J Robotic Surg (2019) 13:611–634
https://doi.org/10.1007/s11701-019-01012-2

ABSTRACTS

Society of Robotic Surgery Annual Meeting 2019, Orlando, FL, USA

Poster Presentation #1
Cardiothoracic

Does socioeconomic status matter with perioperative outcomes after robotic-assisted pulmonary lobectomy?

Anastasia Jermihov[1,], Maria Echavarria[1], Emily Ng[1], Frank Velez[1], Carla Moodie[2], Joseph Garrett[2], Jacques-Pierre Fontaine[2], Eric Toloza[2]*

[1]University of South Florida Morsani College of Medicine, [2]Moffitt Cancer Center

Purpose: Lower socioeconomic status has been correlated with poor survival rates and surgical outcomes in cancer patients, including outcomes after open lung cancer resection. We investigated if the socioeconomic disparity in surgical outcomes pertains to minimally invasive resections for lung cancer. This study sought to determine whether socioeconomic status affects surgical outcomes in lung cancer patients following robotic-assisted video-thoracoscopic pulmonary lobectomy.
Materials and methods: We retrospectively reviewed 447 consecutive patients who underwent robotic-assisted pulmonary lobectomy by one surgeon for known or suspected lung cancer, of which 10 patients were excluded due to incomplete data. We used median income by residential ZIP code as a surrogate for socioeconomic status and grouped patients based on whether ZIP-based median income was less than (Group 1) or greater than (Group 2) 300% of the federal poverty income level, which is $12,140 according to healthcare.gov and which is the threshold for various federal benefits. Incidence of postoperative complications, chest tube duration, hospital length of stay (LOS), and in-hospital mortality were compared between groups. Statistical significance ($p \leq 0.05$) was determined by Fisher's exact test, Pearson Chi-Square, and Kruskal–Wallis Test.
Results: Group 1 tended to have a higher rate of post-operative complications, with 27 (54%) of the 50 patients experiencing complications compared to 133 (34%) of the 387 patients in Group 2 ($p = 0.008$). Median chest tube duration was longer in Group 1 than in Group 2 (5 days vs. 4 days, respectively) ($p = 0.032$). The same was true for median hospital LOS, which was 5 days in Group 1 versus 4 days in Group 2 ($p = 0.034$). In-hospital mortality for Groups 1 and 2, which are 0% (0 of 50) and 1.6% (6 of 387), did not differ significantly ($p = 0.375$).
Conclusion: Lower socio-economic status was associated with higher likelihood of post-operative complications, longer chest tube duration, and longer hospital LOS, but did not significantly affect in-hospital mortality after robotic-assisted pulmonary lobectomy.

Poster Presentation #2
Cardiothoracic

Robotic aortic and non aortic surgery

*Petr Stadler**

Na Homolce Hospital

Purpose: The da Vinci system has been used by a variety of disciplines for laparoscopic procedures but the use of robots in vascular surgery is still relatively unknown. The feasibility of laparoscopic aortic surgery with robotic assistance has been sufficiently demonstrated. Our clinical experience with robot-assisted vascular surgery performed using the da Vinci system is herein described. The da Vinci system has been used by a variety of disciplines for laparoscopic procedures but the use of robots in vascular surgery is still relatively unknown. The feasibility of laparoscopic aortic surgery with robotic assistance has been sufficiently demonstrated. Our clinical experience with robot-assisted vascular surgery performed using the da Vinci system is herein described.
Materials and methods: Between November 2005 and September 2018, we performed 437 robot-assisted vascular procedures. 291 patients were prospectively evaluated for occlusive diseases, 111 patients for abdominal aortic aneurysm (Fig.), 5 for a common iliac artery aneurysm, 9 for a splenic artery aneurysm, 1 for a internal mammary artery aneurysm, 8 for median arcuate ligament release, 8 for endoleak type II treatment post EVAR, 2 for renal artery reconstruction and two cases were inoperable. 5 hybrid procedures in study were performed.
Results: 417 cases (96%) were successfully completed robotically, 1 patient's surgery (0.25%) was discontinued during laparoscopy due to heavy aortic calcification. In 16 patients (3.7%) conversion was necessary. The thirty-day mortality rate was 0.5% (2 patients), and early non-lethal postoperative complications were observed in 7 patients (1.6%).

Conclusion: Our experience with robot-assisted laparoscopic surgery has demonstrated the feasibility of this technique for occlusive diseases, aneurysms, endoleak II treatment post EVAR, for median arcuate ligament release and hybrid procedures.

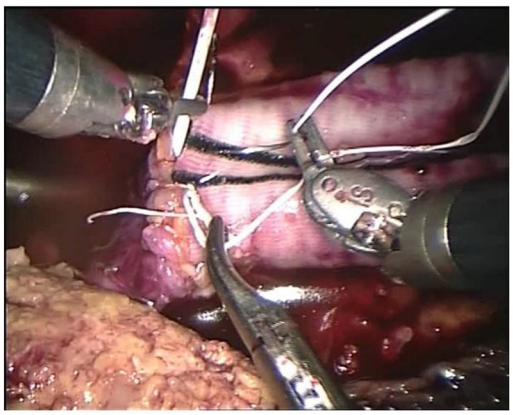


Fig. The distal anastomosis of the robotic abdominal aortic aneurysm repair

Poster Presentation #3
Colorectal

Lymph node harvest is improved in overweight and obese patients who undergo robotic ascending colectomy with intracorporeal anastomosis

Silvana Sidhom[1,], Mark Soliman[2]*

[1]University of Central Florida, [2]Colon and Rectal Clinic of Orlando

Purpose: A growing body of research questions whether obese individuals receive high quality cancer surgery as defined by indicators such as lymph node harvest. This may be due to increased technical challenges of operating in the obese population. Our primary aim was to determine if a robotic operative approach with intracorporeal anastomosis (ICA) would improve the number of lymph nodes harvested in the obese population.
Materials and methods: A retrospective review was conducted of all patients who underwent laparoscopic and robotic ascending colectomy from January 2012 to October 2018 by a single surgeon. Mean and standard deviation of lymph node harvest, type of dissection (medial-to-lateral [ML] vs. lateral-to-medial [LM]), type of anastomosis (extracorporeal [ECA] vs. ICA), were compared. Of note, all patients were part of an enhanced recovery protocol as well.
Results: All robotic and laparoscopic ascending colectomy procedures performed by a single surgeon were reviewed. Of these, one-hundred and thirty three procedures were performed on overweight and obese patients, of which 14 procedures were performed laparoscopically with LM dissection with ECA, 9 were performed laparoscopically with ML dissection with ECA and 98 procedures were performed robotically with ML dissection with ICA. Procedures were performed for neoplastic processes and underwent oncologic resection. On final pathology, 47 overweight and obese patients had invasive adenocarcinoma vs. 86 patients with benign disease. Overall, in obese and overweight patients (BMI > 25), average lymph node harvest in LM dissection with ECA was 14.4 lymph nodes (STD 5.02) vs. 20.1 lymph nodes (STD 8.9) in robotic ML dissection with ICA ($p < 0.03$).
Conclusion: In the overweight and obese population, patients who underwent a ML dissection with intracorporeal anastomosis robotically had a superior lymph node yield when compared to the laparoscopic group with LM and extracorporeal anastomosis.

Poster Presentation #4
ENT

Extended exposure of the base of tongue and vallecula in transoral robotic surgery

Jacob Kahane[1,], Nathaniel Reeve[1], Allen Young[1], Robert Wang[1]*

[1]University of Nevada Las Vegas School of Medicine

Purpose: To present our single institution case series of transoral robotic base of tongue resections using an innovative exposure technique allowing for robotic access to the entire tongue base, lingual vallecula, and epiglottis.
Materials and methods: Study Design: Retrospective case series over 3 years of 10 transoral robotic tongue base resections for primary squamous cell carcinoma.
Methods: Wide exposure of the tongue base is essential for complete robotic resection, with margins, of neoplasms of the tongue base. Broad base of tongue exposure is achieved at our institution with adapted use of the Jennings mouth retractor. We first place a series of 4 silk sutures along the terminal sulcus of the tongue. The sutures are tied so as to leave an air knot and loop. We next utilize the Lone Star Self-Retaining Retractor (Cooper Surgical) placed around the mouth. Lone Star elastic hooks are then placed into the silk suture loops and used to draw the tongue base anteriorly and are fixed to the retractor. Finally, a suture is passed through the uvula and secured to a nasogastric tube to pull the soft palate and uvula superiorly into nasopharynx. This exposure method provides easier robotic access to the tongue base and lingual surface of the epiglottis.
Results: Over the 3 year study period, 10 transoral robotic base of tongue resections were performed using the above described technique. Negative margins were able to be obtained in 9/10 cases. The one case that was unable to be completed robotically, had submucosal tumor extension inferiorly and posteriorly to the pyriform sinus. Of the 9 successful cases, none have experienced locoregional recurrence in the follow up period (8 months–4 years). Complication rates were comparable to the published literature, with no patients experiencing life-threatening postoperative bleeding.
Conclusion: Transoral robotic surgery for base of tongue malignancy is a well established, minimally invasive method for resection of oropharyngeal malignancies. The ability to achieve safe and successful results with the robot depends heavily on the adequacy of exposure and retraction. The use of the Lone Star Self Retaining retractor for tongue base and vallecular access with the da Vinci robot allows for greater maximization of intraoral and pharyngeal space. At our institution, we have been able to use this exposure technique to obtain negative caudal margins for all tongue base malignancies over the study period, including extension into the pre-epiglottic space and lingual surface of the epiglottis.

Poster Presentation #5
General/Single Site/Bariatrics

Initial cost comparison between robotic and open liver resection. Does robotic approach increase the cost of treatment?

Iswanto Sucandy[1,], Sharona Ross[1], Timothy Bourdeau II[1], Trenton Lippert[1], Jack Wecowski[1], Alex Rosemurgy[1]*

[1]AdventHealth Tampa

Purpose: Robotic technology is increasingly utilized in complex abdominal operations, including hepatobiliary procedures. While the minimally invasive technique is associated with improved clinical outcomes, the robotic approach is perceived to result in significantly higher costs and greater financial burden to the hospital when compared to the traditional open approach, limiting its application and adoption. Limited data is available in the published literature to date. In this study, we aimed to compare cost of robotic versus open liver resection undertaken in our hepatobiliary program.

Materials and methods: With Internal Review Board approval, a prospectively collected database of robotic and open liver resection completed for benign and malignant tumors between 2014 and 2017 was analyzed. Economic parameters, consisting of direct fixed costs, direct variable costs and indirect costs, associated with each operation were collected and compared. Data was analyzed using a *t* test in GraphPad (GraphPad InStat®, GraphPad Software, Inc, San Diego, CA). All analyses were considered statistically significant with 95% probability.

Results: 21 robotic and 34 open hepatectomies were included in the study. Total operative time (i.e. in and out of the operating room) was 380 min with robotic hepatectomy and 277 min with "open" hepatectomy. The length of hospital stay was significantly shorter for those undergoing robotic hepatectomy (3.5 versus 8.5 days; p value = 0.003). Variable costs for those undergoing robotic hepatectomy were slightly higher when compared to the open hepatectomy ($17,383 versus $13,994, p value < 0.05), but they were counterbalanced by lower fixed direct costs ($1647 versus $2468, p value < 0.05) and fixed indirect costs ($6285 versus $7192, p value < 0.05). Total overall costs for those undergoing robotic and open hepatectomy are statistically equal ($25,933 versus $26,402, respectively, p value = 0.91). Hospital charges for those undergoing robotic and open hepatectomy were statistically equal ($160,671 versus $140,361; p value = 0.3).

Conclusion: The robotic approach for liver resections results in longer operative time but significantly shorter length of hospital stay. Although the variable costs (e.g. costs of using the robot and related instruments) were significantly higher versus open operations, these costs were offset by a reduction in fixed costs. Utilization of the robotic approach for hepatectomy resulted in a 59% reduction in hospital length of stay compared to the "open" approach, contributing to the reduced fixed costs for the robotic approach. Total overall costs were equivalent for those undergoing robotic and open hepatectomy. The use of robotic platform for liver resection does not result in increased cost of care for hepatectomy.

Poster Presentation #6
General/Single Site/Bariatrics

Robotic versus 'open' pancreaticoduodenectomy: is time of the essence?

Alexander Rosemurgy[1,], Danielle Craigg[1], Jack Wecowski[1], Timothy Bourdeau[1], Trenton Lippert[1], Iswanto Sucandy[1], Sharona Ross[1]*

[1]Advent Health Tampa

Purpose: Robotic operative times are generally thought to be longer when considered relative to conventional 'open' approaches, though data are lacking. The purpose of this study was to compare operative duration for robotic versus 'open' pancreaticoduodenectomy and to determine lengths for specific components of each approach.

Materials and methods: With IRB approval, between 2013 and 2019, 303 patients who underwent robotic vs. 'open' pancreaticoduodenectomy were prospectively followed. Demographic data, including age (years), BMI (kg/m^2), and ASA score, were obtained. As well, total time in O.R., and its components, were measured for each approach: patient 'in room' to incision (prep time), time from incision until specimen extraction (time for resection), time from extraction until end of operation (reconstruction time), time from incision to dressing placement (operative duration), and total time under anesthesia were collected. Data is presented as median (mean ± standard deviation) and significance is accepted at 95% probability.

Results: Of 303 patients, 147 underwent robotic vs. 156 underwent 'open' pancreaticoduodenectomy. Age for those undergoing a robotic vs 'open' pancreaticoduodenectomy was 68 years (66 ± 13.5) vs. 70 years (69 ± 10.6) (p = NS). The BMI for patients undergoing robotic vs. 'open' pancreaticoduodenectomy was 26 kg/mg^2 (27 ± 5) vs. 25 kg/mg^2 (26 ± 5) (p = NS). There was no difference in the frequency of vascular reconstruction between robotic vs. 'open' pancreaticoduodenectomy (Table). Operative duration was longer with robotic pancreaticoduodenectomy ($p < 0.001$; Table); time for resection of the tumor and time for reconstruction were both longer with the robotic approach ($p < 0.001$ for each; Table). As well, when comparing robotic vs. 'open' pancreaticoduodenectomy, total time in O.R was longer with robotic pancreaticoduodenectomy ($p < 0.001$; Table). Length of stay (LOS) and estimated blood loss (EBL) were both less with robotic pancreaticoduodenectomy ($p < 0.01$ for each; Table).

Conclusion: Patients undergoing robotic vs. 'open' pancreaticoduodenectomy were similar. Operative duration, and all its components, were longer with robotic pancreaticoduodenectomy, though the time spent completing robotic pancreaticoduodenectomy seems warranted as robotic pancreaticoduodenectomy was associated with lower EBL and LOS. There will be improvements in the time needed to complete robotic pancreaticoduodenectomy, but the improved outcomes after robotic pancreaticoduodenectomy are undeniable. Robotic pancreaticoduodenectomy is progressing and is here and now!

	Robotic (n=147)	Open (n=156)	p-Value
ASA Class	3 (3±0.6)	3 (3±0.6)	p=1.0
Prep Time (mins)	53 (53±17)	50 (54±30)	p=0.724
Time for Resection (mins)	188 (218±139)	132 (137±79)	p<0.001
Time for Reconstruction (mins)	191 (195±65)	123 (137±75)	p<0.001
Operative Duration (mins)	416 (426 ± 100)	266 (275 ± 92)	P<0.001
Total Time in O.R. (mins)	476 (494±107)	330 (344±93)	p<0.001
EBL (mL)	150 (205±190)	400 (489±409)	p<0.001
Length of Stay (days)	5 (7±8)	7 (10±10)	p<0.01
% with Venous Resections	22%	27%	p=0.39

Robotic vs 'Open' Pancreaticoduodenectomy Perioperative Data

Poster Presentation #7
General/Single Site/Bariatrics

Robotic vs less distal pancreatectomy: an institutional study

Sharona Ross[1,], Danielle Craigg[1], Andres Giovannetti[1], Trenton Lippert[1], Joshua Alvior[1], Iswanto Sucandy[1], Alexander Rosemurgy[1]*

[1]Advent Health Tampa

Purpose: Distal pancreatectomy is becoming a minimally invasive operation, but it is not established if a robotic approach is better than a laparoscopic approach. The purpose of this study was to evaluate operative times and outcomes between laparo-endoscopic single site (LESS) vs. robotic distal pancreatectomy with splenectomy.

Materials and methods: With IRB approval, 100 consecutive patients undergoing LESS or robotic distal pancreatectomy with splenectomy were prospectively followed. Demographic data, including age and body mass index (kg/m^2), were collected. Perioperative data, including operative approach, estimated blood loss (EBL), intraoperative and postoperative complications, length of hospital stay (LOS), and outcomes were obtained. Operative duration and its components were tallied: time from anesthesia induction to incision (prep time), time at the robotic console (console time), time from incision to specimen extraction (time for extraction), and time from specimen extraction until dressings on (closure time). Data are presented as median (mean + standard deviation) and significance was accepted at 95% probability.

Results: 79 patients underwent robotic distal pancreatectomy with splenectomy and 21 patients underwent LESS distal pancreatectomy with splenectomy. Age was 66 years (62 ± 14.5). BMI with robotic vs. LESS distal pancreatectomy with splenectomy was 28 kg/m^2 (29 ± 6.5) vs. 25 kg/m^2 (24 ± 4.9) ($p < 0.05$). 54% of patients undergoing robotic distal pancreatectomy with splenectomy had prior abdominal operation(s) vs. 27% of patients undergoing LESS distal pancreatectomy with splenectomy ($p < 0.05$). Robotic distal pancreatectomy with splenectomy was of longer duration ($p < 0.05$) (Table). EBL and tumor size with robotic distal pancreatectomy with splenectomy were similar vs. LESS [(200 ml (316 ± 291.2) vs. 125 ml (268 ± 340.0), (p = NS)] (Table). LOS was shorter after robotic distal pancreatectomy with splenectomy [4 days (5 ± 3.0) vs. 5 days (7 ± 5.0), ($p < 0.05$)]. There were no intraoperative complications. Postoperative complications after robotic distal pancreatectomy with splenectomy occurred in 10% (8 patients), and after LESS distal pancreatectomy with splenectomy in 33% (7 patients) ($p < 0.05$): 2 patients developed respiratory distress requiring reintubation, 5 had renal dysfunction/UTI, 3 developed pneumonia, 1 developed an abdominal abscess, 1 required a cardiac catheterization, 1 developed an anemia requiring transfusion, 1 had persistent N/V leading to readmission and 1 developed hepatorenal syndrome causing our only mortality.

Conclusion: Patients undergoing robotic distal pancreatectomy with splenectomy had operations of longer duration; they also were heavier, had more previous abdominal operations, had fewer postoperative complications, and had shorter hospital stays. The robotic platform is appropriately becoming the driving force in minimally invasive surgery for distal pancreatectomy with splenectomy.

	Robotic (n=79)	LESS (n=21)	p-Value
Size of Tumor (cm)	3.0 (4.2±3.2)	3.3 (3.8±2.7)	p=0.601
Prep Time (min)	51 (52±15)	48 (47±9)	p=0.149
Console Time (min)	131 (166±148)	N/A	
Time for Extraction (min)	155 (163±72)	142 (128±48)	p=0.888
Closure Time (min)	50 (75±73)	52 (81±71.6)	p=0.738
Operative Duration (min)	240 (263±117)	193 (209±64)	p<0.05
Total Time in OR (min)	304 (307±129)	245 (255±63)	p=0.077
Time Under Anesthesia (min)	318 (327±125)	279 (282±67)	p=0.116

Robotic vs LESS Distal Pancreatectomy with Spleenectomy Operative Times and Tumor Size

Poster Presentation #8
General/Single Site/Bariatrics

Gastric perfusión evaluation in bariatric revision robotic surgery. Case series with follow-up

Hernan Herrera, Sr.[1,], James Hamilton, Sr.[2]*

[1]Bariatric Surgery Department Clínica Meds, Santiago, Chile, [2]Gastrointestinal Surgeon, Bariatric Surgery Department and Robotics Surgery Department Clínica Meds, Chief Professor Fellowship in Advanced Laparoscopic and Robotic Gastrointestinal Surgery Universidad de los Andes, Santiago, Chile

Purpose: Bariatric procedures have low morbidity and mortality, due among other factors to the rich perfusion gastric blood Bariatric revision surgery is an increasingly frequent procedure in bariatric patients. Becomes in a challenge for the surgeon, since many times the vascular anatomy associated with some degree of inflammation and adhesions, which increases the risk of perioperative complications, especially intestinal fistulas. Currently the perfusion is evaluated according to the color of the serosa, peristalsis, bleeding arteries marginal, this evaluation is subjective and can lead to misunderstandings.

There are currently no objective intraoperative evaluations of gastric perfusion.

To evaluate gastric perfusion with indocyanine green from gastric pouch in bariatric revision surgery robotics.

Materials and methods: Prospective case series with follow-up between April 1, 2018 and December 31, 2018.

Inclusion criteria: bariatric revision surgery patients, who underwent a gastric bypass via robotics Exclusion criteria: iodine allergy.

Demographic characteristics of the patients, comorbidities, indication of revision, time operative, hospital stay, perioperative complications, allergic reaction.

A descriptive statistical analysis was performed, with average and measures of central tendency.

Results: Prospective case series with follow-up between April 1, 2018 and June 31, 2018.

Inclusion criteria: bariatric revision surgery patients, who underwent a gastric bypass via robotics Exclusion criteria: iodine allergy.

Demographic characteristics of the patients, comorbidities, indication of revision, time operative, hospital stay, perioperative complications, allergic reaction.

A descriptive statistical analysis was performed, with average and measures of central tendency.

Conclusion: Fluorescence with indocyanine green from gastric pouch is a safe and reproducible technique.

Fluorescence in bariatric revision surgery is an objective pouch irrigation assessment tool gastric.

Poster Presentation #9
General/Single Site/Bariatrics

Perioperative results of robotic and laparoscopic revision bariatric surgery. Retrospective cohort

Hernan Herrera, Sr.[1,*], *James Hamilton, Sr.*[2]

[1]Bariatric Surgery Department Clínica Meds, Santiago, Chile, [2]Gastrointestinal Surgeon, Bariatric Surgery Department and Robotics Surgery Department Clínica Meds, Chief Professor Fellowship in Advanced Laparoscopic and Robotic Gastrointestinal Surgery Universidad de los Andes, Santiago, Chile

Purpose: Bariatric surgery is an effective treatment for obesity in selected patients revisional bariatric surgery may be demanding, and is associated with longer procedures and more of complications.
The ranges of revision surgery, are reported of 8-58%, in gastric band; 30–79% for vertical gastrectomy in sleeve.

Postoperative morbidity is associated with the type of review procedure that is performed.

The objective of this study is to compare the perioperative results of bariatric, revision, robotic and laparoscopic surgery.
Materials and methods: Retrospective cohort between the periods of January 2014 to December 2017.
Inclusion criteria: patients undergoing bariatric revision surgery either laparoscopically or robotically.

Exclusion criteria: patients with primary intragastric balloon procedure.

Demographic characteristics of the patients, comorbidities, indication of revision, time operative, hospital stay, postoperative complications and morbidity, follow-up and weight loss.

The statistical analysis was carried out using IBM SPSS statistics 21. Chi-square test, Student's T test and the test were used of Mann–Whitney. A value of $p < 0.05$ was used for statistical significance.
Results: A total of 192 patients were included in this study. Each group 96 patients.
The main indication for surgery was gastroesophageal reflux and weight gain in both groups.

Surgical time with minor docking in the laparoscopic group ($p = 0.04$).

Postoperative complications and weight loss showed no statistical difference between the groups.

Hospital stay was lower in the laparoscopic group ($p < 0.01$).

In both groups, the main procedure performed was gastric bypass.
Conclusion: Our study demonstrates that bariatric revisional, robotic and laparoscopic surgery are safe techniques.
The main indication of revision surgery is weight reganancy and gastroesophageal reflux.

The percentage of complications is less than that published in the international literature.

Poster Presentation #10
General/Single Site/Bariatrics

It is the revisional robotic gastrojejunoanastomosis better than the laparoscopic gastrojejunoanastomosis revisional? Cohort study

Hernan Herrera, Sr.[1,*], *James Hamilton, Sr.*[2]

[1]Bariatric Surgery Department Clínica Meds, Santiago, Chile, [2]Gastrointestinal Surgeon, Bariatric Surgery Department and Robotics Surgery Department Clínica Meds, Chief Professor Fellowship in Advanced Laparoscopic and Robotic Gastrointestinal Surgery Universidad de los Andes, Santiago, Chile

Purpose: Bariatric revision surgery can be technically challenging and is associated with longer procedure times long and increased complications.
Laparoscopic Roux-en-Y gastric bypass (L-RYGB) is one of the most common bariatric procedures.

Marginal ulcers remain one of the most common and most costly complications after RYGB.

The pathogenesis of marginal ulceration is not completely defined. The use of suture of absorbable material for Gastrojejunostomy (GJA) reduces the risk of gastric fistula and marginal ulceration.

The objective of the study is to determine if the robotic gastric bypass is superior to the L-RYGB in terms of ulcer marginality of the gastrojejunal anastomosis, postoperative complications and operative time.
Materials and methods: Retrospective cohort between the periods of January 2014 to December 2017.
Inclusion criteria: RYGB revisional, either laparoscopic or robotic.

Exclusion criteria: another bariatric revision surgery.

Demographic characteristics of the patients, comorbidities, indication of revision, time operative, hospital stay, postoperative complications and morbidity, weight loss.

The statistical analysis was performed using IBM SPSS statistics 21. A value of $p < 0.05$ was used for the statistical significance.
Results: A total of 159 patients were included in this study.
The main indication for surgery was gastroesophageal reflux and weight gain in both groups.

Hospital stay was shorter in the laparoscopic group ($p < 0.01$).

There was no statistical difference in operative time with docking and postoperative complications among the groups.

In the laparoscopic group, the percentage of marginal ulcer was higher ($p = 0.02$).
Conclusion: The R-RYGB revisional is safe, with complication rates lower than that published in the literature international. Robotic assistance does not increase surgical times and decreases the percentages of marginal ulcer compared to laparoscopic.

Poster Presentation #11
General/Single Site/Bariatrics

Robotic bariatric surgery and patient satisfaction

Hernan Herrera, Sr.[1,*], *James Hamilton, Sr.*[2]

[1]Bariatric Surgery Department Clínica Meds, Santiago, Chile, [2]Gastrointestinal Surgeon, Bariatric Surgery Department and Robotics Surgery Department Clínica Meds, Chief Professor Fellowship in Advanced Laparoscopic and Robotic Gastrointestinal Surgery Universidad de los Andes, Santiago, Chile

Purpose: Multiple studies have evaluated results regarding the introduction of robotic surgery, considering objective elements and comparing this technique with laparoscopic surgery.
There are no studies that evaluate the impact of robotic surgery assistance in bariatric procedures, on patient's subjective perception on health status and satisfaction with surgical results. We present a comparative study that evaluates patient's satisfaction after bariatric surgery with and without robotic assistance, measured using a validated scaling method.
Materials and methods: From December 2015 to May 2018 we conducted a prospective cohort study, asking all patients who underwent bariatric surgery, sleeve gastrectomy or Roux-en-Y Gastric Bypass, laparoscopic or robotic assisted, operated by a single surgical

team in our center, Clinica Meds, Santiago, Chile, to respond to the EQ-5D-5L health status questionnaire, before surgery and on their first post-operative control, 1 week after surgery.
We compared demographic characteristics between patients who underwent laparoscopic and robotic assisted surgery, using t test or Wilcoxon–Mann–Whitney, and Fisher test for qualitative variables.

To analyze information regarding quality of life, we used Fisher test. Perception of health status variations were analyzed using the Wilcoxon–Mann–Whitney test.
Results: Of a total of 626 patients operated, 206 answered and completed both pre and post-operative questionnaire, 90 from the robotic group and 116 from the laparoscopic group.
In both groups, patients reported a significant improvement in their overall health status after surgery as well as in all 5 items evaluated. The overall improvement was higher in the robotic group, but without reaching significance.

After adjusting using a multiple linear regression, this difference did only persist in patients undergoing robotic surgery.
Conclusion: In this study, we tried to analyze if the introduction of robotic surgery to bariatrics has changed the subjective perception of health in our patients.
When we compared both groups globally, we found that perception of health was improved in a higher proportion in patients who underwent robotic assisted surgery.

Patient's perception of health status improves early after bariatric surgery. This improvement seems to be more important after robotic assisted bariatric surgery, but a larger volume of patients is necessary to confirm this tendency.

Poster Presentation #12
General/Single Site/Bariatrics

A potential standardized robotic training and evaluation system in a general surgery program

Harley Moit[1,], David Crawford[1], Anthony Dwyer[1], Michelle DeSutter[2]*

[1]OSF St. Francis Medical Center; University of Illinois College of Medicine at Peoria, [2]University of Illinois College of Medicine at Peoria

Purpose: The general surgery residency at the University of Illinois at Peoria has a long tradition of integrating robotic surgery into training. The purpose of this project is to display our curriculum and evaluation system, which allow faculty to tailor each resident's education over time in a constructive, standardized format.
Materials and methods: The curriculum is divided into two phases. Phase 1 (Pgy1–2): Complete four Robotic surgery training modules. Read two assigned robotic surgery articles. Practice simulation modules on the robot.

Phase 2 (Pgy3–5): Refresh training modules, score > 90% on the simulator modules quarterly, bedside assist a minimum of 4 robotic procedures, and act as console surgeon for minimum of ten procedures with two separate attending surgeons. The required simulator modules were specially selected to incorporate all of the skills categories documented in the simulator.

The faculty evaluate the residents operative performance using the GEARS validated rubric. All categories are graded 1–5 except overall performance which is scaled 1–3.
Results: The curriculum has been in place since June 2017 and we have 72 evaluations from eight surgeons. Averages with standard deviation for GEARS categories were depth perception 3.80 (0.87), efficiency 3.38 (0.79), force sensitivity 3.68 (0.80), autonomy 3.34 (0.71), robotic control 3.375 (0.70), use of third arm 3.32 (0.68), bimanual dexterity 3.54 (0.74), and 1.78 (0.55) for overall performance.
Conclusion: All residents had improvement in their overall performance scores over the course of this curriculum being established. Our preliminary results support the hypothesis that our system optimizes tailored resident education for maximal improvement. One limitation of this paper is that there is not a large volume of evaluations at this time. Over time, we anticipate this number will become much larger. The goal is to produce general surgeons able to operate robotically without the necessity of a robotic/MIS fellowship.

Global Evaluative Assessment of Robotic Skills (GEARS)*

Trainee: **Date of Surgery:** **Evaluator:**

Please circle the number corresponding to the candidate's performance in each category, irrespective of training level.

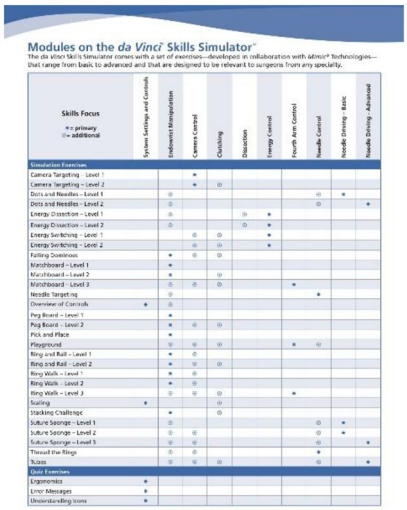
Depth Perception:	1	2	3	4	5
	Constantly overshoots target, wide swings, slow to correct		Some overshooting or missing of target, but quick to correct		Accurately directs instruments in correct plane to target
Bimanual Dexterity:	1	2	3	4	5
	Uses only one hand, ignores non-dominant hand, poor coordination		Uses both hands, but does not optimize interactions between hands		Expertly uses both hands in a complementary way to provide best exposure
Efficiency:	1	2	3	4	5
	Inefficient efforts; many uncertain movements; constantly changing focus or persisting without progress		Slow, but planned movements are reasonably organized		Confident, efficient and safe conduct, maintains focus on task, fluid progression
Force Sensitivity:	1	2	3	4	5
	Rough moves, tears tissue, injures nearby structures, poor control, frequent suture breakage		Handles tissues reasonably well, minor trauma to adjacent tissue, rare suture breakage		Applies appropriate tension, negligible injury to adjacent structures, no suture breakage
Autonomy:	1	2	3	4	5
	Unable to complete entire task, even with verbal guidance		Able to complete task safely with moderate guidance.		Able to complete task independently without prompting.
Robotic Control:	1	2	3	4	5
	Consistently does not optimize view, hand position, or repeated collisions even with guidance		View is sometimes not optimal. Occasionally needs to relocate arms. Occasional collisions and obstruction of assistant.		Controls camera and hand position optimally and independently. Minimal collisions or obstruction of assistant
Use of Third Arm:	N/A	1	2	3	4	5
	Consistently does not use it, or does not use it well when required, even with verbal guidance.			Mostly uses 3rd arm in a safe and efficient manner with moderate guidance.		Consistently uses 3rd arm in a safe and efficient manner without prompting.

***RATE THE LEARNERS PERFORMANCE: circle the number that best describes their performance on this case:**

1: requires significant practice/needs improvement 2: good/at appropriate level 3: excellent/established

*Modified from rubric previously published: Goh et al. J of Urol. 2012

GEARS evaluation form



Skills Categories Which Were Used to Guide Decision of Simulator Modules

Poster Presentation #13
General/Single Site/Bariatrics

Multicenter clinical experience of a hand-held electromechanical system for various articulating tip laparoscopic instruments

Barbara Seeliger[1], Amir Szold[2], Amir Ben Yehuda[3], Steven Schwaitzberg[4], Lee Swanström[5]*

[1]IHU-Strasbourg, [2]Assuta Medical Center, [3]Assaf HaRofeh Medical Center, [4]Jacobs School of Medicine, University at Buffalo, [5]IHU-Strasbourg; The Oregon Clinic

Purpose: The reduced degrees of freedom (DOF) inherent to non-articulating laparoscopic instruments were implicated in limiting the adoption of minimally invasive surgery and led to multimillion-dollar robotic solutions as efforts to solve the problem. We trialed an electromechanical system (HandX, Human Extensions, Israel) designed to combine the advantages of 6 DOF articulating instrument tips common to robotic surgery with those of hand-held laparoscopic instruments.

Materials and methods: In an international, multicenter prospective study, 5 surgeons at 4 different hospital sites used the HandX device in a clinical setting. Informed consent was obtained from each patient enrolled in this study. Training and practice data of each surgeon were systematically recorded prior to clinical application. A validated Likert-type assessment tool (System Usability Scale, SUS), and an internally developed physician assessment questionnaire rating 10 different factors were completed for each procedure. Each surgeon documented the occurrence of intraoperative or postoperative complications.

Results: Between November 2017 and October 2018, four surgeons specialized in minimally invasive surgery performed 33 procedures in 16 female and 17 male patients, with an average age of 58 and an average BMI of 27 kg/m^2. A grasper was used in 11 procedures, a needle holder in 20 procedures, and both instruments in 2 procedures. Laparoscopic procedures included postoperative ventral hernia (n = 9), ventral hernia (n = 1), inguinal hernia (n = 3), cholecystectomy (n = 6), paraesophageal hernia (n = 4, of which 1 revisional procedure), right (n = 5) and left hemicolectomy (n = 1), Tenckhoff catheter implantation (n = 2), diagnostic laparoscopy (n = 1), and inguinal neurectomy (n = 1). There were no device-related adverse events throughout the various procedures performed. One surgeon was trained prior to the development of a structured training program, requiring 2 h of training before proceeding to training in an animal model prior to clinical translation. With the development of a structured training program, training times were significantly reduced to around 1 h of standardized introductory training. The mean SUS score reflected from 33 procedures is 84/100, corresponding to an above average result. The overall mean physician assessment score ranging from 1 (positive) to 5 (negative) for a total of 11 questions was 1.77 ± 0.34.

Conclusion: Computer-assisted (often called robotic) surgery is gaining popularity due to an increase in the surgeon's manual capabilities. It also opens the door for data collection and artificial intelligence which many authors put forward for the future of surgery. Unfortunately, current computer-assisted surgical systems are bulky and expensive. This multicenter experience using a compact, cost-effective solution showed the benefit of multi-articulating instrumentation to enhance the surgeon's abilities. With an efficient training program, the device is safe and easy to use, and represents an encouraging tool to enhance minimally invasive surgery applications.

Articulating tip laparoscopic instrument demonstration

Degrees of freedom provided by the hand-held electromechanical system

Poster Presentation #14
Gynaecology

Robotic sentinel lymph node (SLN) mapping in endometrial cancer: SLN symmetry and implications of mapping failure

Amanda Stephens[1,], Jessica Kennard[1], Christine Fitzsimmons[1], Madhavi Manyam[1], James Kendrick, IV[1], Nathalie McKenzie[1], Sarfraz Ahmad[1], Robert Holloway[1]*

[1]AdventHealth Cancer Institute

Purpose: To establish the bilateral pelvic concordance rate of the sentinel node location and to determine the likelihood of lymph node metastasis in cases of mapping failure.
Materials and methods: A database analysis was performed on 414 patients with clinical stage I endometrial cancer who underwent SLN mapping followed by robotic hysterectomy and completion pelvic (n = 414, 100%) and aortic (n = 186, 44.9%) lymphadenectomy from March 2011 to August 2016. The dataset was analyzed for stage, histology, sites of SLN mapping, and surgico-pathologic findings. The bilateral concordance rate of SLN location, the rate of successful unilateral and bilateral mapping, the false negative rate (FNR), and the rate of non-SLN node metastasis associated with mapping failure were calculated.
Results: Histologies included 355 (85.7%) endometrioid, 39 (9.4%) serous, 15 (3.6%) MMMT, 4 (1.0%) clear cell, and 1 (0.2%) undifferentiated. Final stages included 262 (63.3%) IA, 36 (8.7%) IB, 15 (3.6%) II, 6 (1.4%) IIIA, 68 (16.4%) IIIC1, and 27 (6.5%) IIIC2. In the endometrioid cohort, 212 (59.7%) were grade 1, 111 (31.3%) grade 2, and 32 (9.0%) grade 3. Successful bilateral SLN mapping was achieved in 373/414 (91.1%) of patients and 280 (75.3%) demonstrated mapping to the symmetrical lymphatic group on the contralateral side. The unilateral mapping failure rate was 9.4% (39/414) and bilateral mapping failure was 0.5% (2/414). The mean lymph node count was 3.5 ± 2.6 sentinel, 15.0 ± 9.0 pelvic, and 8.2 ± 6.3 aortic nodes. SLN were identified in 493 (61.9%) external, 265 (33.3%) obturator, 23 (2.9%) internal iliac, pre-sacral, or perirectal, 13 (1.6%) common iliac, and 2 (0.3%) aortic locations. Lymph node metastasis occurred in 95/414 (22.9%) pelvic and 27/414 (6.5%) aortic nodes. The FNR for endometrioid vs. non-endometrioid histologies were 0.6% (2/355) and 5.1% (3/59), respectively. Of the 42 patients with at least unilateral mapping failure, 10 (23.8%) had lymph node metastasis identified on completion lymphadenectomy which was equal to the successfully mapped cases ($p = 0.99$). However, completion lymphadenectomy for mapping failure was more likely to identify macrometastases than in the SLNs (80 vs. 36%, $p = 0.01$).
Conclusion: The contralateral SLN location concordance rate was 75%. The vast majority of SLNs were along the medial external iliac or obturator locations. There was a nearly 25% rate of positive lymph nodes associated with SLN mapping failure, similar to the overall node-positive rate. The detection of pelvic node metastasis with SLN mapping failure was largely populated with macrometastases and confirms the necessity of completion lymphadenectomy with mapping failure.

Poster Presentation #15
Gynaecology

Pain and narcotic use with robotic versus traditional laparoscopic hysterectomy for benign indications

Karen Wierscinski[1], Cynthia Buffington[1], Aileen Caceres[2,], Daniele Fuhrich[2]*

[1]Advent Health Celebration Health, [2]UCF College of Medicine

Purpose: Due to the high incidence of opioid addiction in the US, clinicians are encouraged to reduce patient use of opioids following surgery. Recent reports suggest that the robotic platform may decrease postoperative pain. The purpose of the present study was to compare postoperative pain and analgesic use following total hysterectomy performed robotic (ROB) or via traditional laparoscopy (LAP).
Materials and methods: The study is a retrospective analysis of the surgical records of 149 total hysterectomies performed for benign indications at a community teaching hospital. Among the surgeries, 97 were performed using the robotic platform (da Vinci) and 51 using a traditional laparoscopic approach. Patient ages, body size (BMI), and preoperative co-morbidities were similar between the ROB and LAP patients ($p > 0.05$). Primary study outcomes included maximal pain, pain intensities over 24 h, and use of analgesics (opioids, NSAIDs, acetaminophen, or none). Secondary study outcomes were operative time, estimated blood loss (EBL), intra- and post-operative complications, and length of hospital stay (LOS). Pain was determined using a low to high intensity (0–10) verbal pain scale. Analgesic use was expressed as the percentage (%) of patient who required opioids, non-opioid medications, or no analgesics 24 h postoperatively.
Results: Subjective pain scores over time postoperatively following robotic-assisted and traditional laparoscopic surgery were variable and exhibited no statistical ($p > 0.05$) differences between the surgical approaches. Maximal postoperative pain also did not significantly differ between the ROB and LAP procedures, i.e. 7.0 ± 0.2 and 7.2 ± 0.2, respectively. Nonetheless, significantly fewer ROB versus LAP patients required opioids for pain. A total of 28.8% of ROB patients requested opioids for pain in comparison to 50% of the LAP patients (Chi sq $p < 0.05$). The percentage of patients who requested NSAID for pain was similar between the procedures (31.9% ROB vs. 36.5% LAP). Acetaminophen use was higher for the ROB patients (27.8% ROB, 9.6% LAP), as were the numbers of patients who did not require postoperative analgesics (11.3% ROB, 3.8% LAP). Robotic vs. traditional laparoscopy was associated with a longer operative time (140 vs 80 min, $p < 0.01$) but significantly less intraoperative blood loss (55 vs 107 cc, $p < 0.01$), comparable rates of postoperative complications, and a trend ($p = 0.10$) toward a shorter LOS (34 vs. 47 h).
Conclusion: In a retrospective analysis, the use of the robotic platform for total hysterectomy, as compared to traditional laparoscopy, was found to be reduced by nearly half the number of patients requiring opioids for postoperative pain.

Poster Presentation #16
Gynaecology

Robotic-assisted radical hysterectomy (RRH) for early stage cervical cancer (CC): patterns of recurrence, survival, and the surgeon experience factor

Christine Fitzsimmons[1,], Amanda Stephens[1], Jessica Kennard[1], Madhavi Manyam[1], Julie Pepe[1], Kayla DeCoff[1], Sarfraz Ahmad[1], Nathalie McKenzie[1], James Kendrick, IV[1], Robert Holloway[1]*

[1]AdventHealth Medical Group GYN Oncology

Purpose: The phase III LACC Trial found that minimally invasive radical hysterectomy was inferior to open radical hysterectomy (ORH) with reduced disease-free survival (RFS) (86% v 96.5%) and a higher disease-specific death rate (DSDR) (4.4% v 0.6%). We evaluated our experience with attention to the learning curve and the patterns of recurrence.
Materials and methods: Patients with early stage CC (4/2007–12/2017) who underwent RRH using a uterine manipulator were evaluated. The first 10 learning curve cases per surgeon (Group A) were compared to all subsequent cases (Group B). Inclusion criteria: $\geq$ 1 year follow up, adenocarcinoma or squamous carcinoma, stage IA2 or IB1 using FIGO 2014 guidelines, and pathologic tumor size (TS) of $\leq$ 4 cm.
Results: 144 RRH patients were identified and 90 met inclusion criteria. Exclusions included stage 1A1 without LVSI (n = 13), atypical histology (n = 10), lost to follow up (n = 13), and occult stage 1B2 (n = 18). Baseline characteristics of the cohort included: TS: 1.77 $\pm$ 1.1 cm with TS $\geq$ 2 cm at 47% (n = 42): adenocarcinoma: 44% (n = 40), and squamous cell carcinoma: 56% (n = 50). 40 patients met Group A and 50 Group B criteria. Median follow up was 61 $\pm$ 34.3 months (A = 71.5, B = 52.5). The 5-year RFS was 92% (95 CI $\pm$ 4%) and the DSDR 5.5% (n = 5). There were 7 (7.8%) recurrences with median RFS of 12 $\pm$ 8.3 months. Recurrence in Group A (n = 6, 15%) exceeded Group B (n = 1, 2%), p = 0.025. DSDR was 10% Group A v 2% B (p = 0.184). The 4.5 year RFS was 84.8% (95 CI $\pm$ 7%) in Group A v 98% (95 CI $\pm$ 3%) in Group B. There were no differences in risk factors for recurrence between groups A and B. (TS $\geq$ 2, LN (+), adjuvant therapy (AT), and LVSI $p > 0.05$), except (+) vaginal margin status (A = 10% v B = 0%, p = 0.034). All recurrences had TS $\geq$ 2 cm (median 2.7 $\pm$ 0.7 cm). Of the 42 cases with TS $\geq$ 2 cm, 14 had adenocarcinoma with 36% (n = 5) recurrences compared to 28 squamous with 7% (n = 2) recurrences (p = 0.057). Three recurrences had carcinomatosis with mean RFS and OS of 5.3 $\pm$ 2.3 (95% CI $\pm$ 4.5) and 28.3 $\pm$ 30.9 (95% CI $\pm$ 60) months compared to 17.8 $\pm$ 6.3 (95% CI $\pm$ 13) and 80.6 $\pm$ 48.6 (95% CI $\pm$ 95.2) months for cases with local/pulmonary metastasis (n = 4). RFS with carcinomatosis was less than RFS for local/pulmonary (p = 0.014). When subjected to a multiple logistic regression model, only histology of adenocarcinoma (p = .024) and first 10 experience cases (p = 0.048) were statistically significant with regards to recurrence.
Conclusion: Early stage CC treated with RRH appears to have a unique pattern of recurrence in some cases with carcinomatosis that results in shortened RFS. Recurrences were associated with adenocarcinoma and first 10 cases of surgeon experience. Carcinomatosis may be related to colpotomy technique, requiring a new strategy that isolates the cervical tumor prior to colpotomy.

Poster Presentation #17
Gynaecology

Robotic-assisted laparoscopic splenectomy in recurrent ovarian cancer

Thomas Paterniti[1,], Robert Holloway[2], Sarfraz Ahmad[2]*

[1]Florida State University College of Medicine, [2]Florida Hospital (Advent Health) Gynecologic Oncology

Purpose: To describe clinical outcomes of patients with platinum-sensitive recurrent ovarian cancer who underwent secondary or tertiary cytoreduction with robotic-assisted laparoscopic splenectomy.
Materials and methods: A retrospective chart review was conducted on eight patients who underwent robotic-assisted laparoscopic splenectomy for splenic recurrence of ovarian cancer at a tertiary care center between April 2012 and August 2018. Platinum-doublet chemotherapy was initiated post-operatively. Peri-operative outcomes were assessed along with progression-free survival (PFS) and overall survival (OS).
Results: Eight patients were identified who underwent robotic-assisted laparoscopic splenectomy, seven as part of a secondary and one as part of a tertiary cytoreduction. Patients' mean age was 61 $\pm$ 9 years (range 46–70) and the mean body mass index was 31.5 $\pm$ 4.8 kg/m^2 (range 23.8–40.1). Seven of the patients were FIGO stage III at the time of diagnosis, while one was stage IV. Seven of the primary tumors had a serous histology, while one was a granulosa cell tumor. Each patient received a pre-operative PET/CT scan, which showed disease limited to the spleen in five patients, while three had evidence of omental or diaphragmatic metastases. Three patients had additional procedures performed at the time of splenectomy (colectomy, cholecystectomy, ventral hernia repair). Mean operative time was 208 $\pm$ 96 min (range 123–420), estimated blood loss (EBL) was 188 $\pm$ 198 mL (range 0–500). Resection to no visible disease was achieved in seven of eight patients. One patient suffered a pleural effusion, however there were no transfusions, returns to the operating room, abscesses, or pseudocysts. Mean length of hospital stay was 2 $\pm$ 1 days (range 1–4). Complete tumor resection was achieved in seven of eight patients, and all patients were cleared to begin adjuvant chemotherapy within 21 days post-operatively. After a mean follow-up of 48 $\pm$ 17 months (range 31–85), three patients remain disease free, while five have experienced a recurrence of disease (two deaths, three alive with disease). Mean PFS was 29 $\pm$ 26 months (range 12–85), and the mean OS was 48 $\pm$ 17 months (range 31–85).
Conclusion: Robotic-assisted laparoscopic splenectomy is feasible with low morbidity in selected patients with splenic recurrence of platinum-sensitive ovarian cancer.

Poster Presentation #18
Urology

Comparison of outcomes in salvage robotic-assisted laparoscopic prostatectomy for post-primary radiation vs. ablation therapies

Fikret Onol[1,], Seetharam Bhat[1], Travis Rogers[1], Marcio Moschovas[1], Hariharan Ganapathi[1], Shannon Roof[1], Vipul Patel[1]*

[1]AdventHealth Global Robotics Institute

Purpose: Salvage robotic-assisted laparoscopic prostatectomy (sRALP) represents a viable option for local prostate cancer failure

after primary non-surgical therapies. Outcomes of sRALP in post-primary radiation (RAD) vs. ablation (ABL) therapies were not thoroughly investigated. We aimed to compare clinical and oncological outcomes in these patients by examining our contemporary sRALP series.

Materials and Methods: We retrospectively reviewed our IRB-approved database including > 11.500 RALP cases. Between 2008 and 2018, 126 patients underwent sRALP by a single surgeon (VP). Of these, 94 (74.6%) and 32 (25.4%) patients had underwent RAD and ABL, respectively; including external beam radiation (EBRT, n = 39), intensity modulated radiation (n = 15), proton beam (n = 3), brachytherapy (n = 23), combined EBRT and brachytherapy (n = 14), HIFU (n = 9), cryoablation (n = 20), and other (electroporation/microwave, n = 4) therapies. We analyzed the differences in clinical and oncological outcomes between RAD and ABL groups by using t-test, Chi square and Fisher's exact tests. Kaplan–Meier curves and regression models were used to identify survival estimations and their predictors.

Results: Preoperative demographic characteristics were similar between the 2 groups, except for sexual function. Before surgery, 46.9% of patients in the ABL group were potent as compared to 22.6% in the RAD group (p = 0.013). Operative times, perioperative complication rates, and hospital stay were not significantly different between the two groups. Postoperative catheter duration was shorter in the ABL group (mean 10 vs. 16 days, p = 0.018). At final pathology, ABL group had higher non-organ confined disease (71% vs. 50%, p = 0.042) and positive surgical margin rates (43.8% vs. 17%, p = 0.004) as compared to RAD group. However, estimated 5-year biochemical recurrence (BCR)-free survival rates were similar (59% vs. 56%, p = 0.761). In multivariate analysis, only Gleason score ≥ 8 at pathology was predictive for BCR (OR 4.013, CI 1.549–10.395).

Postoperative full (no pads/day) continence probability was significantly higher in the ABL compared to the RAD group (Fig. 1), and was achieved in 77.3% vs. 39.2% of patients, respectively (p = 0.002). Social (0–1 pad/day) continence rates were 87.5% and 51.3%, respectively (p = 0.002). Multivariate analyses showed ABL as primary treatment (OR 2.644, CI 1.066–6.559) and nerve sparing (OR 2.415, CI 0.99–5.891) as predictors of postoperative continence. Potency recovery was not significantly different between RAD and ABL groups (9.9% vs. 26.3%, p = 0.12). Although there was a trend towards higher potency probability in the ABL group (Fig. 2), the difference did not reach statistical significance (p = 0.179). No independent predictors were identified for postoperative potency.

Conclusion: All salvage robotic-assisted prostatectomies are not the same. At presentation, patients who had ABL therapies as primary treatment have better erectile function than patients who had RAD. Radiation is associated with inferior functional outcomes after sRALP. Ablation therapies are associated with higher non-organ confined disease and PSM rates without a significant difference in short-term BCR-free survival.

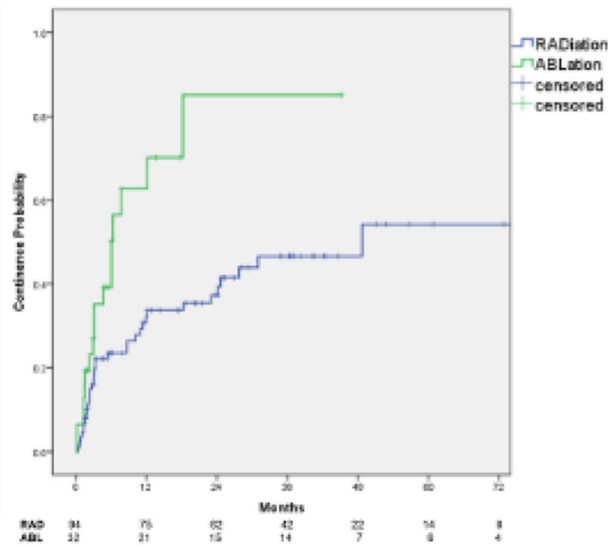


Figure 1

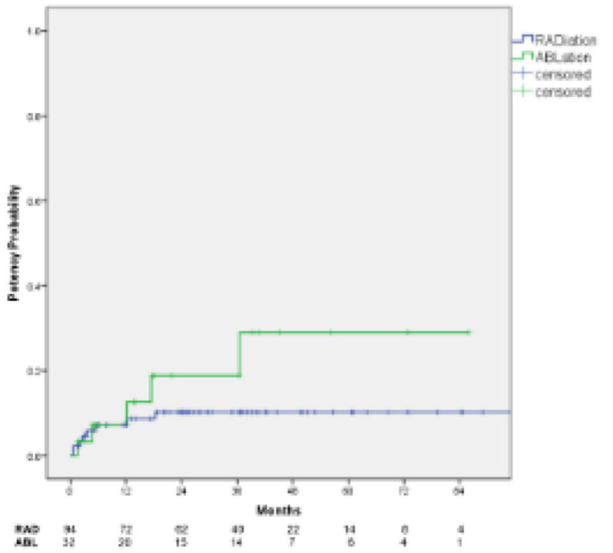


Figure 2

Poster Presentation #19
Urology

An analysis of the efficacy and effectiveness of robotically applied versus assistant applied clips in robotic assisted radical prostatectomy (RARP)

David Bouchier-Hayes[1,*]

[1]Galway Clinic

Purpose: Although robotic assisted surgery offers a multitude of advantages to the surgeon, there are unique challenges not found in other types of surgery. One of these is that the application of

haemostatic self locking clips is usually performed by the bed side assistant, who have to apply the clips independent of the console surgeon. This can be challenging to the bed-side assistant who may have limited laparoscopic experience. This may be especially more pronounced in training institutions that have a constant turnover of surgical trainees as assistants. Added to this, the lack of articulation of the assistant's clip applicator instrument can lead to difficulty in accurate clip application, and the dropping and loss of clips in the abdominal cavity. This leads to surgeon frustration, potential inaccuracy in surgical technique, increased operating times and also has the potential for inefficient clip usage with a subsequent financial consequence, and the potential for dropped clips becoming lost in the abdominal cavity. The daVinci Xi® system (Intuitive Surgical®, USA) allows application of clips under direct control of the console surgeon. This study aims to compare the efficacy, efficiency and cost-effectiveness of both techniques in RARP.

Materials and methods: Retrospective review of twenty operative videos of RARP cases performed by a single surgeon (DBH) assisted by one of two experienced robotic fellows were divided into two groups; Group 1 being robotically applied clips and Group 2 being manually applied clips. Unique redistribution of operating instruments was utilized to maximize robotic clip application efficiency. The assistant is on the left side, with a Maryland forceps in arm 1, camera in arm 2, scissors in arm 3 and Prograsp forceps in arm 4. For robotically applied clips, the Prograsp is removed from arm 4, and scissors is replaced into arm 4. The robotic clip applicator is then inserted and removed via arm 3, as this is a much safer route to facilitate multiple re-entries for the robotic clip applicator, whilst leaving the scissors in situ to allow for efficient division of tissue with the scissors. Review of all videos analysed number of successfully applied or dropped clips, and time for application of all clips. Costs were analysed in Euro. Statistical analysis was performed using student-t test.

Results: Mean number of clips used was 14 in Group 1 versus 10.9 in Group 2, $p < 0.05$. Mean number of clips dropped was 0.8/5.3% versus 2.3/21.9%, $p < 0.05$. Mean time for application was 16 min 53 s versus 20 min 54 s, $p > 0.1$. Average time per effective clip application was 73.2 s versus 119.6 s, $p < 0.05$. Cost analysis shows that an average of €686 was spent versus €490.50, $p < 0.05$.

Conclusion: Effective clip application is more efficient and quicker when performed robotically. The gross cost of robotic clip application is higher robotically, due mainly to the greater number of clips used. This data has led to an immediate change in surgical practice, further increasing speed of application and reducing costs. Ongoing analysis of the data from this new scenario is being undertaken.

Poster Presentation #20
Urology

The effect of USPSTF recommendation on post-operative outcomes in robot-assisted laparoscopic prostatectomy (RALP) based on analysis of a single surgeon series

Seetharam Bhat[1,], Marcio Moschovas[1], Fikret Onol[1], Travis Rogers[1], Cathy Jenson[1], Vipul Patel[1]*

[1]Global Robotics Institute

Purpose: We evaluated the possible influence of these changes on surgical technique, trifecta and pentafecta outcomes following RALP.

Materials and methods: We retrospectively analyzed all men that underwent RALP between 2002 to 2018 with minimum 6 months followup from a prospectively collected IRB approved database. Patients were sub grouped based on degree of nerve sparing. Subgroups were analyzed for differences in clinical parameters, trifecta and pentafecta rates before and after USPSTF's recommendation by using Chi square test.

Results: 7268 patients were available for analysis. Mean preoperative PSA increased from 6.0 to 7.41 ng/ml between the two subgroups. After the USPSTF recommendation, ≥ pT3 disease undergoing Partial Nerve Sparing (PNS) and full nerve sparing (FNS) increased by 16% and 6%. respectively. In patients with FNS, potency rate decreased from 79.7 to 73.7% without significant change in trifecta rates before and after 2012 (70.6% vs. 67.7%, p = 0.074, Table 1). There was a small but statistically significant decrease in pentafecta rates from 61.8 to 57.5% (p = 0.012, Table 1). In patients with PNS, PSM, potency and continence rates decreased significantly after USPSFT's recommendation (Table 1). This resulted in a significant decrease in trifecta rate from 46.8 to 33%, and in pentafecta rate from 40% to 26.2%.

Conclusion: After USPSTF recommendation, our practice has seen a trend towards operating more aggressive disease. In patients undergoing FNS, this only marginally affected the surgical outcomes. However, in patient with PNS this was associated with a statistically significant decrease in our trifecta and pentafecta rates despite increasing surgical experience.

Table No 1: - Comparison of patient outcomes with respect to nerve sparing before and after 2012

Parameters	till Dec 2012 (no 381)		From January 2013 (no=351)		P value	
	PNS	FNS	PNS	FNS	PNS	FNS
PSM	76(5(16)	21/(13.5)	142(21.3)	19(13.5)	<.001	0.147
Potency	963(38.8)	1587(79.7)	834(40.7)	1031(73.7)	<.001	<.001
Continence	1541(94)	1903(95.8)	1754(85.6)	1316(94)	<.001	0.054
BCR	240(7.7)	154 (7.7)	216(10.2)	56(4)	<.001	<.001
PSA persistence	87(5.3)	20(1)	135(6.6)	17(1)		
Trifecta	760(46.8)	1405(70.6)	676(33)	947(67.7)	<.001	0.074
Pentafecta	656(40)	1231(61.8)	538(26.2)	805(57.5)	<.001	0.012
Total	1638	1991	2050	1399		

Table No 1: - Comparison of patient outcomes with respect to nerve sparing before and after 2012 After

Poster Presentation #21
Urology

Can we predict who will need lymphocele drainage following robot assisted laparoscopic prostatectomy (RALP)?

Seetharam Bhat[1,], Marcio Moschovas[1], Fikret Onol[1], Travis Rogers[1], Cathy Jenson[1], Vipul Patel[1]*

[1]Global Robotics Institute

Purpose: The aim of the study was to identify factors that are significantly associated with drainage of lymphocele.

Materials and methods: We retrospectively analysed all men that underwent RALP between April 2010 to November 2018 form prospectively collected IRB approved database. All patients who developed lymphoceles were grouped into two groups for comparison, the ones who were drained and those not drained. Chi square test was used to perform univariate analysis for categorical variables and student t test for continuous variables. Odds ratio calculated using logistic multiple regression analysis. A p value of less than 0.05 was considered significant.

Results: The size of the lymphocele, the number of nodes retrieved and Body Mass Index were significant factors that led to the drainage of lymphocele. The patients with size of the lymphocele larger than 10 cm had a odds ratio of 47.5, for the ones between 5 and 10 cm had an odds ratio of 10.7. The odds ratio of drainage in patients with BMI

above 30 was 2.1. The odds of drainage when more than 10 nodes were taken was 8.8 (Table No: 1).

Conclusion: After PLND ultrasound could be effective in early identification of patients who could potentially need drainage. Prophylactic drainage should be offered to patients who have more than 10 lymph nodes removed with a lymphocele size more than 10 cm in size and BMI above 30.

Independent factors	P Value	Odds ratio of drainage	95% C.I. for Odds ratio	
			Lower	Upper
Size of the lymphocele				
Less than 5 cm	.000			
5-10 cm	.000	10.780	4.289	27.097
More than 10 cm	.000	47.530	10.626	212.592
BMI– more than 30	.019	2.132	1.135	4.005
Dyslipidaemia- yes	.282	.711	.383	1.323
D'Amico class- 1	.099			
D'Amico class- 2	.229	.475	.141	1.597
D'Amico class - 3	.049	.276	.076	.995
Perineural invasion	.408	.606	.185	1.987
Number of nodes taken				
0-3	.003			
4-6	.007	3.098	1.361	7.052
7-9	.009	3.490	1.358	8.964
More than 10	.001	8.803	2.547	30.424

Table No 1: - Multiple regression analysis of significant factors with lymphocele drainage

Poster Presentation #22
Urology

Can we predict patients who will have optimal potency outcome post robotic-assisted laparoscopic radical prostatectomy (RALP)?

Seetharam Bhat[1,], Travis Rogers[1], Marcio Moschovas[1], Fikret Onol[1], Cathy Jenson[1], Vipul Patel[1]*

[1]Global Robotics Institute

Purpose: Potency rates influence the trifecta and pentafecta outcomes following RALP. We aimed at determining the group of patients who will have optimal potency outcomes following RALP.

Materials and methods: We retrospectively analysed all men that underwent RALP between January 2008 to December 2016 with minimum 6 months and a maximum of 96 months follow up from a prospective database for outcome. Data of 6132 patients were available for analysis excluding salvage radical prostatectomy. A subgroup analysis using Chi-square test on 5766 patients with 12 months follow up based on age, preoperative SHIM and the nerve sparing in them with potency was performed.

Results: The median age of our patients was 62 years. Our series had predominantly low to intermediate risk patient with mean PSA of 6.39 ng/ml. 46.7% of patients had erectile dysfunction (ED). (Table no: 1). Overall potency rates were 63.1%, trifecta rate was 55.5% and pentafecta rate was 46.86%. In the multivariate logistic regression analysis, age, pre-operative SHIM score, Charlson comorbidity index, D'Amico risk category and nerve sparing status significantly predicted the trifecta and pentafecta outcomes. There was a significant difference in potency outcomes in patients of same preoperative characteristics undergoing different levels of nerve sparing namely non-nerve, partial nerve and full nerve sparing technique. Patients less than 55 years with no pre-operative ED (SHIM > 22) and full nerve sparing had good potency post-operatively Irrespective of age patients with non-nerve sparing technique had poor potency rates.

Conclusion: Potency rates are excellent in young patients who undergo full nerve sparing and depends on age, preoperative SHIM and amount of nerves spared. This should be kept in mind to predict realistic pentafecta outcomes while counselling patients for surgery preoperatively.

Table No 1: - Potency outcomes at 12 months on patients grouped on age, preoperative SHIM and Nerve sparing.

Sub groups	< 55 years Potency Y/N (%)		P value	55-65 years Potency Y/N (%)		P value	>65 years Potency Y/N (%)		P value
No ED with full nerve sparing	580 (95)	32 (5)		682 (90.8)	74 (9.2)		220(79)	59(21)	
No ED with partial nerve sparing	303 (90.4)	32 (9.6)	0.003	480 (80)	119 (20)	0.000	262(61)	169(39)	0.000
No ED with non-nerve sparing	5 (71.4)	2 (28.6)		7 (26.9)	19 (73)		10(24.4)	31 (75.6)	
Mild ED with full nerve sparing	131(86.2)	21(13.8)		290 (77.5)	84 (22.5)		133(68)	63(32.1)	
Mild ED with partial nerve sparing	94 (82.5)	20(17.5)	0.048	237(72)	92 (28)	0.000	233(59)	162(41)	0.000
Mild ED with non-nerve sparing	0	1(100)		11 (40.7)	16 (59.3)		7(25.9)	20(74.1)	
ED with full nerve sparing	49 (81.7)	11(18.3)		133(76.4)	41(23.6)		81(64.8)	44(35.2)	
ED with partial nerve sparing	48 (72.7)	18(27.3)	0.030	165(67.6)	79(32.4)	0.000	202 (60)	134(40)	0.008
ED with non-nerve sparing	1 (25)	3 (75)		9(45)	11 (55)		13(36)	23(64)	
Total	1211(89.6)	140(10)		2014 (79)	535(21)		1161 (62)	705 (37.8)	
	1351			2549			1866		

Potency outcomes at 12 months on patients grouped on age, preoperative SHIM and Nerve sparing.

Poster Presentation #23
Urology

Long term outcomes of robotic assisted radical prostatectomy (RALP) for cancer prostate in a large single surgeon series

Seetharam Bhat[1,], Fikret Onol[1], Marcio Moschovas[1], Travis Rogers[1], Cathy Jenson[1], Vipul Patel[1]*

[1]Global robotics institute

Purpose: Though short term outcomes of RALP is well established the long term outcomes in the literature is scarce. We evaluated the long-term outcomes following RALP in a single surgeon series with a follow up of up to 120 months.

Materials and Methods: We retrospectively analyzed all men that underwent RALP between 2002 to 2018 with minimum 6 months to 120 months with a mean of 49 months from a prospectively collected IRB approved prostate cancer database. 7268 patients were available for analysis we analyzed the continence, potency, PSA recurrence, positive surgical margins and post-operative complications in all men that underwent RALP. A logistic regression analysis was used to determine the factors predicting trifecta, pentafecta and potency outcomes for analysis excluding patients less than 6 months follow up and ones that were lost to follow up. Continence was defined as no pad usage. Potency was defined as able to penetrate and satisfactorily complete the intercourse with or without PDE5 inhibitor usage. Trifecta is defined as combination of continence, potency and absence of biochemical recurrence. Pentafecta outcomes is defined as trifecta along with absence of positive surgical margins and absence of post operative complications.

Results: Median age was 62 years and BMI 28.3. Overall 42.5% had D'Amico low-risk disease and another 42% had intermediate risk prostate cancer. The remaining 15.5% had high risk disease. Preoperatively, only 47.4% had no erectile dysfunction (ED), 22.5% had mild ED and 30% had moderate to severe ED. Bilateral full nerve sparing (FNS) RALP was performed on 46.6%, 50.7% had partial nerve sparing (PNS) and remaining 2.6% had non-nerve

sparing(NNS) RALP. The post operative complication rates was 8.9% and positive surgical margin (PSM) was 16%. Overall 96.2% patients achieved continence. Mean time to continence was 88.5%. Mean time to potency was 185.4 days. Irrespective of age, pre-operative SHIM score and NS status 61.4% men were potent. In post-operative period 3.7% had PSA persistence and 9.6% had PSA recurrence. Overall Trifecta rate and pentafecta rates were 53.8% and 45.7% respectively. In the multivariate logistic regression analysis, age, pre-operative SHIM score, Charlson comorbidity index, D'Amico risk category and nerve sparing status predicted the trifecta.

Conclusion: RALP has constantly evolved technique allowing more nerve preservation and consistently proven to be safe and efficacious over a long follow up with significantly maintaining the quality of life.

Table 1: - Outcomes after RALP (6 – 120 months follow up)

Parameters	All patients (n = 7268)
Total operative time in minutes (mean, SD)	122.5 (25.6)
Total console time in minutes (mean, SD)	76.9 (10.7)
Estimated blood loss in ml (mean, SD)	118.23 (84.7)
Blood transfusion rate (n, %)	61 (0.8%)
Nerve Sparing	
Bilateral full Nerve Sparing	3390 (46.6%)
Partial nerve sparing	3688(50.7%)
Non-nerve sparing	190 (2.6%)
Intra-operative complications	8 (0.1%)
Post-operative Complications (Overall)	645(8.9%)
Minor Grade	537 (7.4%)
Major Grade	108(1.5%)
Hospital Stay in days (mean, SD)	1.17 (0.8)
Less than 24 hours	6629(91.2%)
Two Days	429 (5.2%)
Three or more days	210 (3.6%)
Pathological stage	
Organ confined (≤ pT2c)	5063 /7268 (69.6%)
Extra prostatic extension (pT3a)	1584/7268 (21.7%)
Seminal vesicle invasion (pT3b)	528 /7268(7.2%)
Adjacent organ involved (pT4)	93 /7268 (1.3%)
Pathological Node Positive	126 (1.7%)
Positive Surgical Margin	1172 (16%)
In D'Amico, low risk	305/2901 (10.5%)
Intermediate risk	543/3162(17%)
High risk	324/1203 (27%)
Positive Surgical Margin	1172 (16. %)
In organ confined disease(pT2)	460 /5063 (9%)
In Extra-prostatic extension (pT3a)	403 / 1584(25.5%)
In seminal vesicle invasion (pT3b)	219 /528(41.4%)
(pT4)	90/93 (96.7%)
Follow up in months (Mean, Range)	49.1 (6-120)
Continence	6991 (96.2%)
Days to continence (mean)	88.5
Potency achieved (Irrespective of Age, Pre-op potency and NS)	4463 (61.4%)
Days to potency (mean)	185.4 days
PSA persistence	271 (3.7%)
PSA recurrence	700 (9.6%)
Days to BCR (mean)	887.32
Trifecta achieved	3908 (53.8%)
Pentafecta achieved	3325(45.7%)

Table 1: - Outcomes after RALP (6 – 120 months follow up) Follow

Poster Presentation #24
Urology

Effect of race on the risk of metastases and mortality in patients experiencing early biochemical recurrence following robotic radical prostatectomy

Shaheen Alanee[1,], Akshay Sood[1], Jacob Keeley[1], Mustafa Deebajah[1], James Peabody[1], Mani Menon[1]*

[1]Henry Ford Health System

Purpose: Racial disparity in prostate cancer (CaP) mortality is well studied. It has been suggested that a major proportion of this disparity is due to differential CaP incidence (~ 75%). However, disparity in care and biological differences in response to treatment do exist. In this study, we sought to assess whether there exist racial differences in disease course in patients experiencing early biochemical recurrence (BCR) following radical prostatectomy.

Materials and methods: Patients undergoing robotic radical prostatectomy (RRP) at our institution between the years 2001 and 2014 were included. Early BCR was defined as PSA > 0.2 ng/ml at two occasions within 2 years of surgery. Our final cohort consisted of RRP patients with early BCR. Only patients that had completed at least 2 years of follow-up were included. Inverse probability of treatment weighting (IPTW) was utilized to balance baseline characteristics among the Whites and Blacks to evaluate the effect of race on metastases and overall mortality.

Results: 339 patients (Blacks = 99, Whites = 240) had early BCR. The IPTW sample was well matched with standardized mean difference among the cohorts ~ 10%. The median age was 62 and 61 years in Whites and Blacks, respectively ($p > 0.05$). The median PSA was 6.6 and 6.9 ng/ml and most patients had GS 8 and ≥ pT2c disease with proportions being 47.6% and 49.4%, and 96.4% and 95.6% in Whites and Blacks, respectively ($p > 0.05$ for all three).Similarly, Whites and Blacks were well matched with respect to node involvement, surgical margins, nerve sparing and comorbidities; 8.8% and 6.5% of Whites and Blacks, respectively received adjuvant treatment ($p > 0.05$). The median follow-up was 72 and 68 months for Whites and Blacks, respectively. There were no differences in metastatic progression (log-rank p = 0.853) and overall survival (log-rank p = 0.775) among Whites and Blacks; the 5-year metastases free and overall survival rates were 84.5% and 89.6%, and 93.1% and 87.2%, respectively, for Whites and Blacks.

Conclusion: Blacks and Whites experiencing early BCR had similar risks of metastasis and death. Racial factors may not exert significant influence on outcomes once definitive therapy for CaP has been delivered. Larger studies are needed to confirm these findings.

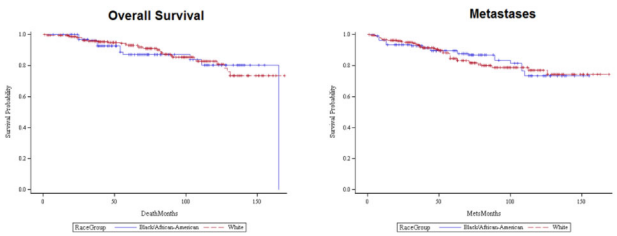


FIGURE 1

Poster Presentation #25
Urology

The water study clinical results—a phase III blinded randomized trial of aquablation vs. TURP with blinded outcome assessment for moderate-to-severe LUTS in men with BPH

Ali Kasraeian[1,]*

[1]Kasraeian Urology

Purpose: Prostate resection of patients with lower urinary tract symptoms (LUTS) remains the gold standard for surgical treatment of benign prostatic hyperplasia (BPH). Early reports of Aquablation (robotic, high-velocity waterjet prostate resection) for LUTS due to BPH suggest efficacy similar to that of TURP. We aimed to compare the safety and efficacy of prostate ablation using Aquablation (A) vs

TURP (T). Ethics Committee or Institutional Review Board approvals were obtained at each site.

Materials and methods: In this randomized, blinded, multi-center phase III trial, men with moderate-to-severe LUTS related to BPH were assigned to TURP or Aquablation. The trial has a co-primary safety and efficacy endpoint designed to show non-inferiority regarding efficacy. The primary safety endpoint was the occurrence of persistent CD Grade 1 or Grade 2 or higher operative complications at 3 months. The primary efficacy endpoint was the reduction in IPSS score at 6 months. Here we plan to report 12 month data.

Results: The mean baseline IPSS score, demographic profile, and mean prostate volume (T: 52 mL vs. A: 54 mL, $p = 0.31$) were similar in both arms. Mean operative time was equivalent between the two groups (T: 35.5 vs. A: 32.8 min, $p = 0.28$), but mean resection time was significantly lower in the Aquablation group (27 vs. 4 min, $p < .0001$).

The primary safety endpoint at 3 months occurred in 26% of Aquablation subjects and 42% of TURP subjects demonstrating superiority of Aquablation versus TURP. The difference in primary endpoint safety rate was driven primarily by retrograde ejaculation. The overall rate of persistent anejaculation in sexually active men in the first 6 months occurred in 10% of Aquablation subjects and 38% of TURP subjects demonstrating superiority of Aquablation versus TURP.

Mean IPSS scores decreased from 22.9 at baseline to 5.9 at 6 months in the Aquablation group and from 22.2 at baseline to 6.8 in the TURP group. The IPSS change score at month 6 was 1.8 points larger after Aquablation, therefore, demonstrating non-inferiority for the primary efficacy endpoint. The IPSS change scores for each arm at 12 months was 15.1 points ($p = 0.9940$). The change in Q_{max} at 12 months was 10.3 for Aquablation and 10.6 for TURP (p = ns).

Conclusion: In patients with moderate-to-severe LUTS due to BPH, surgical prostate resection using a robotically guided waterjet showed non-inferior symptom relief compared to TURP, but with a lower risk of sexual dysfunction. The change in IPSS and Qmax at 12 months show similar durability for both Aquablation and TURP. The 2 year follow up will be completed in May 2019 and those results will be available for 2019 Congress.

Poster Presentation #26
Urology

Comparative effectiveness of RARP versus RT for localized/locally advanced prostate cancer in elderly men: a national wide observational study

Young-Hwii Ko[1,*]

[1]Yeoungnam University

Purpose: In spite of increasing number of evidence supporting the oncologic efficacy of RARP in controlling locally advanced prostate cancer, little is known about the role of surgery especially robotic one in elderly patient who have limited life expectancy within 10 years. Considering contemporary average life span in Korean male of 79.7 years, we investigated comparative effectiveness of RARP versus radiation (RT) in men older than 70 years in localized and locally advanced disease.

Materials and Methods: Among the newly registered prostate cancer patient in each year between 2006 to 2016 using the data from National Health Insurance Sharing Service (NHISS), elderly men ($\geq$ 70 years) who were treated with RARP or RT were selectively enrolled. Patients with more than 6 months of androgen deprivation therapy (ADT) before RT, and direct therapy on metastatic lesions were excluded, as well as all local control performed after initial chemotherapy. The primary end point of this study was overall survival regardless of cause of death, which was not described accurately in current version of NHISS.

Results: Among 139,682 newly coded prostate cancer patients during study period, 13,952 elderly patients had RARP (N = 7535) or RT (N = 6417). The patient with RARP was younger than that for RT (73.81 ± 3.58 vs. 75.05 ± 3.83 yrs, $p < .001$). The death rate adjusted for age, income, residence area, and co-morbidities including DM, hypertension and dyslipidemia which potentially effect on mortality was significantly lower in RARP than RT patients (HR = .767, 95% CI .072–.818, $p < .0001$). From the age of 75 yrs, more patients underwent RT (N = 650) rather than RARP (N = 643). Patients older than this cut-off age, 5717 men had RT (N = 3239) or RARP (N = 2478). The adjusted death rate for this particular patients was similar (HR = .98, 95% CI .897–1.07, p = .649).

Conclusion: With limitation of population based observational series provided by medical insurance information which did not allow analysis on the aggressiveness of specific tumor, RARP performed in elderly patients seems to be a safe therapeutic option replacing RT which had long been recommend for this particular age group of patients, providing non-inferior for older than 75 yrs or superior survival rate for relatively younger counter parts.

Poster Presentation #27
Urology

Dehydrated human amnion/chorion membrane accelerates the return to continence and potency recovery after a nerve-sparing robotic-assisted radical prostatectomy

Alexander Govorov[1,*], *Konstantin Kolontarev*[1], *Vladimir Diakov*[1], *Pavel Rainer*[1], *Dmitry Pushkar*[1]

[1]MSMSU

Purpose: Several reports described the use of dehydrated human amnion/chorion membrane (dHACM) allograft wrapped around the neurovascular bundles (NVB) during a robotic-assisted radical prostatectomy (RARP) (Patel et al. 2015; Ogaya-Pinies et al. 2018). The aim of our study was to determine if the use of dHACM accelerates the return to urinary continence (UC) and potency after a nerve-sparing RARP in a large group of low-risk prostate cancer (PCa) patients with a minimum 12 months follow-up.

Materials and methods: From 2015 to 2017 1274 patients who were pre-operatively potent (Sexual Health Inventory for Men (SHIM) score $\geq$ 20) and continent underwent RARP with full nerve sparing. Of these, 91 had had bilateral placement of dHACM graft around NVBs. We have analyzed post-RARP outcomes between propensity-matched graft and no-graft groups, including time to return to UC and potency. There was no significant difference between the patients' pre-surgical characteristics in two groups. Potency was defined as the ability to achieve and maintain erection firm enough for sexual intercourse (with the use of daily tadalafil 5 mg). UC was defined as the use of no pads.

Results: At 1, 3, 6 and 9 months the UC and potency recovery rates were superior for dHACM group vs no-dHACM. There was no significant difference at 12 months follow-up. Mean time to UC was enhanced in dHACM (1.41 mo) vs no-dHACM (1.94 mo; $p = 0.02$). Mean time to potency recovery was lower in dHACM (2.1 mo) versus no-dHACM (4.42 mo; $p < 0.01$) group. The analysis of functional outcomes depending on younger versus older patients' age is ongoing. The presence of positive surgical margins (12.1% vs 12.9%,

p = 0.81), extraprostatic extension (31.9% vs 31%, p = 0.88) and the risk of biochemical recurrence at 12 months (4.4% vs 5%, p = 0.85) did not differ between dHACM and no-dHACM groups, although the follow-up was short for "oncological" evaluation. The non-randomized patient inclusion and single-center experience are limitations of the study.

Conclusion: The use of dehydrated human amnion/chorion membrane allograft wrapped bilaterally around neurovascular bundles accelerates the return of urinary continence and potency recovery in low-risk PCa patients following nerve-sparing RARP when compared to a similar control group without the use of the allograft.

Oncological results of surgery are not compromised with the use of the membrane providing growth and neurotrophic factors, although longer follow-up is needed—especially in pT3 and high-grade prostate cancer patients.

Poster Presentation #28
Urology

Da Vinci extended salvage lymphadenectomy in patients with prostate cancer recurrence

Konstantin Kolontarev[1], Alexander Govorov[1,], Dmitry Pushkar[1]*

[1]MSMSU

Purpose: Biochemical relapse (BR) after primary radical prostatectomy may occur in up to 40% of cases. Salvage lymphadenectomy has been proposed in patients with "node-only" driven BR following definitive treatment of primary prostate cancer (PCa). We present our initial series of 10 consecutive patients undergoing extended robotic salvage pelvic lymph node dissection (eRSPLND) for "node-only" recurrent PCa.

Materials and methods: It was prospective study including patients presented with biochemical relapse after primary radical prostatectomy at median 3.6 years prior. Clinical work-up which was done including MRI (chest/abdomen/pelvis) and bone scan which did not reveal any abnormalities. All patients underwent ^{11}Choline PET/CT, which identified "node-only" metastases.

Results: Median operative time was 73.4 min, blood loss 100 cc and hospital stay 2 days. No patient had intra-operative complications, open conversion or blood transfusion. Clavien II grade complications occurred in 1 patient (10%) managed conservatively. On histopathology, median number of total and positive nodes per patient were 15 and 6, respectively; overall, in our 10 patients, of 157 total excised nodes, 38.8% were positive. Overall median (range) PSA preoperation was 3.5 (1.6–3.7) ng/ml. At 3 months post-operatively, median (range) PSA was 1.1 (0.2–3.4) ng/ml. This reflects an overall median PSA decrease of 31.4%. In no patient did the post-eRSPLND PSA reach zero.

Conclusion: Extended robotic salvage pelvic lymphadenectomy (eRSPLND) allows majority of patients to postpone hormonal treatment that can theoretically decrease the cost of the treatment. ^{11}Choline PET/CT identifies patients appropriate for eRSPLND. Longer follow-up is necessary to assess oncologic outcomes.

Poster Presentation #29
Urology

Cost analysis of the treatment for localized prostate cancer, a comparison between robot-assisted radical prostatectomy, brachytherapy and stereotactic body radiotherapy in Japanese referral hospital

Masaru Ishida[1,,2], Shuji Chiba[3], Shotaro Watanabe[1,4], Yuichiro Konnai[1], Kazunori Shojo[1], Hiroaki Kobayashi[1], Yasumasa Miyazaki[1], Chikara Uchida[3], Michio Kosugi[1]*

[1]Department of Urology, Saiseikai Yokohamashi Tobu Hospital, [2]Robotic Surgery Center, Saiseikai Yokohamashi Tobu Hospital, [3]Department of Administration, Saiseikai Yokohamashi Tobu Hospital, [4]Department of Urology, Toho University Ohashi Medical Center

Purpose: da Vinci surgical system (dVSS) has innovative core technologies such as 3-dimensional vision, EndoWrist instruments with 7 degrees of freedoms and its intuitive interface. In 2000 the FDA approved the dVSS and then it has spread worldwide. In Japan, however, dVSS had not been approved until 2009 and robotic surgery did not become common even after the approval. Robot-assisted radical prostatectomy (RARP) is rapidly increasing eventually in Japan after the public reimbursement for this procedure in 2012. Despite its advantages in improvement of surgical quality, the high cost of not only the system but the medical expense is one of the main disadvantages. The aim of this study is to analyze and compare the cost of treatments for localized prostate cancer under the reimbursement system in Japan.

Materials and methods: The patients who received androgen deprivation therapy alone or chose active surveillance were excluded from this study. A total of 165 patients were treated for localized prostate cancer at our hospital during 2018. The treatment was RARP in 100 patients (60.6%), brachytherapy (BT) in 35 patients (21.2%) and stereotactic body brachytherapy (SBRT) in 30 patients (18.2%). The treatment costs for all of 165 patients were reimbursed by Japanese national healthcare insurance and we analyzed the total costs for the RARP, BT and SBRT including expenses of hospitalization and surgery or radiation treatments. We calculated at a rate of Japanese 110 yen per U.S. dollar.

Results: The average cost was $13,778 in RARP, of which costs related to surgery was $8661 and related to hospitalization was $5117. The average cost was $9727 in BT, of which costs related to seed implantation was $7506 and related to hospitalization was $2221. The average cost was $8623 in SBRT, of which costs related to related to irradiation was $5909 and hospitalization and gold marker implantation was $2714.

Conclusion: The cost for RARP is higher than BT or SBRT. Citizens in Japan can apply for "High-cost Medical Expense Benefit" which allows them to pay a pre-fixed ceiling amount whatever the treatment, therefore they do not need to concern so much about the total cost of their treatment. The good part about it is that the system eliminates financial constraints from patients when they chose their treatment, but the bad part is that it increases the financial burden of the Japanese government. There is a possibility that the reimbursement for RARP will decrease and hospital income will also decrease. It is anticipated that next-generation surgical robot systems will be launched and they will reduce the cost of robotic surgery.

Poster Presentation #30
Urology

Robotic-assisted simple prostatectomy: a less conservative approach to benefit patients with unknown prostate cancer

Marcio Covas Moschovas[1,], Seetharam Bhat[1], Fikret Onol[1], Travis Rogers[1], Vipul Patel[1]*

[1]ADVENTHEALTH Global Robotic Institute

Purpose: Describe our simple prostatectomy technique for BPH disease and its potential benefit for patients with preoperative unknown prostate cancer association.
Materials and methods: We performed a retrospective chart review of 34 patients who underwent simple prostatectomy for BPH from September 2010 to April 2019. One single surgeon performed the procedures at Advent Health Global Robotic Institute. We evaluated the patients based on age, previous biopsies, and AUA score. The perioperative parameters evaluated the operative time, blood loss, complications, and blood transfusion. The postoperative parameters described the pathology report, complications, days to achieve continence, PSA levels, and AUA scores.
Results: Fourteen patients (41%) with a PSA elevation underwent standard prostate biopsy at least one time before surgery and presented a pathology report consistent with BPH diagnosis. Four patients had a urinary catheter (11.7%) before the surgery. The mean operative time and blood loss were 126 min and 160.5 ml, respectively. None of the patients had complications or blood transfusion. The final pathology report described 17 patients (50%) with BPH diagnosis and 17 (50%) with prostate adenocarcinoma. The cancer group presented thirteen patients (38.2%) with Gleason 6 and four patients (11.7%) with Gleason 7. The pathological stage described five patients (14%) pT2a, three patients (8%) pT2b and nine (24%) pT2c. None of them presented extraprostatic extension or vascular invasion. The mean prostate size reported was 145.6 g.
Comparing the pre- and postoperative AUA scores, twenty-nine patients (85%) presented better scores with urinary improvements, four patients did not follow up in our clinic, and one (2%) reported worse urinary symptoms with higher AUA score after surgery. Regarding the patients with a prostate cancer diagnosis, five did not follow up in our clinic, whereas the 12 remainings (70%) presented PSA lower than 0.01 in 6 months follow-up.
Conclusion: Although we still need better-designed studies to evaluate the benefits of this technique, our data suggest that simple prostatectomy with the approach described is safe, improves the postoperative AUA scores in at least 85% of the cases, and treats a considerable percentage of unknown concomitant prostate cancer.

Poster Presentation #31
Urology

Management of intractable bladder neck strictures following radical prostatectomy

Arjun Nathan[1,], Georgio Mazzon[1], Nicola Pavan[1], Ruben De Groote[1], Ashwin Sridhar[1], Senthil Nathan[1]*

[1]University College London Hospital

Purpose: The incidence of anastomotic strictures after radical prostatectomy varies from 0.3 to 20%. Treatment of this condition can be very challenging, and it includes a variety of different procedures. These range from endoscopic operations to open/laparoscopic approaches. We investigated a combined 2 staged endoscopic treatment, using the thermo-expandable bladder neck stent Memokath™, in patients with bladder neck stricture after radical prostatectomy.
Materials and methods: We retrospectively reviewed results of patients undergoing Memokath™ insertion for bladder neck stricture and completing at least 12 months of follow up. In all cases, a previous endoscopic dilatation/incision was carried out along with clean intermittent catheterisation. During the first stage, the bladder neck stricture was dilated or incised to 26F and the stricture length was measured. A large soft catheter is left for 2 weeks to achieve haemostasis. In the second stage the stricture length is re-measured and an appropriate size Memokath™ stent is inserted with the assistance of fluoroscopy. The stent is subsequently left in place for 1 year and then removed.
Results: We treated 30 patients in total with documented bladder neck stricture (age range 50–73) from 2006 to 2017. 16 patients (60%) had previous robot assisted surgery, 8 patients (27%) had previous laparoscopic surgery and 6 (13%) had previous open surgery. Mean interval from prostatectomy to Memokath insertion was 13 months.
In all cases the Memokath was inserted without complications. 22 out of 30 patients (73%) were fully continent, whereas 8 (27%) utilised 1–2 pads/day after the operation. Among these 8 cases, the Memokath™ had to be replaced in 2 cases (7%) as it was overlapping the sphincter. 2 patients (7%) developed ejaculatory pain and in 1 case (3%) the stent developed encrustations without outflow obstruction and was managed conservatively. After the removal of the Memokath™ (mean follow-up: 3.6 years) there has been no observed stricture reoccurrence.
Conclusion: The utilisation of thermo-expandable metallic stents for the management of post-prostatectomy complex strictures of bladder neck seems to be successful in up to 86% of patients. Outcomes are far superior to other methods with minimal complications. We advise the consideration and utilisation of the Memokath™ in patients with bladder neck stricture after radical prostatectomy.

Poster Presentation #32
Urology

Single centre outcomes from a large series of robotic salvage prostatectomies

Arjun Nathan[1,], Nicola Pavan[1], Ruben De Groote[1], Anand Kelkar[1], Ashwin Sridhar[1], Prabhakar Rajan[1], John Kelly[1], Greg Shaw[1], Tim Briggs[1], Prasanna Sooriakumaran[1], Senthil Nathan[1]*

[1]University College London Hospital

Purpose: Robotic assisted radical prostatectomy is an established successful treatment for prostate cancer. Salvage prostatectomy is a more complex procedure and its efficacy as a secondary treatment has not yet been established. Currently, reported outcomes from a small series of open salvage prostatectomy have been disappointing in both cancer control and quality outcomes. We aim to review the efficacy and quality outcomes following robotic salvage prostatectomy in patients who have had previous treatments.
Materials and methods: We retrospectively looked at 106 patients from 2012 to 2018 who had a salvage robotic prostatectomy with a minimum of three months follow up. Primary treatments included conformal radiotherapy, low dose and high dose brachytherapy, high intensity focused ultrasound, cryotherapy, electroporation and hormonal suppression therapy. We looked at efficacy of cancer treatment and quality outcomes, this included pre and post-operative histology, PSA, incontinence and erectile-dysfunction.

Results: Data from 106 patients was analysed with a median follow up of 2.1 years. The median age of the patients was 67 years. The median preoperative PSA was 5.6 mg/l. 5% had T1; 50% had T2 and 45% had T3 disease. Preoperative histology was 6% 3 + 3; 41% 3 + 4; 28% 4 + 3; 7% 4 + 4; 16% 4 + 5; 2% 5 + 4. 4% had low-grade disease, 49% had intermediate disease and 47% had high-grade disease. Of the 106 patients 61% had post-operative negative margins on histology. 25% had positive margins less than 3 mm and 14% had positive margins greater than or equal to 3 mm. Postoperative histology was 1% 3 + 3, 41% 3 + 4; 36% 4 + 3; 5% 4 + 4; 15% 4 + 5; 2% 5 + 4. 24% of patients had some form of reoccurrence (13% just biochemical while 11% had local or metastatic). 16% of patients had some form of secondary salvage treatment (16% ADT; 2% radiotherapy, 2% chemotherapy) post-operatively. 37% of patients achieved complete continence with varying follow-up times whilst 26% were socially incontinent. The rest (37%) had moderate incontinence using an average of 3 pads-a-day. 95% of patients had some degree of erectile dysfunction post-operatively. 105 out of the 106 patients were alive at the time of data collection. The overall complications in the series was 8% with 1 Clavien IIIa who had bladder neck stricture.

Conclusion: Our data clearly shows that robotic salvage prostatectomy is a safe and feasible procedure. Post-operative complications are similar to primary robotic prostatectomy. In our series there was an upgradation of the pathology in 19% and an upstage in disease by 50%. This is possibly secondary to the late referral of the patients for secondary treatment. We noted a progressive improvement in continence with time especially in the post radiotherapy patients. In patients who had a minimum follow up of 1-year, overall social continence of 63% is acceptable and only 2 required artificial urinary sphincters. In most patient's nerve sparing was not carried out and in the 30% who had nerve sparing 23% was unilateral. Post radiotherapy patients had worse cancer and quality outcomes than post focal treatment. Considering the number of high-risk disease in this series cancer outcomes are in par to primary treatment and quality outcomes are acceptable.

Poster Presentation #33
Urology

Outcomes of salvage radical prostatectomy after high intensity focused ultrasound: analysis of the UK's largest series

Arjun Nathan[1,], Nicola Pavan[1], Ruben De Groote[1], Anand Kelkar[1], Ashwin Sridhar[1], Prabhakar Rajan[1], John Kelly[1], Greg Shaw[1], Tim Briggs[1], Prasanna Sooriakumaran[1], Senthil Nathan[1]*

[1]University College London Hospital

Purpose: There is sparse data on the recurrence patterns within the prostate and salvage RALP outcomes in men who fail focal high-intensity focused ultrasound (HIFU). The aim of this study was to assess concordance between pre-operative biopsy/MRI and Robotic Prostatectomy (RP) in terms of grade, stage and location of cancer and to report short-term outcomes in a cohort of men undergoing salvage RALP following HIFU.

Materials and methods: A retrospective analysis of 59 men who underwent salvage RP at a high-volume pelvic cancer centre was performed from Jan 2012 to Dec 2018, with a median (IQR) follow-up of 9 months (4–20.3 months). Cancer characteristics pre-HIFU, post-HIFU pre-RP, and post-RP were collected. In-field and out-of-field recurrences were examined by correlation with pre-RP MRI and HIFU treatment plans.

Results: Median (IQR) presenting age, PSA, Gleason grade and BMI pre-HIFU were 66 (IQR 62–69), 5.5 (IQR 3.7–9.1) and 28 (IQR 25.7–32.0) respectively. 15/59 (25.5%) had a recurrence post prostatectomy and median (IQR) time to the recurrence was 10 m (4.0–9.5 m).

The procedure appears to be safe and feasible: 2, 2 and 1 men experienced Clavien grade 1, 2 and 3a complications respectively, median (IQR) LOS was 1d (1–2d) median (IQR) EBL was < 500 ml (< 500–500 and 1000), console time was 150 min (120–190) and length of stay was 1 day (1–2).

17/59 (29%) patients suffered a positive surgical margin (PSM) of which 5/59 were ≥ 3 mm. 34/59 (58%) had pT3a/b extra-prostatic spread on RP, 13/34 (38.0%) of who had a PSM. 4/35 (11%) with organ-confined (pT2) cancer had a PSM.

In terms of QOL outcomes, 39/59 (66%) were continent post-RALP. None of the patients were potent at 3 months (0/59) or 1 year (0/59).

Conclusion: Patients considering primary HIFU or salvage RALP should be counselled regarding the often aggressive and multi-focal nature of the recurrence and the likely inferior outcomes following salvage compared to primary RALP. Wide excision is recommended however may not prevent positive margins.

Poster Presentation #34
Urology

Use of transversus abdominis plane block to decrease pain scores and narcotic use following robot assisted laparoscopic prostatectomy

Travis Rogers[1,], Seetharam Bhat[1], Marcio Moschovas[1], Fikret Onol[1], Cathy Jenson[1], Shannon Roof[1], Nina Gallo[2], Vipul Patel[1]*

[1]Global Robotics Institute Advent Health, [2]US Anesthesia Partners

Purpose: To assess whether transversus abdominis plane (TAP) blocks can be utilized to decrease patient pain scores and narcotic use during the first 24 h following robot assisted laparoscopic prostatectomy (RALP).

Materials and Methods: 100 patients received a TAP block with a mixture of 1.3% liposomal bupivacaine, 0.5% Marcaine and 0.9% NaCl prior to RALP. This was in addition to an already established pain management regime, which included preoperative PO acetaminophen (650 mg), celecoxib (200 mg), and tolterodine ER (4 mg). These patients were prospectively followed and then retrospectively compared to a match group of 100 patients that did not receive a TAP but did receive the preoperative PO medications. Pain scores were assessed on a scale from 1 to 10 in the PACU; as well as; the surgical floor at 8, 16, and 24 h post surgery. Intra/post-operative narcotic use and time to ambulation following arrival to the surgical floor were also analyzed.

Results: Patient receiving TAP blocks had immediate post op pain scores of 2.23 vs. 4.26 for those not receiving TAP blocks ($p = 0.000$). The pain scores at 8, 16, and 24 h for TAP patients were 2.68, 2.62, and 2.62; as compared to 2.89, 2.87, and 3.36 for non-TAP patients. The difference was statistically significant for immediate and 24-h pain scores (p = 0.000, 0.001, respectively). On average TAP block patients ambulated faster than non-TAP patients, 2.68 vs. 4.91 h ($p = 0.000$). Intra-operative narcotic use was decreased in the TAP group for each of the opioids that were used: fentanyl 177.5 vs. 205 mcg ($p = 0.001$), morphine 5.5 vs. 10 mg ($p = 0.000$), and hydromorphone 0.75 vs. 1.75 mg ($p = 0.001$). Narcotic usage in the PACU was limited to hydromorphone and TAP patients used 0.7 mg

compared to 1.36 mg ($p = 0.003$) for non-TAP patients. Oral oxycodone/acetaminophen (5 mg/325 mg) was used for pain control on the surgical floor and on average TAP patients received less, 2.4 vs. 5 tabs ($p = 0.000$). Average time to perform the TAP block was 3.5 min and total OR time for TAP vs. non-TAP patients was 107.41 vs. 106.58 min ($p = 0.386$).

Conclusion: TAP blocks as part of a perioperative pain management protocol can be utilized during RALPs to decrease patient pain scores at two different time intervals, immediately post-operative and 24 h after surgery. Patients also ambulate sooner following surgery and require a decreased amount of narcotics during the intra-operative and post-operative periods. TAP blocks are quick, effective, and do not add a significant amount of OR time to RALPs.

Poster Presentation #35
Urology

Trombone: testing radical prostatectomy in men with prostate cancer and oligometastases to the bone: a randomized controlled feasibility trial

Senthil Nathan[1,], Ashwin Sridhar[1], Arjun Nathan[1], John Kelly[1], Prasanna Sooriakumaran[1], On behalf of TRoMbone Trial Group*

[1]University College London Hospital NHS Foundation Trust

Purpose: Emerging data supports the use of local radical therapy for the treatment of men with newly diagnosed oligometastatic prostate cancer. We have previously shown in an International multi-center collaboration between American and Continental European centers that radical prostatectomy in these men is safe and feasible. However, these men were highly selected and thus randomized data is required to confirm true feasibility.

Materials and methods: TRoMbone is a UK-wide multi-center randomized controlled trial that aimed to randomize men with newly diagnosed oligometastatic prostate cancer to standard care systemic therapy (SOC) versus SOC plus radical prostatectomy and bilateral extended pelvic lymphadenectomy (RP). We aimed to recruit 50 men with 1-3 skeletal metastases on standard imaging (CT, bone scan, PET) over 18 months, and collected prospective safety, technical feasibility, functional, quality of life, and early oncologic outcomes at 3 months post-randomization. The Trial was opened in 9 UK centers and embedded a qualitative recruitment investigation (QRI) to aid accrual and examine patient and clinician equipoise.

Results: Initial recruitment was poor; QRI demonstrated a lack of surgeon-oncologist referral networks, poor recruitment techniques, and lack of understanding about treatment sequencing and which imaging modalities defined eligibility. After addressing these issues, recruitment was completed 4 months early. Feasibility of randomization was thus demonstrated, and was seen in geographically disparate centers across the UK.

26 patients were assigned to the RP Arm on the Trial; 1/25 patients (4%) was later withdrawn due to being ineligible (too many metastases) and 24/25 (96%) of the remaining patients received their treatment allocation. 25 patients were randomized to the Control (SOC) Arm of the Trial; 1/25 (4%) patients refused all SOC treatment but agreed to continue the Trial; all remaining patients received SOC ADT ± docetaxel: 11/25 (44%) of RP patients had Docetaxel prior to RP; 25/25 (100%) had ADT prior to RP. 24/24 (100%) patients who underwent RP had the surgery done robotically, with no conversions. Median operative time was 185 min and median length of stay was 1 day. There was 1 patient with intraoperative complications (rectal injury, blood transfusion); this patient had the rectal injury repaired intraoperatively and went home uneventfully on postop day 7. 1 patient was readmitted with an infected lymphocele requiring drainage, and that same patient was readmitted again to another hospital with sepsis and pericarditis.

10/23 (43%) of RP patients had positive surgical margins (in 1 patient there was so much post-treatment effect the margin status was not interpretable); 18/23 (78%) of cases were pT3b and 11/23 (48%) had pN1 disease. PSA responses at 3 and 6 months were excellent. 74% of patients were dry at 3 months postop (0–1 pads/day).

Conclusion: It is feasible to randomize to RP in men presenting with newly diagnosed oligometastatic prostate cancer. Robotic surgery is technically possible and safe with few complications, providing acceptable operative and functional outcomes. Quality of life is also excellent in men that undergo this surgery. Due to these results, larger trials like STAMPEDE are planning to incorporate Surgery in future investigations in this patient group.

Poster Presentation #36
Urology

Urinary reconstruction algorithm for minimally-invasive radical cystectomy in a high-volume oncological center in Latin America

Wenceslao Villamil[1,], Matias Gonzalez[1], Ercilia Zubieta[1], Carlos Andrade[1], Gabriel Favre[1], Juan Tejerizo[1]*

[1]Hospital Italiano de Buenos Aires

Purpose: Open radical cystectomy (ORC), extended pelvic lymph node dissection (PLND), and urinary diversion have been established as the gold standard for muscle invasive bladder cancer (MIBC). In the last few years, however, growing attention has been set on minimally invasive approaches such as laparoscopic (LRC) and robotic-assisted radical cystectomy (RARC), being its incorporation in developing countries a real challenge because of its high costs.

Our objective is to show how to optimize resources by using our algorithm in minimally invasive cystectomy (laparoscopic o robot assisted).

Materials and methods: For the creation of the algorithm a panel of experienced surgeons from a laparoscopic and robotic background in prostatic cancer and expert surgeons in ORC was formed and created recommendations for best practice by optimizing resources in our hospital.

- Recommendation for Bricker Ileal conduit in men: We used a hybrid technique (minimally invasive and open) by isolating the small bowel segment for reconstruction with mechanical staplers and reimplanting the ureters intracorporeally. Then through an abdominal incision we extract the specimen and perform the enteric anastomosis.
- Recommendation for neobladder in men: We used a hybrid technique (minimally invasive and open) by using an abdominal incision for specimen extraction and the neobladder reconstruction. And then performing the urethra-neobladder anastomosis intracorporeally, by re-docking the robot or by standard laparoscopy.
- Recommendation for Bricker ileal conduit in women: Intracorporeal complete reconstruction is preferred to avoid abdominal incisions and using the vagina as a via of extraction for the specimen using the principles of natural orifice surgeries.
- Recommendation for neobladder technique in women: Intracorporeal complete reconstruction is preferred and in this cases we always use robot assisted techniques.
- Advantages: lower costs by using less mechanical staplers or barbed sutures and still having the advantages of minimally

invasive surgery (LRC or RARC). In all cases we perform uretero ileal anastomsis in situ by minimally invasive surgery and less ureteral movilization, except for neobladder reconstruction in men.

Results: We performed a total of 19 procedures in men, 10 RARC (7 neobladders and 3 Brickers) and 9 LRC (3 neobladders and 6 Brickers). In women there were a total of 3 procedures (2 neobladders and 1 Bricker) always using robot-assisted techniques with intracorporeal reconstruction. Robot assisted techniques were performed in all neobladder intracorporeal reconstructions and in 40% of Bricker´s ileal conduits. None of the patients required blood transfusions.
Conclusion: Minimally invasive radical cystectomy is feasible in developing countries. The use of our algorithm showing our hybrid techniques allows us to optimize resources and to take the advantages of minimally invasive surgery,

Poster Presentation #37
Urology

Resident involvement decreases length of stay for robotic prostatectomy: a surprising upside when transitioning from a community to an academic hospital

Connor Ray[1,], Eric McQueary[2], Jeffrey O'Connor[2], Patrick Hurley[2], David Wenzler[1,2]*

[1]Michigan State University College of Human Medicine, [2]Ascension St John Macomb Oakland Residency Program

Purpose: Residents play a vital role in healthcare today. Outcomes research regarding resident participation has shown increased complication rates, surgical time, and length of stay. Recently, Ascension Providence Hospitals were designated a satellite location for a urology residency program. We hypothesized that the presence and availability of residents would reduce the length of stay (LOS) for robotic assisted laparoscopic prostatectomy (RALP) patients.
Materials and methods: A retrospective chart review was performed on patients who underwent RALP at Ascension Providence Southfield and Ascension Providence Novi Hospitals from 2013 to 2016. Patients were treated by attending physicians only from 2013 to 2014, and full resident participation occurred from 2015 to 2016. Primary outcome examined was LOS. Secondary outcomes included discharge on post operative day (POD) 1, total hospital days, operative time (OT) and cost. Groups were compared using two tailed t-test.
Results: A total of 122 RALPs were performed between 2013 and 2016. These were evenly split between no resident participation cases and resident participation (61 each). Groups were statistically similar with respect to patient age ($p = 0.77$) and prostate size ($p = 0.11$). A reduction of 9.5 h in LOS was noted in 2015-16, which was after full resident participation (40.9 vs 31.4 h, $p = 0.01$). In total, this lead to a reduction in total hospital days (114 vs 87 days, $p = 0.007$) and an increase in POD 1 discharges (36% vs. 64%, $p = 0.007$). Even though OT increased significantly after resident participation (215 vs 235 min, $p = 0.0016$), resident involvement lead to an estimated cost savings of $58,833.
Conclusion: Resident participation in RALP surgery and postoperative care resulted in decreased LOS, earlier discharge, and reduction in costs. We believe this is due to increased efficiency in delivering postoperative care and greater availability of residents to expedite care and discharge. As health care costs are increasingly scrutinized, resident participation may play a role in cost reduction and increasing patient satisfaction. Further research should focus on overall patient satisfaction, functional outcomes, and complication rates.

Video Presentation #1
Colorectal

Robotic abdominoperineal resection for rectal cancer

Danielle Craigg[1], Trenton Lippert[1], Anthony Dinallo[1], Allen Chudzinski[1,]*

[1]AdventHealth Tampa

Purpose: This 53-year-old female with rectal bleeding was found to have carcinoma of the rectum located 2.8 cm from the anal verge. Workup with computed tomography scan of the abdomen and pelvis and CXR for evaluation of metastatic disease, and MRI of locoregional spread. Elective resection was indicated after neoadjuvant therapy. Because of proximity to sphincter complex and concern for a functional outcome with low anastomosis an abdominoperineal resection was chosen. Patient was taken to the operating room and preoperative antibiotics were given.
Materials and Methods: A 30° cystoscope was inserted into the urethra. A sensor wire and a 5-French Pollock Cook ureteral catheter were placed to 25 cm from the ureteral orifice. Indomethacin green 5 mL was then injected and the ureteral catheter was removed. The cystoscope was removed and the Foley catheter was placed sterilely.
Results: Next, the anus was sewn shut using a 0 silk suture in a purse string fashion. Dissection occurred through subcutaneous tissue, fascia was scored, and the peritoneal cavity was entered, and stay sutures were placed. A Hasson trocar was placed in this, which was later upsized to a 12 mm robotic port. Two robotic ports were placed in the right upper quadrant, 2 in the left lateral and left upper quadrant, and 1 in the midline supraumbilical region. The inferior mesenteric vessels were visualized in the mesentery; bilateral ureters were identified and avoided for injury. A white load robotic stapler x2 fires were used to transect the inferior mesenteric artery and vein as well as the portion of the vascularized mesentery. The vessel sealing device was then used to dissect in a medial to lateral fashion, and a portion of the sigmoid colon mesentery was taken down with the vessel sealing device.
Conclusion: Next, the hook cautery was used to begin the dissection of the total mesorectum in a circumferential fashion, first in the Waldeyer fascia posteriorly. This dissection continued up laterally with taken down of the lateral stalks and continuing down. Next, Denonvilliers fascia was entered. The dissection occurred circumferentially all the way down to the floor of the pelvis and the levator muscles were well visualized and dissection continued until the sphincteric muscles could be visualized. Next, the sigmoid colon mesentery was selected and dissected down using a green load robotic stapler x2 was used to transect the descending colon from the sigmoid colon. After circumferential dissection had been undertaken, the rectum was fully released. There was no damage to the mesorectum and the peritoneum was intact circumferentially. The tissue was sent for pathologic evaluation. After transecting the colon intraperitoneally, the descending colon was clamped with a bowel clamp in order to identify. Dissection through the skin and subcutaneous tissue into the fascia and the distal descending colon was then brought forth through this abdominal wall defect for the formation of an end colostomy. It was assured that there was excellent hemostasis and

there was no twisting of the end colostomy. All ports were then removed under direct visualization and port sites were closed.

Video Presentation #2
ENT

Branchial cleft excision via retroauricular approach: feasibility and outcomes in the United States

Meghan Turner[1,], Umamaheswar Duvvuri[2]*

[1]West Virginia University Health Sciences Center, [2]University of Pittsburgh Medical Center

Purpose: Various surgical approaches have been described for the treatment of type II branchial cleft cysts, including open neck surgery, endoscopic-assisted techniques, and more recently robotic-assisted surgery. Such techniques have mostly been employed in Asia where the stigma of cervical incisions drove interest in development of cosmetically more acceptable approaches through remote access incisions. To date, only three prior cases of robotic-assisted branchial cleft excision (BCE) through a modified facelift approach have been described. We present the first reports of robotic-assisted BCE in the United States: one case performed with the Medrobotics Flex® Robotic System and the other using the da Vinci® Robotic System. We also discuss the advantages and disadvantages of each system.
Materials and methods: Robotic-assisted BCEs were performed via a modified facelift incision using two different robotic systems. Patients were given detailed information about the procedure, its advantages, disadvantages, the possibility of conversion to an open procedure. Cases were then retrospectively reviewed and analyzed for surgical success and complications. Finally, we compared and contrasted the limitations and benefits of the two systems.
Results: Using the da Vinci® system, the cyst capsule was violated, so this patient was given postoperative antibiotics and suffered no sequelae. Total operative times were 145 and 167 min. Neither patient suffered greater auricular or cranial nerve injury. JP drains were removed prior to discharge on the first postoperative day. Neither patient developed neck infection, hematoma/seroma, or lymphedema in their postoperative course. Both patients were pleased with their functional and cosmetic results (see pictures 5a–d).
Conclusion: Robotic-assisted BCE also has benefits over endoscopic-assisted approaches. First, robotic systems give the operating surgeon control over the endoscope, while retaining use of both hands. Second, assistant driven endoscopy through a retroauricular incision alongside the operating surgeon is difficult and requires reverse hand–eye coordination. This causes collisions with the surgeon and increases operative times.
We believe that robotic-assisted type II BCE is indicated when there is a patient condition that would benefit from the retroauricular approach (i.e., keloidosis) or patient-driven desire for improved cosmesis. With proper patient selection, this technique may lead to better patient satisfaction. Contraindications are the inability to extend the neck (cervical fusion), suspicion for cancer, FNA proven biopsy cancer, revision surgery, previous open lymph node biopsy, and history of neck irradiation as all would make dissection unfavorable. In our opinion, previous infection is a relative contraindication, because only experienced, robotic surgeons should take on such cases.

We acknowledge the disadvantages of robotic-assisted surgery, which include the need for robotic surgery credentialing, purchase of robotic systems, and the need for specially trained staff certified to work with the respective robotic systems. We also acknowledge that open surgery is cheaper than robotic-assisted and endoscopic-assisted approaches. However, we are operating in a world where remote access surgery is available and desired. Robotic surgery makes this easier. This study shows that properly chosen patients benefit from robotic-assisted retroauricular approaches and suggests that patients in the US may even prefer this option given the choice.

Video Presentation #3
General/Single Site/Bariatrics

Robotic partial right hepatectomy with temporary vascular inflow control

Annie Laurie Benzie[1,], Jacek Wecowski[2], Iswanto Sucandy[1,2], Luis Alva[2], Sharona Ross[1,2], Alexander Rosemurgy[1,2]*

[1]University of Central Florida-HCA GME Consortium at Ocala Health General Surgery Residency Program, [2]AdventHealth Tampa Digestive Health Institute

Purpose: A 70 year old man was found to have a large right-sided liver mass for which biopsy demonstrated neuroendocrine tumor (NET). Workup including colonoscopy, endoscopy and octreotide scan failed to reveal a primary neoplasm. We planned to perform robotic non-anatomical resection of the hepatic mass with the assistance of temporary inflow control to limit bleeding and avoid conversion to an open procedure.
Materials and methods: A robotic partial right hepatectomy was undertaken with the use of two separate atraumatic robotic bulldog clamps on the right hepatic artery and right portal vein for inflow control. After central venous pressure was lowered, parenchymal transection was performed using a combination of electrocautery scissors, robotic vessel sealer and finally linear vascular stapler depending on depth and vessel size. Total operative time was 150 min with 18 min of clamping time. Estimated blood loss was 75 cc.
Results: Final pathology report of the liver resection specimen revealed a moderately differentiated NET (Ki 67 index 18%) with negative margins. He recovered well without any postoperative complications and he was discharged home on postoperative day 4. He will receive monthly subcutaneous injection of octreotide and quarterly surveillance.
Conclusion: As previously demonstrated, the robotic platform can be safely used to provide an effective approach to the management of large liver tumors. Hepatic inflow control with specialized robotic bulldog clamps is a novel technique in robotic liver surgery and we demonstrate its advantages in limiting blood loss when performing elegant minimally invasive liver resections.

Video Presentation #4
General/Single Site/Bariatrics

Robotic anatomical left hepatectomy

Annie Laurie Benzie[1,], Jacek Wecowski[2], Iswanto Sucandy[1,2], Luis Alva[2], Sharona Ross[1,2], Alexander Rosemurgy II[1,2]*

[1]University of Central Florida-HCA GME Consortium at Ocala Health General Surgery Residency Program, [2]AdventHealth Tampa Digestive Health Institute

Purpose: A 77 year old woman with history of cholecystectomy who presented with left sided abdominal pain was found to have isolated segment II liver parenchymal atrophy with biliary duct dilatation. These findings were suspicious for an intraductal neoplasm causing biliary obstruction, as ERCP failed to opacify the segment II

intrahepatic ducts. Over concern for malignancy, we planned to perform a robotic left hepatectomy.
Materials and methods: A robotic anatomical left hepatectomy was undertaken using extrahepatic Glissonean pedicle approach. We employed monopolar scissors and vessel sealer for parenchymal transection and a linear stapler for intrahepatic transection of left hepatic duct and left hepatic vein. Intraoperative findings consisted of segment II atrophy with dilated segmental ducts. Total operative time was 120 min. Estimated blood loss was less than 50 ml.
Results: Frozen section of the specimen confirmed clear margins and final pathology returned as biliary ductal ectasia with no evidence of malignancy. She recovered without complication and was discharged on post-operative day 4.
Conclusion: Robotic minimally invasive hepatectomy provides a definitive diagnosis in cases of suspicious imaging that allows for faster recovery time, decreased pain and less wound burden in comparison to an open operation.

Video Presentation #5
General/Single Site/Bariatrics

Robotic pancreaticoduodenectomy and cholecystectomy

Sharona Ross[1,], Andres Giovannetti[1], Iswanto Sucandy[1], Timothy Bourdeau[1], Alexander Rosemurgy[1]*

[1]Advent Health Tampa

Purpose: The patient was taken to the operating room for a robotic pancreaticoduodenectomy and cholecystectomy. Diagnostic celioscopy was undertaken through an 8 mm trocar, which was placed at the umbilicus. No evidence of metastatic disease was found. The remaining 3 robotic trocars were placed. A Gelport® was placed between the midclavicular line and the umbilicus on the patient's right. An AirSeal® insufflation port was placed at the right anterior axillary line. The operation began with the opening of the gastrohepatic ligament to identify the common hepatic artery. The gastroduodenal artery was doubly clipped and transected. Dissection continued with lysis of adhesions between the gallbladder and the duodenum. Kocher maneuver was undertaken and the ligament of Treitz was identified and divided. The gastrocolic ligament was opened and the dissection was carried distally toward the first portion of the duodenum, distal to the pylorus. The robotic stapler was utilized to transect the first portion of the duodenum. Dissection along the inferior margin of the pancreas was undertaken to identify the SMV and develop a tunnel posterior to the pancreatic neck. Division of the gland was achieved using robotic electrocautery hook. The uncinate process of the pancreas was dissected off the SMV, SMA and portal vein using the robotic vessel sealer. The dissection was then carried along the ventral surface of the aorta towards the distal CBD. The CBD was transected and the pancreaticoduodenectomy and cholecystectomy specimen was extracted through the Gelport®. On frozen section all margins were negative. The jejunum was then brought under the root of the mesentery.
Materials and methods: The hepaticojejunostomy anastomosis was constructed using barbed sutures in a single layer running fashion. A 2 layers end to side pancreaticojejunostomy duct to mucosa anastomosis was constructed using barbed and 4-0 polypropylene sutures. Next a loop of jejunum was brought in an antecolic fashion to construct the end to side duodenojejunostomy using a single layer running technique. A 10 Fr drain was placed behind the hepaticojejunostomy and pancreaticojejunostomy.
Results: The robotic approach has been shown to be feasible and safe for complex operations such as pancreaticoduodenectomy and cholecystectomy. The 3D visualization and the increased dexterity offered by this technology allows surgeons to expand the boundaries of minimally invasive surgical techniques.
Conclusion: Keywords: Robotic surgery, Pancreaticoduodenectomy, Minimally invasive surgery.

Video Presentation #6
General/Single Site/Bariatrics

Robotic cystgastrostomy

Rachel Hogan[1,], Hassan Aziz[1], Tiffany Lian[1], Aria Woods[1], Navpreet Kaur[1], Yuri Genyk[1], Rick Selby[1], Mod Sheikh[1]*

[1]Keck School of Medicine

Purpose: Walled-off pancreatic necrosis is a well-known complication of acute pancreatitis. Usually the surgical treatment involves either an open or Laparoscopic necrosectomy procedure with or without a cystogastrostomy. The role of robotic surgery in pancreatic necrosectomy and cystgastrostomy is limited. Due to the superior cosmetic results, and possibly decreased postoperative pain, this technique is increasing in popularity.
Materials and methods: Here we report a case of robotic cystgastrostomy and debridement of walled-off pancreatic necrosis.
Results: We report 2 patients who presented with walled off pancreatic necrosis from gallstone pancreatitis. They developed a pancreatic pseudocyst after the resolution of their acute symptoms. They presented to our clinic with symptoms of abdominal pain, inability to tolerate oral diet. The plan was to perform a robotic cystgastrostomy. They tolerated the procedure well and were discharged without any complications.
Conclusion: Robotic cystgastrostomy is a safe and viable option in terms of drainage procedure for walled off pancreatic necrosis.

Video Presentation #7
Gynaecology

Resection of endometriosis lesions from small bowel

Shruti Agarwal[1,], Daniele Fuhrich[2], Ivan Zepeda[3], Carlos Ortiz-Ortiz[4], Aileen Caceres[2]*

[1]UCF College of Medicine/HCA Consortium of Greater Orlando, [2]Caceres Specialized Gynecology, [3]Institute of Aesthetic Surgery, [4]Advent Health Medical Group-Celebration Hospital

Purpose: Bowel endometriosis is characterized by involvement of the sub-serosal layer of the bowel, and can be present at any level from the anal canal to the small intestine, although it is most frequently located in the rectum and sigmoid colon. It has been estimated to affect between 3.8 and 37% of patients diagnosed with endometriosis. Intestinal involvement is common, reported in 12–37% of individuals with the disease. The sites most often affected are the sigmoid colon and rectum (85%), while small bowel involvement is seen less frequently (7%) and usually confined to the distal ileum. The cecum (3.6%) and appendix (3%) are the sites least affected. No clear guideline exists for evaluation of patients with suspected bowel endometriosis. Medical management is currently speculative; expectant management should be carefully balanced with the severity of symptoms and the feasibility of prolonged follow-up. Several studies demonstrated an improvement in quality of life after extensive surgical excision of the disease. In this video, the authors demonstrate surgical technique for resection of endometriotic lesions from the small bowel using the Da Vinci Xi Robot.

Materials and methods: 31 yo G2P0 female (BMI 24.3) who underwent robotic assisted endometriosis lesion excision secondary to preoperative diagnosis of stage 2 endometriosis on pelvic MRI, chronic pelvic pain and chronic constipation. Pt had previously underwent two laparoscopic endometrial ablations in 2009 and 2013. She presented with complaints of ongoing left sided pelvic pain and passing endometrial casts during her menses. Postoperative diagnosis was stage 4 endometriosis throughout small bowel with findings of bilateral endometriomas in posterior cul-de-sac, anterior cul-de-sac and right pelvic sidewall. The Da Vinci Xi Robot was used with 4 trocar insertions and 3 robotic instruments. The lesions were excised using bowel shaving technique. Bowel prep and 2 g cefazolin were used preoperatively and bowel defect was sutured with 2–0 cicely suture.
Results: Final pathology did not show any malignancies in the biopsies sent. Presence of ectopic endometrial glands and stroma was the histological criteria used to determine the presence of endometriotic lesions. Endometriosis was diagnosed by pathology in the following: right round ligament, bilateral infundibulopelvic ligaments, right uterosacral ligament, sigmoid colon, small bowel (muscular propria and serosa) and bilateral fallopian tubes. Total blood loss for the procedure was 75 cc. The patient tolerated the procedure well and had normal post operative recovery.
Conclusion: Bowel endometriosis is characterized by the involvement of the sub-serosal layer of the bowel as evident by the pathology report which stated involvement of muscular propria and serosa of small bowel. Although only 7% of patients have bowel involvement, it is imperative for the surgeon to be experienced in bowel surgery. This patient's preoperative diagnosis was stage 2 endometriosis and even after two previous laparoscopies, stage 4 endometriosis was discovered intra-operatively. Thus, surgical excision of small bowel endometriosis may further improve a patient's quality of life although relapse of the disease may need further surgery or medical interventions.

Video Presentation #8
Gynaecology

Robotic-assisted vaginal cuff augmentation with cadaveric cutaneous allograft and omental J-flap post radical hysterectomy

Kevin Blau[1,], Robert Holloway[1], Arthur DeBaise[1], Sarika Gupta[1]*

[1]AdventHealth Orlando

Purpose: We will present by video instruction a technique used to augment a shortened vagina in a previously irradiated pelvis using an allograft and omental pedicle graft. For this procedure we used AlloDerm, a readily available dehydrated regenerative tissue matrix graft.
Materials and methods: Early stage cervical cancer is primarily treated with radical hysterectomy and pelvic lymphadenectomy. Postoperative whole pelvic radiation with sensitizing platinum therapy is administered for positive lymph nodes, parametria, or surgical margins. Vaginal shortening is a recognized side effect of radical hysterectomy because approximately 2 cm of upper vagina is removed for surgical margin. Vaginal cuff dehiscence is a rare but serious complication that can be exacerbated by both afore mentioned therapies. A large multi-institutional study reports the incidence of vaginal cuff dehiscence range between 0.13 and 0.64%, with a significant difference between surgical approaches (Uccella et al.) Some studies have reported rates of 1.27% or higher vaginal cuff dehiscence with minimally invasive techniques (Ala-Nissila et al.) Although minimally invasive cases appear to have a higher rate of vaginal cuff dehiscence, conclusions are limited due to the small number and size of the studies.
Results: A 30 year old woman with Stage IB1 squamous carcinoma of the cervix (2.5 cm lesion) underwent radical hysterectomy followed by pelvic radiation and chemotherapy for an obturator lymph node metastasis. The patient presented with vaginal cuff dehiscence twice within 12 months of her radiation therapy. Following each dehiscence, the vagina was repaired vaginally. This subsequently left a clinically shortened vagina. Upon presentation of the third vaginal cuff dehiscence at 14 months, the patient was counseled with options for repair and augmentation. The procedure was performed using robotic-assisted laparoscopy (da Vinci SI). An intraoperative consultation with a reconstructive plastic surgeon was obtained. The decision was made to use an AlloDerm tissue matrix graft. Her shortened vagina was successfully lengthened approximately 3 cm by folding the graft back on itself and suturing it to the vagina. An omental J flap was created and fixed to pericolic gutter and AlloDerm graft to aid in neovascularization. A foley balloon was placed into the vagina and filled with 25 cc of sterile solution. The patient was discharged home within 24 h of the procedure. The foley balloon was removed on post-operative day five. Vaginal irrigation was performed with a red rubber catheter and sterile irrigation. Close follow up with intermittent vaginal irrigation and visual inspection revealed the graft take with appropriate epithelialization by week 16.
Conclusion: A short video will show vaginal cuff augmentation following recurrent cuff dehiscence post radical hysterectomy and pelvic radiation. The decision to use an allograft, even with tissue previously irradiated, was effective in this case. Two years into surveillance the patient reports normal sexual function without recurrence of cuff dehiscence.

Video Presentation #9
Urology

Salvage robot-assisted laparoscopic prostatectomy: tips and tricks for challenges due to different primary treatments

Fikret Onol[1,], Seetharam Bhat[1], Travis Rogers[1], Marcio Moschovas[1], Shannon Roof[1], Vipul Patel[1]*

[1]AdventHealth Global Robotics Institute

Purpose: Salvage robot-assisted laparoscopic prostatectomy (sRALP) is a technically demanding procedure due to significant alterations in anatomical landmarks and loss of tissue planes. In this video, we present the challenges associated with different primary treatments and describe key points in their management.
Materials and methods: Between 2008 and 2018, 126 patients underwent sRALP by a single experienced surgeon. All procedures were performed using a transperitoneal six-port technique. Ninety-four patients had received external or internal radiation (EBRT: 39, IMRT: 15, proton beam: 3, brachytherapy: 23, EBRT + brachy: 14) and 32 had received focal therapy (cryotherapy: 20, HIFU: 9, microwave/electroporation: 3) as primary treatment. Difficulties caused by different primary therapies at each surgical step were identified and key points in their management were presented.
Results:

1. Endopelvic fascia dissection (EFD): Ipsilateral pelvic side-wall fibrosis and troublesome bleeding from vessels obscured by scarring were common after cryoablation. Opening the endopelvic fascia at the prostate base where the space between the prostate and the levators is least vascular and dissection away

from the prostate capsule towards the apex facilitated EFD. Apical dissection around the sphincter was typically difficult in brachytherapy patients due to inflammation caused by misplaced seeds.
2. Bladder neck dissection (BND): In cases with HIFU, the prostate was atrophic and fused anteriorly behind the pubic tubercle. In such cases, opening the anterior BN provided better identification of the anatomy followed by antegrade prostatectomy.
3. Posterior dissection (PD): IMRT and proton beam were noted to cause more extensive fibrosis in the pelvis. In such cases, identification of the correct plane for posterior dissection was especially difficult due to lack of prerectal fat and 'tenting' of the rectum. We have used the instant toggling feature of DaVinci Xi robot (180° upward rotation of the 30° camera) to facilitate visualization of the posterior plane and careful cold dissection.
4. Vesicourethral anastomosis (VUA): Loss of tissue vascularization after EBRT and proton beam radiation adversely affects VUA vitality and leads to anastomotic dehiscence or leaks. In our experience, use of an acellular and resorbable scaffold graft to reinforce base of the VUA resulted in decreased leak rates and catheterization times (Ogaya-Pinies et al., EurUrol 2018).

Conclusion: sRALP should be performed by experienced surgeons due to lack of tissue planes and anatomical landmarks. The surgeon should be familiar with challenges specific to different primary therapies. Opening endopelvic fascia away from prostate capsule, antegrade prostatectomy when prostate and BN are fused to the pubis, 30° toggling during posterior dissection, and Acell graft to reinforce VUA are keys in management of complex cases.

Video Presentation #10
Urology

Salvage robotic-assisted laparoscopic seminal vesiculectomy for a Merkel cell carcinoma metastasis

Luísa Alves[1], Bruno Graça[2], Kris Maes[2,]*

[1]Hospital Beatriz Ângelo, [2]Hospital da Luz

Purpose: Merkel cell carcinoma (MCC) is a rare skin tumour of neuro-endocrine origin with the propensity to metastasize systemically. At diagnoses around 26% of the patients have nodal involvement and 9% distant metastasis with five-year overall survival of 41.4% and 13.5%, respectively. Due to the rarity of this entity the experience on metastatic disease is based on case reports or retrospective studies. To the best of our knowledge, there is no description in the literature of a seminal vesicle MCC metastasis. We present a video of a salvage robot-assisted laparoscopic seminal vesiculectomy in this context.
Materials and methods: The presented video shows step by step salvage (after previous Radiotherapy) robot-assisted laparoscopic seminal vesiculectomy performed in February 2019 in Hospital da Luz, in Lisbon.
Results: A 71-year-old male presented with right inguinal lymph node enlargement in 2011. A biopsy was performed revealing a MCC. No primary lesion was found. Metastatic work-up, with PET-FDG, did not reveal any evidence of distant metastasis (stage III MCC). The patient underwent to systemic treatment with cisplatin and etoposide. Six months later a retroperitoneal and inguinal lymph node recurrence was detected. Consequently, the patient received a second-line treatment with Topotecan with favourable response on PET-FDG showing only positivity for right inguinal nodes and, therefore, was submitted to right inguinal lymphadenectomy followed by adjuvant radiotherapy in 2012. Later on in 2014, he was diagnosed with left adrenal metastasis and was submitted to salvage surgery plus stereotactic radiotherapy (SBRT). In 2016, PET-FDG detected a single metastasis in the right seminal vesicle (SV) that was treated with SBRT. However, in 2018, reoccurrence of tumour in the right SV was noted and a salvage robot-assisted seminal vesiculectomy was performed in February 2019. The postoperative period was uneventful and the patient was discharged on the day after surgery. During the follow-up period a PET-FDG was performed in every 6 months and the recurrences were confirmed by biopsy before the salvage treatments.
Conclusion: We present a case of a patient diagnosed with a stage III MCC with a rare clinical course. There are no guidelines regarding the optimal approach which is often based on retrospective analyses of small series of patients. Recurrences are associated with poor prognosis. In selected patients salvage treatments in locoregional recurrences can be offered. In this particular case, a salvage robot-assisted laparoscopic seminal vesiculectomy was offered demonstrating the feasibility of this procedure.

Video Presentation #11
Urology

Outcomes of robotic ileal ureter

Austin Bramwell[1,], Mahmoud Khalil[1], Mohamed Kamel[1], Ehab Eltahawy[1]*

[1]University of Arkansas for Medical Sciences

Purpose: Reports of operative outcomes after robot-assisted ileal ureter are limited. The objective of this study is to describe intra- and postoperative outcomes after robot-assisted ileal ureter and compare outcomes with patients undergoing open ileal ureter
Materials and methods: Patients with ureteral strictures refractory to less invasive treatment undergoing robotic (RIU) or open (OIU) ileal ureter at a large tertiary referral center between 2012 and early 2019 were identified. Patient charts were reviewed for surgical outcomes. Patients in whom conversion from robotic to open surgery occurred were excluded (n = 1). Patient outcomes including operative time (OPTIME), estimated blood loss (EBL), and hospital length of stay (LOS) were studied and reported. Average available follow-up was: RIU: 9.2 (± 6.8) months and OIU: 20.1 (± 16.9) months. Descriptive statistics were performed to describe the outcomes in both groups.
Results: N = 14 patients were included in this study where 21% (n = 3) patients underwent RIU. Patients in the robotic group were 100% female, 66.7% Caucasian, with a mean age of 33.3 (± 10.7) years. Patients in the open group were 72.7% female, 63.6% Caucasian, with a mean age of 47.9 (± 14.2) years. Mean OPTIME was longer for RIU [406 (± 83.7) minutes] vs. OIU [344.2 (± 90.4) minutes]. The increase in OPTIME is likely attributable to the learning curve associated with new equipment, as well as time spent docking and undocking the robot. There were no intraoperative complications in either group. Mean EBL was lower in RIU [150 (± 0) mL] vs. OIU [236.4 (± 95.1) mL]. None of the RIU patients required transfusion. However, in OIU, 3 patients required transfusion, 1 intraoperatively, and 2 during the postoperative hospital course. Hospital LOS was shorter in RIU [6.3 (± 1.2) days] vs. OIU [8.5 (± 6.1) days]. Among OIU patients, 4 were readmitted within 30 days either due to infection, anastomotic leak, or both. None of the RIU patients were readmitted within 30 days. At long-term follow-up, 4 OIU patients experienced poor renal unit function; of which, 3 had worsening or new onset hydronephrosis requiring intervention and 2 required a complete nephroureterectomy due to complications with the ileal ureter. However, no long-term complications were observed in RIU patients.

Conclusion: We describe intra- and postoperative outcomes associated with ileal ureter reconstruction in a small sample of patients. In our experience, the robotic technique is associated with a longer operative time but decreased intraoperative blood loss and a shorter hospital stay. The descriptive findings suggest favorable outcomes among patients who received the robot-assisted procedure compared to the open procedure. Future studies with larger sample sizes and of prospective nature are warranted.

Video Presentation #12
Urology

Transvesical single-port simple prostatectomy: a new technique

Guilherme Sawczyn[1], Rair Valero[1], Juan Garisto[1], Jihad Kaouk[1,]*

[1]Cleveland Clinic-Glickman Urological & Kidney Institute

Purpose: To present a robotic single-port simple prostatectomy video performed through a percutaneous transvesical approach using a unique 30 mm length incision.
Materials and methods: The novel, purpose-built da Vinci SP® platform was used to perform the surgery.
The patient is positioned in a supine position and Trendelenburg position was not needed.

Bladder's dome is identified by needle percutaneous aspiration, followed by a 3 cm vertical midline incision and dissection of the prevesical tissue. Stay stitches are placed in the bladder and cystostomy is achieved. A GelPoint Mini Advanced access Platform is directly inserted into the bladder and a 4-channel single-port cannula and a 12-mm auxiliary laparoscopic port are docked to the Gelseal Cap.

Pneumovesicum is produced with a CO_2 12 mm Hg pressure. Ureteric orifices are identified and a staged prostate adenomectomy is done. After hemostasis control, the incised edge of the bladder neck is sutured to the posterior aspect of the urethra to cover the resected area. The prostatic adenoma is extracted through the Gelring and bladder is closed externally with absorbable suture.
Results: Two cases were performed in a two-week period in February 2019.
Average prostate size was 105 g, estimated blood loss was an average of 50 ml each procedure. Average operative time was 173 min and average console time was 91 min. In both cases, maximum incisions length was 30 mm, there was no need for extra-portal, no drains were left and patients were discharged 1 day after surgery. Pain Scale at discharge was 0, no opioid was administered during the postoperative hospital stay and patients was discharged with oral pain medications as needed. The urethral catheter was removed at day 10 and no short-term complications were related.
Conclusion: Single-port tranvesical robotic simple prostatectomy using the da Vinci SP® platform is an alternative approach for larger adenoma and allows a small skin and cystostomy incision; avoids Trendelenburg position and its consequences and avoid violating the peritoneum space. There was no need for extra ports or drains and optimum hemostasis led to minimal bleeding. Patients were discharged within 24 h of the operation. Studies aiming long-term outcomes and a larger sample are needed to confirm our results.

Video Presentation #13
Urology

Description of a novel technique for single port extra-peritoneal robotic radical prostatectomy

Rair Valero[1], Guilherme Sawczyn[1], Juan Garisto[1], Jihad Kaouk[1,]*

[1]Cleveland Clinic-Glickman Urological & Kidney Institute

Purpose: To describe our novel technique of extra-peritoneal single port robotic radical prostatectomy and present the initial clinical experience of our first 10 cases.
Materials and methods: Following approval from the institutional review board (IRB) data were prospectively collected. 10 consecutive patients with preoperative diagnostic of localized prostate cancer based on PSA, prostate biopsy and imaging studies were selected and extra-peritoneal single port robotic radical prostatectomy was performed. The novel SP® robotic surgical system (Intuitive Surgical, Sunnyvale CA) was used in all procedures by a single surgeon (JK) during February 2019. No particular selection criteria were used.
Technique: Patient in a supine position with arms tucked. A 3 centimeter (cm) incision one finger breadth below the umbilicus is performed and dissection of the abdominal wall was done until reach the extra-peritoneal where blunt dissection with the surgeon's index finger allow to create the initial space. Thereafter a kidney shape space-maker balloon (Covidien, Dublin, Ireland) is inserted in a caudal direction until reach the pubic bone and then slide under it, approximately 400 cc are pumped and the creation of the space is verified using a 10 mm laparoscopic endoscope. Once the extra-peritoneal space is created a GelPoint Mini advanced access platform (Applied Medical, Rancho Santa Margarita, CA) was inserted and a dedicated SP® multichannel port and a 12 mm laparoscopic were placed through the gelSeal® cap and attached to the Alexis wound retractor. Then, the robot was docked, instruments were put in placed and the procedure was performed following the steps previously described for the multi-arms robotic platforms or trans-peritoneal single port prostatectomy.
Results: No conversion was needed. Mean age, BMI, was 62.3 ± 6.4; 30.01 ± 5.73 respectively. Mean total operative time was 204.5 ± 44.6 min with a mean console time 149.9 ± 27.3. Average blood loss was 143 cc. No complications were recorded. 60% of patients were discharged the same day and almost all report minimal pain at discharge. No drains were used.
Conclusion: Extra-peritoneal single port radical prostatectomy represents a minimally invasive option to treat prostate cancer and in our initial experience offers advantages such as single small incision, no additional lateral ports, no Trendelemburg, no drain, minimal pain medication used during postoperative period and outpatient management (same day discharge) in most of the cases. Further investigations with larger sample size and comparative studies need to be done to validate these advantages.