ABSTRACT BOOK

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BRAZILIAN INITIAL SURGICAL EXPERIENCE WITH VERSIUS ROBOTIC SYSTEM

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Purpose: Describe the results of the initial surgical experience with the Versius robotic system (CMR, England) in general surgery, gynecologyc surgery and urologyc surgery.

Materials and Methods: After exaustive pre-clinical training of the surgical teams – simulation, dry-lab, in service with pelvitrainers and cadaver laboratory surgical training, the authors operated on 50 consecutive patients with the Versius system using the camera and three robotic arms.

Results:
There will be shown the results of evaluated parameters:
- Total surgical time, draping time, system positioning time, docking time, console time, undocking time, post surgical anesthetic recovery time, time for walking after surgery, time for discharge, 30-day readmission.
- Intra-operative complications, bleeding, arms colisions, conversion, post-operative complications, infection rate, reoperations and readmissions.

Conclusion: The current Versius system (CMR, England) is feasible and safe for using in general surgery – (bariatric surgery, cholecystectomy, inguinal and ventral hernias, colectomy) , gynecologic surgery (hysterectomy, endometriosis) and urologic surgery (prostatectomy, nefrectomy).

GS-2

LEARNING SURGICAL SKILLS THROUGH VIDEOS - A SYSTEMATIC REVIEW OF VIDEO BASED SURGICAL EDUCATION

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Purpose: Educational video has great potential in the learning of surgical skills among different study cohorts. Nonetheless, knowledge of the effectiveness of different video interventions and their features is limited. The aim of this systematic review was to evaluate and assess current evidence for video-based teaching interventions against alternative teaching methods for surgical skill acquisition.

Materials and Methods: A systematic search of MEDLINE (via PubMed), Embase (via OVID), Cochrane libraries and Clinicaltrials.gov was performed from inception to 28/02/21. Studies included were not limited by date of publication, studies aiming to assess the impact of video-based interventions in the direct acquisition of surgical skill were included. Eligible studies were analysed based on study type, type of video intervention, method of assessment and period of education. The educational impact of the studies was also assessed as per Messick's framework for testing validity of evaluation methods and McGhagie's model for analysing translational outcomes.

Results: 22 studies were deemed suitable for inclusion, of which 14/22 (63.6%) demonstrated a significant improvement in knowledge/skills following the video-based teaching interventions, 3/22 (13.6%) studies demonstrated an improvement in trainee satisfaction scores. Finally, 4/22 (18.2%) studies reported no significant difference between training groups. A recurrent limitation of the included studies was the lack of validation of selected assessment methods. None of the included studies scored on all 5 parameters of validity as defined by Messicks modern concept of validity framework. Furthermore, none of the included trials had sufficient follow-up to indicate direct changes to patient outcomes resultant from educational methods.

Conclusion: Video based surgical education is effective in learning surgical skills within different trainee populations, however, superior study quality and follow up is required to determine which aspects of video-based interventions are most impactful.

GS-5

LEARNING CURVE IN COMPLEX ROBOTIC COLORECTAL SURGERY WITH THE XI PLATFORM A SYSTEMATIC REVIEW.

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Purpose: Minimally invasive surgery has led to faster recovery and better short and long-term outcomes. The adoption of robotics for colorectal surgery had benefits in visualization, posture, and could be especially favorable in high-risk subgroups such as male or obese patients.
All new surgical innovations and techniques have a learning curve, but it is obvious that the accumulating experience is associated with improved outcomes and faster mastering of these procedures. The most used metrics for defining the learning curve are the number of cases and operating time. For the S platform the learning curve was 28 – 40 cases.
The Da Vinci Xi surgical system was approved by the US Food and Drug Administration for use in colorectal surgery in 2014. The versatility of this new system allows it to be implemented in a wide range of colorectal procedures. The benefits of redesigned robotic arms allow closer port spacing while avoiding external collisions and facilitating dissection in a narrow male pelvis.

Aim: to review the learning curve for complex robotic Colorectal surgery with the Xi Platform through a systematic review of the last 8 years.

Materials and Methods: We conducted a systematic review of the literature of robot colorectal surgery with the Xi platform, according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. The search was conducted in April 2022 in PubMed, MEDLINE, and the Cochrane Central Register of Controlled Trials, for English articles published in the last 8 years.

The search was made following these key words: colorectal surgery / learning curve/robotic surgery / Xi platform.
A total of 31 references were identified. All abstracts were subsequently manually reviewed to identify potentially relevant studies for our purpose.

Variables: number of cases, age, gender, Previous S or Si platform experience, conversion rate, hospital stay, oncological rate, surgery time.

Results: After reviewing the 31 papers, we included 6 retrospective studies with 358 patients in total treated with robotic Xi for colorectal surgery.
Mean age was 60.8 years old, 51.6% were male, BMI was 26.4, 72% of the cases were oncological.
The mean number of cases to obtain the Learning curve (phase 1) was 19.5, and phase 2 was 58.3
The mean time for these complex procedures was 270 min in phase 1, and 238 min in phase 2.
The length of stay was 8.7 days in phase 1 and 5.8 on phase 2.
All the surgeons had previously passed the S or Si platform learning curve experience.

Conclusion: The learning curve for the Robotic Xi appears is shorter than the Si even though it is in complex cases. The previous experience with the oldest platforms appeared to have a good impact on the outcomes of these procedures. The learning curve in robotic colorectal surgery is multifaceted and often poor-defined, with lack of descriptions of mentorship, diagnosis, procedures, institutional and personal experience of the robotic surgeon.

Table 1. Variables of the studies that evaluate learning curve using a CUSUM analysis in the Xi platform for Colorectal surgery.

Author	Mean Age	Platform S experience	Learning Cases (Phase 1)	Expertise Cases (Phase 2)	Operative Time Phase 1	Operative Time Phase 2	LOS Phase 1	LOS Phase 2	Notes
Morelli et al. 2019	67	Yes	19	40	304	263	6	7	Only rectal cancer
Hollandsworth et al. 2020	40	Yes	11	21	350	299	6	4	Subtotal colectomy and proctocolectomy
Sariyaka et al. 2020	71	Yes	17	26	324	281	*	*	Colorectal surgery
Olthof et al. 2021	61	Yes	40	100	167	121	7	4	Rectal resection
Nasseri et al. 2021	62.4	Yes	13	83	282	220	17.7	7.9	Colorectal surgery
Wong et al. 2022	64	Yes	44	88	198	245	6.9	6.1	Colorectal surgery
Total	60.9	YES	19.5	58.3	270	238	8.7	5.8	Colorectal surgery

Phase 1: Learning curve (CUSUM analysis)
Phase 2: Expertise curve (CUSUM analysis)
LOS: Length of stay

Learning curve using a CUSUM analysis in the Xi platform for Colorectal surgery

GS-8

ROBOTIC DISTAL PANCREATECTOMY- DOES IT MAKE A DIFFERENCE? EXPERIENCE FROM THE UK'S LARGEST SERIES.

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Purpose: Minimally invasive distal pancreatectomy (MIDP) has become the standard of care in many centres across since it has a distinctive advantage over open surgery in terms of quicker post-operative recovery. Currently any difference between the laparoscopic or robotic approach for MIDP is still debatable. The aim of this study was to perform a comparative analysis between open, laparoscopic and robotic approaches

Materials and Methods: All patients who underwent a distal pancreatectomy between September 2007 and February 2022 were collected from our prospectively maintained HPB database. They were split by approach: Open, Laparoscopic, Robotic. Laparoscopic distal pancreatectomy commenced in 2007 and became obsolete in 2013 in preference for the robotic approach. The primary outcome measures were length of hospital stay and the need for strong opioids at discharge. Secondary outcome measures included R0 resection rate, complication rates measured by Clavin Dindo grading and number of lymph nodes retrieved were relevant. Statistical analysis involved Mann–Whitney U test for continuous non-parametric data and Chi-Square Test of Independence for nominal data.

Results: From 195 patients who underwent distal pancreatectomy (DP), 70 (36%) had open resections (ODP), 47 (24%) had Laparoscopic distal pancreatectomy (LDP) and 78 (40%) had robotic distal pancreatectomies (RDP). The median age of patients undergoing DP was 60. The median length of hospital stay for RDP (7 days) was shorter than LDP (9 days, P <0.05) and ODP (10 days, P <0.0001)). There was no statistically significant difference between strong opioid use on discharge between the three groups (36% vs 49% vs 37% in RDP, LDP and ODP respectively, P = 0.31). The R0 resection rates were 81%, 85% and 71% respectively. Although minimally invasive groups have higher R0 resection rates in our centre, the difference is not statistically significant ($p = 0.17$). Similarly, there was no significant difference among the groups in terms of the median number of lymph nodes (LN) retrieved: RDP 8 vs LDP 4 (p=0.14) vs ODP 9 (p=0.59). Nor was there any difference between overall complications. After excluding minor complications, the major complications (grade III & IV) were RDP 9%, LDP 30% and ODP 12% (P=0.485). Similarly the pancreatic fistula grade between the groups were not statistically significant. (Grade A: RDP 15%, LDP 9% and ODP 6%, Grade B: RDP 14%, LDP 13%, ODP 9% and Grade C: RDP 1%, LDP 6% and ODP 3%).

Conclusion: In our series RDP reduces the length of in hospital stay and allows for a quicker post operative recovery. We accept this is at more operative expense. We haven't found any significant difference in the other outcomes we analysed which were in line with earlier published series.

GS-10

MEDICAL ROBOTICS: INNOVATION FOR ALL OR FOR SOME? EXAMINING RACIAL PARITY IN ACCESS TO STATE-OF-THE-ART SURGICAL TECHNOLOGY.

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Purpose: To recognize and examine the implications of racial disparity and wealth inequality in access to medical technological innovation, namely those concerned with robotic surgical training and implementation.

Materials and Methods: Comprehensive meta-analysis on the primary benefactors of advancement in specialized medical treatment and management in the in-patient setting. Utilizing both a clinical and research perspective, we seek to determine the present conditions of equitable access to technological care. Additionally, we will propose solutions to further expand access to the disadvantaged, namely underrepresented populations suffering from racial biases and socioeconomic inequalities.

Results: Racial disparities in surgical care have been identified in studies dating back decades and with the emergence of new techniques and technological innovation this disparity is expected to expand [Haider et al.]. Indeed, a 2012 cross-sectional study found that for women undergoing robotic hysterectomy there were significant geographic and racial imbalances in access to this level of care [Simith et al.]. Similarly, a study on the use of robotic surgery (RS) in endometrial cancer found disparities in race as well as socio-economic status [Blansit]. This same pattern is also observed by Palese in robotic assisted laparoscopic surgery (RALS), who found that not only patients were subject to the racial inequality but also the surgeons performing these procedures. A multivariate analysis on endometrial cancer patients found that there were a number of factors that independently predicted patients undergoing robotic surgical care, including race and insurance status [Blake]. Rectal cancer seemed to have parallel predictors according to Ofshetyn who notes that patients receiving RS were predominantly male, white, and privately insured. Finally, significant disparities were observed in the area of radial prostatectomy from 2006 to 2008, where black and Hispanic patients were less likely to receive care at hospitals with RS [Kim]. However, a study in 2020 on locations of hospitals with robotics platforms (HWR) found that these imbalances cannot be explained by sociodemographic factors related to geographic proximity suggesting there may be other biases at work [Bingmer].

Conclusion: The compilation of these studies found suggest that there is an identifiable disparity of access to robotic healthcare, despite the fact that robot-assisted surgery has been found to have benefits over traditional techniques. However, some studies find that the reasons are perhaps not clear which leaves room for further exploration on the socio-economic, demographic, and cultural biases at play and that have been traditionally established in the medical system. This is an unexplored but pertinent area of discussion in a post-modern world which seeks to share the benefits afforded by the robotic surgery revolution to our most vulnerable communities. We propose the following call-to-action to those in the healthcare industry and individuals involved in medical decision-making: first to acknowledge the presence of these issues and then collaborate with advocates for the underserved towards a solution before robotic surgery becomes the status quo and these issues are cemented.

GS-11

COLOMBIAN FIRST EXPERIENCE WITH ROBOTIC ONCOLOGIC SURGERY OF THE COLON

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Purpose: Present our preliminary results using the robotic technique ir oder to develop colonic procedures, with the initial single center experience, evaluating feasibility, outcomes and safety of the robotic system in Latin American population

Materials and Methods: From January 2017 to April 2022, all consecutive patients underwent robotic Sugery of the colon were included with the Da Vinci® Xi™ system. Data were prospectively collected and analyzed . Gender, age, diagnosis and surgical indication, surgery performed, surgical time, conversion, bleeding, post-operative complications, and hospital stay, were analyzed and described

Results: 42 patients were include in the study. The median age was 60 years (30-82) and the median BMI was 24.5 Kg/m2 (16-30). Surgical indications were left colonic cancer(57%) right(42%) , 80 % were ASA I-II. The median operative time was 141 minutes; the median docking time 7.6 min (range 2-16). All patients underwent an appropriate oncological procedure. The median time to discharge was 6 days (range 1-19). 80% were intracorporeal anastomosis. 1 death were documented due to cardiovascular disease. 2 anastomotic leak were documented and required reintervention.

Conclusion: Robotic surgey is currently being used worldwide due to advantages not only for the patient but also for the surgeon. We report the first colorectal surgical case series in Colombia, with promising results, allowing us to support and recommend the use of this technology when it is available.

GS-15

NOVEL SINGLE-PORT ROBOTIC PLATFORM FOR BILATERAL INGUINAL HERNIA REPAIR

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Purpose: Every year ~20 million inguinal hernia repairs are completed worldwide. The increased demand for less invasive techniques driven by better clinical and aesthetic outcomes has expanded interest in a single port approach. The main technical issues with current single port surgeries are the loss of instrument triangulation and the collision of instruments. A robotics platform with a novel approach to articulation and reach may obviate these issues. When assessing the usefulness of new robotics platforms, it is important to understand that robotic functionality is more than just the extent of the workspace that the end effectors can reach, but also the dexterity of the end effectors at every reachable point in that workspace.

Materials and Methods: A robotics platform has been developed that allows all instrument articulation to occur inside the abdomen by 2 flexible instrument arms inserted through a single incision that can be made trans-abdominally for male patients and trans-vaginally for female patients. This system features miniature humanoid-shaped robotic arms that provide human level dexterity, multi-planar flexibility and 360 degrees of articulation for various access configurations. The biomimetic instruments are designed to replicate the motions and capabilities of a surgeon's arms, with shoulder, elbow, and wrist joints. After insertion while extended, the two robotic arms then retroflex towards the anterior abdominal wall. Both inguinal canals can be reached from a single-entry point, either trans-abdominally or in the pre-peritoneal space. This study measured the manipulability of this new robotic platform throughout its entire reachable workspace in the abdomen through either a trans-vaginal, umbilical or pfannenstiel single port insertion site by first generating a set of 200,000 configurations of the robotic arms and secondly calculating the manipulability index according to robotics literature.[1]

Results: The results show that, due to the shoulder, elbow and wrist joints of the arms that perform all of their articulation after entry, the reachable workspace encompasses the entirety of the average male and female abdomen from the para-aortic nodes to the pelvic floor, across from abdominal sidewall to sidewall and from the abdominal wall to vertebrae. Because the wrist joints have unlimited rotation and the shoulder and elbow joints allow the arms to function as they cross over each other, the manipulability index remains high (high usability) with all three single port insertion sites within the abdominal cavity and particularly the deep inguinal ring, external oblique fascia, ilioinguinal nerve, spermatic cord and the pubic tubercle, allowing traction, counter-traction, fine dissection and triangulation in a large as well as a constrained workspace.

Conclusion: The design of this new robotic technology has the potential to realize the clinical benefits of a single port approach while providing unprecedented triangulation and manipulability for either unilateral or bilateral inguinal hernia repair via a trans-abdominal or extra-peritoneal approach. In addition, while traditional multi-port robotics remains expensive and time consuming related to setup[2], this new novel single port robotic technology has the ability drive costs to be more in line with traditional laparoscopic approaches.

[1] Yoshikawa et al (1985)
[2] Prabhu AS, et al (2020)

GS-16

ROBOTIC SINGLE SITE CHOLECYSTECTOMY WITH INDOCYANINE GREEN (ICG) FLUORESCENT CHOLANGIOGRAPHY – 91 CASES OF A SINGLE SURGEON EXPERIENCE

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Purpose: The main objective of the article is to describe aspects from the personal experience of single surgeon both in the learning curve and in the evolution of robotic platforms. Analyzing , console time hospital stay, immediate and late complications.
In addition we analyse the role of use of indocyanine green for fluorescent cholangiography.

Materials and Methods: Serie of 91 cases of robotic single-port cholecystectomies in DaVinci platform SIHD and Xi. Performed between June 2016 and April 2022, at the following locations: Hospital Alemão Oswaldo Cruz (n=12 – Si-HDa), Hospital Nove de Julho (n=9 – Si-HDb) and Moriah Hospital (n=70 - Xi).

Results: No conversion of surgery to multiport or open surgery. Significant improve in console time during when compare first 12 cases and sequence 89 cases (SiHDa: 49min vs SiHDb:34min vs Xi: 33min).
Surgical site infection or seroma in 10% (n=9), treatment with antibiotics.
Incisional hernia in 1% (n=1).
All cases with visualization of cystic duct and common bile duct and common hepatic duct. No biliary injuries.

Conclusion: Single site robotic cholecistectomy is safe and effective as minimally invasive procedure with a small single scar. After aproximately 10 cases we have signicant reducing operative time, but no difference with different platform (SiHD vs Xi).
The utilization of indocyanine green fluorescent colangiography is effective to visualization of biliary tree anatomy.

GS-17

ROBOTIC RECTAL CANCER SURGERY IN COLOMBIAN CENTER, OPTIMAL ONCOLOGIC RESULTS AND WELL BEING FOR THE SURGEONS.

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Purpose: Present our surgical experience, results and follow up using the robotic technique for treatment of rectal cancer, evaluating outcomes, safety and feasibility of the robotic system in Latin American population

Materials and Methods: From January 2017 to April 2022, patients with diagnosis of rectal cancer underwent robotic Sugery with the Da Vinci® XI™ system. Data were prospectively collected and analyzed . We include variable pre- intra and post operatory.

Results: 28 patients were include in the study. The median age was 58 years and the median BMI was 24.3 Kg/m2 (16-30). Surgical indications were rectal cancer (100%), 98% were ASA I-II. The median operative time was 184 minutes; the median docking time 8 min (range3-20). There were 1 conversions to laparotomy. All patients operated on for malignancy (27 adenocarcinoma) underwent an appropriate oncological procedure. The median time to discharge was 8 days (range 3-20). The incidence of post-operative complications was 6 % (Clavien-Dindo I/II). In all cases surgeons refers less musculoskeletal stress to the upper extremities than standard laparoscopic technique

Conclusion: Fully robotic rectal cancer surgery is safe, feasible and can lead optimal oncologic results. Colorectal surgeons reports less musculoskeletal stress to the upper extremities than standard laparoscopic technique.

GS-18

NOVEL SINGLE-PORT ROBOTIC RIGHT HEMICOLECTOMY SURGICAL ROBOTICS PLATFORM: ACCESS AND REACH

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Purpose: Single-port laparoscopy for abdominal surgery is technically challenging due to surgical technique and technology limitations, specifically in right hemicolectomy, which has traditionally shown high herniation rates due to the number of abdominal ports. In comparison with the standard laparoscopic procedure, single port-access may provide improved aesthetic benefit, decreased postoperative pain and a shorter duration of hospitalization[1]. In terms of disadvantages, traditional single port access results in prolonged operative times, reduced triangulation, restricted visualization and longer learning curves. The functionality of a novel single port robotics platform may enable the benefits of the single port-access while alleviating the latter challenges. It is key to distinguish that a robotics platform is more than just the extent of the workspace that the end effectors can reach, but also the dexterity of the end effectors at every reachable point during a right hemicolectomy.

Materials and Methods: A transformative robotics platform has been developed that allows the articulation to occur inside the abdomen by 2 arms inserted through a single incision or natural orifice. This system features miniature humanoid-shaped robotic arms that provide human level dexterity, multi-planar flexibility and 360 degrees of articulation for various access configurations. The robotic arms are introduced into the workspace extended and then retroflexed or anteflexed towards the point of entry, or towards the anatomy to reach and manipulate tissue of the right colon, transverse colon, control and dissect the mesentery and proximal margin. This study measured the manipulability of this new robotic platform throughout its entire reachable workspace in the abdomen by first generating a set of 200,000 configurations of the robot arms and secondly calculating the manipulability index according to robotics literature[2].

Results: The results show that, due to the shoulder, elbow and wrist joints of the arms that perform all their articulation after entry, the reachable workspace encompasses the entirety of the average male and female abdomen from the para-aortic nodes to the pelvic floor, across from abdominal sidewall to sidewall and from the abdominal wall to vertebrae, thus allowing multi-quadrant surgery, enabling a feasible and effective approach to single port right colectomy. Because the wrist joints have unlimited rotation and the shoulder and elbow joints allow the arms to function as they cross over each either, the manipulability index remains high (high usability) within the abdominal cavity and particularly around anatomy of interest such as the distal ileum, cecum, ascending colon and proximal to mid-transverse colon.

Conclusion: The design of this new robotic technology has the potential to provide surgical treatment during a single port right hemicolectomy including improved triangulation, reduced instrument clashing and optimized visualization[3]. The use of a single port access through a transumbilical incision and avoiding additional trocars and drains could increase patient satisfaction, based on reduced pain and increased cosmetic results[4]. Nevertheless, further prospective studies are needed.

[1] Vilcea I, et al (2016)
[2] Yoshikawa T, et al (1985)
[3] Arezzo A, et al (2021)
[4] Morales-Conde S, et al (2012)

Abstract content appears as submitted.

GS-19

ELIMINATING THE FULCRUM POINT WITH A TRANSFORMATIVE SINGLE PORT ROBOTIC SURGERY PLATFORM

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Purpose: The fulcrum point of multi-port robotic minimally invasive surgery has been the topic of much research and debate, presenting an obstacle to overcome during training and requiring careful consideration in the design of soft tissue robots[1]. In multi-port robotics, each robotic arm pivots around a fulcrum at the entry point to the abdomen such that movements of the end effector are inverted and automatically translated by the robot to mimic the movement of the surgeon[2]. While multi-port robotics attempt to minimize trocar movement at the fulcrum, unnecessary torque may still be applied by the robotic arm to the abdominal wall tissues, causing potential issues maintaining pneumoperitoneum, possible increased post-operative pain at the entry site, as well as raising concern for higher herniation rates during abdominal surgery.

Materials and Methods: A novel single port, transformative robotics platform eliminates the fulcrum effect as the 2 articulating instrument arms and end effectors encompass joints that move entirely within the abdominal cavity limiting the potential of unnecessary forces at the access port. This system features miniature humanoid-shaped robotic arms that provide human level dexterity, multi-planar flexibility and 360 degrees of articulation for various access configurations. The biomimetic instruments are designed to replicate the motions and capabilities of a surgeon's arms, with shoulder and elbow joints, in addition to an unlimited 360-degree wrist joint rotation. After introduction into the workspace while extended, the two robotic arms then retroflex or anteflex towards the anatomy of interest. This study simulated the entry of this two-arm robotic system at 3 different access points: transvaginal, umbilical and Pfannenstiel. The simulation then kept the angle of entry of the arms relative to the abdominal access point constant while measuring the reach throughout its entire workspace in the abdomen by generating a set of 200,000 different configurations of the robotic arms. Maintaining a constant angle of entry simulates the elimination of the fulcrum effect.

Results: The results show that, due to the shoulder, elbow and wrist joints of the arms that perform all their articulation after entry, the reachable workspace encompasses the entirety of the average male and female abdomen from the para-aortic nodes to the pelvic floor, across from abdominal sidewall to sidewall and from the abdominal wall to vertebrae, thus allowing multi-quadrant surgery, enabling a feasible and effective surgical approach without any fulcrum effect on the abdominal wall access ports. Because the wrist joints have unlimited rotation and the shoulder and elbow joints allow the arms to function as they cross over each either, the manipulability index also remains high (high usability) within the abdominal cavity and particularly around anatomy of interest.

Conclusion: The design of this new robotic technology has the potential to provide a broad applicability to surgical treatment by expanding single port surgery or natural orifice translumenal endoscopic surgery approaches thus reducing collateral tissue damage, scarring and the effect a mechanical fulcrum at each point of entry has on abdominal tissue[3].

[1] Gruijthuijsen C, et al (2018)
[2] Longmore SK, et al (2020)
[3] Khandalavala K, et al (2019)

GS-22

THE EFFECTS OF SMOKING HISTORY ON ROBOTIC TRANSHIATAL ESOPHAGECTOMY PATIENT OUTCOMES

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Purpose: Smoking is known to have a negative impact on health and is a precursor to a variety of morbidities and malignancies, including esophageal adenocarcinoma. However, literature is limited regarding the impact that smoking (or a history of smoking) has on patients undergoing robotic esophagectomy. This study was undertaken to determine how smoking or a history of significant smoking can affect perioperative outcomes and morbidity following robotic transhiatal esophagectomy.

Materials and Methods: 75 patients were prospectively followed and divided into two groups: 44 patients actively smoking or with a history of significant smoking were classified as 'smokers', while the other 31 patients were classified as 'nonsmokers'. Significance was determined at a p-value of ≤0.05 and data are presented as median(mean± SD).

Results: Smokers' were 70(70±7.8) years old, 89% were men, and 82% underwent neoadjuvant therapy. 'Nonsmokers' were 68(69± 7.8) years old, 74% were men, and 74% underwent neoadjuvant therapy. 'Smokers vs. 'nonsmokers' had a BMI of 26(27±5.0) vs. 26(27±4.8) kg/m^2 and ASA class of 3(3±0.4) vs. 3(3±0.5) (p=1.00). 'Smokers' had an operative duration of 341(343±91.0) minutes and estimated blood loss (EBL) of 150(191±140.0) mL; 'nonsmokers' had an operative duration of 291(298±65.9) minutes and EBL of 100(140±120.9) mL (p=0.02 and p=0.11, respectively). Tumor size was 2(3±1.7) cm for 'smokers' and 2(2±1.9) cm for 'nonsmokers' (p=1.00). AJCC staging was similar for 'smokers' vs. 'nonsmokers' (p=0.70). There were no significant differences found between 'smokers' and 'nonsmokers' for postoperative complications of Clavien-Dindo score ≥III, in-hospital mortality, length of stay, or 30-day readmissions. There was no difference in survival between 'smokers' vs. 'nonsmokers' Figure). Through hospital accounting, the total hospital cost for 'smokers' was found to be $33,131(41,091±23,465.17) compared to $34,896(62,154±65,839.53) for 'nonsmokers' (p=0.05). The hospital profit/loss was $-23,155(-15,137±35,819.29) for smokers compared to $-23,720(-16,716±50,864.64) for nonsmokers (p=0.88).

Conclusion: Patients were generally older overweight men; all had esophageal adenocarcinoma and a considerable majority underwent neoadjuvant therapy. 'Smokers' had longer operations and less costly admissions, though payment for their operations ('smokers' and 'nonsmoker') was associated with net loss. These results indicate that regardless of smoking history, patients undergoing robotic esophagectomy will experience similar outcomes to 'nonsmokers'.

Perioperative Variables	Smokers	Nonsmokers	Total | p-value
Number of Patients	44	31	75
Age (years)	70(70±7.8)	68(69±7.8)	p=0.59
Sex (M/W)	39/5	23/8	p= 0.13
BMI (kg/m^2)	26(27±5.0)	26(27±4.8)	p=1.00
ASA	3(3±0.4)	3(3±0.5)	p=1.00
Underwent Neoadjuvant Therapy (%)	36 (82%)	23 (74%)	p=0.57
Intraoperative Variables			
Operative Duration (min)	341(343±91.0)	291(298±65.9)	**p=0.02***
Estimated Blood Loss (mL)	150(191±140.0)	100(140±120.9)	p=0.11
Conversions to 'Open' (n)	2 (5%)	1 (3%)	p=1.00
Lymph Nodes Examined (n)	9(9±5.1)	10(11±6.5)	p=0.14
Lymph Nodes Positive (n)	0(1±2.5)	0(1±1.6)	p=1.00
AJCC Stage (CR/I/II/III/IV)	12/11/8/9/4	8/12/3/6/2	p=0.70
Tumor Size (cm)	2(3±1.7)	2(2±1.9)	p=1.00
Postoperative Variables			
Experienced Pulmonary Complications (%)	8 (18%)	7 (23%)	p=0.80
Clavien-Dindo Score (≥ III)	1(IIIa), 2(IIIb), 3(IVa)	4(IIIa), 2(IVa)	p=0.53
Underwent Adjuvant Therapy (%)	14 (32%)	11 (36%)	p=0.81
In-Hospital Mortality (%)	3 (7%)	2 (7%)	p=1.00
Length of Stay (days)	9(13±13.0)	7(11±14.0)	p=0.53
Readmissions within 30 days (%)	4 (9%)	2 (7%)	p=1.00
Cost			
Total Cost	$33,131(41,091±23,465.17)	$34,896(62,154±65,839.53)	**p=0.05***
Variable Cost	$20,794(23,555±11,825.66)	$22,815(35,183±31,869.04)	**p=0.03***
Fixed Direct Cost	$3,008(4,910 ±4,922.69)	$3,252(6,815±13,300.43)	p=0.39
Fixed Indirect Cost	$9,360(12,507±7,530.23)	$10,854(19,937±22,271.30)	**p=0.04***
Hospital Reimbursements Received	$14,172(25,257±32,416.46)	$12,895(36,869±50,931.21)	p=0.23
Profit/Loss	$-23,155(-15,137±35,819.29)	$-23,720 (-16,716±50,864.64)	p=0.88

Perioperative Variables Comparing Smokers vs. Nonsmokers after Transhiatal Esophagectomy
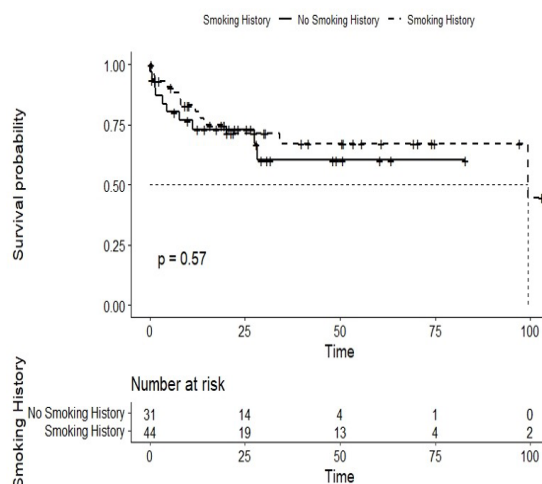
Survival After Robotic Transhiatal Esophagectomy Smokers vs. Nonsmokers

GS-26

IS IT A "STRETCH" TO RECOMMEND ROUTINE FASCIAL CLOSURE OF 8 MILLIMETER ROBOTIC TROCAR SITES?

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Purpose: To evaluate the necessity of fascial closure of 8 millimeter robotic trocar sites to prevent port site hernia.

Materials and Methods: Examination of a case presentation and literature review.

Results: A 58-year-old woman presented to the clinic complaining of epigastric bulge and abdominal pain. She was diagnosed with an epigastric hernia with a 3 cm fascial defect. Given her comorbidities of obesity and collagen vascular disease, robotic assisted laparoscopic hernia repair was recommended. She underwent an uneventful robotic repair with the intraperitoneal onlay method and was discharged home. She presented to the emergency room 8 days later and was diagnosed with a small bowel obstruction, CT showed an intramuscular hernia at her 8 mm left lower quadrant port site. She had a laparoscopic reduction of the incarcerated bowel and primary closure of the hernia, which was a 3 cm defect of the transversus abdominis fascia, the internal and external obliques were intact. Most general surgeons close port sites 10 mm or greater. The DaVinci robotic platform uses 8 mm trocars which are also blunt tip and conical, which based on previous meta-analysis should have a lower rate of port site hernia. The DaVinci robotic arms move around a remote center to avoid applying excess force to the abdominal wall with extremes of arm motion. However, if the remote center is not appropriately placed, it can apply enough force to the wall to increase the size of the fascial opening. A test by Ogasa et al used a clay and rubber model of the abdominal wall with a DaVinci robotic platform, showing that with the remote center appropriately placed, the abdominal wall ended up with a 2.4 cm hole in the clay abdominal wall. When the center was 2 cm shallow, this resulted in a 4.5 cm hole. Though the incision is only 8 mm, slight misplacement of the remote center can stretch the fascia and create a larger defect that may need to be closed.

Conclusion: We recommend close examination of the defect internally and if concerned for stretching of the fascia, perform full-thickness fascial closure.

GS-32

INTRACORPOREAL VERSUS EXTRACORPOREAL ANASTOMOSIS FOR ROBOTIC RECTO-SIGMOID RESECTIONS

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Purpose: Robotic Surgery (RS) has become a standard of care for colorectal conditions at multiple centers in the USA. It has been well demonstrated the advantages of intra-corporeal anastomosis for the right-side colectomies. However, there is no true consensus regarding standardized techniques for the intra-corporeal anastomosis technique in recto-sigmoid resections.
Our aim was to compare short-term outcomes of intra-corporeal (IC) versus extracorporeal (EC) anastomosis following minimally invasive recto-sigmoid resections for treatment of colorectal disease.

Materials and Methods: This is a single center retrospective study. We included patients with robotic colorectal surgical procedures between 2017 - 2020.
Demographics, peri-operative and postoperative information for consecutive Robotic Surgery cases were collected from hospital patient medical records.
The study compared the short-term outcomes of Intra-corporeal Anastomosis vs Extra-corporeal Anastomosis techniques for robotic Colorectal procedures (Sigmoid and Rectal resections with anastomosis)
The primary outcome was 30-day postoperative complications.
Secondary outcomes included operative time, blood loss, length of stay, leaks, and readmissions.
Statistical analysis was done using Chi-square test and Student t-test where appropriate.

Results: Of 172 RS patients studied, EC was performed in 95 (55%) patients versus 45% for IC.
There were no significant differences in any preoperative patient characteristics between groups.
40% of the cases were oncological (recto-sigmoid cancer).
The mean operative time was noted to be significantly longer for IC (3.20 hours) than EC (2.50 hours) (p=0.04).
Both groups had similar mean hospital length of stay (IC: 3.1 vs EC: 3.5 days), mean blood loss (IC: 30.5 vs EC: 38.9 ml), leaks (IC: 0% vs EC: 2%), 30-day readmissions (IC: 7% vs EC: 9%), and complications (IC: 9% vs EC: 12%).

Conclusion: In this single-center study, the type of anastomosis did not have an impact on short term surgical outcomes in robot recto-sigmoid resections. However, EC is associated with shorter operative time compared to IC. Prospective and randomized studies are needed for stronger recommendations.

Variable	IC (n=77)	EC (n=95)	p-value
Demographics			
Mean age (years)	58.5	60.8	0.12
Gender, n (%)			
Female	43 (55.8%)	54 (56.8%)	0.92
Body Mass Index	27.8	28.3	0.48
Operative Characteristics			
Indication, n (%)			
Sigmoid colon cancer	17 (22%)	23 (24.2%)	0.47
Rectal Cancer	14 (18%)	13 (13.6%)	
Benign Colonic Disease	46 (59.8%)	59 (62%)	
Mean Estimated Blood Loss (ml)	30.5	38.9	0.52
Operation time (hours)	3.1	2.5	**0.052**
Mean Length of stay (days)	3.1	3.5	0.391
Post-Operative Outcomes			
Leaks, n (%)	0 (0%)	2 (2%)	
Readmissions, n (%)	6 (7%)	9 (9.4%)	0.77
Complications, n (%)	9 (11.6%)	16 (16.8%)	0.25

Table 1: Robotic Colorectal Surgery patients. Demographics, peri-operative and postoperative outcomes.

G-3

MALIGNANT PERITONEAL CYTOLOGIC CONTAMINATION WITH ROBOTIC HYSTERECTOMY FOR ENDOMETRIAL CANCER

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Purpose: Positive peritoneal cytology in endometrial cancer (EC) has not been determined to be an independent prognostic factor in uterine-confined disease and is not included in the International Federation of Gynecology and Obstetrics staging system. The aim of this study was to determine the prevalence of peritoneal cytologic contamination following robotic hysterectomy for EC.

Materials and Methods: Peritoneal cytologies from the pelvis and diaphragm were obtained at the initiation of surgery, and from the pelvis only at the completion of robotic hysterectomy and sentinel lymph node mapping. Cytology specimens were processed and evaluated for the presence of malignant cells. Pre- and post-hysterectomy specimens were compared

Results: 162 patients underwent robotic hysterectomy with sentinel lymph node mapping for EC with the use of a uterine manipulator. Mean age and body mass index were 65.9 ± 9.7 yr, and 34.1 ± 7.8 kg/m^2. 34/162 (20.9%) cases had positive cytologies including 33 (20.4%) pelvic, 2 (1.2%) diaphragm. Pre-hysterectomy (+) washings were 12 pelvic, 0 diaphragm, and 2 both. Twenty (12.3%) patients had (+) cytology at hysterectomy completion after initially negative pre-hysterectomy cytologies. Six (3.7%) had conversion of positive cytology to negative following hysterectomy. Pelvic contamination was associated with deeper invasion (48.6% vs 29.7%, *p=0.008*), lesion size (4.71cm vs 3.69cm, *p=0.03*), positive pelvic lymph nodes (35.7% vs 10.4%, *p=0.001*), and presence of LVSI (50% vs 30.6%, *p=0.03*).

Conclusion: Malignant peritoneal contamination occurred during robotic surgery for EC in 12% of cases. There was an association with lesion size, depth of invasion, positive pelvic lymph nodes, and LVSI. Whether or not peritoneal contamination leads to disease recurrence should be studied, including evaluation of patterns of recurrence and the potential impact of adjuvant therapies. Methods to reduce peritoneal contamination are likely warranted.

G-4

MICROSCOPIC DISEASE DETECTED USING THE DA VINCI XI LEADING TO EARLY DIAGNOSIS OF PRIMARY PERITONEAL SEROUS CARCINOMA DURING A LAPAROSCOPIC PROCEDURE FOR PELVIC ORGAN PROLAPSE: A CASE REPORT

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Purpose: 13,700 people die each year from cancer of the ovaries, fallopian tubes, or peritoneum. Primary Peritoneal Serous Carcinoma (PPSC) typically presents in postmenopausal patients (n = 61 years) complaining of symptoms identical to tubal and ovarian cancers such as fullness, bloating, increased abdominal girth, and constipation, and are more frequently diagnosed at a higher grade and stage. The 5-year mortality of PPSC is 40%. The lack of screening procedures for PPSC and its relatively silent course contribute to the high mortality associated with this diagnosis. Our recent case report suggests that using the Da Vinci XI in various surgical specialties, compared to laparoscopic procedures and open procedures, may lead to a decreased mortality rate of PPSC due to early diagnosis and identification.

Materials and Methods: A 69-year-old female, G4P4, presented to the clinic with symptomatic pelvic organ prolapse and stress incontinence. Following dialogue with the physician, the patient elected to proceed with surgical management including a robotic-assisted total laparoscopic hysterectomy, bilateral salpingo-oophorectomy, uterosacral suspension, mid-urethral sling placement, and cystoscopy were scheduled for correction of the patient's presenting symptoms. Following resection of the uterus, cervix, and bilateral fallopian tubes and ovaries, the surgeon identified an abnormal appearing omentum. A 0.4 cm mass was resected with an additional portion of the omentum and sent to pathology (Image 1). The patient tolerated the procedure well and had an uncomplicated recovery.

Results: The pathology results were consistent with an incidental finding of a stage IIB low-grade serous primary peritoneal cancer identified in the omental mass. No ovarian or fallopian tube surface involvement was identified. A single lymph node was noted to be involved in the mesosalpinx/mesovarium with a 7mm metastatic deposit. A CT of the chest, abdominal, and pelvic location was ordered, finding no concern for residual or metastatic disease. Upon genetic analysis, the patient was found to have a CHEK2 mutation. After the recommendation for the need for ER/PR testing on the tumor, PET scans, and surgical exploration for further identification, the patient declined in favor of the use of hormone therapy, Letrozole.

Conclusion: Although published studies demonstrate similar surgical outcomes between laparoscopic and robotic-assisted hysterectomies, the use of the robotic Da Vinci XI system allowed the surgeon to further examine the surrounding tissue of the peritoneal cavity using 10-15X magnification. To our knowledge, this is the first case presenting an incidental finding that was later identified as PPSC during a Da Vinci XI-assisted hysterectomy for benign disease. We recognize the possibility of finding an incidental cancer is possible on laparoscopic instruments, however, we propose the likelihood of an incidental finding would be higher during robotic-assisted procedures. The use of the Da Vinci XI system was instrumental in the early diagnosis and identification of PPSC due to its increased magnification and 3D vision capabilities resulting in the potential decrease in morbidity from PPSC.

IMAGE 1: 0.4 cm abnormal appearing mass in the omentum.

G-5

UNDERSTANDING FEATURE IMPORTANCE IN ROBOTIC HYSTERECTOMY INCISION-TIME DURATION USING MACHINE LEARNING

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Purpose: To create a machine learning (ML) model to understand predictive variables and to better predict incision time for robotic hysterectomies.

Materials and Methods: Patient characteristics (age, body mass index, surgical history, uterine size, diagnosis, and history of pelvic adhesive disease) and surgical characteristics (presence of trainees, number of procedures performed concomitantly, and surgeon median times for prior 5, 30, and 50 surgeries) were identified and used to build ML models. Analyses compared various ML models to determine which performed best. Sequential monthly models were then built, each trained using data prior to that month (up to 18 months). Feature importance was determined as an average of the absolute predicted value of each feature. A dataset of 3058 patients undergoing robotic hysterectomy from January 2017 to April 2021 across three hospital campuses was used.

Results: Explainable boosting machine (EBM), a tree-based, cyclic gradient boosting Generalized Additive Model with automatic interaction detection, was chosen for its superior performance compared to the baseline around specific performance indicators. EBM also allows us to examine features individually to study how they impact the prediction, taking other features into account. Our analysis showed the most important features influencing incision time were the median of the past 5, 10, and 30 procedures, the number of other procedures, the uterus size, and patient age. When more closely examined as step functions, discrete thresholds that shift incision time can be identified. For example, uterus size appears to change incision time when the value approached at least ~350 cc (figure 1), which, based on the literature, is approximately 300 grams. Interestingly, this differs from Current Procedural Terminology code thresholds that use a 250-gram cutoff.

Conclusion: Machine learning is a valuable tool to both predict as well as understand patient and surgical features' that impact total incision time of a robotic hysterectomy, which can highlight opportunities to enhance surgical excellence as well as create evidence-based policy, such as more accurately coding uterus size.
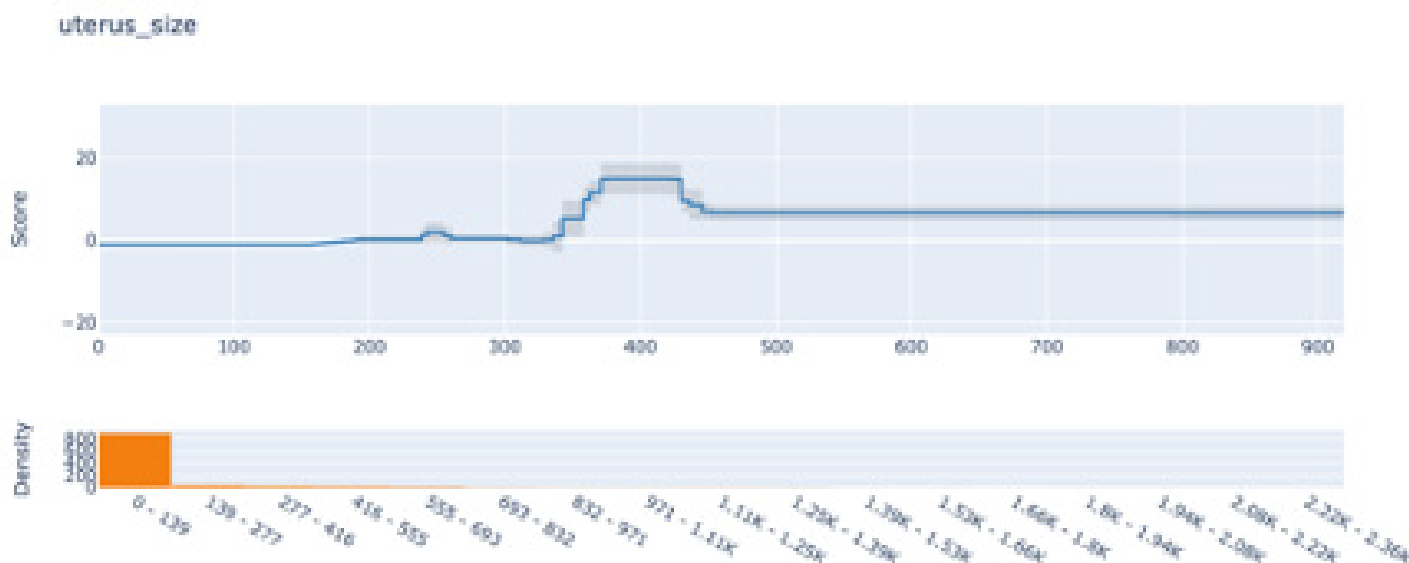

Figure 1. Uterus Size Step Function (score signifies impact on incision time)

G-6

PERFORMANCE AND PROSPECTIVE VALIDATION OF A MACHINE LEARNING MODEL TO PREDIT ROBOTIC HYSTERECTOMY INCISION TIME DURATION

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Purpose: To employ a novel machine learning predictive model to prospectively estimate operative time for robotic hysterectomies to optimize operating room scheduling and resource utilization.

Materials and Methods: A machine learning model was created to predict total incision time for robotic hysterectomies based on clinical and surgical features identified as potentially impacting incision time. Features included patient characteristics (age, body mass index, uterine size, presence of gynecologic malignancy, history of pelvic adhesive disease, and prior abdominal surgeries) and surgical characteristics (presence of trainees, surgeon median incision time for prior 5, 10, and 30 hysterectomies, and number of procedures performed concomitantly during the case). The final model was developed using a dataset of 3058 robotic-assisted hysterectomy cases within the NYU Langone Health System between October 2019 and March 2021 and tested on cases from April 2021. Prospective validation was performed on 95 cases taking place in December 2021 using a secure, internal web interface application built to ingest feature data and predict incision time. Currently, OR time is scheduled in 15-minute increments, and as such, the difference between an estimation and the true incision time were calculated and rounded to 15 minutes blocks. When the estimation is shorter than the true incision time, the patient scheduled for the following surgery will need to wait ("wait time blocks"). In contrast, excess time blocks are created when the estimation is longer than the true incision time, which introduces excess time during which more surgeries could have been scheduled ("excess time blocks"). The predicted time was compared to standard practice estimates and actual incision time using these metrics.

Results: In December 2021, the research team entered 104 cases into an internal web interface application to validate the model prospectively. Nine cases whose incision time was greater than 3 hours were excluded based on our exclusion criteria. In the prospective dataset of cases, the model performed better than current practice, predicting 67% of cases correctly within 30 minutes of the true incision time, reducing average underestimated minutes by 20%, and reducing excess time blocks by 12%. For the nine cases that were excluded due to >3 hours median incision time, the model still saved a greater amount in excess time blocks than current practice.

Conclusion: This machine learning model and its features are successful in predicting incision time for robotic hysterectomies compared to standard estimates, which may allow for improvement in OR and resource utilization, enhanced patient satisfaction, and significant institutional savings. Given the improvement in case duration predictions, expansion of this model to other robotic procedures and deployment into hospital operations may promote efficient surgical case scheduling and improved patient and staff experience.

Table 1. Prospective Results in December 2021 (n=95)

Metric	Model	Baseline	Model vs. Baseline
Higher is better			
% true time within 15% of prediction	34.74	37.89	-8%
% true time within 30 min of prediction	67.37	64.21	5%
Lower is better			
overage	41.05	36.84	11%
avg. minutes that are overestimated	56.06	56.60	-1%
underage	35.79	35.79	0%
avg minutes that are underestimated	21.56	26.88	-20%
avg minutes that are off	31.96	31.59	1%
15 minutes time blocks (Lower is better)			
# wait time blocks	150	139	8%
# excess time blocks	57	65	-12%

Results: Table 1. Prospective Results in December 2021 (n = 95)

G-8

QUANTIFYING A COMPREHENSIVE TRAINING PROTOCOL FOR A NOVEL TRANSVAGINAL ROBOTIC SYSTEM

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Purpose: Efforts should be made to minimize the learning curve of new medical technology and safety must be ensured during this process. This abstract describes the training platform and the quantification methods designed to assess a novel transvaginal robotic technique for benign hysterectomy.

Materials and Methods: The training platform covers vaginal entry into the rectouterine pouch, insertion and retroflexion of the humanoid robotic arms, standard fundus to cervix hysterectomy techniques using the robotic arms, safe use of energy, specimen extraction through the colpotomy and vaginal cuff closure. The training platform is implements in 4 phases. Phase 1 is an Introduction to the Technology and includes case observations, video reviews and peer-to-peer workshops. Phase II is the Technology Training which includes online modules, skills drills on a desktop trainer and a vaginal access trainer and 10-13 hours of simulation and wet lab training followed by a system skills assessment. Phase III is the initial first case series. Phase IV is a continued Training Continuum including surgeon led webinars, advanced master courses, surgeon lecture programs.

Results: Effectiveness of the surgeon training pathway will be assessed according to the Kirkpatrick Model of learning evaluation. This includes the Reaction, which quantifies the surgeon satisfaction with training, Learning, which measures the increase in knowledge and skills, the Impact on Behavior, which assesses the change in behavior both with the 6 months after training and finally the Results, which quantifies the overall impact of training on the outcomes. Learning curve will be assessed using Cumulative Summation (CUSUM) Analysis which is a sequential analysis technique developed in statistical quality control.

Conclusion: This systematic and objective approach to training is critical to successful implementation of new technology in the operating room.

G-9

DESIGN OF A ROBOTIC SURGERY CONSOLE TO OPTIMIZE USER ERGONOMICS

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Purpose: Standard laparoscopic surgery is oftentimes associated with major musculoskeletal discomfort for the surgeon [1,2]. Robotic surgery allows the surgeon to work from a seated position with arms on an armrest, significantly improving user ergonomics [3]. Recent data has shown, however, that the ergonomics of working at a common robotic surgery console still results in suboptimal neck and trunk postures [4]. A robotics platform with open line of sight to the endoscopic viewing screen and the patient, as well as an ergonomically designed console and armrests has the potential to significantly improve surgeon ergonomics, thus improving long term surgical performance. The purpose of this study was to determine the optimal dimensions of a robotic console compared to preferable joint angles according to ergonomic guidelines.

Materials and Methods: The optimal joint angle ranges were derived from the Rapid Upper Limb Assessment (RULA) tool [5]. According to this tool, a console should be adjustable to provide optimized ergonomics such that the angle of the elbow is within 60-100°, the angle of the knee is within 90-110°, the angle of the hip is within 90-100°, the angle of the shoulder is within 0-20°, the angle of the trunk is within 0-10° and the angle of the neck is within 0-10°. Five different 3D human models were used that met the following proportions: 5th, 50th and 95th female percentiles and the 50th and 95th male percentiles. The joints of each of the 5 human models were placed in the RULA optimal joint angle ranges while the minimum adjustable parameters and their values for a new console design were determined.

Results: The results showed that all human user models could be satisfied by allowing adjustments to following 6 parameters: the armrest height from the floor, the armrest distance from the controllers, the distance between the feet, the chair height, the controller height and the screen height. The ranges for each parameter were calculated to meet all 5 human models at each optimal angle extent. While the largest delta between min and max was found with the distance between the feet (40.8cm), this parameter is simply something the console must allow. The other parameters define the structure of the console with the largest delta of the remaining 5 parameters found in the screen height (23.2cm). The other adjustable range deltas were 13.0cm for the armrest height from the floor, 18.3cm for the armrest distance from the controllers 5.8cm for the chair height and 11.9cm for the controller height. Interestingly, while all the maximums were observed in the 95th male percentile, not all minimums were observed in the 5th female percentile.

Conclusion: These results show that a robotic surgery console with a limited number of adjustable parameters with realistic ranges (all under 25cm) will allow for optimal ergonomics for a broad range of users.

[1] Cavallo F, et al (2012)
[2] Alleblas CCJ, et al (2017)
[3] Bagrodia A, et al (2009)
[4] van't Hullenaar CDP, et al (2017)
[5] McAtamney L, et al (1993)

H-1

UTILIZING THE DA VINCI FIREFLY SYSTEM AND FLUORESCENTLY LABELED ANTI-EGFR ANTIBODIES AS OPTICAL IMAGING AGENTS TO VIZUALISE CANCER TISSUE IN REAL TIME DURING TRANSORAL ROBOTIC SURGERY

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Purpose:
Fluorescence-guided surgery (FGS) has improved outcomes in ablative oncologic surgery through delineating tumor margins, detecting residual disease, and facilitating sparing of normal tissue. The development of cancer-specific near infrared (NIR) contrast agents has further improved FGS technology. Enhanced intraoperative visualization and appreciation of three-dimensional tumor margins is theorized to decrease positive margin rates and hence improve locoregional control. Pre-clinical success with anti-EGFR antibodies conjugated to NIR fluorophores prompted translation into a US clinical trial in patients with HNSCC. Transoral Robotic Surgery (TORS) is uniquely positioned to benefit from this technology. TORS suffers from an absence of tactile feedback, lack of panoramic view, and low ambient light. The objective of this study is to evaluate whether the combination of retrofitted Firefly/Sensitive Firefly NIR hardware on the Intuitive System and tumor-specific fluorescence contrast agents can improve tumor-to-background ratio (TBR) and permit enhanced tumor visualization and specimen orientation during TORS for HNSCC.

Materials and Methods: Patients undergoing standard of care surgical resection of HNSCC were consented and enrolled in a Phase I clinical trial at UAB hospital (Birmingham, AL; NCT02415881) exploring the safety and specificity of systemically administered Panitumumab-IRDye800, a NIR fluorophore conjugated to an anti-EGFR antibody, to detect the presence of tumor tissue. Nine patients with mucosal HNSCC underwent TORS resection with the Da Vinci Robot (Intuitive Surgical) and intraoperative imaging using the onboard Firefly and Sensitive Firefly NIR imaging systems. Ex vivo imaging was performed using wide-field (Luna, Novadaq) and closed field (Pearl Trilogy, LICOR) NIR imaging systems, which have been validated previously. Outcomes included safety data (adverse events) as well as quantitative and qualitative fluorescence measures (TBRs and correlative fluorescence mapping, respectively).

Results: There were no safety issues or adverse events in for any patients (n=9). To date, no patient has had recurrence of disease (mean time from treatment: 44.6 months, range: 32-83 months, median: 36 months). Mean TBRs were >1.5 for all patients (>1.5 deemed clinically significant by international consensus group; range 1.74 to 4.12), and the overall mean TBR was 2.85 ± 0.87. In vivo fluorescence using the Firefly and Sensitive Firefly systems correlated with ex vivo fluorescence using validated open and closed-field devices and colocalized with tumor tissue on ex vivo specimen mapping and correlative histopathology (Figure 1).
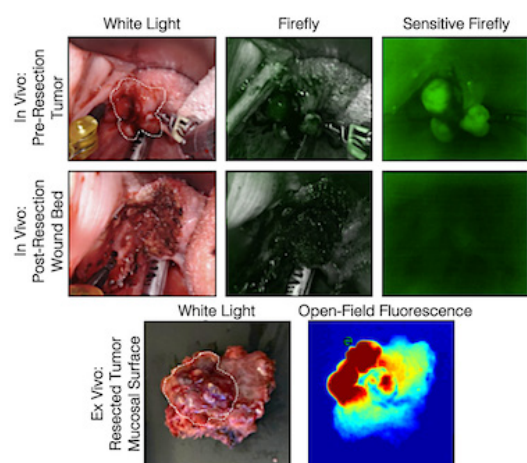
Conclusion: In this first-in-human Phase I clinical trial, we demonstrate the ability of tumor-targeted (anti-EGFR) NIR fluorophores to safely and specifically detect the presence of HNSCC in patients using the da Vinci Xi surgical system and the onboard Firefly/Advanced Firefly integrated NIR fluorescence imaging systems. The findings of this novel clinical trial show that FGS has the potential to guide real-time tumor resection and margin assessment, expedite frozen margin assessment, and improve both immediate post-resection pathological processing and final margin assessments in patients with HNSCC undergoing TORS resection. Future Phase 2-3 trials are planned to assess whether this technology decreases positive margin rates which would ultimately have a global impact on the field.

Figure 1: Radical Tonsillectomy using Da Vinci Xi System

T-2

SHORT TERM OUTCOMES OF FIRST 100 ROBOTIC ASSISTED MINIMALLY INVASIVE OESOPHAGECTOMY: OUR SINGLE INSTITUTIONAL EXPERIENCE

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Purpose: With the aim to decrease the rate of pulmonary complications associated with thoracotomy, minimally invasive oesophagectomy (MIE) was introduced. Our purpose is to see the feasibility, safety and short term outcomes of Robot Assisted MIE (RAMIE).

Materials and Methods: 100 consecutive cases of carcinoma oesophagus from May 2017 to March 2022 were eligible in Department of Surgical Oncology, BLK-Max Hospital, New Delhi, India. Demographic, neoadjuvant therapy, operative and outcomes data was prospectively collected. Complications were graded according to Esophagectomy Complications Consensus Group (ECCG).

Results: 71 male and 29 female patients with a median age of 60 years (range 20-80). 29% patients had no comorbidities. 1 had prior fundoplication surgery, 1 had carcinoma ascending colon, another had carcinoma thyroid. 24 patients were staged II, 71 patients staged III and 5 patients were staged IVA disease. Most of the patients (91%) had clinical nodal positivity pre-treatment. Most of the tumors (63%) were localized in middle oesophagus. Most of the patients received neoadjuvant chemoradiotherapy (62%).

Operative Results
Out of 100, 73 underwent total robotic MIE and 27 hybrid technique. 78 underwent McKeown's and 19 underwent Ivor Lewis and 3 underwent Laryngo Pharyngo Oesophagectomy. Thoracic part in 1 patient was converted to open due to extensive adhesions in right hemithorax. Mean abdominal console time was 146 min (+ 32 min) and thoracic console time was 120 min (+ 39 min); with a total operative time of 314 min (+ 44 min). Intraoperative blood loss was 300 ml (+ 86 ml).

Post operative and short term outcomes
Out of 100 patients, 74 recovered well without any major complications. Most common complications were pulmonary (14%). Anastomotic leakage was found in 8 patients in whom 4 patients were managed conservatively, 1 required oesophageal stenting, other 2 had bedside opening incision, 1 required pectoralis major muscle flap cover. Clinically recurrent laryngeal nerve palsy was found in 3 patients and were all unilateral and transient. Chylothorax was found in 2 for which 1 required thoracic duct ligation and other was treated with dietary modifications. The median ICU stay was 3 days (range 1-28 days), whereas median hospital stay was 8 days (range 6-38 days). Our 30 day mortality was 1% and this patient died on POD8 due to sepsis and respiratory failure. Our 90 day mortality was 2% due to recurrent pneumonia, aspiration and sepsis.

Oncological Outcomes
Squamous cell carcinoma was the most common histopathological diagnosis (81%). Pathological complete response (pT0N0) was seen in 22 patients and only nodal disease remained in 9 patients with no tumor viable at primary site. Median lymphnodal yield was 21 nodes (range 9-68) with median positive nodal rate of 0 (range 0-31). There was no margin positivity in any of the cases.

Conclusion: RAMIE is technically feasible and safe procedure. Postoperative complications and short-term oncologic results of our centre are comparable to the highest international standards.

T-9

USE OF ROBOTIC SURGERY FOR THYMOMA RESECTION IN A PATIENT WITH THROMBOCYTOPENIA. CASE REPORT.

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Purpose: Thymomas are associated with paraneoplastic syndromes in 30% of cases, often with myasthenia gravis, hypogammaglobulinaemia, pure red cell aplasia and others. However, their association with thrombocytopenia is rare. The surgical approach to this type of neoplasm is the mainstay of treatment, with minimally invasive procedures being increasingly used due to their optimal results. We present a case in this regard, demonstrating optimal patient recovery with the use of robotic surgery.

Materials and Methods: A 66-year-old man with a history of chronic smoking and hypertension was admitted to the emergency room for petechiae in the lower limbs and epistaxis. Complete blood count showed 1,000 platelets, haemoglobin 10 g/dL and haematocrit 30%. Bone marrow aspirate showed absence of megakaryocytes. Chest CT scan showed a mediastinal tumour measuring 11.3 x 7.9 x 5.3 cm with well-defined borders and no evidence of invasion of adjacent structures or pathological lymph nodes. Surgical management with a robotic approach was decided.

Results: During surgery, the tumour was found to be encapsulated, with no invasion of adjacent structures. Dissection of the superior vena cava and innominate vein was facilitated until the tumour was dislocated and completely resected (Figure 1). The tumour was sent for histopathological study, describing it as firm, smooth, dark brown, bilobed in appearance, with nodules of variable size. The histological study showed WHO type AB thymoma with lymphovascular invasion present, focal invasion of the capsule without crossing it, with a negative surgical margin for malignancy (Figure 2). After the procedure, the patient recovered cell counts to normal parameters. He was discharged on the 2nd postoperative day.

Conclusion: The minimally invasive approach offers excellent results. In our patient's case, he required a short postoperative hospitalisation with adequate disease control. Currently, the removal of mediastinal tumours by minimally invasive procedures has shown some benefits over conventional surgery, with better visualisation of anatomical structures, reduced injury to adjacent tissues, vascular and nerve damage, shorter hospital stay, better cosmetic results, less trauma and early return to daily activities. As for the association of thymoma with thrombocytopenia, it is a rare entity and its physiopathogenic and therapeutic mechanisms are poorly described, although in most cases it improves with resection of the mediastinal tumour.
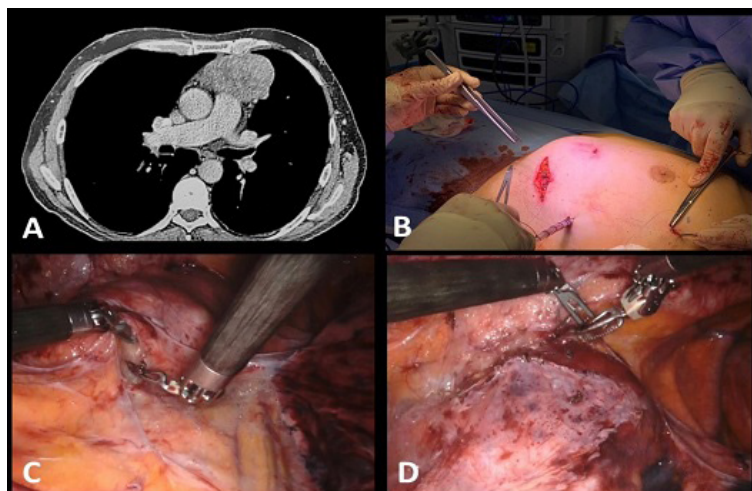
Chest CT scan showing the mediastinal tumour (A). Surgical approach (B) and trans-operative photographs (C, D).
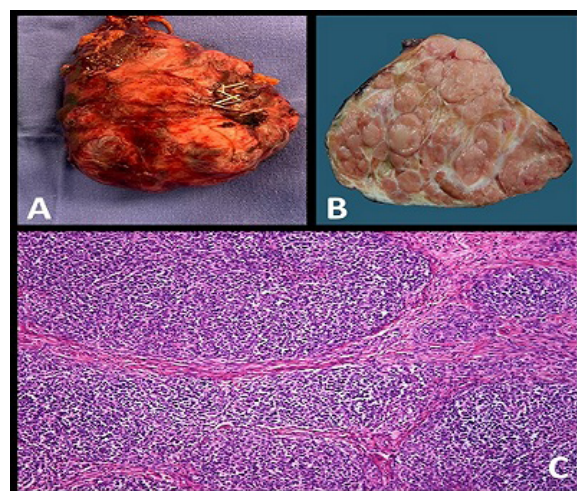
Surgical specimen (A external surface, B medial section) and histopathological section with haematoxylin and eosin stain (C).

U-1

ANALYSIS OF FIXED OPERATING ROOM (OR) TIMES IN UROLOGIC ROBOTIC-ASSISTED SURGERY

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Purpose: Current evaluations of robotic-assisted surgery operating room efficiency focus on surgical console time. We broke procedures into fixed (nonprocedural) and variable (procedural) timepoints. Our objective was to evaluate fixed OR times for three common robotic-assisted urologic procedures.

Materials and Methods: Over a 24-month period, we prospectively collected intraoperative data for 635-consecutive robotic-assisted surgeries. Fixed OR times were evaluated for robotic-assisted partial nephrectomy (RAPN) (n=146), robotic-assisted radical cystectomy (RARC) (n=77), and robotic-assisted radical prostatectomy (RARP) (n=412). Fixed OR times were defined as nonprocedural time in the OR, including, in room time to anesthesia release time (IRAT), anesthesia release time to cut time (ARCT), in room time to cut time (IRCT; IRAT + ARCT), and close time to wheels out time (CTWO). The effects of surgery time of day and the number of anesthesia personnel (AP) present in surgery on fixed OR times were also analyzed. Time of day was broken into morning (before 12PM) and afternoon (at or after 12PM) procedures. Only frontline anesthesia personnel (certified registered nurse anesthetists and anesthesia residents) were included in the AP portion of the analysis. Comparisons between groups were performed using the Fisher exact test for categorical variables and the Kruskal Wallis test for continuous variables. P values less than 0.05 were considered statistically significant in our analysis.

Results: Fixed OR times occupied 15% (IQR: 13%-17%) (RARC), 27% (23%-31%) (RAPN), and 20% (17%-23%) (RARP) of total OR time. Median procedure time was 473 min (IQR: 415-779) for RARC, 273 min (244-308) for RAPN, and 271 min (247-297) for RARP. The majority of procedures began in the morning: 100% (77/77) of RARCs, 53% (77/146) of RAPNs, and 66% (271/412) of RARPs. Time of day did not have a negative effect on fixed OR times for robotic-assisted urologic surgeries. Median AP count was highest for RARC (median: 3, range: 1-7). RAPN and RARP both had a median AP count of 2 (range: 1-5). We did not find any association between AP count and fixed OR times for any of the procedures evaluated (all P≥0.19).

Conclusion: Fixed OR times made up a significant percentage of total operating room time for robotic-assisted procedures and should be incorporated into OR efficiency analyses in the future. The number of AP involved per case and the time of day in which surgeries were performed did not negatively impact fixed OR times in urologic robotic surgeries.

U-2

ISOLATED RETROPERITONEAL LYNPHANGIOLEIOMYOMATOSIS: ROBOT-ASSISTED SURGICAL TREATMENT

NILO LEÃO, LAIS FERNANDES, FELIPE MOREIRA, LEONARDO CALAZANS, JOÃO ESTRELA, ALEXANDRE ZIOMKOWISKI
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Purpose: In this paper, we will describe the case of a 44-year-old female patient diagnosed with isolated retroperitoneal lymphangioleiomyomatosis and treated with a robot-assisted laparoscopic approach.

Materials and Methods: Case report of a patient accompanied by members of the author's team. Information was obtained by reviewing the medical records about the case.

Results: 44-year-old female patient without comorbidities. She presented to the service with the chief complaint of diffuse and nonspecific abdominal pain of undetermined origin.
Total abdominal US was requested, which showed the presence of a large mass of retroperitoneal origin on the left.
An MRI was then performed for better surgical planning, which showed a solid-cystic lesion of the retroperitoneum measuring 8.6 x 5.3 x 4.7 cm, with partially defined contours, multiloculated, predominantly cystical with a solid component of 3 cm. There was an apparent continuity between the lesion and the retroperitoneal lymphatic branches, branches that were slightly ectatic. The lesion had an intimate medium distal contact with the main renal vessels on the left, with no signs of their infiltration. After robotic docking, the main mass was easily visualized and a fragment of it was sent for a freezing biopsy, which revealed a 9.2 cm Fusocellular Neoplasm in its longest axis. Due to the absence of lymphoma suggestive findings, the proposal for resection of the mass and retroperitoneal lymph nodes was continued. During the surgery, it was possible to perform dissection of the main tumor mass, preserving the renal hilum and ureter, which enabled the preservation of the entire renal unit. The resection of the intra-aortocaval and paraortic lymph nodes was performed with the patient in lateral docking with no noteworthy technical difficulties. For the ligature of larger size lymphatic vessels, it was used polymer clips. There was a point of more adherence of the lymph nodes to the medial part of the inferior vena cava, which resulted in a 2 mm small lasceration, that was promptly sutured with a X point using Prolene 3.0. The procedure lasted 120 minutes, with an estimated blood loss of 200 ml. We chose not to send the patient to a closed unit, which allowed hospital discharge within 24 hours after surgery. The final histopathological analysis together with immunohistochemistry confirmed the diagnosis of isolated retroperitoneal lymphangioleiomyomatosis.

Conclusion: Lymphangioleiomyomatosis is a rare disease, especially in cases of isolated retroperitoneal presentation, as reported. To decide the best course of action, factors such as the size and location of the mass are considered. In this case, a robot-assisted laparoscopy was performed with good results, with the possibility of preserving adjacent structures, low blood loss and discharge after 24 hours.
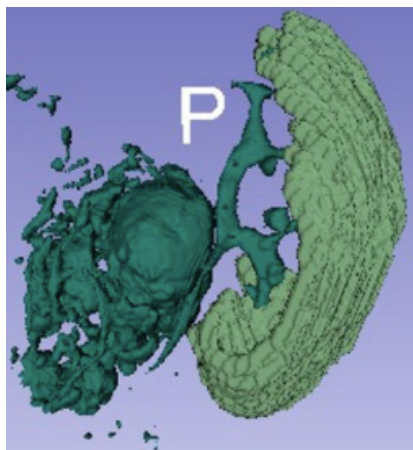
RMN   *SURGICAL PIECE*

U-4

COMPARISON OF SALVAGE PROSTATECTOMY VERSUS SALVAGE RADIOTHERAPY AFTER FOCAL THERAPY FAILURE

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Purpose: Ablative therapy, such as focal therapy, aims to treat clinically significant prostate cancer with reduced treatment-related toxicity. Up to a third of patients may require further local salvage treatment after ablative therapy failure. We compare oncological and functional outcomes after salvage robot-assisted radical prostatectomy (SRARP) and salvage radiotherapy (SRT).

Materials and Methods: Data were collected prospectively and retrospectively on 100 consecutive SRARP cases and 100 consecutive SRT cases, after ablative therapy failure, in a high-volume tertiary centre.

Results: High-risk patients were over-represented in the SRARP group (66.0%) compared to the SRT group (48.0%) (p=0.013). Median (IQR) follow-up after SRARP was 16.5 (10.0-30.0) months and 37.0 (18.5-64.0) after SRT.
SRT appeared to confer greater biochemical recurrence (BCR)-free survival at one, two and three years compared to SRARP in high-risk patients, but BCR-free survival was similar for intermediate-risk patients.
There was no statistical difference in pad-free continence at 12- and 24-months between SRARP (77.2% and 84.7%) and SRT (75.0% and 74.0%) (p=0.724, 0.114). After SRT, cumulative bowel and urinary Radiation Therapy Oncology Group toxicity grade I were 25.0% and 45.0%, grade II were 11.0% and 11.0%, and grade III or IV complications were 4.0% and 5.0%, respectively.

Conclusion: We report the first comparative analyses of surgical and radiotherapy salvage treatment following ablative therapy. Men with high-risk disease appear to have superior oncological outcomes after SRT; however, treatment allocation does not appear to influence oncological outcomes for men with intermediate-risk disease. Treatment allocation was associated with a different spectrum of toxicity profile.

U-6

VIRTUAL CLASSROOM USE FOR ROBOTIC SURGERY TRAINING: A PROSPECTIVE, CROSS-OVER EFFECTIVENESS STUDY (VROBOT)

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Purpose: Robotic surgery is an established yet evolving surgical technique that requires specialist training. To date, training has lacked evidence-based standardisation. We aimed to determine the effectiveness of interactive, supplemental virtual classroom training (VCT) in concordance with the self-directed fundamentals of robotic surgery (FRS) curriculum.

Materials and Methods: 11 novice robotic trainees were randomly allocated to two training groups. Both cohorts completed a one-week robotic skills induction. In week two, Group A undertook training under the FRS curriculum and VCT; Group B only received access to the FRS curriculum. In week three, the groups received the alternate intervention. Objective performance scores (R-OSAT) were collected post-intervention (timepoint 1: end of week two and timepoint 2: end of week three).

Results: Both cohorts demonstrated significantly improved proficiency upon completion of the training programme. Participants attained higher mean proficiency scores with both the FRS and VCT programme, compared to the FRS curriculum alone. At timepoint 1, Group A achieved a statistically significant greater mean proficiency score compared to Group B (44.80vs35.33 points, p=0.006). At timepoint 2, there was no significant difference in mean proficiency score in Group A from timepoint 1. In contrast, Group B showed significant improvement in mean proficiency by 9.67 points from timepoint 1 (95%CI 5.18-14.15, p=0.003) once they had received VCT.

Conclusion: VCT is an effective training adjunct to the FRS curriculum for the learning of basic robotic skills. With the steep learning curve in robotic surgery training, VCT offers interactive learning that improves training effectiveness and accessibility.

U-11

ANALYSIS OF FIXED OPERATING ROOM (OR) TIMES IN PARTIAL NEPHRECTOMIES: OPEN VERSUS ROBOTIC-ASSISTED

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Purpose: Fixed (nonprocedural) operating room (OR) time is defined as any time other than surgeon operating time (cut to close). Our institution utilizes the same patient positioning and sterile preparation for robotic-assisted partial nephrectomy (RAPN) and open partial nephrectomy (OPN). Our objective was to evaluate the variation in efficiency between open and robotic-assisted partial nephrectomies through an analysis of both fixed and variable OR times.

Materials and Methods: Over a 24-month consecutive period we reviewed all open partial nephrectomies (OPN) and robotic-assisted partial nephrectomies (RAPN) performed by a single surgeon at our tertiary institution. Fixed OR times were prospectively collected and were defined as: in room time to anesthesia release time (IRAT), anesthesia release time to cut time (ARCT), in room time to cut time (IRCT) (combines IRAT and ARCT), and close time to wheels out time (CTWO). Variable OR time was cut to close time (CTCT). The Fisher exact test was utilized to compare groups for categorical variables and the Wilcoxon rank sum test was utilized to compare groups for continuous variables. P values less than 0.05 were considered statistically significant in our analysis. Our institution performed robotic procedures with the Da Vinci Xi surgical system (Intuitive Surgical Company Sunnyvale, CA, USA).

Results: Over the 24-month period, 146 RAPN and 31 OPN were performed. Median IRAT was the same for both RAPN (20.0 minutes (min), range: 10.0-53.0) and OPN (20.0 min, range:11.0-98.0) (P=0.57). Median ARCT was longer for RAPN (40.0 min, range: 7.0-70.0) than it was for OPN (33.5 min, range: 2.0-52.0) (P<0.001). IRCT median time was longer for RAPN (62.0 min, range: 6.0-87.0) compared to OPN (55.0 min, range: 42.0-100.0) (P =0.005). Median CTWO was similar for OPN (12.0 min, range: 1.0-39.0) and RAPN (11.0 min, range: 1.0-50.0) (P =0.89). CTCT median time was longer for RAPN (202.0 min, range: 102.0-384.0) compared to OPN (164.0, range: 104.0-222.0) (P<0.001).

Conclusion: In a single surgeon series for procedures with the same patient positioning and sterile preparation, utilization of robotic technology for partial nephrectomies was associated with longer surgeon operating time as well as less efficient fixed OR times, specifically ARCT.

U-12

THE ROLE OF VIDEO LABELLING IN ROBOTIC SURGERY - A PILOT STUDY

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[1]*MRC Centre for Transplantation, King's College London, London, United Kingdom,* [2]*Westminster School, London, United Kingdom,* [3]*Urology Centre, Guy's and St. Thomas' NHS Foundation Trust, London, United Kingdom*

Purpose: Recent technological advancements have enabled the utilisation of the surgical data, available in the operating room, through Artificial intelligence (AI). Robotic and laparoscopic surgical procedures streamline the recording and storage of surgical video. The applications of surgical video are numerous, ranging from surgical education to the training of intelligent machine learning algorithms. Current literature has demonstrated applications ranging from automated grading of surgical performance to the identification of anatomical structures from intraoperative video. One facet of AI in interest is supervised Machine Learning (ML), training supervised ML algorithms requires labelled data which can be labor intensive and expensive to gather.

Materials and Methods: The aim of this study was to assess the feasibility of training an undergraduate with no prior exposure to robotic surgery in the annotation of a surgical video set. The student was tasked with developing a foundational understanding of the robotic prostatectomy procedure, and to subsequently assign temporal labels to full length surgical videos. A library of predefined steps visible in the operative video were agreed upon for subsequent use in video labelling.
A video-set of 25 robotic prostatectomy procedures was provided, labelling was trialled using VGG Image Annotator (VIA), an open-source video labelling platform. The accuracy of video labels was subsequently assessed by four senior urologists, who routinely perform the robotic prostatectomy procedure, through the random selection of a labelled video.

Results: Of the 17 labelled videos, one video was chosen for assessment and was graded for accuracy of assigned labels, yielding a mean accuracy of 93.06% (Range = 85.6% - 100%). This was achieved over a three-month study period, whereby the feasibility of using the video labelling software (VIA) was also proven.

Conclusion: The self-training of an undergraduate in the accurate segmentation of novel surgical video, with a high degree of accuracy, is feasible for the robotic prostatectomy procedure. Further research conducted should assess video labelling among a cohort of novice students, testing the degree of labelling accuracy which can be achieved to facilitate further ML research, and to train ML algorithms to automatically segment surgical video.

U-15

PROSTATE DUCTAL ADENOCARCINOMA, ROBOTIC SURGERY APPROACH. FIRST CASE IN CENTRAL AMERICA

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Purpose: Prostate ductal carcinoma (PDA) is a rare subtype of prostate cancer, with a worse prognosis than the usual prostatic acinar adenocarcinoma. Represents 0,2-0,4% of all prostate cancers. We report the first case of localized PDA in Central America, treated with robotic surgery.

Materials and Methods: A 72-years-old man presented with an increased PSA of 9 ng/ml. His medical history only included mild arterial hypertension, well controlled. Prostate MRI showed a 19mm right apical lesion (PIRADS 5). Prostatic biopsy revealed a prostatic ductal adenocarcinoma, in the medial and lateral prostate right apex. PET CT Scan and bone scan were negative for metastatic lesions. PRECE nomogram was obtained.

Results: A robotic-assisted laparoscopic surgery was performed. Trans peritoneal approach, with anterior fascia preservation (Patel) was used. Complete left side neurovascular preservation and total right-side excision and bilateral pelvic lymphadenectomy were done without complications.
Pathology report of the 75g specimen, revealed tall pseudostratified columnar epithelium organized into either papillary or cribriform patterns, compatible with ductal prostatic adenocarcinoma. PDA compromises the 90% of the tumor, 10% was acinar prostatic adenocarcinoma. The tumor was confined to the right apex, with no extracapsular extension. No tumor was found in the seminal vesicles or lymph nodes. (pT2N0M0). Ten months after surgery is completely continent with a PSA of 0.01 ng/ml.

Conclusion: PDA is a rare prostate cancer tumor. This is the first report of this type of tumor treated with Robot-assisted laparoscopic radical prostatectomy in Central America. PRECE nomogram was useful to predict extracapsular prostatic extension.
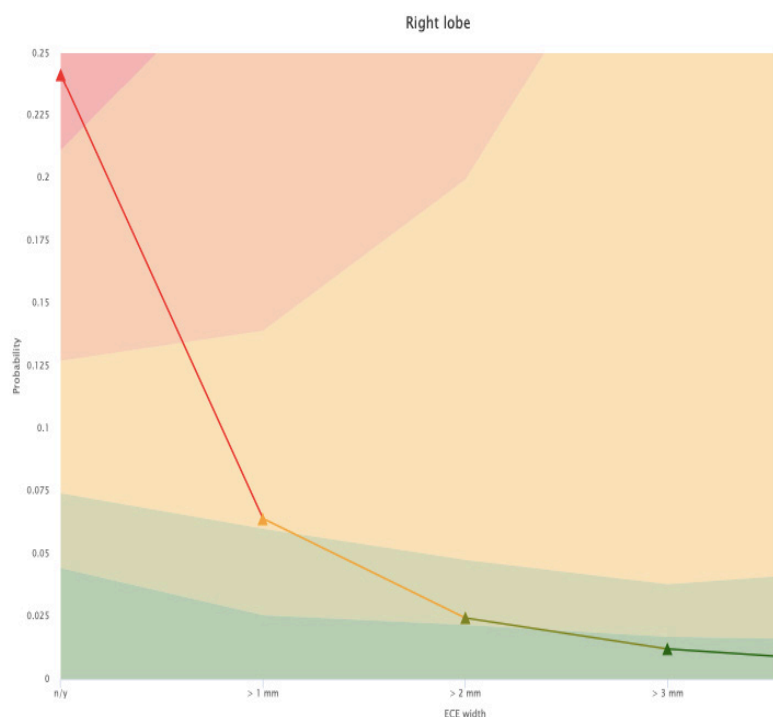

*Figure 1: Prece: Left side: Complete preservation.
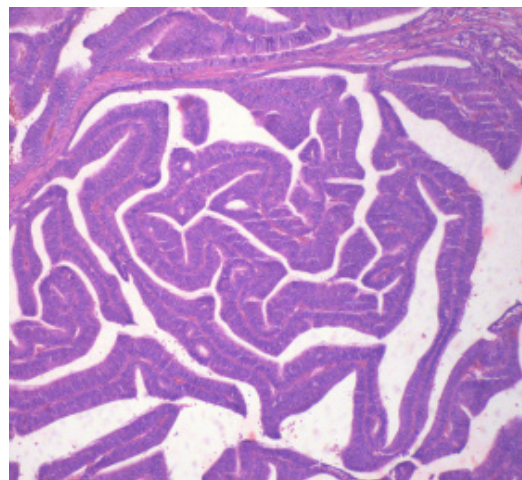Right side: Total excision of the NVB.*

Figure 2: Tall pseudostratified columnar epithelium organized into either papillary or cribriform patterns, (PDA)

U-17

LAPAROSCOPIC VERSUS ROBOT-ASSISTED RADICAL PROSTATECTOMY: COMPARISON OF OUTCOMES OF A SINGLE SURGEON

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[1]IBCR, SALVADOR, Brazil, [2]FTC, SALVADOR, Brazil, [3]UFBA, SALVADOR, Brazil, [4]OSID, SALVADOR, Brazil

Purpose: To compare the functional and oncological results of laparoscopic radical prostatectomy (LRP) and RALP performed by a single surgeon.

Materials and Methods: This retrospective cohort study included patients who underwent LRP and RALP performed by a single surgeon between June 2017 and April 2020 and were followed-up for 12 months. The Da Vinci ® robotic system was used for all surgeries. The potency, continence, surgical margins, postoperative prostate specific antigen (PSA) level, and surgical complications were compared.

Results: The cohort included 156 patients: 103 and 53 patients underwent RALP and LRP, respectively. We found that RALP were superior to LRP with respect to potency in all periods analyzed. At 3 months, 60% of the patients in the RALP group were potent, and this proportion rose to 87.1% at the end of one year, versus 36.6% and 66.7% at the corresponding periods in the LRP group. No statistical differences were observed in the surgical margins, post-operative PSA, or continence.

Conclusion: The comparison of the RALP and LRP performed by the same surgeon revealed the superiority of the former over the latter, with respect to the postoperative sexual potency. There was no difference in the continence rates, surgical margin, or persistence of disease.

Variable	Minimum	Median	Mean (DP)	Maximum	CI 95%	p Value
Age	46	66	65.06 (7.79)	86	63.82 – 66.31	
Laparoscopic	48	66	65.23 (8.10)	86	62.99 – 67.46	0.855
Robotic	46	66	64.98 (7.66)	79	63.47 – 66.49	
BMI	19	25	25.88 (3.59)	38	25.23 – 26.52	
Laparoscopic	19	26	26.27 (4.07)	37	25.08 – 27.46	0.370
Robotic	19	25	25.64 (3.26)	38	24.90 – 26.38	
Comorbidities	0	1	1.08 (1.05)	5	0.90 – 1.26	
Laparoscopic	0	1	1.53 (1.18)	5	1.18 – 1.89	0.001
Robotic	0	1	0.86 (0.91)	4	0.68 – 1.05	
Pre-Surgical PSA	0.60	5.50	7.72 (7.25)	65	6.52 – 8.92	
Laparoscopic	0.60	4.78	8.66 (9.96)	65	5.82 – 11.49	0.343
Robotic	0.75	4	7.21 (5.22)	26	6.13 – 8.30	
Prostate Size	22	46	53.95 (27.65)	180	49.35 – 58.56	
Laparoscopic	22	45	52.85 (29.80)	180	44.38 – 61.32	0.735
Robotic	25	49	54.56 (26.54)	170	49.03 – 60.09	

Table 1: Statistics pre surgical quantitative variables in general and stratified by surgery type.

U-19

MODIFIED SINGLE-INCISION EXTRAPERITONEAL ROBOT-ASSISTED RADICAL PROSTATECTOMY WITHOUT PORT VERSUS TRANSPERITONEAL MULTI-INCISION ROBOT-ASSISTED RADICAL PROSTATECTOMY: A SINGLE-INSTITUTION COMPARATIVE STUDY

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Purpose: To compare the perioperative outcomes of patients undergoing modified single-incision (SI) extraperitoneal Robot-assisted Radical Prostatectomy without PORT(ERARP) versus conventional multi-incision (MI) transperitoneal robot-assisted radical prostatectomy (TRARP).

Materials and Methods: From September 2019 to September 2021, data of 150 patients who underwent SI-ERARP and 120 patients who underwent MI-TRARP by the same surgeon from the Robot Minimally Invasive Center of Sichuan Provincial People's Hospital were retrospective collected.
Demographic characteristics as well as intra- and postoperative data of patients in both groups were analyzed. Quantitative data were described in terms of median and quartiles.

Results: The differences in age, body mass index, prostate volume, PSA level, Gleason score, clinical stage and previous abdominal surgery history between the two groups were not statistically significant.
All the operations were completed successfully. There were no signifcant diferences in blood loss, postoperative hospital stay, positive surgical margins, or continence at 6 months.
After SI-ERAR, the operative time, postoperative exhaust time and length of incision were less than that after MI-TRARP ($p < 0.001$).

Conclusion: In this study, SI-ERARP delivered similar oncological and functional outcomes, while also ofering faster operative time, postoperative exhaust time and decreased length of incision when compared to MI-TRARP. The long-term effect of treatment needs to be further confirmed by prospective studies.
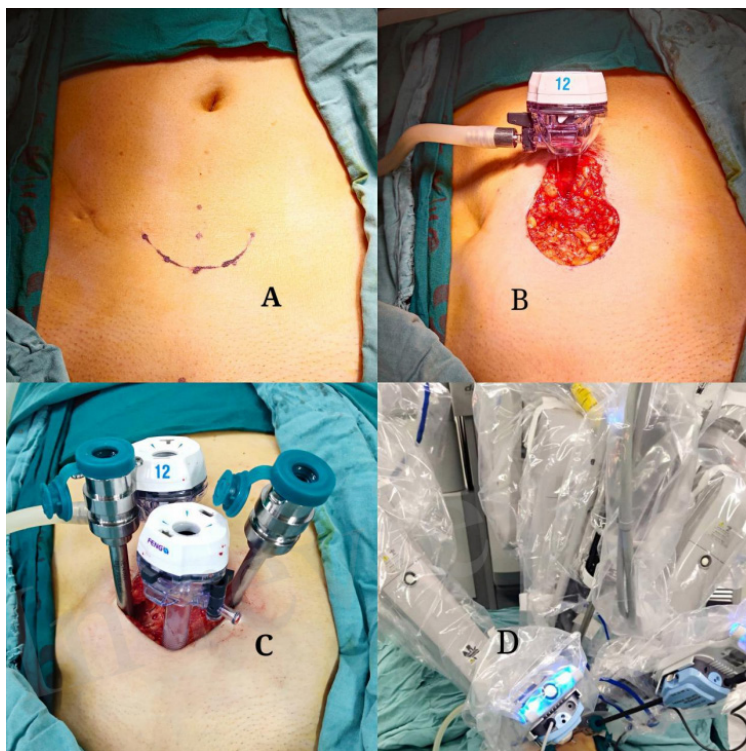
Establishment of SI-ERARP channel without PORT

U-21

SURGICAL APPROACH TO PARTIAL NEPHRECTOMY RATHER THAN TUMOR COMPLEXITY IS THE MAIN DRIVER OF PROLONGED HOSPITALIZATION: A SINGLE CENTER EXPERIENCE

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Purpose: Length of hospital stay (LOS) after surgery is a factor of primary importance for health care systems. The cost of each day of hospitalization for surgical patients is variable and may range from 750 to 1000 euro, according to local institution.
Several factors can be associated with prolonged hospitalization. The purpose of this study is to analyze LOS after partial nephrectomy performed at a single center and to evaluate factors associated with a prolonged hospitalization.

Materials and Methods: Data from 109 patients who underwent PN were retrospectively collected (113 renal masses). Mean age was 63 years (SD 12), mean mass radius was 33 mm (SD 14), mean Padua score was 7 (6-10). 27 patients underwent open PN whereas 82 patients had a robotic procedure. Age, CCI, ECOG score, size of renal masses, Padua score and Renal score were similar between surgical approaches. Overall, mean LOS was 6.1 days (SD 2.5). The primary endpoint of the study is to analyze which variables are related with prolonged LOS (≥ 6 days). To this purpose, after a descriptive analysis of all covariates, the association between continuous and categorical variables and the presence of LOS > 6 days was established using a logistic regression model.

Results: Despite the size of renal mass was not significantly different, patients with LOS ≥ 6 presented a higher Padua (7.5 vs 7.1) and Renal score (6.7 vs 6.0) compared to patients with a lower LOS. Age, ECOG and CCI were similar between groups. Operative time and WIT were longer in patients with LOS ≥ 6 (216 min vs 193 and 16 vs 13, respectively; p= 0.03). LOS after robotic PN was lower than after open PN (5.2 vs 8.9, respectively, p=0.00). Overall, 38% of patients experienced a complication, which was mostly a Clavien I (fever w/without pleural effusion in 82%); patients with prolonged LOS had a higher complication rate compared to patients with short LOS (64% vs 21%, p=0.00). Multivariate analysis included age, gender, ECOG (cat), CCI (cat), Padua and RENAL (cat), radius of the mass, OT, WIT, Clavien (bin) and approach (robot vs open). Surgical approach (OR 0.05; 95% CI 0.006-0.4; p=0.008) and presence of a Clavien complication (OR 3.8; 95%CI:1.2-11-0.8; p=0.02) resulted independent predictors of LOS ≥ 6. Nevertheless, if Clavien was not considered as binary but categorical variable, surgical approach would be the only independent predictor of LOS ≥ 6 days.

Conclusion: Urology is the surgical field mostly advantaging from the robotic approach. EAU Guidelines 2021 suggest that "robotic assisted and laparoscopic PN are associated with shorter LOS and lower blood loss". The current retrospective analysis suggests that the impact of a robotic surgical approach may outperform all renowned factors traditionally related to prolonged hospitalization.

U-23

RELIABILITY OF A COMBINATION OF TARGETED AND SYSTEMATIC PROSTATE BIOPSIES IN PATIENTS WITH MRI-VISIBLE LESIONS: CONCORDANCE BETWEEN BIPARAMETRIC MRI, COMBINED BIOPSIES AND PROSTATECTOMY PATHOLOGY

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Purpose: We aimed to confirm the reliability of a combination of targeted and systematic prostate biopsies in patients with MRI-visible lesions compared to radical robot-assisted prostatectomy pahtology.

Materials and Methods: We retrospectively analyzed the records of 80 men who underwent bi-parametric magnetic resolution imaging-ultrasound fusion targeted and systematic biopsies (bpMRI-US transperineal FTSB) transperineally with region of interest (ROI) and subsequent robot-assisted radical prostatectomy. Changes in the grade group determined by MRI and biopsy versus surgical specimens were analyzed.

Results: Thirty-five patients with insignificant prostate cancer and 45 with significant cancer were diagnosed using bpMRI-US transperineal FTSB. Among those with insignificant PCa, 25 of 35 (71.4%) were upgraded to significant PCa in prostatectomy specimens: 9/12 (75.0%) with Prostate Imaging Reporting and Data System (PI-RADS) 3, 12/16 (75.0%) with PI-RADS 4, and 4/7 (57.1%) with PI-RADS 5. In the PI-RADS 3 group, the upgraded group showed higher prostate specific antigen (PSA) and PSA density (PSAD) than the concordance group; PSA 8.34(2.73) vs. 5.31(2.46) (p = 0.035) and PSAD 0.29(0.11) vs. 0.18(0.09) (p = 0.025).

Conclusion: The results of prostate biopsy and prostatectomy specimens were inconsistent and underestimated in patients with MRI-visible lesions. Therefore, for precise and individualized treatment strategies for PCa with MRI-visible lesions (PI-RADS ≥ 3), careful interpretation of biopsy result is required, considering the high possibility of significant PCa, even if it is insignificant PCa.
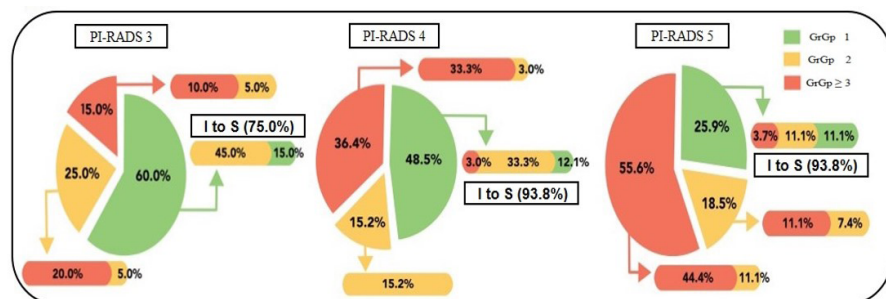
bpMRI	Targeted and systematic biopsy		Prostatectomy specimen		Changes in grade group, n(%)		Insignificant (GrGp 1) to significant (GrGp≥2)		
							GrGp 1	to GrGp≥2	Changes (%)
Total (n = 80)	GrGp 1	35	GrGp 1	11	Downgrade	5(6.3)	35	25	71.4
	GrGp 2	15	GrGp 2	38	Concordance	47(58.7)			
	GrGp≥3	30	GrGp≥3	31	Upgrade	28(35.0)			
PI-RADS 3 (n = 20)	GrGp 1	12	GrGp 1	4	Downgrade	2(10.0)	12	9	75.0
	GrGp 2	5	GrGp 2	14	Concordance	9(45.0)			
	GrGp≥3	3	GrGp≥3	2	Upgrade	9(45.0)			
PI-RADS 4 (n = 33)	GrGp 1	16	GrGp 1	4	Downgrade	1(3.0)	16	15	93.8
	GrGp 2	5	GrGp 2	17	Concordance	20(60.6)			
	GrGp≥3	12	GrGp≥3	12	Upgrade	12(36.4)			
PI-RADS 5 (n = 27)	GrGp 1	7	GrGp 1	3	Downgrade	3(11.1)	7	4	57.1
	GrGp 2	5	GrGp 2	8	Concordance	17(63.0)			
	GrGp≥3	15	GrGp≥3	16	Upgrade	7(25.9)			

Figure.1

U-28

ROBOT-ASSISTED PARTIAL CYSTECTOMY WITH PSOAS HITCH AND URETEROVESICAL REIMPLANTATION FOR A MYOFIBROBLASTIC PSEUDOSARCOMATOUS TUMOR OF THE BLADDER

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Purpose: We present the case of a 49-year-old patient who has a pseudosarcomatous inflammatory myofibroblastic tumor that reached the bladder to the level of the lower left urethra. We did a partial cystectomy by robot with ureteral reimplantation and psoas hitch. The patient has presented with an excellent post treatment evolution.

Materials and Methods: The patient comes for a macroscopic hematuria. The CT scan reveals a 4 cm mass on the left posterolateral lining of the bladder. The cystoscopy reveals a fleshy polypoid mass near the left ureteral meatus. There is extensive invasion of the submucosa and invasion of the proper muscle layers. This tumoral proliferation is associated with numerous hemorrhagic changes. The tumor is invasive and poorly demarcated. Ulceration appears on the surface. There is strong, positive and diffuse immunostaining for anti-ALK antibody. A pelvic MRI is performed and reveals a heterogeneous lesion enhancing at the level of the left posterolateral bladder lining, close to the ureterovesical junction, without extravesical extension and measuring 26x22x14 mm. A partial cystectomy with left ureteral reimplantation is performed following the multidisciplinary oncological consultation. The procedure is performed by robot-assisted laparoscopy. The patient is placed in dorsal decubitus with 30° of Trendelenburg. Transperitoneal approach. Placement of the 4 DaVinci Xi robot trocars in line at the level of the umbilicus and a 12 mm Airseal trocar in the right iliac fossa. Intra-abdominal pressure reduced to 8 mm Hg. Incision of the peritoneum and dissection of the Retzius space. Opening of the anterior surface of the bladder and identification of the tumor and the ureteral meatus. Placement of ureteral catheters. Immediate resection of the tumoral lesion on the left posterolateral face of the bladder and of the lower left ureter which is caught in the lesion. Closure of the posterior bladder lining by overlocking with Vlock 3/0. Mobilization of the dome of the bladder which is fixed on the left Psoas muscle by 2 points of vicryl 2/0 and reimplantation of the left ureter with a submucosal tunnel. Inspection of the vascularization of the ureter by indocyanine green fluorescence. Double J catheter in the left ureter and closure of the anterior surface of the bladder with a 3/0 Vlock. Bladder catheter and left iliac fossa drain.

Results: The postoperative evolution was favorable. The patient left the hospital on the 4th postoperative day with his bladder catheter. The bladder catheter was removed on the 15th postoperative day. Note significant postoperative changes with calcifications and necrosis. No urothelial carcinoma in situ or invasive lesion visualized. Healthy surgical resection margins. After a 2-year follow-up, the cystoscopy and the PET-Scan are negative.

Conclusion:
Myofibroblastic tumors present a diagnostic challenge given their rarity, endoscopic and radiological appearance. Given their benign nature, we must try to be as conservative as possible while ensuring complete excision.
The tumor presented by our patient is an excellent case indication for conservative surgery. Robotic surgery allows the excision of extensive lesions with reconstruction in a minimal invasive approach.
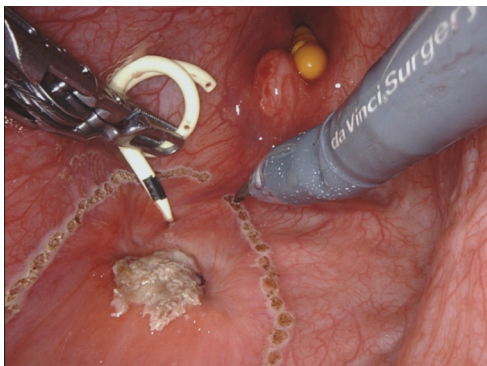
Intra-abdominal view of the tumor demarcation
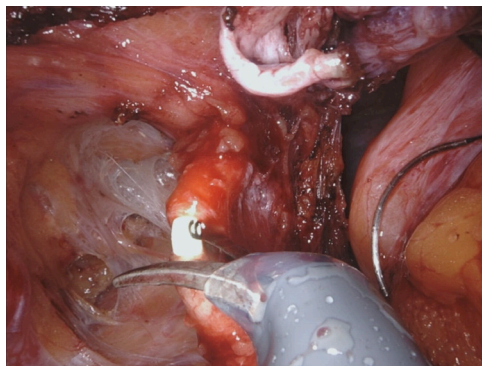
Intra-abdominal view of the ureter severing

U-30

THE DIFFUSION AND THE ROLE OF 3D IMAGING RECONSTRUCTION IN REAL-LIFE UROLOGIC PRACTICE: RESULTS FROM AN INTERNATIONAL SURVEY

Maria Chiara Sighinolfi[1], Julienne Simoes[2], Dourado Menezes Aurus[3], **Simone Assumma**[1,4], Tommaso Calcagnile[1,4], Salvatore Micali[4], Filippo Annino[5], Giorgio Bozzini[6], Giovanni Cacciamani[7], Vipul Patel[2], Marcio Covas Moschovas[2], Andrea Gregori[8], Filippo Turri[1,4], Mattia Sangalli[1], Alessandra Cassani[4], Luca Sarchi[9], Ahmed Eissa[10], Bernardo Rocco[1]
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Purpose: Three-dimensional (3D) virtual reconstruction (VR) of 2D cross-sectional imaging has recently gained popularity among urological scientific community. The process often involves a cognitive reconstruction, in which the surgeon visualizes and consults a 3D virtual model of surgical cases. Despite the increasing interest, their real application in urological daily practice has been scarcely explored. The aim of the study is to evaluate, throughout an international survey, the diffusion, the use and the perception of 3D models among urologists.

Materials and Methods: A survey, addressing the role of 3D imaging in real-life practice, was developed. The survey aimed to: 1) quantify the degree 3D models are perceived to improve surgical outcomes; 2) evaluate the procedures mostly advantaging of 3D VR; 3) identify the settings in which 3D models are mostly applied; 4) evaluate surgical steps benefitting of 3D VR; 5) address how 3D models could be improved. Between August and September 2021, the survey was sent to 600 contacts (mail or phone) of urologists with current known availability of 3D cognitive models, or who have used these tools in the past. The survey was sent in 2-rounds up to reach a pre-planned number of 100 responders. All backgrounds (academic/not academic), settings (robot/lap/open) and level of expertise were allowed. The survey was developed according to the Checklist for Reporting Results of Internet E-surveys and was built using Google Workspace.

Results: A predefined number of 100 responders from different countries completed the survey. Overall, 55 robotic, 25 laparoscopic and 9 open surgeons were included; the remaining did not define themselves belonging to any category. Forty-six (46%) have been working as urologist for < 10 years, 35% from 10-20 years, 19% had > 20 years of urological expertise. More than a half (53%) were first surgeons and had already completed their training (59%). 70% came from medium to high-volume institutions. Overall, 77% consider 3D cognitive models very/highly impacting on outcome improvement. The main application of 3D cognitive VR is partial nephrectomy (85%), followed by radical nephrectomy and radical prostatectomy. By using a 5-point Likert scale, the setting in which 3D cognitive models are mostly used is pre-operative planning (75% very/highly useful), followed by intra-operative tailoring and training purposes (47%). Only 33% defines 3D models useful for patients' counseling. In kidney surgery, the main application is the evaluation of pedicle and vascular anatomy; in prostate surgery, for assessing lesion's proximity to the capsule. Outline availability of 3D models, presence of a ruler, incorporation of nephrometric scores are suggestions to improve 3D cognitive VR.

Conclusion: To our knowledge, this is the largest survey addressing the role of 3D cognitive reconstruction in urological real-life practice. Overall, 3D VR is acknowledged as useful to improve surgical proficiency, with partial nephrectomy being the procedure mostly involved. Surgical pre-planning is the setting mostly advantaging of 3D reconstruction, whereas their educational role (training and patients' counselling) is recognized to a less degree. Technological improvement – together with higher availability of the models – may further implement the role of 3D reconstruction in surgical and clinical daily practice.

U-33

ONCOLOGIC OUTCOMES IN LOCALIZED KIDNEY CANCER UNDERGOING ROBOT-ASSISTED LAPAROSCOPIC PARTIAL NEPHRECTOMY

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Purpose: To present the oncologic and functional outcomes in patients treated with robot-assisted laparoscopic partial nephrectomy of cT1 renal tumors, from June 2015 to February 2022, at the Hospital Carlos Andrade Marin, Quito, Ecuador.

Materials and Methods: A retrospective, descriptive, observational study was conducted on 50 patients treated with robot-assisted laparoscopic partial nephrectomy within the period of June 2015 to February 2022. Surgical time duration, warm ischemia duration, surgical margins and the R.E.N.A.L. score were analyzed.

Results: The mean follow-up period was 3.1 years, and overall survival was 98%. Mean age of patients was 56.94 years. Mean surgical time was 155,4 minutes; while the mean time of console use was 94.5 minutes. Renal artery clamping was performed in 42% of cases. Mean warm ischemia time was 18.5 minutes. Mean blood loss was 250.8ml. 20% of the patients presented with positive margins and 54% had a R.E.N.A.L. score of moderate complexity. 80% of the lesions were stage pT1a. Disease recurrence occurred in 4% of patients, and there was only one death and it was not cancer-specific. 58% of the cases presented some degree of chronic kidney disease prior to surgery, compared to 62% of the patients after surgery. No progression to predialysis or dialysis stages was found in any of the cases.

Conclusion: After a 7 year follow-up, the outcomes were favorable and the overall survival was good. Robot-assisted laparoscopic partial nephrectomy is an appropriate approach for patients in cT1 stages, as has been shown in other studies. Our study suggests that partial nephrectomy provides adequate oncologic and functional results when performed by experienced robotic surgeons.

U-34

SINGLE-PORT EXTRAPERITONEAL TRANSVESICAL ROBOT ASSISTED RADICAL PROSTATECTOMY

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Purpose: To describe the detailed techniques for single-port extraperitoneal transvesical robot-assisted radical prostatectomy (SETvRARP) using da Vinci Xi system coupling with a 4-channel single port and evaluate the early functional and oncological outcomes in 10 prostate cancer patients.

Materials and Methods: 10 patients with localized prostate cancer were enrolled for SETvRARP. Preoperative data of patients [mean ± SD: patient age 63.9 ± 8.4 years, BMI 24.2 ± 3.3 kg/m², tPSA 10.1 ± 4.8 ng/ml, prostate volume 53.6 ± 17.9 ml; median (IQR): biopsy Gleason score 6 (6, 7), IIEF-5 score 11 (3.25, 19.25), maximal urinary flow 22.8 (20.9, 25.9) ml/s, bladder capacity 317.0 (306.6, 343.0) ml, voiding phase detrusor contractility 39.6 (37.8, 43.4) mmH$_2$O, and residual urine 0 (0, 1.3) ml] were collected. Preoperative assessment revealed 3 case of cT2a and 7 case of cT2c. All patients were continent preoperatively (defined as no pad required or 1 dry pad per day for precaution), with IQOL score of 100 (100, 100). Surgical results and perioperative complications were assessed. All patients were followed up for at least 3 months postoperatively (3 to 12 months).

Results: The mean operation time was 136.0 ± 23.2 min. Estimated blood loss was 85.0 ± 41.2 ml. No Grade II or higher grade complication was noted. Urethral catheters were removed on postoperative day 7. 9 patients achieved immediate urinary continence, with 1 patients returning to full continence on postoperative day 14, though post-op IQOL [92.6 (84.6, 96.9)] was significantly lower than pre-op results ($p = 0.0078$). Postoperative pathology confirmed 2 pT2a cases, 6 pT2c cases and 2 pT3a cases [Gleason score 7 (6.75, 7.25)]. Positive surgical margin was found in 2 patients (20.0%). No urethral stricture or urinary leakage was noted on urethrocystography taken 3 months after surgery. Urodynamic studies performed preoperatively and 3 months after surgery: maximal urinary flow [23.5 (22.0, 24.8) ml/s], bladder capacity [297.3 (247.8, 351.8) ml], voiding phase detrusor contractility [38.8 (36.1, 41.1) mmH$_2$O] and residual urine [0 (0, 0) ml] were not statically different from pre-op results with a p value of 0.6892, 0.2885, 0.0972 and 0.4846, respectively. During a minimal of 3-month follow up, no biochemical recurrence was noted in all patients. Post-op IIEF-5 score [10.5 (3.25, 16.5)] was not statistically different from pre-op results ($p = 0.0697$).

Conclusion: SETvRARP using da Vinci Xi system coupling with a 4-channel single port is a valid technique of radical prostatectomy in selected patients, providing promising postoperative urinary continence. Long term functional and oncological results require further investigation.
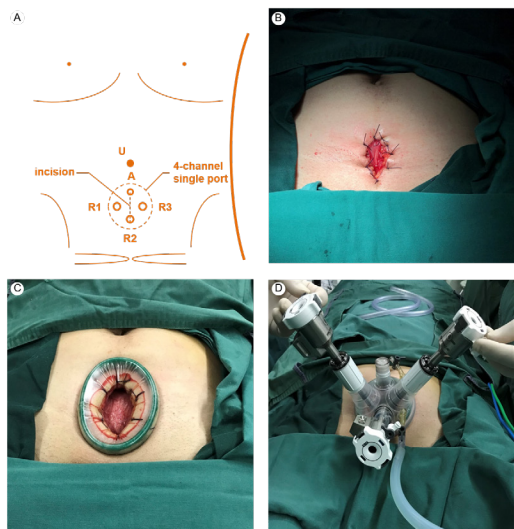
Figure 1. Establishment of single-port extraperitoneal transvesical access and trocar configuration. A 6 cm midline cystotomy incision whose midpoint overlaps with the midpoint between umbilicus and pubic symphysis was made after overinflating the bladder (A). The bladder wall was anchored to the skin by 8 evenly distributed stay sutures (B), before a 4-channel single-port was installed to couple with 3 da Vinci Xi robotic trocars (C&D).
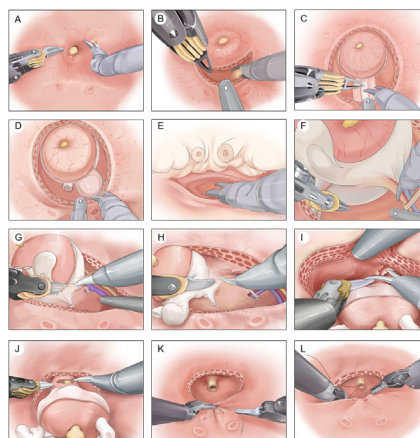
Figure 2. Surgical steps. Intravesical structures were identified (A) and a circumferential incision was made around the internal urethral orifice (B). Dissections of the vas deferens (C) and seminal vesicles (D) were carried out through the lower half of the circumferential incision. Intrafascial posterior dissection was continued towards the apex (E). Lateral dissection of prostatic pedicles (F) and NVBs (G) was carried out between prostatic capsule and periprostatic fascia in a nerve-sparing manner, before continuing with lateral dissection towards the apex (H). After a sufficient anterior dissection towards the apex (I), the urethra was exposed and transected (J). The bladder neck was shrinked in a racket style (K) before urethrovesical anastomosis (L).

U-37

COMPARATIVE ANALYSIS OF OUTCOMES AFTER OPEN AND ROBOTIC-ASSISTED RETROPERITONEAL LYMPH NODE DISSECTION FOR TESTICULAR CANCER IN POST CHEMOTHERAPY PATIENTS

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Purpose: Testicular cancer has a predominant existence in 15-34 years, constituting about 1.5% of all malignancies. The remnant disease characterizes the prognosis of the disease in its retroperitoneal drainage site after multimodality treatment. We present our single-center retrospective data spanning over a decade comparing open with robot-assisted RPLND.

Materials and Methods: From 2011 and 2019, we managed 82 patients with germ cell tumors (GCT) of testis in our institute's designated cancer care center. Out of these, 62 were non-seminomatous germ cell tumors (NSGCT), and 20 were seminomatous germ cell tumors (SGCT). Post BEP chemotherapy, residual retroperitoneal lymph node dissection (RPLND) was required in 34 in NSGCT and 3 in SGCT. These were reviewed and analyzed retrospectively. RPLND was performed either by open (n=18) or robot-assisted laparoscopic (n=19) method. Relevant baseline characteristics, preoperative imaging that included CECT abdomen pelvis and chest, tumor markers levels, and intraoperative details were analyzed. We recorded all post-operative recovery parameters. We followed-up the patients by repeating tumor markers, imaging in regular intervals according to AUA guidelines. We compared recurrence and survival rates between the two groups.

Results: Among 37 patients who underwent RPLND, we operated 18 by the open method, and 19 underwent a robotic approach. Total operative time was not significantly different in the two groups (205 vs 248 mins, p=0.112), with the estimated blood loss being more in the open group (315 vs 220 ml, p=0.021) and four times as many patients requiring transfusion. The mobilization time post-surgery was earlier in the robotic group (24 vs 48 hrs p<0.001), and significant post-operative complication rates were similar (44% vs 36.8% p=0.905). The five-year overall survival probability was 84% in the open group and 100% in the robotic group (p=0.201).

Conclusion: With this, we demonstrate that the R-RPLND, even in a post-chemotherapy setting, is a procedure that we can vouch for as a much less morbid means to achieve an equally efficacious oncological conclusion compared to a traditional open procedure which has been the gold standard.

U-38

FEASIBILITY OF PERFORMING ROBOTIC URETEROURETEROSTOMY AND ROBOTIC PYELOPLASTY IN INFANTS.

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Purpose: The aim of this study is to report the surgical and postoperative outcomes of patients ≤12 months undergoing robotic pyeloplasty or robotic ureteroureterostomy(UU) in order to determine the safety and feasibility of robotic surgery in infants.

Materials and Methods: We retrospectively identified children ≤1 year who underwent robotic pyeloplasty or robotic UU from 2013 to 2021. Inclusion criteria were having a unilateral procedure and at least one follow-up image after surgery. Exclusion criteria were extra-genitourinary malformations and incomplete medical records. Surgical success was defined as decrease in ≥1 hydronephrosis grades according to the Society of Fetal Urology (SFU) classification, and a reduction or absence of ureteral dilation for those who underwent robotic UU. Demographic, surgical, and postoperative variables were collected by chart review.

Results: A total of 30 robotic pyeloplasties and 12 robotic UU were included in the study. The mean age at surgery was 7.92 (median=8.5; IQR= 5 – 10; range= 5-12) months in the UU group and 6.34 (median=6.34; IQR=5 – 8; range= 1 – 11) months in the pyeloplasty group. The mean postoperative follow-up was 11.83 and 12.8 months in the UU and pyeloplasty groups, respectively. All patients in the UU group had a diagnosis of antenatal hydronephrosis, and all of them were postnatally diagnosed with an ectopic ureter (Table 1). Two patients (16.6%) had concomitant ureterocele and 1 (8.3%) had VUR. Preoperative MAG3 split function differential ranged from 2 to 22. The 12 patients underwent ipsilateral UU, upper pole distal ureterectomy, and placement of double J ureteral stent. Three (25%) complications presented during the postoperative period; 2 febrile urinary tract infections treated with antibiotics (mean time of presentation after UU = 23.5 days) and 1 incisional hernia at the trocar site that required surgical repair. In the pyeloplasty group all the patients had an antenatal diagnosis of hydronephrosis with the predominant SFU classification being grade 4 (Table 2). The 30 patients had a preoperative MAG3 renal scan with an obstructive pattern, that confirmed the diagnosis of ureteropelvic junction obstruction, and the split renal function differential ranged from 4 to 64. No crossing vessels were observed during the surgery, and 26 (86.6%) patients had a double J ureteral stent placed. The only postoperative complication was a febrile UTI reported 22 days after pyeloplasty that resolved with a cycle of outpatient antibiotics. The mean length of hospital stay in both groups was 1 day, and surgical success was observed in 91.6% and 93.3% of the patients in the UU and pyeloplasty groups. None of the patients from either group has required any additional surgical intervention during the follow-up period.

Conclusion: We found that in our cohort of patients, robotic UU and robotic pyeloplasty can be safely performed in patients ≤12 months, with acceptable complication rates, short length of hospital stay, and high percentage of surgical success.

Tables on next page.

Abstract content appears as submitted.

Table 1. Clinical variables of patients undergoing robotic ureteroureterostomy

Variables	N=12 or Mean
Demographic	
Gender	
Male	5 (41.6%)
Female	7 (58.3%)
Age at surgery (months)	7.92
Antenatal upper pole moiety SFU hydronephrosis grade	
Grade 4	4 (33.3%)
Grade 3	6 (50%)
Grade 2	2 (16.6%)
Concomitant ureterocele	2 (16.6%)
Preoperative UTI	0 (0%)
VUR	1 (8.3%)
MAG3 renal scan split function differential	8.91
Surgical	
Laterality	
Right	6 (50%)
Left	6 (50%)
Operative time (hh:mm)	2:14
Hospitalization length of stay (days)	1
Postoperative	
Complications	3 (25%) *
Clavien 2	2 (66.6%)
Clavien 3	1 (33.3%)
Last postoperative SFU grade of hydronephrosis of the upper pole moiety	
Grade 0	2 (16.6%)
Grade 1	5 (41.6%)
Grade 2	3 (24%)
Grade 3	1 (8.3%)
Grade 4	1 (8.3%)
Length of ureteral stent (days)	23.5
Removal of ureteral stent	
Operative room	5 (41.6%)
Office	6 (50%)
Accident	1 (8.3%)
Follow-up (months)	11.83
Surgical improvement	11 (91.6%)

*One patient had 2 complications. SFU: Society of Fetal Urology

Table 1. Clinical variables of patients undergoing robotic ureteroureterostomy

Table 2. Clinical variables of patients undergoing robotic pyeloplasty.

Variables	N=30 or Mean
Demographics	
Gender	
Male	24 (80%)
Female	6 (20%)
Age at surgery (months)	6.34
Preoperative SFU grade of hydronephrosis	
Grade 3	3 (10%)
Grade 4	27 (90%)
Preoperative UTI	1 (3.3%)
VUR	3 (10%)
MAG3 renal scan split function differential	22.9
Circumcision	17 (70.8%)
Surgical	
Laterality	
Right	11 (36.6%)
Left	19 (63.3%)
Crossing vessels	0 (0%)
Operative time (hh:mm)	2:30
Hospitalization length of stay (days)	1.1
Postoperative	
Complications <90 days	
Clavien 2	1 (3%)
Stent placement	26 (78.8%)
Length of ureteral stent (days)	47.8
Removal of ureteral stent	
Operative room	24 (92.3%)
Office	1 (3.8%)
Accident	1 (3.8%)
Last postoperative SFU grade of hydronephrosis	
Grade 0	2 (6.6%)
Grade 1	16 (53.3%)
Grade 2	2 (6.6%)
Grade 3	7 (23.3%)
Grade 4	2 (6.6%)
Follow-up (months)	12.8
Surgical improvement	28 (93.3%)

SFU: Society of Fetal Urology.

Table 2. Clinical variables of patients undergoing robotic pyeloplasty.

U-42

URINARY INCONTINENCE ASSOCIATED WITH MÜLLERIAN MALFORMATION, ROBOTIC SURGERY APPROACH

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Purpose: The association between renal tract and uterine malformations has long been recognized. A high incidence of renal tract anomalies is found in women with congenital uterine malformations. Renal tract anomalies have been detected in 30-41 % of women with specific uterine anomalies such as uterine agenesis and unicornuate uterus. Congenital absence of one kidney has been the most common urologic anomaly associated with obstructive uterovaginal anomalies and is less common to found an ectopic kidney.

Materials and Methods: We present a rare case of total urinary incontinence, in a 20 years-old patient with a subseptate uterus with a pelvic kidney and ectopic ureter opening into the vagina and the surgical resolution treatment with robotic surgery

Results: A 20 years-old-female with a history of total urinary incontinence. Abdominal US revealed an absent right kidney and bicornuate uterus, Pelvic CT an MRI image suggested a pelvic structure (kidney) that drain in the vagina.

A robotic-assisted laparoscopic surgery was performed. On exploration we found a right pelvic retroperitoneal structure similar to a dysplastic kidney with a tubular segment that communicated with the vagina. Histopathology study confirmed the diagnosis of dysplastic kidney with ectopic ureter.

Conclusion: The absence of one kidney is recognize as the most frequent renal tract malformation in women with Müllerian duct anomalies. It occurred in the main groups of uterine anomalies and was manifested especially in patients with concomitant cervical and obstructive vaginal anomaly. We have to consider the rare possibility of dysplastic kidney and ectopic ureter in patient with history of incontinence and Müllerian malformation. Laparoscopic robotic surgery was the best approach in this case, without complications.
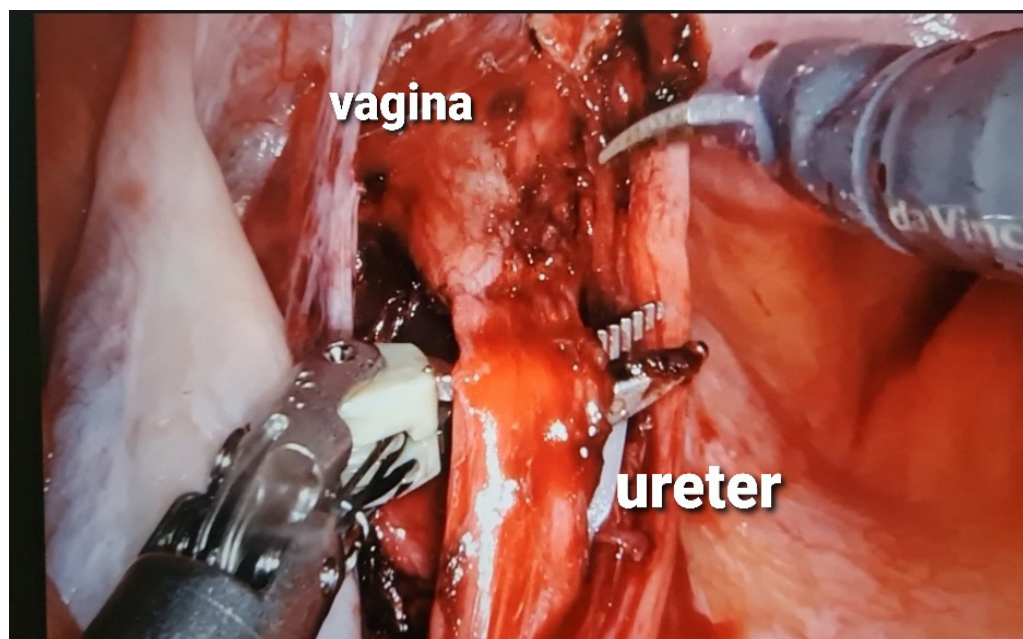
Robotic disection of ectopic ureter draining to the vagina

U-43

ROBOTIC-ASSISTED PARTIAL CYSTECTOMY FOR BLADDER ENDOMETRIOSIS. FIRST CASE IN CENTRAL AMERICA

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Purpose: Urinary tract endometriosis (UTE) is one of the forms of deep infiltrating endometriosis, and is present in around 1% of the women with endometriosis. Bladder endometriosis is defined as the presence of endometrial glands and stroma in the detrusor muscle, and represents 70-85% of UTE cases. We report the first case of bladder endometriosis treated with robotic surgery, in Central America.

Materials and Methods: A 28-years-old woman (Gravida 0 para 0), currently with the diagnosis of endometriosis and a history of urgency, urinary frequency, bladder pain and negative urinary cultures. She was receiving leuprolide in regular basis. Vaginal evaluation was normal. CT scan revealed a bladder lesion, 2x2x1,6 cm, located in the posterior-inferior bladder wall, 60 HU. No hydronephrosis was found. Deep transurethral resection of the bladder lesion was performed and endometrial glands invaded the detrusor muscle. Three months after the endoscopic surgery, symptoms still persist and CT Scan revealed again the bladder lesion.

Results: A robotic-assisted laparoscopic partial cystectomy was performed. Bilateral stents were used to avoid ureteral section. No evidence of peritoneal implants was found. Complete resection was achieved without complications. Pathology reported normal urothelial mucosa showing in the muscular layer or muscularis propria multiple foci of endometrial tissue formed by glandular columnar epithelium and endometrial stroma associated with recent and old hemorrhage with macrophages containing pigment of haemosiderin Six months after robotic surgery, the patient is receiving hormonal treatment without any complains of lower urinary tract symptoms.

Conclusion: Bladder endometriosis is an uncommon condition. Usually can be treated with a combination of medication and minimally invasive surgery. This is the first report of this type of endometriosis treated with robot-assisted laparoscopic surgery in Central America.

CT Scan: 60 HU bladder lesion
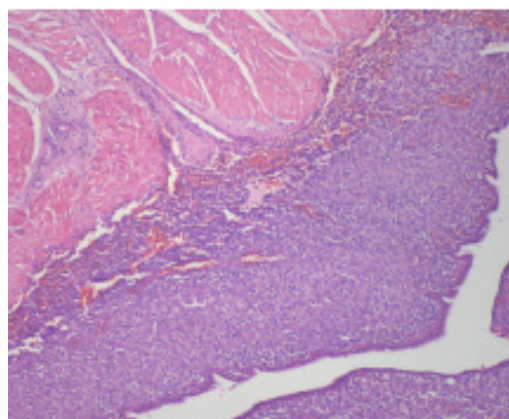
Endometrial glands and stroma in detrusor muscle

U-44

URETHRAL CATHETERS CAN BE SAFELY OMITTED AFTER PEDIATRIC ROBOTIC PYELOPLASTY

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Purpose: It is a common practice to place an indwelling ureteral stent and urethral catheter after pediatric robotic pyeloplasty. The foley is routinely removed on postoperative day (POD) 1; however, urethral catheters, even with a limited indwelling time can increase risk of urinary tract infection (UTI). Despite the short duration of foley use, it is unknown if foley can be safely omitted during pyeloplasty. We recently discontinued postoperative foley use during robotic pyeloplasty and aimed to compare the safety profile and outcomes of our early experience to a cohort of patients who had urethral catheter placement during robotic pyeloplasty.

Materials and Methods: Our prospectively maintained database of patients who underwent robotic pyeloplasty without use of a foley catheter from 2019-2022 was queried. Retrospective chart review was done from 2012-2020 of patients who underwent robotic pyeloplasty with urethral catheter placement. Patients were excluded if they were >21 years of age, did not yet have stent removal or did not have at least 1 postoperative follow-up imaging study. Indwelling ureteral stents with or without a string were placed in all patients either retrograde via cystoscopy immediately prior to the procedure or antegrade during the ureteropelvic junction reconstruction. Surgical success was defined as improvement of ≥1 grade of hydronephrosis according to the Society of Fetal Urology (SFU) classification, and/or improvement in MAG3 renal scan drainage with a non-obstructive curve. We conducted a series of chi-squared tests and t-tests to assess statistically significant differences between patients with and without urethral catheter, where alpha=0.05.

Results: A total of 56 patients without (group A) and 68 patients with (group B) foley placement were included in the study. Comparison of clinical variables among groups is shown in table 1. The mean operative time and POD of hospital discharge were statistically significant higher in group B than group A. Stent was removed in the operating room cystoscopically and under general anesthesia in 60.7% of group A and 85.3% of group B ($p<0.001$). Although the mean stent indwelling time was longer in group B than group A, the difference was not statistically significant ($p=.07$). The incidence of UTI during the first 30 POD was higher in group B than group A (10.3% vs 1.7%), however it was not statistically significant ($p=.055$). Lower urinary symptoms in the first 30 POD also presented more frequently in group B (4.4%) than group A (0%) with $p=0.09$. Surgical success was comparable among groups.

Conclusion: Pediatric robotic pyeloplasty without foley placement showed a favorable safety profile with durable post-operative outcomes across a wide range of preoperative clinical variables. "Foley-less" pyeloplasty had benefits beyond a low incidence of UTIs, including earlier hospital discharge, and increasing frequency of ureteral stents left on a string, negating the need for cystoscopic stent removal under general anesthesia.

Table 1. Comparison of clinical variables among patients without (group A) and with (group B) foley placement.

Variable	Group A: without foley (n=56)	Group B: with foley (n=68)	*p*-value
Gender			0.17
Male	41 (73.2%)	42 (61.8%)	
Female	15 (26.7%)	26 (38.2%)	
Age at surgery (months)	67.9 ± 67.8	85.8 ± 84.5	0.2
Preoperative hydronephrosis SFU grade			
3	13 (23.2%)	8 (11.8%)	
4	43 (76.7%)	60 (88.2%)	0.09
MAG3 Imbalance (Absolute value of % difference)	20.4 ±18.9	17.9 ± 16.6	0.45
Operative time (min)	162.3 ± 52.5	231.5 ± 59.6	**<0.001**
POD of hospital discharge	1.0 ± 0.2	1.5 ± 1	**<0.001**
Time with stent (days)	38.8 ± 28	52.7 ± 47.4	0.07
Place of stent removal			
Operative room	34 (60.7%)	58 (85.3%)	**<0.001**
Office	20 (35.7%)	6 (8.8%)	
Accident	2 (3.6%)	4 (5.9%)	
UTIs on POD≤30	1 (1.7%)	7 (10.3%)	0.05
Lower urinary symptoms	0	3 (4.4%)	0.09
Surgical success	51 (91%)	61 (89.7%)	0.8

*SFU: Society of Fetal Urology. POD: post-operative day.

Table 1. Comparison of clinical variables among patients without (group A) and with (group B) foley placement.

U-48

ROBOTIC-ASSISTED RADICAL PROSTATECTOMY, WITH ANTERIOR FASCIA PRESERVATION. 50 CONSECUTIVE CASES IN PANAMA

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Purpose: Prostate cancer is the most common tumor in Panama. Every year we have 800 new cases and 300 deaths are estimated. First cases of prostatic Robotic surgery start in 2012. We report 50 consecutive cases of radical robotic prostatectomies performed with anterior fascia preservation (Patel approach).

Materials and Methods: 50 consecutives robotic radical prostatectomies were performed between 2019 and 2021 in our Robotic center by the same surgeon. Before 2019 we used the classical approach, described by Vipul Patel and others. Due to improve the time to restore complete continence, we performed 50 consecutive cases with anterior fascia preservation, with Patel technique. We record age, PSA, mean robotic console time, Gleason score, pelvic node dissection, final Gleason score, Margin status, lymph node invasion, pathologic T stage, mean hospital stay, transfusions, and 30-day complications.

Results: All 50 patients had successful procedures without the need for conversion to open surgery or modification of the planned robotic technique. Pre-, intra, and postoperative characteristics are: Mean age: 61y (range 41-75), mean PSA: 11ng/ml (range 2-30), Low risk: 46%, Intermediate-High risk: 54%, Pelvic node dissection performed: 60, mean blood loss.: 150ml (range 150-500). No transfusions required.
The mean console robotic time was 124 minutes (range 95-180)
All the patients had an uncomplicated postoperative course and were discharge in 2-day (range 2-7). Six of the 50 patients had positive surgical margin (12%), two had positive seminal vesicles (4%) and nine had extracapsular disease (18%). Most common final GS was (3+3): 46%, with two patients with 10 (5+5) GS (2%). No patients had lymph node invasion. 30-day complications include a urinary anastomosis leakage, treated with a Foley catheter for three weeks. One patient had a pelvic hematoma, but no transfusions or invasive treatment was required. Only 4 of the patients (8%) used urinary pads after 30-days.

Conclusion: Robot-assisted radical prostatectomy with anterior fascia preservation (Patel technique) is a safe, reproducible procedure, with equivalent oncological results and superior urinary continence outcomes.

U-49

BILATERAL ROBOTIC ASSISTED LAPAROSCOPIC ADRENALECTOMY: TWO ARE BETTER THAN ONE

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Purpose: Adrenal incidentalomas encompass a wide spectrum of pathological entities. From benign adrenocortical adenoma without hormone secretion, to neoplasm
secreting adrenocortical carcinoma (adrenocortical carcinoma) or a hormone-secreting tumor of the adrenal medulla.

Synchronous bilateral adrenalectomy is one of the less frequent surgeries performed, its indications are restricted only to a group of patients with specific pathologies. We present the case of a patient with bilateral synchronous adrenal masses, identified during the evaluation of arterial hypertension and handled simultaneously with robotic-assisted laparoscopic adrenalectomies.

Materials and Methods: We present the case of a 51-year-old female patient diagnosed with multiple endocrine neoplasia type 2A. During follow-up she had plasma free metanephrines elevated four times the normal value. The abdominal CT showed a nodule of 13.5 mm in diameter in the right adrenal gland and a solid mass of 27 mm in diameter in the left adrenal gland, compatible with bilateral pheochromocytoma.

Results: The patient was hospitalized one day before the procedure, for blood pressure control and alpha and beta blocker were started.

The patient was positioned in the supine position to mark the points where the ports will be located. She is subsequently placed in the right lateral decubitus position. Placement of the first 12-mm trocar in the paraumbilical position was performed under direct vision. The following additional robot trocars are placed triangulated directed towards the left suprarenal gland as follows: an 8 mm port in the left iliac fossa and another 8 mm in the left hypochondrium and a 5 mm subxiphoid port for retraction, suction and recovery of samples by the assistant. Then left adrenalectomy was performed.

The patient was repositioned in left lateral decubitus, and another 8-mm trocar is placed in the right iliac fossa, the 5 mm trocar in the subxiphoid region previously positioned is used to help lift the liver. Afterwards, right adrenalectomy is performed.

The surgical time was 110 minutes, 35 minutes for the left gland and 30 minutes for the right gland, the intraoperative bleeding was of 50ml. The procedure was uneventful. There were no complications during the long term follow-up.

Conclusion: There is currently no standardized approach to manage bilateral synchronous adrenal masses. This case demonstrates the safety, efficacy, and benefits of bilateral simultaneous robot-assisted adrenalectomy.

U-50

ROBOT ASSISTED RADICAL PROSTATECTOMY VERSUS RETROPUBIC PROSTATECTOMY: CHOICE OF SURGICAL MODALITY

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Purpose: Prostate cancer is the most prevalent tumor among men and its incidence increases with age. Most patients still choose a surgical approach as a treatment modality. The most used surgical methods are currently retropubic or robotic. Comparison of oncological and functional outcomes between conventional and robotic approaches is conflicting and controversial, making it difficult to reach meaningful conclusions.
The objective of our study was to analyze parameters that possibly influence the choice of surgical modality, aiming at establishing future protocols and favoring the analysis of possible biases in the surgical results in both groups.

Materials and Methods: A retrospective study was carried out at Hospital Naval Marcílio Dias with the evaluation of 171 patients of which 123 underwent the robot assisted technique (Group A) and 48 patients underwent the conventional technique (Group B), from january 2018 to december 2019. The two groups were compared and then age, patient comorbidities, classification of the histopathological degree of the disease by the ISUP classification (International Society of Urological Pathology grades), prostate-specific antigen (PSA) and prostate size were analyzed.

Results: The mean age of the selected patients is 62.29 years, ranging from 42 years to 77 years, with a standard deviation of 7.38 and with a predominance of individuals over 60 years of age.
The ISUP mean was 2.23 (95%-CI, 2.06-2.40), with 1 being the lowest value found and 5 the highest. There was a variation from 4.20 to 104 ng/dL in total PSA with a mean of 9.92 ± 14.40 ng/dL (95%-CI 7.75-12.10). Prostate weight ranged from 14g to 252g with the mean of $41.22g \pm 22.89g$ (95%-CI, 37.76-44.67). Most individuals (67.8%) had some comorbidity.
Comparing the variables studied in the surgical indication between groups A and B, it was possible to perceive an association with statistical relevance only in relation to age. Among the patients undergoing retropubic prostatectomy, 83.3% were 60 years of age or older, against 56.1% in the group undergoing robotic surgery (p-value=0.001).

Conclusion: There is currently no consensus on recommending the choice of surgical approach for the treatment of prostate cancer. It is therefore concluded that the definition of the technique adopted must be an individualized decision shared with the patient.

U-56

TRENDS IN COST AND OPERATIVE TIME WITH ROBOT-ASSISTED SIMPLE PROSTATECTOMY: A RETROSPECTIVE SINGLE-CENTER STUDY

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Purpose: Although transurethral resection of the prostate (TURP) is the gold standard surgery for benign prostatic hyperplasia (BPH), simple prostatectomy remains a preferred choice for patients with a large prostate weighing more >80 grams in addition to Holmium Laser Enucleation of the Prostate (HoLEP) according to AUA guidelines [1]. Specifically, robot-assisted simple prostatectomy (RASP) has gained popularity due to its minimally-invasive nature, with benefits including shorter operation times, fewer complications, and a smaller learning curve. We hypothesize a decrease in both cost and duration of the procedure due to increased comfort with the procedure from its short learning curve at our institution.

Materials and Methods: A total of 52 patients (N_{2019}=11, N_{2020}=12, N_{2021}=24, N_{2022}=5) undergoing RASP were identified from September 2019 through February 2022. Data was obtained for anesthesia, surgery, recovery, and supply costs. Additionally, the duration of each surgery was obtained. Kruskal-Wallis tests and post-hoc Dunn tests were performed to investigate whether differences in individual and aggregate costs and operation times based on year the RASP was performed were statistically significant. We used an alpha of 0.05 for the Kruskal-Wallis tests and a Bonferroni-adjusted alpha of 0.0083 (0.05/6) for the post-hoc Dunn tests. Lastly, we performed Mann-Kendall tests to investigate the presence of a significant downward trend in cost or duration over time, using an alpha of 0.05. Procedure-only costs were calculated through the summation of anesthesia, surgery, and recovery costs.

Results: Median total costs for RASP surgeries performed each year from 2019 through 2022 are $5948.11, $6041.50, $5569.20, and $5597.90 respectively. Median operation times for the same periods were 157, 211.5, 181.5, and 183 minutes respectively. Kruskal-Wallis tests showed statistically significant changes in procedure-only costs *(H=12.571, P=0.00567)*, anesthesia costs *(H=37.713, P<0.00001)*, surgery costs *(H=10.767, P=0.0131)*, and supply costs *(H=19.838, P=0.00018)*. No statistically significant differences were noted for total overall cost and duration. Pairwise post-hoc Dunn tests showed significant decreases in several categories of RASP cost: procedure costs between 2019 and 2021 *(Z=2.827, P=0.00469)* and between 2020 and 2021 *(Z=2.917, P=0.00354)*, anesthesia costs between 2019 and 2021 *(Z=4.980, P=6.35E-7)* and between 2020 and 2021 *(Z=4.970, P=6.68E-7)*, and surgery costs between 2020 and 2021 *(Z=4.970, P=6.68E-7)*. Similarly, significant increases in supply costs were found between 2019 and 2021 *(Z=-3.930, P=8.49E-5)* and between 2020 and 2021 *(Z=-2.994, P=0.00275)*. Lastly, Mann-Kendall tests showed no significant monotonic upward or downward trend in cost or duration associated with RASP over time.

Conclusion: At our institution, we noted a general decrease in RASP procedure cost and duration, with a significant decrease between costs for surgeries performed in 2020 and 2021. However, declines in procedure cost were likely offset by higher supply costs due to COVID-19. At a single center, it is likely such trends will be seen with more cases performed as surgeons become accustomed to RASP. Additionally, RASP is easier to learn given Urology includes many robotic procedures. With recognized benefits from the minimally-invasive technique for both patients and surgeons, RASP will become a major option for the surgical management of patients with BPH.

U-57

EFFECT OF IMAGING MODALITY AND HISTORY OF URINARY TRACT INFECTION ON THE PERCENT YIELD OF ROBOT-ASSISTED SIMPLE PROSTATECTOMY

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Purpose: Robot-assisted simple prostatectomy (RASP) is a minimally invasive procedure that is used to treat lower urinary tract symptoms (LUTS) and urinary retention secondary to benign prostatic hyperplasia (BPH). AUA guidelines for BPH management endorse the use of RASP for large (80-150g) and very large (150+g) prostates. The assessment of prostate size and shape is performed via transrectal or abdominal ultrasound, cystoscopy, magnetic resonance imaging (MRI), or computed tomography (CT). Additionally, while many patients with BPH have a history of UTI, there is limited data discussing its relevance during the procedure. The purpose of this study is to evaluate the effect of imaging modality and urinary tract infection history on the percent-yield of RASP.

Materials and Methods: The charts of 52 patients who underwent RASP were reviewed and analyzed by two factors: preoperative imaging method and history of urinary tract infection (UTI). 28 patients were identified as having either ultrasound (US), magnetic resonance imaging (MRI), or both. 17 patients were identified as having a history of UTI. The percent-yield of the RASP was calculated for each patient by dividing the excised specimen weight from the estimated pre-operative prostate weight, as determined by imaging. The percent yields were averaged and reported for each of the 5 categories. Last, imaging modality percent yields were stratified and reported by presence of UTI history. An ANOVA analysis was utilized to check for significant differences between the percent yields of the imaging modalities. Paired t-Tests were utilized to analyze the differences between UTI history overall and UTI history by imaging method.

Results: Results indicated that the percent yield of RASP varies by both imaging modality and UTI history. Average RASP percent yields for US without MRI, MRI without US, and both MRI and US were 58.3% (n=9), 68.1% (n=16), and 77.3% (n=3) respectively (F = 2.467, p=0.105). Additionally, RASP percent yield was 59.8% (n=15) in patients with and 62.9% (n=32) in patients without history of UTI (p=0.502). In patients who received an US but no MRI, RASP percent yield was 69.6% (n=3) in patients with and 61.3% (n=6) in patients without UTI history (p=.206). Cases with MRI but no US demonstrated RASP percent yields of 63.3% (n=4) in those with and 70.2% (n=12) in those without UTI history (p=0.458). Finally, RASP cases with both MRI and US showed 92.1% yield (n=1) and 69.9% yield (n=2) for positive UTI history and negative UTI history, respectively (p=0.472).

Conclusion: Our results indicate both MRI and US, when taken and utilized together preoperatively, yield a higher percentage of the prostate when performing RASP. MRI may have a favorable effect on the percent yield of RASP when compared to US. UTI history may not affect RASP percent yield. Furthermore, the RASP percent yield in patients with UTI history may be increased by ultrasound and decreased by MRI. However, utilizing both MRI and US may be the most effective imaging modality for patients with UTI history. More studies are needed to better grasp the extent of these effects.

U-58

THE EFFECT OF THE SIZE OF THE PROSTATE ON OPERATIVE OUTCOMES IN ROBOT ASSISTED SIMPLE PROSTATECTOMY

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Purpose: Robot assisted simple prostatectomy (RASP) is a minimally invasive procedure that is often used for patients with benign prostatic hyperplasia leading to lower urinary tract symptoms. Previous research explored the effect of the size of the prostate in robot assisted radical prostatectomies as well as robot assisted laparoscopic prostatectomies, but not for RASP. We hypothesize that larger prostates have worse postoperative outcomes including operative time, length of stay, estimated blood loss, and complications when undergoing a robot assisted simple prostatectomy.

Materials and Methods: The charts of 52 patients who underwent RASP were analyzed, 5 of which were excluded due to lack of prostate size prior to RASP. We then grouped this cohort into large (70-149mL, n = 34) and very large (150+ mL, n =14) prostate size based on the AUA classifications for prostate size. We compared the two cohorts for operative time, length of stay, and estimated blood loss using two sample t-tests. We then compared the frequency of Clavien Dindo Classification Grade 1 and Grade 2 complications using a chi square analysis.

Results: The average size of the prostate for the cohort was 130 mL with a maximum of 275 and a minimum of 71. The average size of the prostate for the large group was 102 mL and the average size of the prostate for the very large group was 199 mL. The operative time for the large group was 184 minutes, and 190 minutes for the very large group and was not statistically significant ($P = .660$). The average length of stay for the large group was 1.77 days, and 2 days for the very large group and was statistically significant ($P = .000504$). The estimated blood loss for the large group was 212.9 mL and the estimated blood loss was 375.0 mL for the very large group and was statistically significant ($P = .000124$). Finally, there were 6 grade one complications and 5 grade two complications for the large group, whereas there were 3 grade one complications and 3 grade two complications for the very large group, which was not statistically significant ($P = .736$).

Conclusion: Our initial results indicate that a larger prostate may lead to higher blood loss and longer length of stay. Based on this preliminary data, we hypothesize that a very large prostate may have both increased vasculature and increased volume loss, leading to higher blood loss and longer length of stay, but may not necessarily lead to an increase in complications. In the future, we plan to explore more outcomes based on prostate size; we are also curious to explore how the presence or absence of a median lobe may affect outcomes.

U-60

EFFECT OF PRE-OPERATIVE UROLOGIC MEDICATIONS ON SURGICAL OUTCOMES IN ROBOT-ASSISTED SIMPLE PROSTATECTOMY

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Purpose: Robot-assisted simple prostatectomy (RASP) is a minimally-invasive procedure for male patients with lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH) in the setting of a large prostate (>80 grams). However, surgical management of BPH is usually reserved for patients who are unresponsive to medical treatment, according to AUA guidelines. Common classes of drugs used for BPH include alpha-adrenergic antagonists (alpha blockers), phosphodiesterase-5 inhibitors (PDE5), and 5-alpha reductase inhibitors (5ARIs). Previous studies have shown that finasteride decreased blood loss during transurethral resection of the prostate. In this study, we investigate whether intra-and-postoperative outcomes of RASP surgery are different amongst patients taking different medications for BPH.

Materials and Methods: A total of 52 patients undergoing RASP were identified from September 2019 through February 2022. We noted 5 outcomes including: estimated blood loss, length of stay, operation time, percent yield (of prostate tissue excised), and severity of complications. We identified 27 patients on alpha blockers, 9 patients on 5ARIs, and 17 patients with no prior urological medications. A single factor ANOVA test with an alpha of 0.05 was performed to assess for statistically significant differences in length of stay between the three medication groups. Additionally, chi-square analyses with an alpha of 0.05 were performed to investigate whether observed differences in estimated blood loss, operation time, percent yield, and complications were due to chance. Categories for estimated blood loss, operation time, and percent yield were set based on cutoffs of 200 mL, 150 minutes, and 50% respectively. Complications were divided based on Clavien-Dindo 1 and 2 classifications.

Results: No significant differences were found on the single-factor ANOVA tests for length of stay. We found a significant interaction between patients taking alpha blockers and patients taking no medications in estimated blood loss *(P = 0.0368)*. Specifically, patients on alpha blockers reported lower than expected blood loss. No other significant interactions were found for operative time, percent yield and severity of complications.

Conclusion: Our data contrasted with previous studies in that finasteride did not lead to favorable intra-operative or post-operative outcomes, which may be secondary to the superiority of the procedure in the hands of an experienced surgeon. A larger subject pool may elicit a statistically significant interaction between the other urologic medications. At our institution, we noted patients taking alpha-adrenergic antagonists before RASP have lower than expected blood loss during the procedure. Although a more comprehensive set of data is needed to confirm our findings, alpha blockers should remain a consideration for urologists in the treatment of BPH, even in cases where symptoms are severe and surgery is indicated.

GS-3

ROBOTIC APPROACH TO DOUBLE INCISIONAL HERNIA REPAIR: EPIGASTRIC AND SUBCOSTAL IPUM PLUS

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Purpose: Minimally invasive surgery is nowadays the preferred approach for ventral incisional hernia repair. Intraperitoneal underlay mesh (IPUM) technique can be used to close defects at any location, requires no dissection of abdominal wall, and allows a bigger mesh overlap than other repairs.

Materials and Methods: A 37-year-old man with history of complicated cholecystitis treated by laparoscopic cholecystectomy with conversion to open surgery, presented to the office 1 year after the procedure with a history of bulging in the right flank and under the xyphid process that started 6 months prior to consultation, these bulges were directly over the previous incision and had increased progressively in size according to the patient. Physical examination revealed a 4 cm postincisional epigastric hernia, as well as a subcostal 7 cm postincisional hernia, none of which were incarcerated or had any signs of vascular compromise. The patient underwent a simple abdominal CT scan that confirmed the presence of two hernias, an M2 W2 epigastric post incisional hernia and a L1W2 post incisional hernia according to the EHS classification. The patient was programmed for robot assisted laparoscopic IPUM plus repair.
A robotic repair was performed, using a DaVinci X with a 3-port technique. Abdominal entry was performed using Hasson open cutdown. Docking time was 25 minutes. Once in abdominal cavity, lysis of colon-abdominal wall adhesions was performed using monopolar scissors. Two large defects were found, an epigastric of approximately 4cm, and one subcostal following the previous Kocher incision. Both defects were closed using a 2-0 V-loc continuous suture. A large Ventralight ST mesh was introduced and placed using an Echo positioning system. Once the mesh was placed, we realized that the angle at which the trocars were placed did not allow for fixation of the mesh using running suture, so we opted for using a protack fixation device through the assistant´s trocar. A 5 cm overlap was accomplished. On the epigastric hernia we used a Ventralex mesh that was placed using 2-0 Vicryl suture. Total surgery time was 2 hours. The patient had a rapid recovery after surgery, being discharged the next day after surgery. Six months after, the patient came to the office with no visible wall defect, he referred no abdominal pain or added symptoms.

Results: There are many randomized trials reported that compare laparoscopic versus robotic repair. Although robotic repair is associated with higher hospital costs, faster recovery after surgery is observed, lowering hospital stay and minimizing postoperative complications.

Conclusion: Robotic incisional repair should be used where available, compared to laparoscopic approach, robotic repair makes dissection of the hernia sac and adhesions easier due to the improved optics and better ergonomics. The freedom degrees offered to the surgeon makes the defect closure more effective and faster, making this approach superior to laparoscopic technique. IPUM is an easy to perform technique, with great postoperative results.

GS-4

ROBOTIC RESECTION OF A GASTRIC GIST TUMOR AT THE GASTROESOPHAGEAL JUNCTION

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Purpose: The role of robotic technique in surgical oncology continues to evolve along with surgeon experience and surgical platforms. While minimally invasive surgery for gastrointestinal stromal tumor (GIST) is becoming routinely available, size, location of the tumor and endophytic lesions may present as a challenge for conventional laparoscopic approach. We present a case of robotic partial gastrectomy for an endophytic GIST measuring 5.5 cm at the gastroesophageal junction (GEJ).

Materials and Methods: Herein, we reviewed a case of a 64-year-old female who presented for a robotic resection of a gastric GIST. We examined the preoperative conditions leading up to the case, intraoperative findings, and postoperative outcome of the patient. Additionally, a video recording of the operative case was reviewed.

Results: A 64-year-old female with history of sarcoidosis and prior colectomy for an endoscopically unresectable colon polyp was found to have a 5.5cm asymptomatic GIST at the gastroesophageal junction. This was biopsied and confirmed as GIST with exon 11 mutation. Because of the location of the lesion and the size of the tumor, she underwent a 6-month of neoadjuvant imatanib with modest decrease in size. Given no further decrease in size of the tumor at 6 months, the decision was made to move forward with robotic intragastric tumor resection.
We started the case with an intragastric tumor resection given the endophytic lesion as well as the location of the tumor. Access was obtained with three 8mm robotic trocars placed into the gastric lumen under EGD visualization. The mass was visualized within the gastric lumen approximately 1cm from the GEJ. Dissection was initiated with a grasper and hook electrocautery and the mass was separated from surrounding normal gastric muscle. However, it became impossible to maintain pneumogastium likely because one of the trocars was dislodged. Subsequently, the case was converted to conventional robotic approach through anterior gastrotomy. A silk suture was placed in the mass for retraction and we continued dissecting the mass from the surrounding gastric muscle. The mass was completely excised without posterior gastrotomy. Anterior gastrotomy site was closed in two layers, and initial gastotomy site was closed with figure-of-eight. An endoscopic leak test at the conclusion of the procedure was negative. Postoperative course was unremarkable with negative upper GI study on the postoperative day (POD) one. The patient was discharged home on POD 3. Final pathology showed a T3 low-grade GIST (5.5cm) with negative margins.

Conclusion: Here, we present successful robotic partial gastrectomy of a 5.5cm endophytic GIST lesion within 1cm of the gastroesophageal junction. Initial intragastric approach was limited by loss of insufflation in the gastric lumen. Nonetheless the lesion was excised robotically with negative margins. We hypothesize that the robotic approach for GIST excision will become more common as surgeon robotic experience increases. Larger robotic case volume will also lend more evidence to the utility of intragastric approach.

GS-7

LATERAL APPROACH TOTALLY EXTRAPERITONEAL (TEP) ROBOTIC RETROMUSCULAR INCISIONAL HERNIA REPAIR

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Purpose: Total extraperitoneal access (TEP) has been a widely used technique for the repair of ventral and incisional hernias, its technique has been perfected each time according to the access sites, in this video we show a lateral approach for a 5cm incisional hernia in a post baritric patient

Materials and Methods: Our team outlines the key steps in a structured step-by-step approach to safe and reproducible repair based on well-defined anatomical landmarks, identification of dissection sites, and subsequent correction of rectus diastasis.

Results: A robotic-assisted surgery with 3 robotic arms is performed in a lateral docking setup, Mean console time was 121.6 min, skin-to-skin time was 138.5 min. There were no intraoperative complications or conversion. The mean length of hospital stay was 0.91 days. During the median follow-up period of 1 year, there was no hernia recurrence or other complications.

Conclusion: We present a standardized side docking robotic assisted eTEP approach for ventral hernia repairs. We believe understanding the landmarks and a step-by-step guidance based on the concepts of retromuscular abdominal wall anatomy foster a safe learning of minimally invasive restoration of the abdominal wall integrity.

GS-9

TRIRADIAL HIATAL HERNIA

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Purpose: The term hiatal hernia refers to the protrusion of any non-esophageal structure through the esophageal hiatus, whose abdominal content is covered by a peritoneal sac, the objective of this video is to show a giant hital hernia for which closure is performed in three stitches without the use of mesh.

Materials and Methods: The 56-year-old patient presents symptoms of pathological gastroesophageal reflux of several years of evolution, mainly heartburn, regurgitation, early satiety, sensation of retrosternal occupation and frequent eruptions.
Endoscopically, a first ring corresponding to the mucosal change and gastroesophageal junction is described, followed by a saccular formation with gastric folds that emerge for a second, ring located distally and more dilated corresponding to the esophageal hiatus. Endoscopic retrovision of the gastric fundus and gastroesophageal junction confirms the signs suggestive of hiatal hernia with a dilated hiatus where folds invaginate towards proximal. Biopsies taken from gastroesophageal junction and distal epithelium showed chronic esophagitis and/or carditis and no columnar epithelium with intestinal metaplasia was found, ruling out an associated Barrett's esophagus,elective surgery, with the use of a robot, the coupling was cephalocaudal.

Results: The treatment of achalasia has evolved in recentyears. Endoscopic treatment with pneumatic dilation or botulinum toxin injection into the lower esophageal sphincteroffers temporary improvement of symptoms. Recurrence of symptoms requires additional sessions, increasing the risk of esophageal perforation. Therefore, the robotic alternative allows the elimination of tremor and the increase in the degrees of freedom of the instruments explain the lower rate of perforation of the esophageal mucosa. We developed a safe way to manage giant hiatal hernia with a closure in three directions to divide the tension forces, managing to keep the esophagus centralized, the suture used was cotton 2.0.

Conclusion: In conclusion, when faced with a giant hiatal hernia defect and without obtaining mesh, a tri-radial type closure can be performed in all three angles, thus reducing the tension line of a single suture and distributing it in three suture lines. .

GS-12

ROBOTIC ELONGATION OF COMMON CHANNEL AFTER STOMACH INTESTINAL PYLORUS SPARING SURGERY (SIPS)

Vikrom Dhar, Gregory Dakin, Omar Bellorin, **Cheguevara Afaneh**
New York Presbyterian Hospital - Weill Cornell Medical Center, New York, NY, USA

Purpose: The purpose of this video is to demonstrate the operative technique for elongation of the common channel following stomach intestinal pylorus sparing surgery (SIPS).

Materials and Methods: The patient is a 51 year old gentleman who developed chronic malabsorption and vitamin deficiencies with excessive weight loss after undergoing SIPS.

Results: The patient was recommended to undergo robotic elongation of the common channel as demonstrated in the video.

Conclusion: In this video, we present robotic elongation of the common channel following SIPS for the treatment of chronic malabsorption and excessive weight loss.

GS-13

ROBOTIC LIGAMENT OF TREITZ AND MEDIAN ARCUATE LIGAMENT RELEASES FOR SMA AND MAL SYNDROMES

Vikrom Dhar, Gregory Dakin, Omar Bellorin, **Cheguevara Afaneh**
New York Presbyterian Hospital - Weill Cornell Medical Center, New York, NY, USA

Purpose: In this video we present the operative technique for ligament of Treitz (Strong's) and median arcuate ligament releases.

Materials and Methods: The patient is a 15 year old woman with chronic abdominal pain exacerbated by exercise and alimentation. She underwent mesenteric duplex studies and CT angiography demonstrating findings consistent with superior mesenteric artery syndrome and median arcuate ligament syndrome.

Results: The patient was taken to the operating room for ligament of Treitz release as well as median arcuate ligament release.

Conclusion: The patient had significant improvement in her symptoms and was tolerating a diet with appropriate weight gain at most recent follow-up.

GS-14

ROBOTIC CHOLECYSTECTOMY FOR ACUTE GANGRENOUS CHOLECYSTITIS

Vikrom Dhar, Gregory Dakin, Omar Bellorin, **Cheguevara Afaneh**
New York Presbyterian Hospital - Weill Cornell Medical Center, New York, NY, USA

Purpose: This video demonstrates the operative technique for robotic cholecystectomy in a patient with acute gangrenous cholecystitis.

Materials and Methods: The patient is a 41 year old gentleman who presented with several day history of worsening right upper quadrant pain as well as radiographic and clinical findings consistent with acute cholecystitis.

Results: A robotic cholecystectomy was performed with suture closure of the cystic duct.

Conclusion: Robotic assisted cholecystectomy can be performed safely for patients with acute gangrenous cholecystitis.

GS-20

INITIAL EXPERIENCE OF FOUR CASES

Luis Felipe Campos
Hospital Samaritano, São Paulo, Brazil

Purpose: To show the initial experience with the Robotic assisted surgery for children with different pathologies

Materials and Methods: four different cases submitted to robotic assisted surgery: one child with sickle cell anemia and congenital right diaphragm eventration, one child with trichobezoar and acute pancreatitis and two children with encephalopathy and Gastroesophageal reflux

Results: All children supported underlying diseases, which compromises correct analysis about the results, besides the size of the sample

Conclusion: The group needs more experience to show deeper analysis about results. it's just a case report

GS-23

ROBOTIC PANCREATICODUODENTECTOMY FOR PERIAMPULLARY ADENOCARCINOMA

Sharona Ross, Malik Watson, Iswanto Sucandy, Alexander Rosemurgy
Digestive Health Institute, Tampa, FL, USA

Purpose: This video demonstrates a robotic pancreaticoduodenectomy undertaken in a patient with periampullary adenocarcinoma.

Materials and Methods: This video demonstrated a robotic pancreaticoduodenectomy undertaken in an 81-year-old woman who presented with jaundice and weight loss. Preoperative workup included EUS/FNA which indicated periampullary adenocarcinoma.

Results: The operation began with lysis of adhesions. The Kocher maneuver was undertaken and the ligament of Treitz was divided with the blue load stapler. The gastrohepatic ligament was dissected along the common hepatic artery. The GDA was isolated and clipped prior to being divided. The gastrocolic omentum was then taken down and the duodenum was divided utilizing a robotic blue load stapler. The pancreas was then transected with hook cautery. Dissection continued along the SMV. The common bile duct was divided, and the specimen was then removed and sent to pathology where it was confirmed to be negative for malignancy. Reconstruction began with the jejunum being brought under the roof of the mesentery to complete the single layer end-to-side hepaticojejunostomy. Then, a 2-layer pancreaticojejunostomy and duodenojejunostomy anastomosis was undertaken in an antecolic fashion. Finally, a 10-French flat JP drain was placed.

Conclusion: The patient tolerated the operation well. This video demonstrates a safe and efficacious robotic pancreaticoduodenectomy in a patient with periampullary adenocarcinoma.

GS-24

ROBOTIC TRANSHIATAL ESOPHAGECTOMY FOR ESOPHAGEAL ADENOCARCINOMA

Sharona Ross, Sean Scanlon, Iswanto Sucandy, Alexander Rosemurgy
Digestive Health Institute Tampa, Tampa, FL, USA

Purpose: Esophagectomy is key to curative intents in esophageal adenocarcinoma. Resection can be associated with significant abdominal and pulmonary perioperative morbidity due to immobility and anastomotic tension resulting in pneumonia and anastomotic leak respectively. Robotic transhiatal resection can provide a minimally invasive approach with a corresponding minimization of postoperative pain. The superior camera visualization and wristed instrumentation allows high mediastinal dissection with good technical and oncologic outcome. We present a case of a patient who underwent this resection modality as a critical component to their care.

Materials and Methods: A 71 year old gentleman presented with T2N0M0 biopsy proven adenocarcinoma of the esophagus. After 3 months of neoadjuvant therapy, the patient had excellent response with a decline in the PET Avidity of the lesion from 9.6 to 3.1. He underwent Robotic Transhiatal Esophagectomy with Esophagogastrostomy anastomosis.

Results: Post-operatively the patient recovered uneventfully with tolerance of liquid diet on postoperative day 3 and discharge home on postoperative day 4. Final pathology identified a complete pathologic response to neoadjuvant therapy in a background of Barrett's esophagus.

Conclusion: Robotic resection is safe and feasible. The minimally invasive nature significantly attenuates perioperative morbidity, allowing for rapid recovery, quality of life and resumption of critical adjuvant therapy as indicated.

GS-25

ROBOTIC-ASSISTED VENTRAL HERNIA AND DIASTASIS REPAIR : NEW WAY TO ACCESS RETRO MUSCULAR SPACE

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Purpose: Background: Described alternatives technique for ventral hernia repair included diastasis of the rectus. The approach of using combined robotic and retromuscular position of the mesh shows the best results. The cosmetic technique can be done performed associated with maintenance of bases of using reinforce of linea alba and insert the mesh is easy than recognized anatomy familiar by all surgeons.

Materials and Methods: Methods: Introduce the robotic subcutaneous and retro muscular approach, using robotic-assisted surgery to perform ventral hernia repair with a technique that is usual for most surgeons.

More clinical studies are needed to measure the impact of R-Dom implementation in MIS ventral hernia repair and long-term results.

Results: Discussion: The treatment combined diastasis and ventral hernia approach may change the initial view but complain of important concepts to fix the problem. Introduce the robotic-assisted surgery turn of this technique easier for most surgeons just understand of currently abdomen wall.

Conclusion: More clinical studies are needed to measure the impact of R-Dom implementation in MIS ventral hernia repair and long-term results.

GS-27

ROBOTIC GASTRIC BYPASS WITH VERSIUS SYSTEM

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Purpose: SHOW THE TECHNICAL STEPS OF ROBOTIC GASTRIC BYPASS WITH VERSIUS SYSTEM

Materials and Methods: EDITED VIDEO OF A ROBOTIC GASTRIC BYPASS WITH VERSIUS SYSTEM

Results: SHOWED IN THE VIDEO

Conclusion: ROBOTIC GASTRIC BYPASS IS VIABLE WITH VERSIUS SYSTEM

GS-28

REVISIONAL SURGERY AFTER 20 YEARS OF OPEN GASTRIC BYPASS WITH RING FOR OBSTRUCTIVE AND REFLUX SYMPTOMS

Alexandre Elias, Walter Sasaki, Thiago Vidal
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Purpose: AFTER MANY YEARS OF OPEN BARIATRIC SURGERY, THE PATIENT WOMAN, SIXTY YEARS OLD , BMI 28, DEVELOPED RECURRENT FOOD INTOLERANCE AND REFLUX SYMPTOMS, COMPROMISING YOUR NUTRITIONAL STATUS AND QUALITY OF LIFE. SHE PRESENTED FREQUENT VOMITING AND REFERRED TO HAVING DIFFICULTY EVEN TAKING LIQUID FOODS LIKE WATER

Materials and Methods:
- DURING THE INVESTIGATION, WE DID THE CT SCAN AND X- RAY THAT SHOWED THE POUCH AND RING WAS HERNIED INTO THE THORAX AND THE ENDOSCOPY SHOWED LEVEL C OF ESOPHAGITIS AND THE RESULT OF THE BIOPSY WAS SHOWN BARRET'S ESOPHAGUS

Results:
- IN THIS CASE, WAS INDICATED TO REPAIR THE HIATAL HERNIA AND REMOVAL OF THE RING TO SOLVE ALL OBSTRUCTIVE PROBLEMS

Conclusion:
PATIENT HAD A SATISFACTORY POST-OPERATIVE WITHOUT COMPLICATIONS IN THIRTY DAYS, HAVING GOOD ADAPTATION WITH DIET PROGRESSION AND PRESENTED TOTAL RESOLUTION OF REFLUX AND OBSTRUCTIVE SYMPTOMS

GS-29

REVISONAL ROBOTIC BARIATRIC SURGERY TO REPAIR HIATAL HERNIA AND RING OBSTRUCTIONS

Alexandre Elias, Walter Sasaki, Thigo Vidal
Instituto Garrido Bariatric Center, São Paulo, Brazil

Purpose: AFTER 18 YEARS OF LAPAROSCOPIC BARIATRIC SURGERY BY GASTRIC BYPASS WITH RING, THE PATIENT PRESENTED RECURRENT VOMITING AND REFERRED TO HAVING DIFFICULTY EVEN TAKING LIQUID FOODS LIKE WATER DEVELOPED FOOD INTOLERANCE AND REFLUX SYMPTOMS, COMPROMISING YOUR NUTRITIONAL STATUS AND QUALITY OF LIFE.

Materials and Methods:
THE CT SCAN AND X- RAY SHOWED THE POUCH AND RING WAS HERNIED INTO THE THORAX AND THE ENDOSCOPY SHOWED LEVEL C OF ESOPHAGITIS AND THE RESULT OF THE BIOPSY WAS SHOWN BARRET'S ESOPHAGUS

IT WAS INDICATED ROBOTIC REVISIONAL SURGERY TO REPAIR THE HIATAL HERNIA AND REMOVAL OF THE RING TO SOLVE ALL OBSTRUCTIVE PROBLEMS

Results: THE PATIENT HAD A SATISFACTORY POST OPERATION WITH IMPROVEMENT OF REFLUX SYMPTOMS AND RETURNED TO EATING WITHOUT VOMITING, RESTORING HER NUTRITIONAL CONDITION

Conclusion: THE ROBOTIC SYSTEM HAS HELPED MAINLY IN REVISION SURGERIES THAT CAN BE MORE COMPLEX MINIMIZING RISKS PERFORMING THE PROCEDURE WITH MORE PRECISION AND SAFETY

GS-30

ROBOTIC APPROACH FOR GIANT TUMOR OF ANGLE OF TREITZ

Ana Olga Fernandes, Flavio Kawamoto, Samia Casagrande
Hospital Moriah, Sao Paulo, Brazil

Purpose: Present a video of ressection of tumor of angle of Treitz.

Materials and Methods: Patient with a history of epigastric pain, in investigation with CT scam show a abdominal mass with 13cm, next to angle of Treitz.

Results: Ressection of the tumor, with Davinci Xi, with transit reconstruction by duodenal jejunal termino lateral anastomosis.

Conclusion: The case show safety e feasibility of the ressection and transit reconstruction. The challenge in this case is primary reconstruction with duodeno jejunal anastomosis.

GS-31

MEDIAN ARCUATE LIGAMENT SYNDROME - ROBOTIC APPROACH

Luis De Carli, Marcio Lucas, David Lopez, Fernando Cirne Lima, Marcos Tang, Eduardo Fumegalli, **Leandro Cavazzola**
Irmandade Santa Casa de Misericórdia de Porto Alegre, Porto Alegre, Brazil

Purpose: Demonstrate robotic approach of a very rare syndrome - median arcuate ligament syndrome.

Materials and Methods: Case report of a median arcuate ligament release by robotic approach. Pre and postoperative diagnostic images are showed, as well as the robotic procedure, including port placement.

Results: Pre and postoperative doppler ultrasound and CT scans showing resolution of the compression

Conclusion: Robotic approach is safe and feasible for this rare condition

G-7

LAPAROSCOPIC MYOMECTOMY: WHEN AND HOW?

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Purpose: The purpose of this video will be to review common fibroid symptoms and diagnostic modalities that assist with surgical planning. A technique for laparoscopic myomectomy approach utilizing robotic assistance with the use of methylene blue will be reviewed.

Materials and Methods: N/A

Results: During this 5-minute video we will review fibroid symptoms including its effects on assisted reproductive technology. This video will review preoperative imaging and its assistance in surgical approach planning. Finally, it will focus on a 5-step surgical video tutorial of a laparoscopic myomectomy technique with methylene blue to assist with endometrial cavity identification. The presentation will end with concluding remarks.

Conclusion: Fibroids are a common female problem. Surgical management of fibroids should be considered if symptomatic i.e., pelvic pain, heavy vaginal bleeding or infertility issues secondary to endometrial cavity deforming fibroids. Usage of methylene blue throughout the laparoscopic myomectomy assists with assessing cavity integrity and decreasing the risk of intrauterine adhesions.

H-2

VIRTUAL 3D SPECIMEN MAPPING IN TRANSORAL ROBOTIC SURGERY: THE INTRAOPERATIVE "CAD MARGIN"

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Purpose: Transoral robotic surgery (TORS) is a well-established treatment modality for HPV-associated oropharyngeal squamous cell carcinoma (SCC). The goal of complete surgical resection with microscopically negative margins is achieved intraoperatively using frozen section analysis. Margin visualization and specimen mapping techniques have previously been explored as an important feature to aid communication between surgeons and pathologists and documentation of margin status during TORS. The purpose of this study was to demonstrate the application of structured light 3D scanning and computer-aided design (CAD) technologies for intraoperative specimen mapping in TORS.

Materials and Methods: A commercially available structured light 3D scanner was used to capture and digitally reconstruct the 3D surface topography of the fresh *ex vivo* surgical specimen. Working alongside the pathology team in real time, CAD software was used to graphically depict the inked surfaces and sites of sampled margins.

Results: A 50-year-old male non-smoker presented with a painless neck mass. Workup revealed a cT1N1 biopsy-proven p16-positive SCC of the left tonsil. The patient elected to undergo TORS. The specimen was resected *en bloc* and sent for frozen section. The specimen was 3D-scanned immediately upon arrival at the lab. Image acquisition time was 7:16. Virtual 3D specimen mapping was performed, with 5 inked surfaces and sites of all 3 sampled margins graphically depicted on the 3D model. Deep, anterior, and inferior margins were found to be 1, 4, and 6.5 mm, respectively, on frozen section. These findings were mapped onto the 3D specimen model and virtually communicated to the surgeon in the OR. The tumor was determined to be pT2N1 and final margins were negative.

Conclusion: Achieving clear and wide margins during resection of oropharyngeal tumors with TORS can be challenging due to anatomic constraints. Clear communication between the surgeon and pathologist during intraoperative margin analysis is crucial for success. Structured light 3D scanning and CAD specimen mapping represents a novel modality that can serve as a useful tool for robotic head and neck surgeons during frozen section analysis. This technique may be applicable to other surgical oncologic disciplines.

T-1

RATS (ROBOTIC ASSISTED THORACOSCOPIC SURGERY) FOR PEDIATRIC DIAPHRAGMATIC HERNIAS AND EVENTRATIONS - AN EXPLORATORY CASE SERIES- A VIDEO DEMONSTRATION

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Purpose: Congenital diaphragmatic hernias and eventrations are traditionally stabilised and operated by an open surgery. Minimal access surgery, either thoracoscopic or laparoscopic, is considered controversial. The use of the robotic platform to carry out the same has rarely been described. Potential drawbacks cited are the large size of the instruments and the small working area. We describe an exploratory series of four cases of progressively younger patients and demonstrate a typical video of the same.

Materials and Methods: The index case is a four-year-old boy with recurrent episodes of cough and respiratory symptoms since infancy. A chest radiograph revealed left diaphragmatic eventration. Given the persistent symptoms, the child was taken up for a robotic-assisted thoracoscopic repair.
Robotic-Assisted Thoracoscopic left diaphragmatic eventration repair was carried out using the da Vinci Xi system employing a three-port technique. 5mm of CO_2 insufflation was used to assist in reducing the contents. Using a bipolar Maryland dissector and a megasuturecut needle driver, the edges of the eventration were identified and sutured using an interrupted 3-0 polyester 17mm tapercut needle(ethibond) suture in two layers. The patient was extubated on table at the end of the procedure and observed in a high dependency unit. The patient had oral feeds the same evening, intercostal drain removed the following day and was discharged within 24 hours. He had good pain control on oral paracetamol alone and is well on follow up of 30 months.

Results: We have carried out four cases, the youngest a 5month 5kg baby, who also were extubated on table at the end of the procedure and observed in a high dependency unit. Each patient had oral feeds the same evening, intercostal drain removed the following day and was discharged within 24 hours. each of them had good pain control on oral paracetamol alone and all were well on follow up.

Conclusion: With careful port planning and use of 8mm wristed instruments, eventration and diaphragmatic repair can be carried out safely even in small children using the robotic platform. We noted no significant difficulty using the 8mm instruments or due to a lack of space.

T-3

ROBOTIC TRACHEOPLASTY: HOW I DO IT

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Purpose: Tracheobronchomalacia (TBM) continues to present a unique technical challenge for thoracic surgeons globally, particularly those dedicated to the adoption of minimally-invasive techniques in order to provide the best clinical outcomes. Whilst the aetiology of severe diffuse tracheomalacia and excessive dynamic airway collapse (EDAC) may vary or remain idiopathic, the principles underlying definitive surgical management for severely symptomatic patients despite optimal medical management are constant – stabilisation of the posterior membranous wall with the end-goal of restoring native airway geometry. We propose excellent outcomes can be achieved utilising a robotic-assisted approach due to enhanced the visualisation, instrument manipulation and access it provides to the posterior mediastinal trachea; a difficult area to access via minimally-invasive means and traditionally accessed via right posterolateral thoracotomy.

Materials and Methods: We perform this operation with the patient in the left lateral decubitus position, as though for standard right thoracotomy. A dual-lumen endotracheal tube is utilised to achieve isolation and single-lung ventilation. Triangulation of robotic instrument and assistance port sites is achieved, by dividing the 8th intercostal space (ICS) into thirds. The camera port is placed in the 8th or 9th ICS, shouldered on either side by two instrument ports in the 8th ICS. We then place an Intuitive robotic-controlled atrial retractor and 5 mm assistant port in the 5th and 7th intercostal spaces, respectively, equidistant apart. Following ligation and division of the azygous vein and dissection of the right vagus nerve, enhanced exposure of the posterior membranous trachea and mainstem bronchi is achieved by placing a single tacking suture from the oesophagus and preserved vagus nerve to the parietal pleura. Station 7 lymph nodes are dissected and removed to expose the subcarinal space. Membrane plication is performed with additional reinforcement of the lateral walls of involved trachea and bilateral mainstem bronchi using polytetrafluoroethylene (PTFE) felt pledget cut to appropriate length. Continuous horizontal mattress suturing is performed using a 4-0 Medtronic V-Loc suture to plicate the posterior membrane in a partial-thickness and pledgeted fashion. Plication of the trachea from cranial to caudal is completed first, followed by plication of the right main bronchus, including bronchus intermedius. Plication of the left main bronchus is performed last, beginning in the middle subcarinal space and extending as far distally as can be dissected. Posterior membrane tightening is achieved throughout the entire tracheobronchial tree and natural cartilaginous C-shape airway geometry is restored. Further stabilisation is achieved with semi-absorbable Ultrapro mesh cut into custom Y-shape and sutured to the posterior wall using V-loc sutures in a continuous fashion with additional tacking sutures as required.

Results: The patient made an excellent recovery with significant improvement in symptoms at 3-month follow up. During her inpatient stay, she was admitted to Intensive Care Unit for the first 24-hours for routine monitoring and discharged home to a neighbouring state on post-operative day 16.

Conclusion: We have successfully demonstrated that excellent outcomes can be achieved utilising the robotic-assisted approach to tracheo-bronchoplasty for severe tracheobronchomalacia, avoiding the morbidity associated with traditional open approach.

T-4

ROBOTIC LOBECTOMY AFTER MECHANICAL PLEURODESIS

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Purpose: Many are discouraged from attempting a minimally invasive surgical technique or are quick to convert to thoracotomy when approaching the re-operative chest. The purpose of this video case presentation is to demonstrate and encourage the use of minimally invasive methods, even for the most difficult of circumstances.

Materials and Methods: We report the case of a 59-year-old gentleman who presented with a right upper lobe adenocarcinoma nearly a decade after undergoing a thoracoscopic blebectomy and pleurodesis. Staging workup confirmed localized disease and the decision was made to attempt a robotic approach. Access to the chest was gained with the robotic port and extensive carpet-like adhesions were encountered. Some space was developed with the thoracoscope so that an additional port could be placed. With the use of harmonic scalpel under direct visualization, enough adhesions were lysed such that all robotic ports could be inserted, and the robot could be docked. At this point, the adhesiolysis progressed more efficiently. Finally, a standard right upper lobectomy was performed and the specimen was removed with an endo-bag. A chest tube was placed and the case was concluded. Total case duration was 215 minutes with over 135 minutes spent on lysis of adhesion.

Results: The patient had a grade 1 air leak post-operatively that resolved after several days. The chest tube was removed, and he was discharged to home in good condition. The final pathology report revealed a T1bN0 adenocarcinoma.

Conclusion: Despite the daunting nature of the case with extensive adhesions from a prior pleurodesis, this case was able to continue with a minimally invasive approach. If enough space can be created to allow for the robot to be docked, the lysis of adhesions can be performed with greater alacrity, ease, and speed.

T-5

CASE OF PARTIAL ANOMALOUS VENOUS RETURN IN ROBOTIC RIGHT UPPER LOBECTOMY

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Purpose: Partial anomalous pulmonary venous return (PAPVR, also known as Partial anomalous pulmonary venous connection) is a rare congenital anomaly, characterized by pulmonary venous drainage into a systemic veins or the right atrium.[1] PAPVR is a rare condition with prevalence of 0.5–0.7%[2] and typically are associated with atrial septal defects (ASD), up to 90%[3]. Anomalous right-sided pulmonary veins may drain into the superior vena cava, inferior vena cava, right atrium, azygos vein, portal vein, or hepatic vein, while anomalous left-sided pulmonary veins drain into the left brachiocephalic vein, coronary sinus, or hemiazygos vein[4]. PAPVRs are sometimes incidentally found during operations for lung cancer. This is a case of a 74F with drainage of posterior segmental vein directly into the right atrium behind the right mainstem bronchus during a robotic right upper lobectomy.

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[2] Black MD, Shamji FM, Goldstein W, Sachs HJ. Pulmonary resection and contralateral anomalous venous drainage: a lethal combination. *Annals of Thoracic Surgery.* 1992;53(4):689–691.
[3] Shahriari A, Rodefeld MD, Turrentine MW, Brown JW. Caval division technique for sinus venosus atrial septal defect with partial anomalous pulmonary venous connection. *Annals of Thoracic Surgery.* 2006;81(1):224–230.
[4] Tourmousoglou, et al.

Materials and Methods: Patient had past medical history of atrial fibrillation, s/p ablation, myocarditis, cardiomyopathy, and breast cancer s/p lumpectomy/XRT, but no h/o ASD. Patient presented with a RUL part solid 1.8 cm nodule with minimal FDG avidity. NavBronch/EBUS preoperatively established adenocarcinoma, sT1bN0. 1/5/2022 patient underwent robotic right upper lobectomy, and mediastinal lymph node dissection.

Results: During a hilar dissection an ectopic vein, crossing left main stem bronchus and entering right atrium was visualized, establishing a diagnosis of a partial anomalous pulmonary venous connection. This anomalous vein was circumferentially dissected and divided with vascular stapler. The remainder of the procedure was uncomplicated. Retrospective review of the preoperative imaging confirmed presence the anomaly, overlooked previously.

Conclusion: PAPVR although rare can be a significant source of bleeding and morbidity when unidentified, therefore it is imperative for surgeons to be able to recognize these anomalies.

T-6

RATS DIAPHRAGMATIC PLICATION

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Purpose: DEMONSRTATE THE ROBOTIC THORACOSCOPIC APPROACH AS A RELIABLE AND SAFE PROCEDURE WITH FAST POSTOPERATIVE RECOVERY FOR DIAPHRAGMATIC PLICATION.

Materials and Methods:
WE PRESENT THE CASE OF A 32 YEAR OLD MALE WITHOUT ANY MEDICAL BACKGROUND, WITH HISTORY OF PROGRESSIVE DYSNEA. THE PHYSICIAN DECIDED TO DO A CHEST X RAY, FINDING RIGHT HEMIDIAPHRAGM ELEVATION; WE COMPLEMENTED WITH A CT SCAN SHOWING AN ELEVATED RIGHT HEMIDIAPHRAM WITH NO DISRUPTION TO THE DIAPHRAGMATIC CONTINUITY.

Results: WE PERFORMED A RIGHT THORACOSCOPIC DIAPHRAGM PLICATION, USING TWO LINES OF SUTURES.THE DIAPHRAGM WAS INVERTED AND BITES WERE TAKEN WITH THE SUTURE TO CREATE A FOLD; ONCE DE PROPPER AMOUNT OF TENSION WAS ACHIEVED THE SUTURE WAS TIED AND TRIMMED. THE FIRST ROW WERE INDIVIDUAL MATTRESS SUTURES STARTING IN THE MIDDLE ASPECT OF THE DIAPHRAGM TOWARDS THE LATERAL POSTERIOR PART. THE SECOND ROW WAS MADE WITH A CONTINUOUS SUTURE LINE, BOTH WITH NON ABSORBABLE MONOFILAMENT SUTURES. A PLEURAL DRAINAGE WAS LEFT FOR THREE DAYS, AND HE INITIATED REHABILITATION THERAPY IN POSTOPERATIVE DAY 1. HE WAS DISCHARGED IN POSTOPERATIVE DAY 4, WITH A CHEST X RAY SHOWING A SIGNIFICANT IMPROVEMENT IN THE POSITION OF THE RIGHT HEMIDIAPHRAGM.

Conclusion: THE USE OF A ROBOTIC SYSTEM, WITH ITS ENDO-WRISTED INSTRUMENTS AND STEREOSOCOPIC VISION MAKES SUTURING EASIER IN THIS TYPE OF PROCEDURES. WE UNDERSTAND THAT COSTS MAY BE ELEVATED, BUT THE POSTOPERATIVE RECOVERY IN THIS CASES HAS BEEN PROVED TO BE SHORTER. IN CONCLUSION ROBOTIC DIAPHRAGMATIC PLICATION IS A SAFE AND EFFECTIVE PROCEDURE AND SHOULD BE OFFERED IN SYMPTOMATIC PATIENTS WITH DIAPHRAGMATIC EVENTRATION. HOWEVER MORE STUDIES SHOULD BE MADE WITH A LARGER SAMPLE AND FOLLOW UP.

T-7

ROBOTIC THYMECTOMY IN A POSTOPERATIVE THORACOSCOPIC PATIENT: IS IT FEASIBLE AND SAFE?

Francina Bolaños Morales, Francisco Armas Zárate, **Luis Waldo Hernández**
Instituto Nacional de Enfermedades Respiratorias "Ismael Cosío Villegas", Mexico City, Mexico

Purpose: To describe a clinical case of a patient previously operated for VATS thymectomy with symptomatic relapse. A robotic approach was decided without complications.

Materials and Methods: Retrospective analysis of a clinical case.

Results: Female, 32 years old. History of hypothyroidism of 4 years of evolution under treatment. Diagnosis of myasthenia gravis 3 years ago. VATS thymectomy was performed 3 years ago with right hemithorax approach. Pathology report was lymphoid hyperplasia. Adequate postoperative evolution, with withdrawal of prednisone and azathioprine, maintaining doses of pyridostigmine for the following 2 years. The patient started 6 months before admission with dysarthria, facial weakness, ptosis and dysphagia. She required management with immunoglobulin for symptom improvement. Subsequently, a thoracic CT scan was performed with evidence of thymic remnant, so it was decided to perform a robot thymectomy. A 3-port approach was performed in the left hemithorax, with complete resection of the remaining thymic tissue, and minimal intraoperative bleeding. Postoperative evolution without complications. Discharge on the 3rd day. Follow-up at 3 months with improvement of symptomatology and decrease of medication dosage.

Conclusion: Thymectomy in patients with myasthenia gravis has its precise surgical indications. In patients who have already undergone thymectomy, the indication for reoperation is less consistent. Young patients with a CT image of thymic remnant may be good candidates for reoperation. The robotic approach has demonstrated advantages in mediastinal pathology when compared to VATS due to the greater reach and dissection achieved with the robot, while maintaining the minimally invasive benefits achieved by VATS.

T-8

RATS WEDGE LUNG RESECTION COMBINING FIREFLY TECHNOLOGY AND CT-GUIDED INJECTION OF A DISTINCT PREPARATION OF INDOCYANINE GREEN

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Purpose: To describe a technique for lung wedge resection combining fluorescence imaging of a robotic device and preoperative CT-guided injection of an unique indocyanine green preparation.

Materials and Methods: A 69-year-old man, with past medical history of radical prostatectomy due to adenocarcinoma in 2009, presented a lung nodule in the lower right lobe of 1.2 x 1.0 cm during follow-up. A transthoracic needle biopsy diagnosed a metastasis of the prostate cancer. After tumor board discussion, a wedge resection of the nodule was planned. Due to the small size of the lesion and to the fact that the use of radioscopy is not feasible during RATS, a preoperative CT-guided localization was planned with the injection of a preparation of indocyanine green coupled with Tissuecol, Evicel, and iodinated contrast. The use of those this preparation provides several advantages over indocyanine green alone, including better visualization of the area of injection in subsequent CT scans and intraoperatively since the preparation does not spread in the lung parenchyma.

Results: During the surgery, the distict preaparation of indocyanine green with Tissuecol and Evicel allowed optimal visualization of the nodule during the when the fluorescence imaging (Firefly) was turned on. Combining both technologies the nodule could be easily found and the need of extended resection, since the use of radioscopy is not feasible during RATS, to assure proper margins was minimized. The patient was discharged on the 2nd postoperative day. Pathology report confirmed a prostate adenocarcinoma metastasis and clear margins.

Conclusion: The reported technique is useful for finding small lesions during robot assisted surgery, when the use of radioscopy is not feasible, and may be replicated in several centers due to its simplicity.

U-8

INTRACORPOREAL ORTHOTOPIC ILEAL NEOBLADDER FOR RARC: INITIAL EXPERIENCE IN OUR CENTER

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Purpose: To explore the curative effect of robotic intracorporeal studer orthotopic neobladder (RISON).

Materials and Methods: The clinical data of 65 patients who underwent RISON in our hospital from April 2018 to March 2022 were analyzed retrospectively, including 63 males and 2 female with an average age of 56.4±9.9 years, an average BMI index of 25.5±3.1kg/m^2. Six patients received preoperative neoadjuvant chemotherapy. 5 patients received postoperative adjuvant therapy. Comorbidity component index score was 0-2 points in 10 cases, 3-5 points in 54 cases, 6-8 points in 1 case, 63 patients had definite pathological diagnosis for the high grade urothelial carcinoma or recurrent bladder tumors, and the tumor staging forecast within $T_2N_0M_0$. 2 male patients were diagnosed as $T_4N_0M_0$. All patients underwent robotic radical intracorporeal Studer orthotopic neobladders and standard lymphadenectomy. Selection about 30 to 40 cm from terminal ileum as the new bladder neck and 50 cm ileum as neobladder. Restore intestinal continuity with EndoGIA. Cut off the intestinal canal along the offside of mesentery except for proximal 10 cm. After U-shape suture of the new bladder back wall, the new anterior bladder wall is sutured with barbs line further in pulp muscularis. "Wallace" was performed bilateral ureteral anastomosis and closing the proximal end of the anterior wall of the new bladder. Further follow-up results were also collected to evaluate the clinical treatment effect, including pathological results of tumor, bladder capacity, urine control (usage of pads), short-term (≤30d) and long-term(>30d) complications.

Results: All the RISONs were successfully performed without conversion to open operation or changing method. Median operation time was 360 (300, 442.5) min, blood loss was 200 (200, 337.5) ml, indwelling time of gastric tube was 3 (3, 4)d, full tolerance time was 3(3, 5)d, and postoperative hospital stay was 9 (8,10)d. Postoperative pathological results showed 63 (96.9%) cases were no more than $T_2N_0M_0$, 2 case was confirmed $T_4N_0M_0$ pathologically, 1 case was positive in surgical margin, 1 case was diagnosed as incidental prostate cancer, 15 (12, 20) lymph nodes were dissected and no lymph node metastasis was found. Short-term (within 30 days) complications occurred in 22 patients, including Clavien grade I 12cases, Clavien grade II 10 cases. Long-term (out of 30 days) complications occurred in 30 patients, including Clavien grade I 13 cases, Clavien grade II 13 cases, Clavien grade III 4 case. And the follow-up time was 9 to 48 months. The mean bladder volume 300 (237.5, 400) ml of 56 patients who were followed up for more than one year and 2 female patients developed incontinence or retention. 56 male patients had continence (0 pad) during the day and needed regular urination at night (1 - 3 times), with an average of 2 pads. 4 patients had tumor recurrence or metastasis and 1 death occurred in all patients during the follow-up period.

Conclusion: Robotic intracorporeal studer orthotopic neobladder is a safe and feasible urinary diversion operation. The patients achieved relative good clinical efficacy in tumor control, bladder volume, daytime and nighttime continence.

U-10

ROBOTIC ASSISTED INGUINAL LYMPHADENECTOMY: A SIMPLIFIED APPROACH

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Purpose: Inguinal lymphadenectomy is used to treat patients with metastatic penile cancer to the inguinal lymph nodes. Robotic-assisted inguinal lymphadenectomy has been associated with lower estimated blood loss, shorter hospital length of stay, appropriate lymph node retrieval, and fewer post-operative complications allowing for favorable outcomes. We present an educational video about our technique for robotic-assisted inguinal lymphadenectomy for the treatment of metastatic penile cancer.

Materials and Methods: We report the use of robotic-assisted bilateral inguinal lymphadenectomy in a patient with penile cancer with metastasis to the inguinal lymph nodes who presented to our institution in 2021. Using the DaVinci XI robotic system, a bilateral inguinal lymphadenectomy was completed. Superficial and deep lymph nodes were collected from the right side.

Results: Robotic-assisted bilateral inguinal lymphadenectomy was completed successfully using the described technique. Total node yield was 19 lymph nodes. The patient was discharged in stable condition on post-operative day 2.

Conclusion: Open inguinal lymphadenectomy was traditionally used to treat patients with invasive penile cancer and up to one third of patients were affected by major complications including flap necrosis. A robotic approach allows for improved ergonomics, a minimally invasive approach, and great precision while also maintaining oncologic principles.

U-13

ROBOTIC URETERAL SUBSTITUTION WITH TUBULARIZED BUCCAL MUCOSA GRAFT IN COMPLEX URETERAL STRICTURES

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Purpose: THE MANAGEMENT OF PROXIMAL URETERAL STENOSIS IS A SURGICAL CHALLENGE WHEN THE URETERAL DEFECT DOES NOT ALLOW END-TO-END ANASTOMOSIS. THE USE OF AN ORAL MUCOSAL GRAFT AS A TUBULARIZED URETERAL SUBSTITUTION HAS NOT BEEN DESCRIBED IN THE LITERATURE AND WE WILL EXPLAIN OUR TECHNIQUE.

Materials and Methods: WE PERFORMED ROBOTIC URETERAL SUBSTITUTION WITH TUBULARIZED BUCCAL MUCOSA GRAFT IN A 44-YEAR-OLD MALE PATIENT WITHOUT CHRONIC DEGENERATIVE DISEASE WITH PROXIMAL RIGHT URETERAL STENOSIS SECONDARY TO LASSER URETEROSCOPY PERFORMED 2 MONTHS AGO. OUR MAIN OBJECTIVE WAS CLINICAL SUCCESS, ABSENCE OF SYMPTOMS, ABSENCE OF OBSTRUCTION IN RENAL SCAN AND URETEROSCOPY ONE YEAR POSTOPERATIVE.

Results: FOLLOW UP
GOOD POSTOPERATIVE CLINICAL EVOLUTION WITHOUT COMPLICATIONS, REMOVAL OF URETHRAL CATHETER AFTER 3 DAYS, REMOVAL OF ABDOMINAL DRAINAGE 48 HOURS LATER, HOSPITAL DISCHARGED AFTER 5 DAYS OF HOSPITALIZATION, REMOVAL OF JJ CATHETER AT 2 MONTHS. 1 YEAR AFTER URETEROSCOPY WITHOUT STRICTURES AND RENAL SCAN MAG-3 WITHOUT OBSTRUCTION PATTERN AND ADECUADA FUNCION RENAL, RIGHT KIDNEY: 176ml/min
LEFT KIDNEY: 152ml/min.

Conclusion: THE RECONSTRUCTION OF THE UPPER URINARY TRACT IS A GREAT CHALLENGE TO OFFER BETTER RESULTS TO PATIENTS WITH THE MINIMUM OF MORBIDITY, IN THIS CASE THE EVOLUTION DEMONSTRATES THAT ROBOTIC URETERAL SUBSTITUTION WITH TUBULARIZED BUCCAL MUCOSA GRAFT IS FEASIBLE, REPRODUCIBLE AND VERY LOW MORBIDITY.

U-14

REPAIR OF A BLADDER NECK CONTRACTURE AFTER TURP A SIMPLE ROBOTIC APPROACH

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Purpose: In this presentation we describe our technique for repair of a bladder neck contracture after bipolar TURP

Materials and Methods: We elected to perform a minimally invasive transvesical approach to reconstruct the bladder neck. This approach was inspired by our team's successful experience performing robotic assisted simple prostatectomy which began in 2018 for which this reconstruction is performed in a similar fashion.

Results: Most recently the patient was seen at 3 month follow up without complaints, reporting strong stream and minimal post void residual

Conclusion: This presentation illustrates an approach to repairing a bladder neck contracture after a bladder outlet procedure. Due to the similarity in performing a robotic simple prostatectomy, this method offers a familiar and reproducible technique with successful results.

U-16

ROBOT-ASSISTED KIDNEY TRANSPLANTATION

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Purpose: To demonstrate the step-by-step procedure of robot-assisted kidney transplantation (RAKT).

Materials and Methods: A 28-year-old male patient, diagnosed as chronic renal insufficiency (uremic stage), underwent RAKT at Chinese PLA General Hospital in September 8th 2021. The surgical and functional outcome of this patient was determined.

Results: The surgery was successfully completed without open conversion. The operative time was 245 min, with console time of 155 min. The warm ischemia, cold ischemia and rewarming times were 2, 55, and 50 min, respectively. The arterial, venous, and ureterovesical anastomosis times were 25, 17, and 33 min, respectively. The estimated blood loss was 50 ml, and the length of hospital stay was 15 d. The serum creatinine level decreased to 85.9 µmol/L 7 d postoperatively.

Conclusion: RAKT is a safe and feasible procedure for patients with end-stage renal disease.

U-18

ROBOTIC RADICAL PROSTATECTOMY IN A KIDNEY TRANSPLANTED PATIENT.

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Purpose:
Prostate cancer is as common in kidney transplant recipients as it is in the general population. The mainstay of care for clinically localized cancer is radical prostatectomy; however, because of adhesions and the location of the transplanted ureter/kidney, this procedure is considered complicated. Robotic surgery is a less intrusive method that can be quite beneficial. The purpose of this video is to demonstrate a robotic-assisted laparoscopic prostatectomy (RALP) in kidney transplant patients, as well as to describe preparatory processes, renal and oncological outcomes.

Materials and Methods:
We present a 54-years- old patient with a recent diagnosis of prostate cancer clinically localized. In a patient with a kidney transplanted recipient since 1999, normal creatinine values medical history of laparoscopic cholecystectomy and bilateral inguinal hernioplasty. Trans rectal ultrasound Biopsy: reveals adenocarcinoma Gleason 8 (4+4), p.s.a :15 nanogram, digital rectal exam palpable firm left lobe T2b. classifying it as a High risk disease. Stages with cross sectional images (CT and bone scan) were negative in the early stages, but the pet scan choline indicated locally illness. MSKCC pre prostatectomy radical nomogram predicts an extent of disease probability involving the lymph nodes of 41%. Robotic radical prostatectomy was performed. Patients were placed in lithotomy position, with a 27 to 30 degrees Trendelemburg inclination. All pressure points were carefully padded in order to avoid vascular and nervous injuries. Before the port placement, a bladder catheter was positioned. A standardized four-arm robotic configuration was used in all patients, either with the robotic da Vinci® Si HD systems, both placed caudally between the legs: a total of 6 ports were used, 3 for the robotic arms, 1 for the camera and 2 for the bedside assistant (one of 12mm and one of 5mm).

Results:
The surgery duration was 240 minutes, the anticipated blood loss was 100 ml, the patient was discharged on the third day, with a 1.2 mg/dl creatinine and 39% hematocrit values, an ultrasound on the kidney graft control with no significant complication and the urinary catheter was removed on the ninth day. The followup without any changes in the nephrology controls. Pathological anatomy revealed adenocarcinoma Gleason 9 (4+5) with a substantial compromise of the left lobe in 85%, negative surgical margins, and pathological stage pT3b N0 M0.

Conclusion:
The robotic-assisted laparoscopic radical prostatectomy techniques presented in our video might be used successfully on kidney transplant recipients. There was a low rate of morbidity and overall acceptable surgical results, with no significant complications noted. Oncologic and functional results are comparable to those of individuals undergoing robotic-assisted laparoscopic radical prostatectomy in the general population. However, in kidney transplant patients, robot-assisted radical prostatectomy remains a difficult procedure that should only be performed by competent robotic surgeons in a tertiary referral institution.

U-20

ROBOTIC ASSISTED LAPAROSCOPIC RADICAL PROSTATECTOMY AFTER PREVIOUS OPEN TRANS-VESICAL ADENOMECTOMY

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Purpose: In this video, we will demonstrate a robotic assisted laparoscopic radical prostatectomy after previous open trans-vesical adenomectomy.

Materials and Methods: There is lack of evidence on the feasibility and safety of robotically assisted radical prostatectomy following open trans-vesical prostatectomy for benign prostatic hyperplasia (BPH). A 67 year old male with no family history of prostate cancer had previously undergone open trans-vesical adenomectomy for BPH in Venezuela in 2006 with resultant occasional urinary stress incontinence, his IIEF-5 score was 6. He was diagnosed 16 years later with elevated PSA of 9.7, DRE was normal, and a prostate biopsy confirmed a Gleason 8 (4+4) prostatic adenocarcinoma. PSMA-Pet scan showed only involvement of left prostate and no signs of metastases. After treatment considerations, patient elected for treatment a robotic prostatectomy.

Results: With the DaVinci Si four robotic ports were used. The Optical port was 12mm placed above de umbilicus, and below the umbilucus three 8mm ports where positioned laterally on the flanks, and an additional 12mm port was used for the assistant located just above the right iliac fossa. The Si robot was docked and the patient was placed in steep Trendelenburg. First step was the development of retropubic space of Retzius.
The initial challenge was the dissection the adhesions between the bladder and the abdominal wall. We began with a lateral dissection first and worked our way to the midline which had more scar tissue. For the identification of the bladder neck , movement of the catheter balloon was presented to the surgeon and a good cranial traction of the peritoneum was made with the 3rd robotic arm to achieve an hour-glass shape.
We could observe the difference between the scared urethral tissue and the pink bladder mucosa. After Dissection of the posterior bladder neck the seminal vesicles and vas deferens where identified and transected, also encountering difficulty for the dissection. In a retrograde approach. Development of the pre-rectal space required cautious blunt dissection and counter traction to avoid any rectal injuries. Afterwards we continued with the dissection of the pedicle and neurovascular bundle which was clipped and cut. Then dissection or the anterior portion of the prostate and dorsal venous complex followed by dissection of the urethra, with a sharp cut to free the prostate. The final step was the anastomosis of the bladder with the urethra. Pathology demonstrated prostatic adenocarcinoma Gleason 8 (4+4) T2NxM0 with negative margins. Foley catheter was removed after ten days. First month post-op, patient was back to normal with undetectable PSA, and same occasional urinary stress incontinence as prior to surgery.

Conclusion: Robotic assisted laparoscopic radical prostatectomy is safe and with excellent oncological outcomes for men with previous open trans-vesical adenomectomy.
Due to potential intraoperative challenges this surgery should be performed by an experienced surgeon.

U-22

PELVIC NODAL SPREAD FOR METASTATIC MELANOMA: ROBOTIC APPROACH

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Purpose: Nodal metastasis are an adverse pathological finding affecting the prognosis of melanoma. Despite the absence of prospective randomized studies, surgical dissection represents the gold standard treatment of nodal spread of melanoma origin. Furthermore, in case of a positive sentinel biopsy, the earlier the intervention is performed, the higher is overall survival; therefore, in case of high-risk patients, a simultaneous approach to either the inguinal and the pelvic region can be recommended.
We report a case series of patients with melanoma of the inferior limb elected to pelvic nodal dissection (PND). The aim of the video is to report tips and tricks of PND in the case of a bulky nodal metastatic disease. The case series and peri-operative and oncological outcomes are depicted as well.

Materials and Methods: Four patients with melanoma of the inferior limb were elected to robotic PND. Mean age was 71 years (2 males, 2 females), 2 patients had an ASA II and 2 had an ASA score III with oral anticoagulants drugs. Two of them had a prior inguinal nodal dissection, whereas the others had a concomitant inguinal open dissection just before the robotic pelvic approach. PND is performed homolateral to the melanoma lesion and included external iliac, internal iliac, common iliac and obturator nodes.
Surgical procedure: trocar placement is similar to the one used for robotic pelvic surgery; a pelvic CT-scan aids to pre-plan the intervention according to the burden and site of the spread. The procedure starts dissecting the peritoneum over the ureter and the dissection proceeds caudally splitting the peritoneum over the common and external iliac artery. The exposure of the Marseille's triangle enables a better mobilization of nodes, that, in case of melanomatous location, often appear of bluish color and of weak consistency. Thus, a soft and gentle handling of nodes is suggested in order to reduce manipulation and prevent intra-operative injury. In case of bulky disease with strict proximity to vessels mimicking infiltration, a gentle, energy-free and blunt dissection makes the debridement affordable.

Results: Overall, mean console time was 40 (+/- 25) minutes. The mean number of retrieved nodes was 13,2 (SD 5,6). Mean hospital stay was 7.7 (SD 7.8). None of the patients had a Clavien > 1 requiring invasive procedures (related to the PND or to the inguinal open approach). A pelvic nodal metastasis was found in 2/4 patients. Three had an adjuvant treatment with nivolumab, whereas the last one with dabrafenib; all adjuvant treatments were started immediately after hospital leave. At a median follow up of 12 months, 3 patients were progression free, whereas one has a metastatic disease (liver).

Conclusion: The robotic approach to PND for melanoma of the low leg may represent a novel indication for urological surgeons, despite scarcely reported in the literature. Robotics may represent a key point to approach nodal disease for patients with melanoma: the precise dissection enables the management of bulky diseases and the reduced invasiveness and LOS allows a fast recovery and eligibility to adjuvant treatment, possibly enhancing overall oncological outcomes.

U-24

THE USE OF A GUIDEWIRE FOR MINIMALLY INVASIVE DIVERTICULECTOMY AND MORE: RESULTS FROM A MULTICENTRIC SERIES

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Purpose: We previously described a novel technique for minimally invasive (robot/lap) bladder diverticulectomy. The technique involves the use of a guidewire, inserted endoscopically inside the bladder diverticulum (BD), to have it expanded and more recognizable through the intact peritoneum.
In the present video, we aim to show tips and tricks of the technique and report updated outcomes from a multicentric series. Furthermore, we describe an unusual case of residual Mullerian duct in a male patient, managed with retrograde guidewire insertion as well.

Materials and Methods: This is a multicentric series of minimally invasive diverticulectomies performed with this original technique in 54patients. In 35 patients, the procedure was concomitant to: -TURP or bladder neck incision (19); -radical prostatectomy (7); - Lap or robotic Millin adenomectomy (9 cases). In the remaining cases, the bladder diverticulectomy was a single procedure.
Surgical technique: the first endoscopical step consists of the retrograde insertion of a stiff guidewire inside the BD; the device is pushed-in until it coils several times, to allow the trans-peritoneal identification "at a glance" of BD, filled and stretched by the guidewire. In addition, the guidewire allows to identify the BD neck to ensure its further safe suturing. Outcome measures included operative time (OT) and complication rate.

Results: Median size of BDs was 6,4 cm. The location of BD was postero-lateral or posterior in all except 1 case. Bladder diverticulectomy was laparoscopic in 35 and robotically assisted in 19 cases. Median OT was 189 minutes (DS 49). Post-operative course was uneventful for all, excluding 4 patients with post-operative fever due to UTI. One patient had leakage at the post-op cystogram. The operative time for the patient with Mullerian remnant was 220 mins and at 1-mo follow up no leakage was evident.

Conclusion: The identification of BD could be a challenging step of bladder diverticulectomy, for the presence of pneumoperitoneum compressing the bladder. This occurrence could be particularly evident for posterior- or postero-lateral location of BDs or for other conditions as the one we described. The use of a stiff guidewire coiling and expanding the BD is a simple and useful trick to aid BD's identification and dissection, likely improving intra- and peri-operative outcomes.

U-25

ROBOTIC LEVEL IV IVC THROMBECTOMY USING INTRAPERICARDIAL CONTROL TECHNIQUE: IS IT SAFE WITHOUT CARDIOPULMONARY BYPASS?

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Purpose: To introduce an intrapericardial control technique of robotic approach in surgical treatment of renal tumor with level IV Inferior vena cava (IVC) thrombus to decrease sever complications associated with cardiopulmonary bypass.

Materials and Methods: Eight patients with level IV IVC thrombi without extending into the atrium underwent transabdominal-transdiaphragmatic robotic assisted IVC thrombectomy (RA-IVCT) obviating CPB (CPB-free group) by an expert team comprising urologic, hepatobiliary, and cardiovascular surgeons. The central diaphragm tendon and pericardium were transabdominally dissected until the intrapericardial IVC were exposed and looped proximal to the cranial end of the thrombi under intraoperative ultrasound guidance. As control, fourteen patients underwent RA-ICVT with CPB (CPB group) were included. Clinicopathologic, operative, and survival outcomes were retrospectively analyzed.

Results: Eight RA-IVCTs were successfully performed without CPB, with one open conversion. The median operation time, first porta hepatis occlusion time, and estimated blood loss were less in CPB-free group as compared to the CPB group (540 vs. 586.5 min, 16.5 vs. 38.5.min, and 2050 vs. 3500ml, respectively). Sever complications (level IV-V) were also less in the CPB-free group than that in CPB group (25% vs. 50%). The oncologic outcomes were comparable among two groups in short-term follow-up.

Conclusion: Pure transabdominal-transdiaphragmatic RA-IVCT without CPB represents an safe minimally invasive approach for selected level IV IVC thrombi.

Abstract content appears as submitted.

U-26

ROBOTIC RADICAL CYSTECTOMY WITH INTRACORPOREAL NEOBLADDER RECONSTRUCTION

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Purpose: Robotically assisted radical cystectomy (RARC) with intracorporeal neobladder reconstruction is a challenging surgical procedure, performed only in high-volume robotic centers. It consists of four major surgical steps: cystectomy, extended pelvic nodal dissection, isolation of a bowel segment and ileo-ileal anastomosis, detubularization of ileum and reconstruction of the neobladder through a novel ileal folding with uretero-neobladder anastomosis.
The aim of the study is to present the introduction and implementation of this complex procedure in a urological robotic naive center. Furthermore, a step by step description of the procedure is provided.

Materials and Methods: From 15 July to 29 September 2021 a total of 8 RARC was performed at our Institution. Six patients (4 males and 2 females) underwent intracorporeal neobladder reconstruction and were included in the analysis. Median age was 65 y.o. In the remaining two cases, an external diversion was chosen.
Surgical technique. Patient is placed in 18° Trendelenburg position. Ureters are bilaterally identified and isolated from above iliac vessels until bladder insertion. At bladder level, the ureters are closed with median size Hem-o-lok and then sectioned. In males, the peritoneum at seminal vesical (SVs) level is incised and the plane between Denonvilliers' fascia and the posterior face of the prostate (and between bladder and uterus and vagina in females) is created. Lateral aspects of the bladder are freed bilaterally, and vesical pedicles are clipped and transected. In males, preservation of neurovascular bundle is done to endure sexual potency. Inverse U peritonectomy is performed between the 2 internal inguinal rings, umbilical arteries are transected and access to the Retzius space is gained. Anterior face of bladder is freed. Santorini complex is severed and then sutured. The urethra is isolated and then incised after a large hem-o-lok is placed to prevent urine spillage. The urethral stump is maintained as long as possible. An extended pelvic nodal dissection is performed bilaterally. A 40-50 cm ileal segment is isolated 20 cm proximal to the ileocecal valve. The isolation of the segment is made using a mechanical laparoscopic stapler and ileal-ileal anastomosis is performed. The median part of the isolated ileal segment is pushed towards the urethral stump and then ileal-urethral anastomosis performed. A reverse tubular U of the ileum attached to the urethra centrally is configured, and afterwards the ileum is detubularized. The reconstruction of the neobladder starts from the suture of the posterior plane, and then the cranial part is folded downwards toward the bladder neck to create a "heart shaped" orthotopic reservoir, with two lateral horns with direct bilateral ureteral anastomosis.

Results: All procedures were carried out without intra-operative complications; post-operative course was uneventful (no Clavien Dindo III b complications) in all 8 RARC patients. 30-days follow up is available for 4 patients: in all cases, an almost complete voiding of the neobladder was evident with normal renal function and electrolyte count.

Conclusion: Despite the complexity of RARC with neobladder reconstruction, the standardization of surgical technique allows for the rapid introduction and implementation of the procedure with satisfying clinical outcomes and preserved patient's quality of life.

U-27

ROBOT ASSISTED RADICAL PROSTATECTOMY + BILATERAL HERNIOPLASTY

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Purpose: Taking consideration about the need of two surgeries in the same anatomic space and the difficulties plasty of the hernias after RARP, we prepared this case showing the realization of the two approaches in a single surgical time. Case report about a Robot Assisted Radical Prostatectomy and Bilateral Hernioplasty approach in a single surgery in a feasible time of surgery, avoiding the difficulties of 2 steps surgeries.

Materials and Methods: Single case report about a radical robot assisted prostatectomy whit bilatheral hernioplasty whit polipropilene mesh in a single approach.
Si DaVinci robot assistant, Polypropylene Mesh.

Results: A nerve sparring radical robot assisted prostatectomy whit bilatheral hernioplasty showing an adequate time of surgery (aprox. 3 hours) whit adequate oncologic and anatomic treatment in a single surgery.

Conclusion: We concluded that it is feasible realizing the RARP + bilatheral herniplasty treating both deseases in a single surgery, avoiding the difficulties of the 2 steps approach.

U-29

ROBOTIC APPROACH TO VESICOURETHRAL ANASTOMOTIC STENOSIS AND RESECTION OF REMAINING PROSTATE AFTER RADICAL PROSTATECTOMY

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Purpose: Prostate cancer is the second most commonly diagnosed cancer in men, with an estimated 1.4 million diagnoses worldwide in 2020[1]. Currently, we have several therapeutic modalities, however, prostatectomy remains the main option for localized prostate cancer, therefore, side effects and complications are extremely relevant. Vesicourethral anastomotic stenosis (VUAS) after open radical retropubic prostatectomy (RRP) is a side effect with a high impact on quality of life, with incidence rates of 2.7–15%[2].
Risk factors include age, elevated body mass index (BMI), smoking, anastomotic suture technique, anastomotic urinary leakage, previous mucosal manipulation and excessive blood loss[3]. The diagnosis is made with clinical history of voiding symptoms and a cystoscopy or voiding urethrocystography (VUC).
Endourologic therapies such as dilation, internal urethrotomy and transurethral resection are considered first-line management, although recalcitrant VUAS requires surgical reconstruction of the vesicourethral anastomosis[4].

Materials and Methods: We present a 72 year-old male, submitted to a radical retropubic prostatectomy (RRP) 2 years before, with postoperative persistent detectable PSA levels. A new MRI was performed showing residual prostate and seminal vesicles, with no sign of malignancy. A biopsy was also negative for residual tumor. He presents VUAS with VUC showing extensive stenosis. Several endoscopic procedures were performed with no satisfactory result, requiring cystostomy. A robotic approach was performed to redo the vesicourethral anastomosis.
The procedure was done under general anesthesia, in trendelenburg position and semi-lithotomy; the trocars were positioned as standardized for robotic prostatectomy. We identified the bladder neck and the proximal urethra was dissected. A small perineal incision was made and the urethra was dissected to allow better mobilization. The bladder neck was opened and a gross fibrosis area was resected until we could identify healthy tissue. The residual prostate and seminal vesicles were identified and resected. A new vesicourethral anastomosis was performed, attaching the bladder to the bulbar urethra, with no tension. We used continuous stitches with a 3-0 barbed suture. An 18Fr urethral catheter was placed and a Jackson Pratt drain was located to watch for leaks.
The drain was withdrawn and the patient was discharged on the first postoperative day; the urethral catheter was removed after 14 days.

Results: The pathological report showed no tumor in the remaining prostate and seminal vesicles. A new VUC was performed after 30 days, with no recurrence. After 6 months, the patient is satisfied, with no voiding symptoms and mild grade urinary incontinence, using one pad/day.

Conclusion: Vesicourethral anastomotic stenosis, especially recalcitrant cases, remains a challenging problem for patients and urologists. In this video, we demonstrate that surgical reconstruction with a robotic approach allows great exposure and successful results.

U-32

URETERAL REIMPLANT DUE TO DEEP INFILTRATING ENDOMETRIOSIS - PSOAS HITCH APPROACH

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Purpose: Deep endometriosis is a pathology that affects the quality of life of women. Ureteral involvement is not the most common site of this pathology, but when it occurs, it causes complications that require a surgical procedure for correction. With the advent of robotic surgery, the ureteral reimplantation procedure for deep endometriosis has become an alternative to laparoscopic surgery.
This video is to demonstrate the feasibility and safety of performing robotic ureteral reimplantation using the psoas hitch technique.

Materials and Methods: A 37-year-old patient with deep endometriosis with left ureteral dilatation underwent robotic (daVinci Si) ureteral reimplantation on the left using the Psoas hitch technique.

Results: The patient underwent the surgical procedure. She was discharged from hospital on the 5th postoperative day, removal of the double J catheter on the 30th postoperative day. At follow-up, the patient was asymptomatic, with preservation of renal function and without pyeloureteral dilatation by imaging tests

Conclusion: it is feasible and safe to perform robotic ureteral reimplantation procedure using the psoas hitch technique

U-35

SINGLE-PORT EXTRAPERITONEAL TRANSVESICAL ROBOT ASSISTED RADICAL PROSTATECTOMY

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Purpose: To describe the detailed techniques for single-port extraperitoneal transvesical robot-assisted radical prostatectomy (SETvRARP) using da Vinci Xi system coupling with a 4-channel single port.

Materials and Methods: Presented case was a 63-year old male diagnosed as prostate cancer. Pre-operative biopsy confirmed 3+3 leasions. Prostate volume was 26.2ml. The patient underwent SETvRARP on da Vinci Xi system without conversion.

Results: Console time was 117 min. Intraoperative blood loss was minimal. Post-operative pathology confirmed 3+3 leasions without positive surgical margin. A 3-way 20Fr urethral catheter was the only drainage, which was removed 7 days after surgery.

Conclusion: SETvRARP using da Vinci Xi system coupling with a 4-channel single port is a valid technique of radical prostatectomy in selected patients, providing promising postoperative urinary continence. Long term functional and oncological results require further investigation.

U-36

ROBOTIC RIGHT RADICAL NEPHRECTOMY WITH CAVAL EXPLORATION

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Purpose: The purpose of this video abstract is to demonstrate the techniques and method used in performing a robotic right radical nephrectomy with caval exploration for a 9cm renal tumour with thrombus extending down the renal vein into the inferior vena cava on CT imaging.

Materials and Methods: With the patient in a left lateral decubitus position, ports are placed slightly more medially than standard positioning for nephrectomy to allow for better access to the aortocaval region. 4 x 8mm, 1x 12mm AirSeal, 1x5mm port for a liver retractor and 1x15mm umbilical port were utilised. The procedure begins with medial reflection of the ascending colon, the duodenum is kocherised and IVC identified. The ureter and right gonadal vein are used to elevate the kidney. Intraoperative ultrasound is used to gauge the extent of thrombus extension. Complete mobilisation of the IVC is commenced. The right renal artery is dissected medial to the IVC in the aortocaval groove. The left renal vein is mobilised and looped with vessel loop. The right gonadal vein and adrenal veins are ligated. The right renal artery is ligated with Hemolock clips. The IVC is elevated and rolled laterally to access and control the lumbar veins with Hemolock clips or vascular stapler device. An extra long fenestrated bipolar forceps is used get a vessel loop around the IVC distally. This is repeated to get proximal control of the IVC. All 3 vessel loops are tightened using a pledget of feeding tubing and Hemolock clip. The IVC is incised medial to the insertion of the right renal vein. The tumour thrombus is identified and the right renal vein is dissected away from the IVC with a cuff to ensure an adequate margin. Care is taken not to take too much of the wall of the IVC. A 4/0 Gore-Tex suture cut to 12cm in length is used to close the IVC defect. After placement of a second Gore-Tex suture in the proximal end, the lumen is flushed with heparinised saline. The left renal vein compression is released prior to tying the knot in the centre of the IVC defect. The remaining vessel loops are loosened around the distal and proximal IVC and then removed.

Results: The suture line was re-examined after complete resection of the kidney. No further sutures were required and good hemostasis was achieved. The specimen was retrieved through extension of the 15mm umbilical port. The patient has since been discharged home and final pathology showed clear cell renal cell carcinoma stage pT3b.

Conclusion: In Conclusion, robotic radical nephrectomy and caval exploration can safely be performed for large renal tumours with thrombus extension into renal vein and vena cava using these demonstrated techniques and methods.

U-40

ROBOTIC RADICAL PROSTATECTOMY AFTER RIVES-STOPPA INGUINAL HERNIA REPAIR

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Purpose: The purpose of this video is to demonstrate a robotic radical prostatectomy after Rives-Stoppa inguinal hernia repair.

Materials and Methods: A single case of robotic radical prostatectomy after Rives-Stoppa inguinal hernia repair was performed and the step-by-step technique is shown in the video.

Results: A nerve-sparring robotic radical prostatectomy was performed as usual, after a delicate detachment between the prosthetic mesh and the abdominal wall. Caution should be taken to keep the prosthethic mesh in place, to avoid a new hernia.

Conclusion: Robotic Radical Prostatectomy After Rives-Stoppa Inguinal Hernia Repair is a difficult, but feasible procedure which should be performed by experienced robotic surgeons.

U-41

ROBOTIC APPROACH TO HORSESHOE KIDNEY WITH INFERIOR VENA CAVA THROMBUS

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Purpose: Robotic surgery has established itself as a standard in several approaches. Heminephrectomy in the horseshoe kidney, especially with inferior vena cava thrombus, is an excellent indication for this technique. We show a video of a heminephrectomy of a horseshoe kidney in a case of grade I inferior vena cava thrombus.

Materials and Methods: A 76-year-old female patient complaining of gross hematuria and weight loss. She had type II diabetes, high blood pressure and ECOG 1. Her CT scan showed an 11 x 8.1 x 6.8 cm lesion on the right in a horseshoe kidney, with a renal vein thrombus extending into the inferior vena cava. A robotic heminephrectomy with thrombus approach was proposed.

Results: The Davinci SI platform was used, using 4 robotic portals and 1 auxiliary portal. The right colon was released, the renal artery was identified and ligated, the gonadal vein was identified and ligated, the renal vein was clamped along the vena cava with a bulldog, its section and overcast with a prolene stitch. Soon after, we approached the vascularized isthmus, with ligation of the artery that irrigated it with the help of venous indocyanin. The surgery lasted 2 hours and 40 minutes, 600 ml of bleeding. Discharged on the second postoperative day. The histopathology study revealed clear cell carcinoma, eosinophilic component, compromised focal margin. It evolved with metastasis to the vaginal vault and adjuvant therapy with immunotherapy was started.

Conclusion: Robotic heminephrectomy surgery can be performed, even when a venous thrombus is present. The use of indocyanin greatly facilitates the approach to the hilum.

U-45

FEMALE GENITAL SPARING ROBOTIC RADICAL CYSTECTOMY WITH ROBOTIC INTRACORPOREAL KAROLINSKA ORTHOTOPIC NEOBLADDER RECONSTRUCTION

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Purpose: Robot assisted radical cystectomy (RARC) is a preferred approach for surgical management of bladder cancer. Currently, majority of the literature on RARC involves men in view of higher incidence of bladder cancer in them. We have document peri-operative variables, oncological and survival outcomes in 41 women who underwent RARC, by single surgeon at a tertiary health care centre.here with a video demonstration Genital Sparing Female Cystectomy with neobladder

Materials and Methods: Out of 225 RARC and urinary diversion procedures performed from 2012 to 2020, a retrospective analysis of 41 women was performed. Baseline demographic and peri-operative details, oncological data and survival were recorded and analyzed. Kaplan-Meir analysis was done for survival outcomes and prognostic factors were assessed by Log Rank test.

Results: Thirty eight patients underwent intra-corporeal urinary diversion while three underwent extracorporeal diversion. One patient underwent organ preserving cystectomy. Clavien Dindo 30- day postoperative complications were Grade I in 8 (19.5%), Grade II in 4 (9.8%) and grade IIIa in 3 (7.3%) patients without any mortality. During median follow up of 34 months (Range- 6-87months), 7 patients died of disease recurrences. Five-Year survival was 74% (95% CI- 59-82) and 35% (95% CI, 10-91) in transitional cell carcinoma (TCC) and non-TCC group respectively with p value of 0.04. There was no mortality in Stage 0 and 1. Five year survival was 78% in stage 2 and 41% in stage 3 and 4.

Conclusion: Our study highlights safety, feasibility and acceptable clinical, peri-operative and oncological outcomes of robotic radical cystectomy in females which should be incorporated in the mainstream approach.

U-46

ROBOT-ASSISTED LAPAROSCOPIC PARTIAL NEPHRECTOMY FOR HORSESHOE KIDNEY: CASE REPORT

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Purpose: Horseshoe kidney (HK) is one of the most common renal fusion anomaly, found in 0.25% of the population, and is twice as frequent I males as is a female. However, the malignant tumor is rare, Renal cell carcinoma associated with a HK has been described in fewer than 200 cases. Incidence and prognosis of renal masses seem to be not different from those of the general population. Due to the vascular anatomical variability, renal surgery in patient with this condition is challenge, therefore preoperative planning is pivotal for good outcomes. We report a Robot-Assisted Laparoscopic Partial Nephrectomy (RAPN) in patient small renal mass in HK, which was successfully resected.

Materials and Methods: This is a case report.

Results: A 26-year man, was referred to our service, Hospital Santa Joana – Recife, with incidental finding of renal mass on the anterior surface of the lower pole in the right portion of a horseshoe kidney (HK). Abdominal tomography showed a solid lesion measuring 3.4 x 3.1 x 3.1 cm, heterogeneous after contrast infusion, with a clinical diagnosis of Renal Cell Carcinoma, cT1aN0M0 (R.E.N.A.L.: 1 + 1+ 1+ P + 1 = 4P). Preoperative planning was performed with 3D image reconstruction using the "Docdo" application. RAPN was performed with the patient in the right lateral decubitus position, using the "DA VINCI XI" Platform, trocars in an inferior arrangement surrounding the target, without clamping. Console time was 70 minutes, estimated blood loss was 80 ml. No complications were reported and patient was discharged the next day. Pathologic examination confirmed a diagnosis of pT1a clear cell renal cell carcinoma with negative surgical margins. At 6 months postoperatively, computed tomography showed no local recurrence or metastasis and renal function was normal.

Conclusion: Due to the difficulty mobilization of the fused kidney and its multiple arterial blood supplies minimally invasive surgery for renal tumors in HK can be challenging. But, RAPN with preoperative three-dimensional computed tomography may have advantages for resection of tumors in patients with horseshoe kidney.

U-47

ROBOTIC ASSISTED VESICOVAGINAL FISTULA REPAIR WITH URETERONEOCYSTOSTOMY IN A PATIENT WITH HISTORY OF CERVICAL CANCER

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Purpose: Vesicovaginal fistula is an abnormal connection between the posterior wall of the bladder and the anterior wall of the vagina. Concurrent necrosis and subsequent ischemia in both organs predispose a pathological communication. Its incidence and etiology vary between developed and developing nations, been obstetric trauma de most prevalent cause in the latter. Less common causes include pelvic radiation, history or treatment of advanced pelvic malignancies such as bladder, rectal and cervix. These women present with continuous leakage of urine through the vagina, which has a devastating impact on quality of life. There are no guidelines or standardized algorithm for management, but minimally invasive approaches have become widely adopted recently.

Materials and Methods: We describe the case of a patient with history of cervical cancer and vesicovaginal fistula, treated surgically with a minimally invasive approach assisted by the da Vinci Si system.

Results: A 56 year-old female with history of cervical cancer stage IB1 treated with radical hysterectomy, pelvic lymphadenectomy and adjuvant radiation therapy presented to the outpatient urology clinic with permanent incontinence 19 years after initial management for cancer. Despite limiting liquid consumption, the patient was using three diapers per day, but denied urinary tract infections or abdominal pain. With suspicion of vesicovaginal fistula, a cystoscopy and a CT urogram were ordered. A trigonal 5 mm fistula was documented endoscopically in close proximity to the right ureteral meatus, with no involvement of the upper urinary tract in the CT scan. A biopsy of the lesion was taken, which was negative for malignancy. She was scheduled for a robotic assisted repair of the fistula with ureteroneocystostomy; the procedure took place with no complications. A pelvic drain, urinary catheter and ureteral stent were left in place, which were removed a week, two weeks and six weeks post-operatively, respectively. At two-month follow-up the patient has no urinary leakage.

Conclusion: Robotic assisted repair is an effective and safe approach for management of trigonal vesicovaginal fistulae secondary to treatment of cervical cancer, as the magnified 3D vision allows for precise dissection, easy suturing and less blood loss.

U-51

SINGLE-PORT TRANSVESICAL SIMPLE PROSTATECTOMY FOR BIG MEDIAN LOBE: DESCRIPTION OF TECHNIQUE

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Purpose:
To present our updated technique and evaluate the perioperative and postoperative outcomes of Single-port transvesical robot-assisted simple prostatectomy (SP RASP)

Materials and Methods: Forty-two consecutive patients with BPH indicated for surgery underwent SP RASP in a single institution. The procedure was performed in the following steps: 1- The Patient was positioned in a supine position. 2- A 3-3.5 cm suprapubic midline incision is made, and a 2 cm vertical cystotomy was performed after bladder identification. 3- After insertion of the access port, the single-port (SP) robot was docked. 4- Identification of the ureteral orifices. 5- Prostatic enucleation was performed using the prostatic capsule as a landmark. 6- Then a complete vesicourethral mucosal advancement flap was accomplished. Demographics, and perioperative and postoperative data were prospectively collected. The mean follow-up period was 12 months.

Results: All procedures were successfully performed with no conversion, additional port placement, or intraoperative complication. The median prostatic volume was 170cc. 95% of the patients did not require opioids analgesia after discharge. 65% of the last consecutive patients were discharged a few hours after the surgery and had their Foley catheter removed 2-3 days later. The Median IPSS score decreased from 23 before the surgery to 2.5 after the surgery. All patients had a significant postoperative improvement in maximum flow rate with a 200% improvement over baseline (19 vs. 6.5 mL/sec).

Conclusion: In our initial series, SP RASP allows for favorable perioperative and early postoperative outcomes including low complication same-day discharge, short Foley catheter stay, minimal opioids use and quick recovery.

U-52

SINGLE-PORT TRANSVESICAL ROBOTIC RADICAL PROSTATECTOMY: AN EXTRAPERITONEAL RETZIUS SPARING APPROACH THAT FACILITATES EARLY CONTINENCE RECOVERY

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Purpose: In this video, we are presenting our single-port (SP) transvesical robot assisted radical prostatectomy (RARP) technique.

Materials and Methods: A total of 100 consecutive patients underwent SP transvesical RARP at an academic center by a single surgeon, between December 2020 and March 2022. The patient was positioned in a supine position. A 3.5 cm suprapubic incision is made and access is made directly into the bladder. Da Vinci SP access kit was used and the robot is docked using the floating docking technique. RARP was performed using a transvesical anterior Retzius-sparing approach. Surgical steps are in the following order. 1) Posterior bladder neck dissection, 2) Seminal vesicle and vas deferens dissection, 3) Posterior dissection, 4) anterior bladder neck dissection, 5) Prostatic pedicle and neurovascular bundle dissection, 6) Lymph node dissection, 7) Vesicourethral anastomosis. Bilateral limited pelvic lymph node dissection was performed in 31% of patients.

Results: The surgery was completed in 179 minutes. Estimated blood loss was 50 ml. The patient was discharged on the day of surgery. The urethral catheter was removed on postoperative day 3. The patient was continent upon catheter removal. Pathology showed pT2 disease, Gleason 3+4 disease with negative surgical margins. In our initial series, continence rates at postoperative 6 weeks, 3 months, and 12 months were 70.1%,89%, and 94% respectively. The median length of stay was 5 (4-21.8) hours, and catheter time 3 days (3-4). 4% required opioid analgesics after discharge. The positive surgical margin rate was 16%. Two patients had Clavien III complications, one hematoma, and one lymphocele.

Conclusion: SP transvesical RARP results in a high rate of early continence recovery and same-day discharge; and low rate of positive surgical margins, complication rate, and opioid analgesia requirement.

U-53

RECURRED VEISCO-VAGINAL FISTULA REPAIR USING THE DAVNCI XI PLATFORM

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Purpose: Abdominal hysterectomy is the most common cause of vesico-vaginal fistula in developed countries, occurring in a frequency of 0.3 to 2% of cases. For pre-trigonal fistulas, the transvaginal approach has good results, but for supra-trigonal fistulas, which are the most common, there are many cases of recurrence. Laparoscopic and more recently robotics, with its already known advantages, is an excellent option to deal with this problem.

Materials and Methods: We show, in a video, the feasibility and the excellent exposure of the tissues that the robotic technique can offer. The case is of a 54-year-old female patient, without comorbidities, who underwent abdominal hysterectomy and who, shortly after the urinary catheter was removed, began to have urinary leakage, being diagnosed with a vesico-vaginal fistula. After 40 days, an attempt was made to correct it through an open approach, but without success. After 4 months, a new attempt was made, this time via the transvaginal route, with improved loss, but still showing leakage. We recommend, after 2 months, robotic correction.

Results: We performed a cystoscopy in the operating room (without progression of the guide wire through the fistula) and catheterized the left ureter. We confirmed the presence of the fistula with the instillation of methylene blue in the bladder and observed the staining of the mounted gauze that was in the vagina. The procedure was performed using the Davinci XI platform, we used the W-shaped trocars, free the adhesions, identified the transition between the vaginal vault and posterior aspect of the bladder, performed a longitudinal cystotomy, identified the fistula and the ostium, released the bladder from the vagina, suture of the vault with a 2.0 barbed stitch and bladder, with the same Stitch. Epiploic fat and biological glue were used between the two sutures. The procedure lasted 85 minutes, the patient was discharged the next day and after 4 weeks we removed the catheter, with cystographic control. The patient, after 3 months, is doing well, without leaks.

Conclusion: The robotic approach is an excellent alternative for the treatment of recurrent vesico-vaginal fistulas, as the 3D view and the articulation of the arms at multiple angles help to provide more robust success rates.

U-54

SINGLE PORT TRANSVESICAL PARTIAL PROSTATECTOMY FOR LOCALIZED PROSTATE CANCER: INITIAL SERIES WITH FUNCTIONAL AND ONCOLOGIC OUTCOMES

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Purpose: Partial prostatectomy has recently been described as an alternative to focal therapy for management of localized low and intermediate risk prostate cancer in carefully selected patients. Preclinical studies show technical feasibility of single port (SP) transvesical partial prostatectomy. Here we describe the early outcomes for SP transvesical partial prostatectomy using the da Vinci SP surgical system.

Materials and Methods: SP transvesical partial prostatectomy was offered to nine patients as an alternative to focal therapy or whole-gland treatment in patients with low volume, localized, and low to intermediate risk prostate cancer (Gleason grade group 1 or 2). Through a 3cm suprapubic incision, the bladder was incised and a da Vinci SP access port was used for docking. Through the access port, robotic instruments, a 12 mm assistant port, and flexible suction tubing were introduced. Transrectal ultrasound fused with preoperative prostate MRI was used for intraoperative guidance.

Results: All cases were completed successfully without need for extra ports or conversion. There were no intraoperative complications, no transfusions, and no patients required an inpatient stay (median LOS of 3.8 hours). Pain scores at discharge were median 3/10 and no opioid prescriptions were used in opioid naive patients. There were no readmissions. Catheter duration was 3 days and all were able to void spontaneously, though two patients experienced hypercontinence requiring temporary foley catheter re-insertion. Pathology reports showed GG1 in 1 patient and GG2 in 7 patients and GG3 in 1 patient. There were no positive margins on intraoperative margin assessment. The median PSA at 6 weeks was 0.50. Median SHIM score at 6 weeks was 17.5. All patients were continent with a median pad count of 0 at 6 weeks postop.

Conclusion: We demonstrated technical feasibility and reported the initial outcomes for SP robotic transvesical partial prostatectomy. To date, functional outcomes show impressive return to continence and erectile function. Continued attention to follow up will evaluate the long-term oncologic outcomes.

U-55

ROBOTIC RADICAL PROSTATECTOMY IN LARGE PROSTATES: TIPS AND TRICKS

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Purpose: Robotic radical prostatectomy is one of the surgical procedures most used in the treatment of prostate cancer. It is based on the minimally invasive approach to laparoscopic prostatectomy, optimized by robotic technology. With its wide dissemination, surgeons are increasingly faced with situations that can make the operative act more difficult. For example, cases such as locally advanced tumors, post-radiotherapy, large prostates, anatomical changes and intra-abdominal adhesions. Surgeons must be prepared for such findings and the dissemination of techniques, tips and tricks in various situations can help in this process.
This video aims to report a robotic radical prostatectomy in a patient with a large prostate and chronic prostatitis, showing the main difficulties and strategies to overcome them.

Materials and Methods: A 70-year-old patient with a history of chronic prostatitis and recurrent urinary tract infections, in addition to severe LUTS. Diagnosed with ISUP 1 prostate cancer. Preoperative PSA 9.22 and MRI showing prostate of 75 grams. He underwent robotic radical prostatectomy with a transperitoneal technique. The procedure was performed in Da Vinci Si Surgical System®.

Results: Intraoperatively, an enlarged prostate was confirmed. Also visualized inflammation of periprostatic tissues, making dissection difficult. Initially, an attempt was made to approach the bladder neck without opening the endopelvic fascia and ligating the dorsal venous plexus. Bleeding was visualized during this step, and fascia opening and plexus ligation were chosen. Seminal vesicles dissection continued, which was hampered by the prostate size and inadequate catheter traction. By correcting the catheter traction, we can better visualize the planes and proceed with the posterior dissection. Despite being a large prostate, with the correct exposure we can identify the transition between the vascular pedicle of the prostate and the neurovascular bundle to proceed with the next step, which is its dissection and preservation. After apex dissection and section of the urethra, we can perform a vesicourethral anastomosis followed by reconstruction of the anterior arch in order to improve functional results.

Conclusion: Especially in large prostates, dorsal venous plexus ligation may be necessary, although its preservation is now widespread. Details such as adequate traction and good exposure of the planes make even more difference in more complex cases. With proper technique, even in large prostates, good preservation of the neurovascular bundle and good functional results are possible.

U-59

IMPLEMENTATION OF HUGO RAS SYSTEM IN ROBOTIC-ASSISTED RADICAL PROSTATECTOMY

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Purpose: The results and benefits of Robotic-assisted Radical Prostatectomy (RARP) are already established in the literature. However, new robotic platforms have been released recently in the market.
Our purpose is to present the way we implemented this novel robotic platform in our hospital during the first clinical cases.

Materials and Methods: Transperitoneal anterior robotic assited radical prostatectomies using HUGO robot are presented to demonstrate port placement and docking this new platform. Photographs, schematics and intraoperative videos are used to describe the process.

Results: 34 Robotic assisted laparoscopic radical prostatectomies have been performed in our institution using HUGO Robot since June 2021. Positioning, port placement and docking has allowed to perform the surgery safely, maintaining the surgical precision without outside crashing.

Conclusion:
• The surgeries were successfully executed with acceptable transoperative outcomes, without conversions or major complications.

•Is a friendly platform for surgeons who already use another robotic systems.

•The open console starts a new era on educational goals.

•We are still working on follow-up to provide postoperative functional and oncological outcomes data.