The hernia content was gently reduced with blunt dissection. The sac was not resected. The defect was closed with non-absorbable sutures and a tissue excluding mesh (polypropylene mesh with a bioresorbable hydrogel coating) was fixed in the repaired place with tackers.

Results of the study: The patient had a good evolution during the follow up period. Was discharged home on the 3rd post operative day without complications. Respiratory symptoms and chestpain resolved.

Conclusions: Laparoscopic Morgagni hernia repair is a viable and safe procedure including hernia reduction, suture closure of the defect and mesh implantation as in conventional approach but offering benefits of minimally invasive surgery.

13.320 General Surgery

Gel Coated Self Gripping Mesh for Delayed Tissue Gripping in Inguinal Hernia Repair

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Background: Inguinal hernia repair is the most frequently performed procedure in general surgery and more than 20 million are estimated to be repaired annually worldwide. Recently, use of the Progrid™ self-gripping mesh demonstrated beneficial effect on postoperative pain in trans abdominal pre-peritoneal inguinal hernia repairs (TAPP). However, the use of this novel mesh required greater laparoscopic skill and dexterity owing. We hypothesized that gel like coverage of the Parietene Progrid™ Mesh with a water soluble film, will allow delaying the immediate surface adherence of the mesh to the tissue, which may allow greater freedom and ease in mesh placement for the laparoscopic surgeon.

Materials and Methods: In this Ex-Vivo, Animal Study. Gel coated pieces of Progrid™ Mesh were compared to a control mesh and measured for bovine tissue adherence ability using a dynamometer prior and after dissolving the gel coat.

Results: Gel coating of the mesh reduced dislodgement forces by 77% (12.4N vs. 2.8N, $P < 0.035$). Dissolving the gel markedly increased the anchoring force (19.0N vs 2.8N, $P < 0.0004$) and after dissolving the gel, the dislodgement forces were similar (and slightly higher) compared to the control (19.0N vs 12.4N, $P = NS$).

Conclusions: Water soluble gel does not impair adhesive features of the Progrid™ Mesh and may simplify its use in laparoscopic repair of inguinal hernias in TAPP and TEP techniques.

13.321 General Surgery Endoscopically Assisted Fasciotomy for Treating Compartment Syndrome in the Lower Leg

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Introduction: Lymphedema is the accumulation of protein-rich interstitial fluid within the skin and subcutaneous tissue, and lymphangitis refers to the inflammation of lymphatic vessels.

Etiology and Classification: Primary lymphedema is thought to be a genetically determined disease with expression at or shortly after birth, puberty, or after 35 years of age. Secondary lymphedema occurs as a result of a precipitating cause.

Incidence: The most common cause of secondary lymphedema worldwide is lymphatic filariasis. In Western countries the most common cause is damage to or removal of lymph nodes by surgery, radiotherapy, tumor invasion, or as the result of infection or inflammation.

Diagnosis: Diagnosis is made in the majority of cases by history and physical examination and lymphoscintigraphy.

Case: We report a case of a female patient 75 years old with history of rheumatoid arthritis, hysterectomy, laparoscopic cholecystectomy, hypertension, psoriatic arthritis, diabetes mellitus, osteoporosis and diagnosis of lymphedema for 2 years. She had undergone endoscopically assisted fasciotomy for treating compartment syndrome of lymphedema. Patients discharged from hospital two days after the procedure.

Surgical Treatment: Surgery is a continuum of medical management and is performed for failure of medical management, gross extremity size and weight with impaired extremity function, severe skin changes, and/or recurrent lymphangitis. Physiologic procedures attempt to restore lymphatic drainage.

Excisional procedures remove lymph- producing as well as fibrosclerotic tissue and fat. Fasciotomy is an optional treatment for compartment syndrome in this disease.

13.322 General Surgery Initial Experience with Single-incision Cholecystectomy using a Glove port.

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Introduction: Laparoscopic surgery has been established as the preferred method for addressing gallstone disease. Recently, single incision laparoscopic surgery has been reported to offer a similar safety profile whilst providing better cosmesis and less post-operative pain. However, this approach frequently requires special ports and instruments, which add to the cost of the procedure and may not always be available. We report on our initial experience with single incision cholecystectomy with a glove fitted over a wound protector.

Methods: A consecutive case series of patients who underwent single incision laparoscopic surgery, using a reusable retractor and a sterile glove. Inclusion criteria were patients with uncomplicated gallstone disease. Exclusion criteria were previous abdominal surgery and BMI >27.5kg/m².

Results: Seven patients underwent single incision laparoscopic cholecystectomy. Most patients (5) presented cholelithiasis, while 2 had chronic cholecystitis. There were no intraoperative or immediate complications. Mean surgical time was 67 (50-82) minutes. Blood loss had a mean of 40 (25-70) milliliters. All patients were started on early feeding and discharge, with a mean hospital stay of 16.5 (6-24) hours.

Conclusions: Single incision cholecystectomy with the glove technique is safe, feasible, and provides the opportunity to undertake this approach with non-expensive and readily available material.

13.323 General Surgery

General Principles in the Conduct of Revisional Antireflux Surgery. Case Report of a Nissen Redo

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This is a woman of 63 years old who went to the emergency room because of gastroesophageal reflux and regurgitation of 1 year duration. She has a history of diabetes type 2 for 10 years of evolution in treatment, previous Nissen fundoplication (2011), laparoscopic cholecystectomy (2010), cystopexy (2010) and hysterectomy (1995).

Her condition began one year, three months before admission, referring heartburn and regurgitation. These symptoms have been present intermittently and decreased with proton pump inhibitors. The symptoms then became difficult to control and the patient reported no improvement one month before, despite taking the drugs mentioned, which is the reason why she went for evaluation.

Physical examination showed only mesogastrio level pain, no peritoneal irritation, and normal laboratories. Prompted, upper endoscopy where there is a third site of stenosis in the lower esophagus. Biopsies were taken and pneumatic balloon dilatation 12 mm was performed. The biopsy result is negative malignancy.

Esophageal manometry upper esophageal sphincter relaxation normal pressure and coordinated with pharyngeal contraction. Esophageal body peristaltic waves with low average amplitude, with 45% failed. Lower esophageal sphincter with normal contraction and relaxation.

Given these findings, we proceeded to perform dismantling Nissen fundoplication (Nissen Redo) laparoscopically. During surgery, a hernia is sliding into the chest and back clockwise rotation fundoplication. Later we proceeded to take apart de fundoplication, then a Dor fundoplication is performed. The patient presented further good progress and was discharged on the third postoperative day tolerating diet.

13.324 General Surgery Single-port Laparoscopic Liver Surgery - 170 Cases Review

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Background: Single-port laparoscopic liver surgery has been performed sporadically. The aim of this study is to assess our experience with single-port laparoscopic liver surgery as one of the usual treatment modality for various kinds of hepatic diseases.

Methods: We retrospectively review the medical records of 170 patients who performed single-port laparoscopic liver surgeries between Dec 2008 and Dec 2012 in the Catholic University Seoul St. Mary's Hospital.

Results: 170 patients underwent single-port laparoscopic liver surgeries for variety of hepatic lesions. Of these, 87 were single-port laparoscopy-assisted right hepatectomy (right liver mobilization for donor right hepatectomy in living-donor liver transplantation). In 83 patients, various kinds of single-port laparoscopic liver resection were performed for hepatocellular carcinoma (n=39), metastatic liver tumor (n=18), intrahepatic duct stone disease (n=9), cholangiocarcinoma (n=5) and others (n=12). For these patients, partial liver resection was carried out in 55 cases. 13 were left hepatectomy, 11 were left lateral sectionectomy, 4 were right hepatectomy. Two procedures were converted multiport laparoscopy due to instruments length limitation and ten were converted to open liver resection. Mean operation time for liver resection was 151 minutes (range 39 - 546 minutes). There were no major perioperative complications in these cases.

Conclusion: Single-port laparoscopic liver surgery seems to be a feasible approach for various kinds of liver diseases.

13.325 Urology Evaluation of Acceptability of Physical Simulation Model for Training of Laparoscopic Pyeloplasty

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Objectives: The objective was to determine the acceptability and aspects of validity for a high-fidelity, low cost synthetic renal pelvis/ureter analogue model for use as a simulation model for training of laparoscopic pyeloplasty.

Methods: The model was designed with integrated assessment lines for use in objective post-task Black Light Assessment of Surgical Technique (BLAST)[™]. Practicing urologists participating in the 2011 (N=35) and 2012 (N=12) AUA Mentored Renal Laparoscopy course performed a laparoscopic pyeloplasty procedure on the model (2011 and 2012) and completed a post-task questionnaire to evaluate acceptability, face, and content validity (2012). Post-task performance data collected included patency and twist angle at the anastomosis.

Results: Practicing urologists found the model acceptable by rating the model favorably on a 5 point Likert scale in terms of the model improving their ability to safely perform a pyeloplasty procedure (mean = 4.33, SD = 0.651), and in improving preparedness to perform spatulation and anastomotic suturing (mean = 4.17, SD = 0.577). The model was given an average score of 3.92 (SD = 0.996) for ease of set up and use. Aspects of face validity were rated including analogue tissue behavior (mean = 3.42, SD = 0.996) and anatomical accuracy (mean = 4.17, SD = 0.389). For content validity, the average score was 4.33 (SD = 0.492) and 4.42 (SD = 0.515) for the model allowing the user to reproduce skills necessary for spatulation and anastomotic suturing, respectively.

Conclusion: The model demonstrated good acceptability and preliminary evidence of validity for training of laparoscopic pyeloplasty.

13.326 Urology

Setting up Performance Standards on Green-light Simulator for Photo-Selective Vaporization of the Prostate

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Objective: The aim of the study is to describe the performance standards for individual tasks on the Greenlight PVP simulator.

Methods: Eight expert surgeons with mean age of 49±10.1 years, who had performed 10.2±5.5 Greenlight PVP in last 30 days and a lifetime total of 737.2±477.5 cases overall performed the tasks on the AMS Greenlight simulator.

Results: For anatomy identification exercise, mean correct questions were 6.2±1.4

within 116.9 ± 63.3 seconds (cut off 8 questions). For bleeding coagulation, 9 ± 5.6 bleeders were coagulated with an actual coagulation time of 13.5 ± 7.9 seconds and blood loss of 6.1 ± 0.5 ml (Cut off- 2 minutes).. For laser distance task, the average distance was 2.2 ± 0.3 mm with an optimal time of 81.4 ± 22.9 seconds (Cut off- 2 minutes). For the sweep speed exercise, the average speed was 4.0 ± 0.7 mm/sec with an optimal time of 72.1 ± 23.2 sec (cut-off 3600J). For power settings, the mean questions answered correctly were 7 ± 1.6 (cut off 10 questions). The small normal gland task (cut-off 17g) was completed in a mean time of 32 minutes 4 seconds (± 7 min 14 seconds) with a blood loss of 1.5 ± 0.7 ml. The average capsular perforation and bladder neck damage were 3.6 ± 3.7 mm² and 23.9 ± 12.2 mm² respectively. There were no other injuries to the instruments or the anatomical landmarks/adjacent organs.

Conclusions: The study describes the proficiency standards for the Greenlight simulator, which the residents should aim to achieve.

13.327 Multispecialty

Face, Content and Construct Validation of Holographic Models for Human Organ Systems

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Objective: The aim of this study is to evaluate the face, content and construct validity of the 3D anatomical holograms of heart, brain, eye and airway.

Methods: We identified five professionals each from the departments of CTVS, ENT, Ophthalmology and Neurosurgery. These subjects evaluated the holograms in their respective field only and answered the questions for face and content validity on a five point likert scale. To establish construct validity, all 20 professionals were asked to locate and identify the corresponding structures for all specialties on the hologram. Each subject answered all the 20 questions for construct validity.

Results: The participants rated that the eye models have a value in training medical students (5 ± 0), healthcare professionals (4.8 ± 0.4), and patient education (4.8 ± 0.4). When asked if the model teaches the anatomy of the respective system accurately, the professionals rated a mean of 4.6 ± 0.5 for eye. To answer if the models aid in understanding the orientation of the structure to one another, the subjects rated a mean of 4.8 ± 0.4 for eye and airway. Upon asking if the models can potentially aid in translating the knowledge of procedures and interventions they rated 4.8 ± 0.4 for eye. Similar findings were determined for all three other models. The difference between the total numbers of correct answers in both groups (experts vs non experts) was statistically significant ($p < 0.0001$) for all the models.

Conclusions: The face, content and construct validity was successfully demonstrated for these models.

13.328 General Surgery

Biliary Pancreatitis in a Woman with Situs Inversus Totals: Laparoscopic

Approach

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Situs inversus totalis is a rare defect with genetic predisposition that may present difficulties in the diagnosis and management of abdominal pathology due to mirror-image anatomy. We present the case of a woman diagnosed with biliary pancreatitis and situs inversus totalis.

A 48-year-old female with 4 months history of abdominal pain located in left upper quadrant aggravated by fatty foods. 24 hours earlier, started with epigastric pain radiating to the back associated with nausea and vomiting. Physical exam present with tenderness in left upper quadrant. Laboratory tests showed: serum amylase 1995 U/L. Chest X-ray showed dextrocardia. Ultrasound showed location of gallbladder on the left side of the body with gallstones. An abdominal computed tomography confirmed the situs inversus and showed inflammation of the pancreas with peripancreatic fluid. Once the pancreatitis resolved, the patient was programmed for laparoscopic cholecystectomy, in which the patient was placed in the supine position with both the surgeon and camera-man on his right side and the assistant on the left side. Monitor placed near the head of the patient at the left side. Trocars were introduced in the left side of the patient's abdomen. The Calot's dissection was performed with the left hand through the subxiphoid port, also the application of the clips to both cystic artery and duct. Patient was discharged in the second day after surgery.

We concluded that there is technical difficulty performing laparoscopic cholecystectomy in such patients. The dissection was quite safe and confirms the previous reports of safe laparoscopic cholecystectomy in situs inversus totalis

13.329 General Surgery Laparoscopic Management of a Giant Hepatic Cyst

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Background: Congenital hepatic cysts are common, as they may occur in 5-10% of the population, although only 5% of all cysts will become symptomatic. Most cysts are found during workup for other causes. Their size rarely exceeds 20 centimeters in diameter. When symptomatic, this may be due to rupture, hemorrhage, infection or compression of adjacent organs.

Methods: We present the case of a 35 year-old woman presented to the ER

complaining of RUQ abdominal pain and was found to have a hepatic cyst measured 22cm in diameter, displacing the right kidney inferiorly and medially. Laparoscopic de-roofing of this cyst was performed using 3 ports. After aspiration of the cyst, a 5x8cm segment was resected with the aid of a vessel sealant device. A drain was left in the right gutter.

Results: Operative time was 30 minutes. There were no complications. Oral intake was initiated on post-op day 1 and the patient was discharged home on the 2nd day. The patients remains asymptomatic at 30 months follow-up.

Conclusions: Giant hepatic cysts are an uncommon finding, and there is no consensus for management. Surgical management is indicated for symptomatic patients and complications. Laparoscopic de-roofing is associated with low morbidity and short hospital stay.

13.330 General Surgery

Diverticular Disease Complicated with Colovesical Fistula: Laparoscopic Versus Robotic Management

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Objective: Left colon resection for diverticular disease with associated colovesical fistula (CVF) can be technically challenging. The laparoscopic approach, once contraindicated in this setting, is now our preferred approach. In recent years, we have adopted robotic techniques. The purpose of our study was to compare our experience with laparoscopic and robotic left colectomy with colovesical fistula takedown. The primary endpoint was conversion.

Methods: This is a retrospective review of a prospective database. Between October 2001 and April 2013, 75 consecutive patients underwent elective left colectomy and colovesical fistula takedown for benign disease - 55 laparoscopic (LAP) and 20 robotic (ROB) assisted. Conversion was defined as the use of a laparotomy wound for any dissection or fistula takedown.

Results: Both groups were similar in mean age, body mass index, and comorbidities. Estimated blood loss (EBL) was higher in LAP than in ROB (187.65 vs. 101.25 ml; p=0.06). Two LAP required transfusions. Major intraoperative complications occurred in 4 LAP patients. Postoperative complications were similar in both groups. Diversion was performed in 2 LAP and 1 ROB. No recurrences or deaths occurred in either group. No conversions were necessary in the ROB group (p<0.05).

Conclusions: Robotic techniques are safe and feasible for left colectomy and CVF takedown in the elective management of complicated diverticular disease. Robotic surgery may decrease conversion rates compared to the laparoscopic approach. Robotics may decrease blood loss, major complications, and favorably impact LOS. More study is needed to evaluate possible advantages of robotic surgery in the management of diverticular disease complicated by CVF.

13.331 Urology Laparoendoscopic Single Site Donor Nephrectomy

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TEC Salud

Introduction: Since the description by Clayman in 1991 of laparoscopic nephrectomy, minimally invasive technique has become the standard management for urological interventions, since it has proven better outcomes in perioperative evolution and convalescence in comparison to open conventional surgery; thus decreasing morbidity and improving cosmesis associated to laparoscopic ports. Laparoendoscopic single site donor nephrectomy is a novel technique with encouraging results and decreases procedure related morbidities. The objective is to describe the surgical technique and report our center experience in single port living donor nephrectomy.

Methods and materials: The 8-year experience for living donor nephrectomies with minimally invasive procedures in over 350 patients, in which 14 were managed with single port technique. Since 2010 twenty-five cases have been performed with single port for different pathologies in Hospital San José – Tec de Monterrey.

Results: Demographic factors such as age (45 years), gender (F:9, M:5), surgery time (195 minutes), estimated blood loss (80 ml), hospital length of stay (2.6 days), complications and cold ischemic time (10 minutes) were analyzed retrospectively.

Conclusion: The interest in minimally invasive urological procedures with single port or natural orifices surgery has widened the spectrum for other interventions decreasing trans abdominal incisions. The single port approach offers cosmetic benefits for patients and provides less postoperative pain, blood loss and hospital length stay.

13.332 General Surgery Incisional Hernia Through a 5 mm Trocar Site Following Laparoscopic Cholecystectomy

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In recent years, laparoscopy became popular in surgery. Parallel to the development of new techniques, new complications have appeared. Less than 10 mm port-site herniation is one of the new rare complications after laparoscopic surgery. To avoid trocar site hernias, usually it is recommended to close at the fascia level, but usually in adults, 5mm port sites are only closed at skin level.

The objective here is to report a rare case of a strangled hernia through a 5mm laparoscopic wound. An 85 year old female was admitted due to abdominal pain and intestinal obstruction. She had a laparoscopic cholecystectomy 2 weeks before. She reported abdominal pain of about 24 hours of evolution. On physical examination, a 15 cm size mass was palpable on the right flank area. CT scan revealed a portion of the ileum protruding by de 5mm wound. The surgery revealed a protrusion of a part of small intestine into the subcutaneous space through the abdominal wall defect. A part of the ileum showed zones of necrosis, so approximately 15cm of intestine was resected and anastomosed manually. The fascia-muscular defect was closed by interrupted non absorbable sutures.

Traditionally an advantage of laparoscopic surgery is the decreased possibility of hernias . Acute herniation through a 5 mm port site is a rare complication of laparoscopic surgery, which in some cases requires urgent diagnosis and treatment. We need to recognize the risk factors in order to prevent the port site hernia.

13.333 General Surgery

Laparoscopic Common Bile Duct Exploration through a Choledochotomy for Choledocholithiasis in the Pregnant Patient

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Background: Gallstone disease is very common during pregnancy and management of choledocholithiasis is a complex issue involving both the mother and fetus. Choledocholithiasis can lead to sepsis, biliary stasis and metabolic derrangements which can be life-threatening to both the mother and fetus. With the increasing volume of literature supporting safety of surgical therapy in all terms of pregnancy, the laparoscopic common duct exploration provides a safe way to treat choledocholithiasis in pregnancy while minimizing radiation exposure.

Case: 32 yo F G3P2 at 27 weeks gestation with choledocholithiasis, RUQ abdominal pain and elevated LFTs. Ultrasound and MRCP showed dilated cystic and common bile ducts to 18 mm with several >8 mm stones in both ducts. Patient was taken for laparoscopic cholecystectomy, cholangiography and common bile duct exploration. Stones were successfully removed through a choledochotomy, radiation exposure to the fetus was limited and the choledochotomy was closed over a T-tube. There were no signs of fetal distress, patient had an uneventful postoperative course, discharged home, delivered and followup T-tube cholangiograms revealed no retained stones.

Conclusion: Laparoscopic common duct exploration in pregnancy is a good solution to a difficult disease process that is both safe for the mother and fetus while minimizing radiation exposure.

13.334 Urology

Long-term Results Using Novel Technique of Suture Ligation of the Vascular Pedicle to Facilitate Nerve Preservation during Robotic Radical Prostatectomy

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Georgia Urology

Introduction: Pedicle control during robotic prostatectomy has been performed in a variety of ways. Prior series have used clips, bipolar electrocautery, or temporary bulldog clamping with subsequent over-sewing. We present a novel suture ligation technique.

Methods: Over a seven-year period, nine hundred and eighty-six patients with normal erectile function (SHIM>23) who were candidates for bilateral nerve sparing underwent robotic prostatectomy. A figure-of-eight absorbable suture ligature is placed into the proximal portion of the pedicle just posterior to the prostate prior to partial transection. This suture and attached needle are temporarily left in situ. Care is taken to sequentially ligate (using the same suture in a continuous manner) and divide portions of the pedicle without incorporating the neurovascular bundle. The neurovascular bundles are sharply dissected along the prostatic capsule. Holding the suture on slight tension during the dissection avoids direct traction of the bundle.

Results: Excellent hemostasis and visualization were achieved in all patients. Five patients required post-operative transfusion. No other complications associated with this technique were observed. The positive margin rate at this location was less than 2%. Successful intercourse (SEP-3) was reported by 296 (30%), 503 (51%), and 897 (91%) of patients in this selected group at 6 weeks, 4 months, and one year, respectively.

Conclusions: This suturing technique provides excellent exposure and vascular control. Meticulous avoidance of trauma and thermal energy to the neurovascular bundles leads to the validated early return of erectile function.

13.335 Multispecialty

Novel Technique Using Vascularized Peritoneal Pedicle Flap for Interposition During Complex Urinary Reconstruction

Scott D Miller MD

Georgia Urology

Introduction: Fistula formation is a potential complication of urinary reconstruction. Tissue interposition can help prevent this complication. However, suitable omentum and epiploica are not always readily available, and exogenous graft material is not desirable. Rotation of a peritoneal flap is usually suitable.

Methods: Twenty-six patients were deemed high-risk for urinary fistula formation. Procedures include robotic vesicovaginal fistula repair (n=13), laparoscopic or robotic cystorrhaphy during minimally-invasive hysterectomy (n=5), post-radiation rectal repair during salvage robotic prostatectomy (n=1), complex cystorrhaphy during C-section (n=6), and post-radiation open cystorrhaphy following erosion of recurrent endometrial cancer (n=1). The peritoneal flap is dissected off the anterior abdominal wall with attempted inclusion of ipsilateral medial umbilical ligament, epigastric artery, and properitoneal fat. The base of the flap spans from the pubic arch to the psoas muscle. Bilateral peritoneal flaps were used in one patient.

Results: Bladder integrity was achieved in all 26 patients. No patient developed a subsequent fistula. No patient experienced an abdominal wall complication.

Conclusions: The peritoneum can serve as a suitable mechanical barrier for use during complex urinary reconstruction. As prior studies have shown, although lacking in tensile strength, the peritoneum provides additional advantages due to its high content of fibroblasts, growth factors, and other healing properties.

13.336 Urology Laparoscopic Vena Cava Thrombectomy

Zanndor J del Real-Romo MD, Francisco Lopez-Verdugo, Diego Guajardo-Nieto, Rene Palomo-Hoil, Guillermo Peralta-Castillo, Cesar Jaurrieta-Rico, Oscar Villegas-Cabello, Antonio Diaz-Elizondo

TEC Salud

Introduction: Renal tumors are found in 2 to 3% of all malignant diseases. Four to 15% are associated with a tumoral thrombus extension in inferior vena cava. Radical surgery is the only potential curative treatment in renal tumors with thrombus. The objective is to present a case of a patient with a renal tumor with tumoral thrombus in inferior vena cava with a complete laparoscopic approach and a literature review.

Methods and materials: A 70 year old male with a T3c N0 M0 stage bilateral renal tumor with a tumoral thrombus in level II inferior vena cava diagnosed with tomography, in which a right radical laparoscopic nephrectomy and thrombectomy was performed.

Discussion: Renal tumors associated with tumoral thrombus have a worse biological behavior but it does not necessarily links with a worse prognosis, being the tumoral extension the major prognostic determinant. The laparoscopic approach has become the standard treatment for renal tumors up to a T2 stage with lymph node affection and in patients with disseminated disease as a cytoreductive surgery.

Conclusion: Radical nephrectomy with thrombectomy is an effective procedure in renal carcinoma with tumoral vena cava thrombus and offers the possibility of local disease control and survival improvement. The minimally invasive approach decreases postoperative pain, hospital length stay and convalescence, being the elective treatment in these patients without compromising the oncological parameters required for their treatment.

13.337 General Surgery Laparoscopic Assisted Endoluminal Resection of Large Gastric GIST

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Purely endoscopic resection of GISTs larger than 3 cm are still a difficult procedure.

In this case report we present a 76 year old male patient with a history of chronic gastritis. The patient presented melanic stools and anemia in his laboratories. An upper GI endoscopy was performed and a large (5 by 6 cm) GIST in the gastric fundus was identified. Endoscopic resection was not possible. The patient was scheduled for a laparoscopic assisted endoluminal resection. The resection was performed with 2mm intragastric ports and a 5mm intragastric balloon trocar for visualization. The procedure was performed under endoscopic control.

13.338 General Surgery Transluminal Endoscopic Microsurgery as Anastomotic Stenosis Management

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Benign stenosis following an intestinal anastomosis occurs at approximately in 0 to 30% of cases and it is estimated that less than 5% requires correction. Its incidence in the literature is variable due to the lack of criteria to qualify as stenosis and in many cases may be asymptomatic. We report a 27 year old patient diagnosed with familial adenomatous polyposis, with a history of total colectomy and ileorecto anastomosis with mechanical 28mm stapler, two months prior to the current query.

The patient reported occasional episodes of hypogastrium pain, increased with defecation, tenesmus and constipation. We decided to perform a colonoscopy, finding a circumferential scar stenosis on the ileorectal anastomosis, approximately 15 cm from the anal margin. With a complete bowel preparation, we made 3 to 4 cuts with the papillotome in the stenotic ring. The patient progressed favorably, obtaining adequate dilation of the segment, then endoscopic examination (8 days later), verifying this dilation.

The etiology of this complication is not clearly understood. He has spoken on various factors: anastomotic leaks can cause a lack of healing, causing granulation, fibrosis and stenosis. Also technical failures and delayed oral intake after surgery, degree of local circulation and radiation. Endoscopic treatment of colorectal strictures has been reported, especially by using balloons or dilators type Savary. However, the YAG laser, the papillotome or other cutting tools have been used in endoscopic surgical treatment.

The presented technique is a viable option, cheap, effective and with minimal invasion to this complication.

13.339 Multispecialty The Musculoskeletal Exam. Why Should Every Surgeon Perform One?

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It is imperative to perform a musculoskeletal examination in preoperative patients with chronic pain.

Up to 29% of patients with chronic pain have a primary musculoskeletal problem. Unrecognized musculoskeletal pain preoperatively may lead to unnecessary surgery, worsening postoperative pain, new onset postoperative pain, and worsening of other chronic pain syndromes. The aim of the video is to briefly review how to perform a musculoskeletal examination that can be incorporated into the preoperative assessment for surgeons. The video will also demonstrate signs during the physical examination that may suggest the need for a physical therapy evaluation prior to surgery or other multidisciplinary preoperative evaluation.

13.340 Pediatric Surgery

The Value of Computerized Tomography in the Management of Spontaneous Pneumothorax in the Pediatric Population

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Purpose: The management of Spontaneous Pneumothorax (SP) has changed with the availability of computerized tomography (CT). We conducted a retrospective review of cases with SP treated in our institution to correlate the use of CT with management and outcomes.

Methods: There were 22 males and 7 females, managed with video assisted thoracoscopy and pleurodesis (VATS). Ages varied from 12 to 19 years. CT was done in 23 cases. The interval between admission and CT varied from 1 to 8 days with an average of 2.5 days. Three patients showed no blebs in the CT, they were done with 5 mm cuts. Twenty patients had either multiple or single blebs demonstrated by thin cuts (<3mm). Of the eleven children with bilateral VATS, the second side was operated electively in 7, the other 4 presented with spontaneous Pneumothorax after refusing or delaying medical advice to have the other side operated on electively.

Results: All patients recovered uneventfully. There were two recurrences. The six patients managed with VATS following clinical indications without CT had a significant delay in their treatment. There was a good correlation of blebs between CT, surgery and pathology. A significant delay in surgical intervention and increased length of stay was found when the CT was not done.

Conclusion: CT done in a timely fashion and with appropriate technique in patients with SP can accurately demonstrate pulmonary blebs. The presence of blebs will prompt surgical intervention with improved surgical outcome and decreased length of stay.

13.341 Pediatric Surgery

Traumatic Abdominal Wall Hernias in Children

Gustavo Stringel MD MBA, Stephanie Talutis, Samir Pandya MD, Whitney McBride MD

Introduction: Traumatic abdominal wall hernias in the pediatric population are rare. We report four children who developed abdominal wall hernias following blunt abdominal trauma.

Material and Methods: There were three males and one female. Ages varied from 4 to 11 years old. Two hernias occurred as a result of handle bar injuries to the abdomen, one from an all-terrain vehicle collision and a fourth after a falling tree crushed her abdomen. Three of the children had hernias containing bowel in the Spigelian area of the anterior abdominal wall. The fourth had a right lumbar hernia containing colon and fat. Associated injuries included fractures of the sacrum, lumbar spine and lower extremities. Two patients were managed with diagnostic laparoscopy followed by repair of the hernia. One patient had laparotomy with repair of the hernia and a small bowel injury. The patient with lumbar hernia was managed non operatively with close follow up and serial Magnetic Resonant Imaging.

Results: All patients recovered uneventfully. The lumbar hernia gradually closed spontaneously over a period of 8 months. Follow up varied from 10 months to 4 years.

Discussion: Abdominal wall hernias in children should be repaired expeditiously, especially when they contain bowel. Asymptomatic lumbar hernias can be treated non operatively but need careful follow up with clinical examinations and appropriate imaging. Computerized tomography helps to exclude other injuries. Diagnostic laparoscopy is useful to examine the entire abdominal cavity to rule out or identify intestinal injuries.