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BOOK OF ABSTRACTS

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INDICE

A_01

Ureteral Stricture and Urolithiasis. A Robot-assisted and Endoscopic-combined approach.

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INTRODUCTION

The development of ureteral strictures is a known complication of the endoscopic treatment for impacted ureteral stones [1,2,3]. Although the smaller caliber of the recent endoscopic equipment has reduced its occurrence, it still is a statistically important complication, ranging from 14.2% and 24% in the older studies to 7.8% of the newer ones [4]. The contemporary robotic techniques have also proven to be an effective approach to the ureteral surgery demonstrating the same postoperative outcomes as open surgery with a reduction in the hospital stay [5,6].

In this video we present the advantages of a robotic and endoscopic combined approach for the treatment of ureteral stricture associated with impacted urolithiasis. In our case series we showed the perioperative outcomes of robotic ureterectomy with termino-terminal ureteroureterostomy.

MATERIALS AND METHODS

From December 2019 to December 2021 we performed 8 robotic ureterectomies with termino-terminal ureteroureterostomy with a combined endoscopic approach for ureteral stenosis caused by previous treatment of impacted stones. All patients were studied with a CT urogram and a renal scintigraphy. A preliminary ureteroscopy with pyelography was performed to better highlight the ureteral stenosis and its length. When possible a ureteral stent was placed and removed the day before robotic surgery. We also collected perioperative data and follow up. In our experience we removed the abdominal drainage the second day after surgery, the bladder catheter and the ureteral stent after one and three weeks after surgery respectively in outpatient care.

RESULTS

8 patients (3 women and 5 men) underwent robotic ureterectomy with termino-terminal ureteroureterostomy with a combined endoscopic approach for impacted stones. The mean age was 54 years with a mean ASA score of 1,5. In 4 cases the stenosis affected the mid ureter while the proximal ureter was involved in the other 4 patients. We performed 5 left and 3 right robotic ureterectomies, one of which in a patient with a solitary kidney. The mean length of the stenosis was 2,25 centimeters. The mean operative time was 227 minutes. The drop of haemoglobin after surgery was 1,45 g/dL. In our case series we had only one case of reintervention for re-stenosis and two cases of urinary infection treated with a targeted antibiotic therapy. No bleeding or leakages occured after surgery. The mean follow up was 15 months.

CONCLUSION

The robotic and endoscopic-combined approach offers the opportunity to execute a precise ureteral resection under vision, sparing healthy ureteral tissue, which is useful especially in long strictures. This procedure allows carrying out the termino-terminal ureteroureterostomy with less tension, reducing the risk of restenosis. Moreover in case of multiple lithiasis the use of endoscopy allows the mobilization of the stones granting the complete removal at the end of the procedure. The robotic procedure is safe and effective with a low risk of complication in our series.

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A_02

Bladder neck and Urethral stenosis after Thulium laser enucleation of the prostate: a multicentric cohort study

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INTRODUCTION

To assess the incidence of bladder neck stenosis (BNS) and urethral stenosis (US) and the relative risk factors after Thulium laser enucleation of the prostate (ThuLEP).

MATERIALS AND METHODS

Data regarding patients who underwent ThuLEP at two referral institutions between December 2014 and June 2020 were retrospectively reviewed. Exclusion criteria: previous urethral/prostatic surgery, pelvic irradiation, prostate cancer, neurogenic bladder, history of BNS/US, concomitant transurethral surgery, active urinary tract infection. The relationship between BNS/US occurrence and clinical-demographic variables was analyzed by Wilcoxon-Mann-Whitney or Chisquare test. Significant variables ($p<0.05$) were therefore included in a multivariate logistic regression back-wise analysis and their association with BNS or US was established by odds ratio (OR) and 95% confidence intervals (CI).

RESULTS

1003 patients were included in the analysis. Median age was 69.0 (63.0-75.0). Median prostate volume was 65.0 (46.3-82.0) ml. Median follow-up was 31 months (25-75: 21-50). Thirty patients (2.99%) developed BNS, with a median time to event of 15 (11-17.75) months, whilst 50 patients (4.98%) developed US with a median time to event of 9 (7-11) months. Men suffering from BNS had significantly smaller prostate (median volume 43.5 ml vs 66.0 ml, $p=0.008$). Men with US had significantly smaller prostate volume (52.0 ml vs 66.0 ml, $p=0.009$). At multivariable analysis surgical time predicted BNS (OR 0.973; 95% CI 0.957–0.990, $p=0.002$), and re-catheterization (OR 3.973; 95% CI 1.876–8.414, $p<0.001$) and prostate volume (OR 0.984, 95%CI 0.97–0.996, $p=0.008$) for US.

CONCLUSION

Shorter surgical time and small prostate volume were found to be associated with BNS, whilst re-catheterization significantly predicted US occurrence.

A_03

Role of pre-operative prostatic shape in urinary continence recovery after robotic radical prostatectomy: a single-cohort analysis

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INTRODUCTION

Several predictors of urinary incontinence (UI) after robot-assisted radical prostatectomy (RARP) have been described, including preoperative multiparametric prostatic magnetic resonance imaging (mpMRI) prostatic apex shape. The present study was conceived to explore the possible role of preoperative MRI prostate shape in UI after RARP in order to offer a more appropriate counselling to the patients about the post-operative scenario.

MATERIALS AND METHODS

Data of consecutive patients who underwent RARP after positive fusion biopsy at our Institution were collected on a dedicated prospectively maintained database. RARP were performed between Sep-2019 and Sep-2020 by a single surgeon. Patients were stratified into four groups based on the mpMRI prostatic apex shape. Group A (prostatic apex overlapping the membranous urethra anteriorly and posteriorly), Group B and C (overlap of the prostatic apex of the anterior or posterior membranous urethra, respectively) and Group D (no overlap of the prostatic apex over the membranous urethra). Preoperative variables and intraoperative data were compared. Outpatient evaluation was performed at 1, 3, 6 and 12 months after RARP to assess UI. Urinary rehabilitation started after catheter removal by pelvic floor exercises. Continence recovery was defined as no pad/day or 1 safety pad/day.

RESULTS

One hundred patients underwent RARP were classified as belonging to Group A (n=30), Group B (n=16), Group C (n=14) and Group D (n=40) based on the mpMRI prostatic apex shape. At baseline, statistically significant differences were found in Charlson's Comorbidity Index (CCI>1 was 6.7, 12.5, 0, and 5% in the A, B, C, D groups, respectively), serum prostate specific antigen values (p=0.004) and membranous urethral length (p=0.003). In terms of bladder neck sparing technique, a statistically significant difference was found among the Groups (p=0.010). Group D showed a significantly more favorable urinary continence recovery after RARP respect to all the other shapes presenting any forms of overlapping (HR=1.9, 95% CI 1.2 – 3.1, p=0.007). The estimated HR remained substantially unchanged after adjusting by age, body mass index, CCI, prostate volume, and bladder neck sparing (HR=1.9, 95% CI 1.1 – 3.2, p=0.016). The continence recovery median time was 9 months for Group A+B+C (95% CI 5 – 11) and 4 months for Group D (95% CI 2 – 6) (p=0.023).

CONCLUSION

Our study demonstrated that shape D, appearing as globous and round, significantly showed a better continence recovery when compared either to the shape A (complete overlap of the prostatic apex over the membranous urethra) or to the shapes A+B+C (piriform shape with any kind of overlapping).

A_04

Thulium vaporization of the prostate: postoperative bleeding risk in New vs Old generation anticoagulant therapy

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INTRODUCTION

Thulium Laser surgery plays nowadays an increasingly important role in the treatment of benign prostate hyperplasia (BPH).

The aim of the study was to evaluate the efficacy and safety of Thulium Laser Vaporization of Prostate (Thuvap) in patients treated either with Direct-acting Oral Anticoagulants (DOACs) or Vitamin K antagonist (Warfarin and derivates), and to compare these patients with standard population.

MATERIALS AND METHODS

383 patients with symptomatic BPH who underwent Thuvap in our institution between January 2015 and December 2019 were retrospectively evaluated.

Patients were divided into 3 groups: 35 patients treated with DOACs (Group A), 26 patients treated with VKA (Group B) and 322 patients no anticoagulant therapy (Group C).

DOACs and VKAs perioperative management was set according to the American Urological Association (AUA) and European Heart Rhythm Association (EHRA) guidelines. Low molecular weight heparin (LMWH) was administered to all patients at least for one week after surgery.

Clinical and functional data were assessed pre and postoperatively.

Primary endpoints were: post-operative hemoglobin drop and improvement of functional outcomes. Secondary endpoints were: days of catheterization, postoperative complications, Quality of Life score (QoL), Maximum flow rate (QMax), Average flow rate (QAve) and post void residual volume (PVR).

All patients had at least 12 months follow up.

RESULTS

There were no significant differences in patient baseline characteristics among the three groups ($p>0.05$). The rate of post-operative bleeding complications was significantly higher in Group A (42.9%) compared to Groups B (15.4%) and C (5.7%) ($p<0.0001$).

Median hemoglobin drop between pre and postoperative was - 0.79 g/dL (95% IC -1.1 - -0.3) in Group C, -0,84 g/dL (95% IC -1.45 - -0.35) in group B e -1.18 g/dL (95% IC 1.8 - -0.425) in group A. The difference between groups was not statistically significative ($p >0.05$).

Moreover, Group A was found to have a longer catheter dwelling time (45 vs. 25.5 vs. 26 hours, respectively) ($p<0.05$).

Nonetheless, functional data, as QMax and QAve, PVR, IPSS and QoL, significantly improved after surgical procedure in all three groups ($p<0.05$). Post-operative acute retention of urine risk was similar in all three groups ($p =1$).

CONCLUSION

Despite a major incidence of post-operative hematuria in group A, patients treated with DOACs did not show an increased risk of blood transfusion and achieved the same functional outcomes of other groups. In fact Thuvap was found to be an effective treatment option for all three groups of patients.

Patient treated with DOACs may benefit from this procedure, but the perioperative management of DOACs should take into account the risk of bleeding complications and the lack of an antidote, thus we recommend heparin switch soon after surgery in this population.

A_05

TURBT: postoperative bleeding risk in NEW vs OLD generation anticoagulant therapy

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INTRODUCTION

Transurethral Resection of Bladder Tumor (TURBT) is the gold standard worldwide for diagnosis and treatment of bladder cancer. The increase in the average age and cardiovascular diseases required a common use of anticoagulant drugs, in particular of Direct-acting Oral Anticoagulants (DOACs). The aim of the study was to evaluate the safety of TURBT procedures in patients treated either DOACs or Vitamin K antagonist (Warfarin and derivates), and to compare these patients to standard population.

MATERIALS AND METHODS

451 TURBT procedures in our institution between January 2017 and December 2021 were retrospectively evaluated. We identified 3 groups: 226 controls with no anticoagulant therapy (Group A), 143 procedures with VKA (Group B) and 82 with DOACs (Group C). DOACs and VKAs perioperative management was set according to the American Urological Association (AUA) and European Heart Rhythm Association (EHRA) guidelines. Low molecular weight heparin (LMWH) was administered to all patients at least for one week after surgery. Clinical and functional data were assessed pre and postoperatively. Primary endpoints were: post-operative hemoglobin drop and risk of postoperative complications. Secondary endpoints were: days of catheterization and length of stay.

RESULTS

In the control group the mean age was 72.93 (±9.85) years. In VKA and DOACs group the mean age was 77.90 (±6.47) years vs 79.17(±7.63) and have more comorbidities ($p<0,0001$). The rate of postoperative bleeding complications was significantly higher in Group C (23,2%) and B (21,7%) compared to Group A (8,4 %) ($p<0.0001$).

The difference between groups in median hemoglobin drop and re-intervention was not statistically significant ($p>0.05$).

Moreover, Group B and C were found to have a longer catheter dwelling time (63.92±93.04 and 48.41±90.23 hours respectively) than controls ($p<0.05$). Post-operative acute retention of urine and infections risk was similar in all three groups. No differences among major complications were found between VKA and DOACs procedures.

CONCLUSION

Despite a major incidence of post-operative hematuria and catheter dwelling time in procedures under anti-coagulation, patients treated with DOACs and VKA did not show an increased risk of major complications than control group.

A_06

Thulium laser vapoenuclation of prostate (THUVEP) in patients with benign prostatic hyperplasia (BPH) and chronic urinary retention, a long term follow up

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INTRODUCTION

to evaluate long-term outcomes of thulium laser vapoenucleation of prostate (Thuvep) in patients with benign prostatic hyperplasia (BPH) and chronic urinary retention (CUR)

MATERIALS AND METHODS

a retrospective review was performed of all patients with CUR who underwent Thuvep at our institution with at least 5-years follow up. CUR was defined as PVR urine volume > 300 mL or refractory urinary retention requiring catheterisation. We collected postoperative outcomes in a long term follow up.

RESULTS

From January 2012 to December 2015, 106 patients with CUR underwent Thuvep. The mean catheterization time was 3,39 months (SD 3,62), the mean prostate volume was 89,86 cc (SD 45,74). In September 2021, only 36 patients had a follow up of at least 5 years (mean 7,55). Of these, only 1 patient required indwelling catheter 2 years after Thuvep, 1 patient performed self-catheterism and 3 patients required re-intervention at 2, 3 and 8 years after Thuvep. All the other patients had a good quality of life, only 4 patients need alpha-blockers or 5-ari. At the uroflowmetry the mean Q_max was 16,4 ml/s, the Q_avg was 8,6 ml/s and post-voidal residual urine was 75 ml.

CONCLUSION

Thuvep is effective at improving urinary parameters in men with CUR also in a long term follow up with poor need of drug-support and good uroflowmetry parameters.

A_07

Antegrade versus retrograde common iliac artery revascularization and occurrence of erectile disfunction

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INTRODUCTION

Aim of the study was to assess the effect of antegrade and retrograde common iliac artery (CIA) revascularization on erectile dysfunction (ED) using the validated International Index of Erectile Function (IIEF) questionnaire, on patients who were treated for chronic occlusions of the CIA.

MATERIALS AND METHODS

Clinical data of patients who were submitted either to antegrade endovascular CIA revascularization (group A) or to femoral-femoral crossover bypass with retrograde revascularization (group B) between 01/2010 and 12/2019 were retrospectively analyzed. Primary outcomes included the evaluation of ED using the IIEF questionnaire, before and after the operation, comparing both groups. Chi-square and T-tests and logistic regression analysis were used as appropriate. A P value <0.05 was considered statistically significant.

RESULTS

Thirty-three patients underwent endovascular (14 patients, group A) or surgical treatment (19 patients, group B). Patients of group A were younger than those of group B (63.4+14.4 years vs. 71.8+17 years respectively, P=0.003). Before the operation, no differences were recorded in the sexual function between the two groups. After the intervention, patients of group A performed significantly better than those of group B in terms of IIEF questionnaire (18+10.1 versus 12.1+14.8, P=0.01).

Age significantly affected the occurrence of preoperative ED (OR 1.31, P=0.02), the preoperative results of the IIEF questionnaire (OR -0.39, P<0.001) and the postoperative results of the IIEF questionnaire (OR -0.28, P<0.001). Chronic Obstructive Pulmonary Disease (COPD) also affected the values of the preoperative and the postoperative IIEF questionnaire (OR 0.29, P=0.03 and OR 0.46, P=0.001, respectively).

CONCLUSION

Patients who were submitted to endovascular antegrade revascularization of the CIA performed significantly better in terms of IIEF questionnaire than those who underwent retrograde revascularization. Older patients and patients affected by COPD were more likely to have sexual impairment both before and after the treatment and irrespectively of the groups.

A_08

Iatrogenic segmental renal artery pseudoaneurysm: a case report

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INTRODUCTION

Pseudoaneurysm is a false aneurysm that occur at the site of arterial injury that involves one or more layers of the arterial wall but no all three layers of the wall. The renal artery pseudoaneurysm in a rare clinical entity due to iatrogenic procedures like percutaneous procedures, renal biopsy, nephrectomy or to penetrating or blunt traumas. The clinical can be different according to patient local pressure, blood flow and also to the effectiveness of the hemostasis. This complication can lead to hematuria, blood loss, and even hemorrhagic shock secondary to rupture (rare event but with a mortality rate as high as 80%).4 Aneurysms larger than 2 cm in diameter are considered to have a high risk of rupture, although ruptures have also been reported in smaller aneurysm.

RESULTS

We present the case of a 56-year-old female patient admitted to the orthopedic department for scoliosis and undergoing L3 - L4 arthrodesis surgery. The operation was interrupted due to bleeding on the left side and the thoracic surgeon was urgently called to evaluate the presence of trauma to the diaphragm and mediastinum. Despite the thoracic evaluation, the patient continued to have hemoglobin loss and worsening of renal function indices (Hemoglobin 7 gr/dL from 10 gr/dL; Creatinine 1.50 mg/dL from 0.80 mg/dL; Azotemia 55 mg/dL from 31 mg/dL). For these reasons a CT scan of the abdomen and pelvis with contrast was performed. On baseline examination there was total edematous imbibition of the left perirenal fat. After injection of iodinated contrast, a meso-renal fracture was found at the level of the upper pole. Finally, during late urographic scans at 5 and 15 minutes, the contrast was observed to spread from the upper renal calyces to the posterior renal space, forming a urinoma. The patient immediately underwent endoscopic surgery for placement of monoj ureteral stent and bladder catheter with drainage of clots at bladder level. The next CT scan after six days documented reduced contrast leakage at the level of the left upper pole renal laceration, almost complete resorption of the urinoma, and the distal end of the ureteral stent correctly positioned near the upper calyces. Nevertheless, blood loss and gross hematuria persisted the next day, so it was decided to perform angiography.

Angiography was performed using a right transfemoral arterial approach with study of the abdominal aorta, selective catheterization of the left renal artery, and super selective intraparenchymal branches of the middle and upper renal pole using a microcatheter under anesthesia care. The examination revealed the presence of two spreads of constraint of the renal parenchyma compatible with pseudoaneurysms in correspondence of the superior and mesorenal renal pole, both less than 2 centimeters. Finally, embolization of the arterial branches afferent to the lesions was performed by positioning metal coils with controlled release (3 at the upper pole: 2 x 70 mm and 1 x 70 mm; 2 at the mesorenal level of 3 x 70 mm). In the days following the embolization there was a rise in hemoglobin, the complete disappearance of hematuria and a normalization of the indexes of phlogosis.

CONCLUSION

A true aneurysm is a circumscribed dilatation of an artery that is surrounded by the intima, media, and adventitia. A pseudoaneurysm, by contrast, forms as a result of an injury to one or more layers of the arterial wall. These vascular lesions are generally related to renal biopsy, nephrectomy, renal transplantation, or percutaneous procedures. In addition, there is a relationship with penetrating traumas and, more rarely, with blunt traumas, the mechanism of sudden deceleration in automobile accidents is the most probable cause. Renal artery pseudoaneurysm is a rare but serious condition because it involves an arterial perforation that is occluded only by hematoma and connective tissue with a high propensity for rupture.A controlled bleed, in fact, can become a life-threatening hemorrhage if the balance between the tamponade effect of the surrounding hematoma and connective tissue, and the intraluminal hydrostatic pressure changes. When there is rupture, there are four spaces the blood can be redistributed: retroperitoneal, intraperitoneal, intrarenal, and intrapelvic but most intraparenchymal renal artery pseudoaneurysm ruptures are self-contained. Symptoms may include abdominal tenderness, abdominal mass, hematuria, hypertension until shock. In renal artery pseudoaneurysm hematuria is the most common symptom because of the pseudoaneurysm erosion to the adjacent renal collection system. This situation can lead to worsening of kidney function, anuria and dialysis.

Diagnosis of renal pseudoaneurysm can be complicated by a lack of specific clinical signs and symptoms or by a failure to identify potential mechanisms of arterial injury. When the patient is hemodynamically stable, the non-invasive examinations of choice are doppler ultrasound, computed tomography, and magnetic resonance imaging. Early detection and treatment of renal pseudoaneurysm is important to avoid potential morbidity from this condition.

Treatment of renal pseudoaneurysm consists of nephrectomy, open vascular surgery, or angiographic embolization, depending on the patient's clinical condition. Angioembolization is the currently accepted first line therapy for renal pseudoaneurysms because of its greater success rate of up to 80% and lower complication rate compared to those of surgical approaches. If interventional radiology is not available or if substantial delay in getting a patient to angiography is expected, surgery is the alternative (evacuation and closure of the arterial defect, or evacuation and ligation of the offending artery).10,11 There are no established protocols for post- treatment follow-up of patients who have undergone selective angioembolization, but it is, however, generally accepted among experts that the patient should be closely monitored by both laboratory and first and second level diagnostic tests, 24 hours apart, one week and then one month after surgery.

A_09

Level III and IV inferior vena cava thrombectomy in renal cell carcinoma: beating heart surgery with normothermic cardiopulmonary bypass

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INTRODUCTION

Radical nephrectomy with inferior vena cava thrombectomy for renal cell carcinomas (RCCs) with Mayo levels III and IV thrombus is considered one of the most challenging urological procedures. In this setting extracorporeal circulation with deep hypothermic circulatory arrest is considered the gold standard treatment for Mayo level III and IV inferior vena cava tumor thrombi (IVC-TT). This case series describes a less invasive operative strategy aimed at minimizing the complication rate associated with this surgery.

MATERIALS AND METHODS

Between 2016 and 2020, 12 patients diagnosed with Renal Cell Cancer and a vena cava tumor thrombus were treated with radical nephrectomy and thrombectomy at our Institution. In patients with level IV thrombi a coordinated thoracic and abdominal procedure was performed: beating heart surgery with normothermic cardiopulmonary bypass (CPB) was used for thrombus retrieval from the right atrium (RA). On the other hand, level III thrombi were approached exclusively through an abdominal access. Perioperative complication and mortality rates were recorded.

RESULTS

No patient died during the procedure. Overall, 50% of patients had postoperative complications. Median intensive care unit stay was 2 days (IQR:1-3) and median duration of hospitalization was 10,5 days (IQR: 8-15,3), less than other case series where patients underwent the gold standard treatment.

CONCLUSION

Therefore, beating heart surgery with normothermic CPB can be considered a less invasive method for radical resection of Mayo level IV IVC-TT, while Mayo level III IVC-TT can be treated effectively and exclusively with an abdominal approach.

A_10

External validation of Resorlu-Unsal stone score in predicting outcomes after retrograde intrarenal surgery

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INTRODUCTION

Pre-operative assessment of renal stones is essential in selecting treatment options and achieving high success rates for RIRS. Several nephrolithometric scoring systems have been developed using pre-operative clinical data and stone characteristics. Resorlu-Unsal stone score (RUSS) is composed of four different parameters, and each of them adds 1 point to the final score. One point is added in patients with stone size >20 mm, lower calyceal stones and infundibulo-pelvic angle, stone number >1, and abnormal anatomy. RUSS categorizes patients into four distinct groups and aims to predict stone-free rates after RIRS. We externally validated RUSS and evaluated its predictive accuracy.

MATERIALS AND METHODS

We performed a retrospective analysis of 79 patients who underwent RIRS for renal stones between January 2020 and December 2021. Patient age, pre-operative hydronephrosis, stone size, stone density (HU), operative time and RUSS were investigated as potential preoperative predictive factors for stone-free status. RUSS was applied to all patients, and the nomogram was externally validated. Area under the curve (AUC) was used for clinical validity assessment.

RESULTS

The present study included 41 (51.9%) men and 38 (48.1%) women. Mean patient age was 55.1 ± 15.4 years (IQ 44-66) and mean stone size was 14.2 ± 4.4 mm (IQ 10-15). Overall, 68 of the 79 (86.1%) patients were stone free after the initial treatment. After applying RUSS, 41.8, 43.0, 12.7, and 2.5 % had score 0, 1, 2, and 3, respectively. RUSS was significantly correlated with stone-free status, operative time and hospital stay (all $p < 0.05$). On logistic regression only RUSS (OR = 0.220; 95%CI: 0.086-0.567; $p = 0.002$) was identified as predictor of postoperative stone-free status. The area under the curve of the RUSS scoring system was 0.757.

CONCLUSION

RUSS is a simple scoring system that may predict postoperative stone-free rate after RIRS with great efficacy and accuracy.

Table 1

Correlation between RUSS and postoperative outcomes

Variable	Rho	Lower	Higher	p value
Stone-free status	-0.270	-0462	-0.050	0.016
Operative time	0.379	0.084	0.607	0.012
Hospital stay	0.323	0.021	0.565	0.035

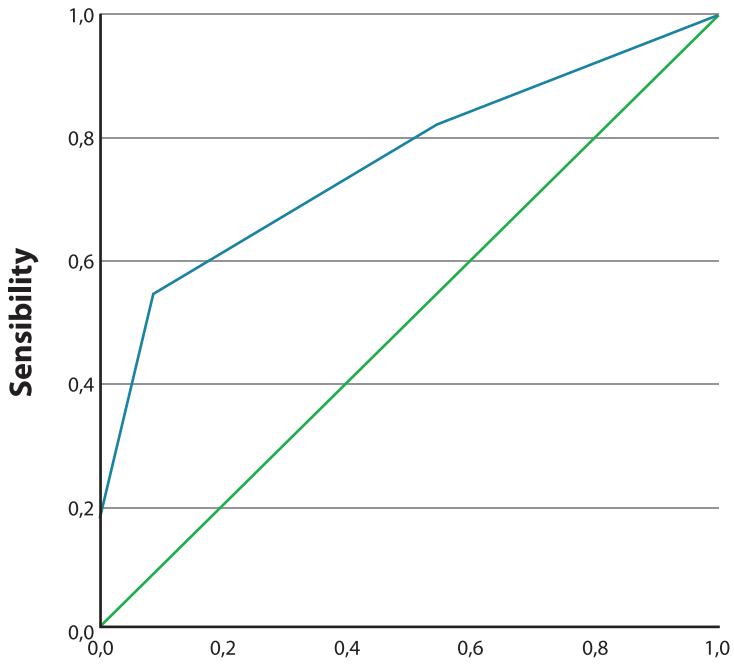
Table 2

Binary logistic regression analysis for predictors for postoperative stone-free status

Variable	OR	Lower	Higher	p value
Age	1.006	0.966	1.049	
Hydronephrosis	0.724	0.194	2.705	0.631
Stone size, mm	0.995	0.859	1.152	0.948
Stone density, HU	0.998	0.990	1.007	0.706
Operative time	0.982	0.949	1.016	0.299
RUSS	0.220	0.086	0.567	0.002

Figure 1

Predictive accuracy of Resorlu–Unsal stone score



A_11

VERSIUS RoIbotic System - Experience of the first italian hospital adopting this technology.

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INTRODUCTION

Versius® is a latest generation modular robotic system produced by CMR Surgical. It is a system with a compact and modular design, versatile and transportable from one room to another in the hospital integrating with normal workflows.

MATERIALS AND METHODS

All the procedures have been done at Cristo Re Hospital in Rome. The open console is designed to reduce the surgeon's physical and mental fatigue, giving the ability to work from both sitting and standing, always ensuring an ergonomic posture. The open configuration facilitates the verbal and non-verbal communication between the doctor and the rest of the surgical team and does not require a second console for training activities. The Versius arm replicates the human arm mimicking their movements and shape, including the major shoulder, elbow and wrist joints. The wrist joint is made with the V-Wrist™ technology. The endoscope is held from the robotic arm in a natural way (coaxial and not perpendicular to the distal segment arm). This allows for extensive excursions of endoscopic optics by minimizing movements of the arm. This study aimed to evaluate the advantages and peculiarities of this new robotic technology compared to our laparoscopic experience.

RESULTS

Our surgical team made by two exeperts surgeons (MDD and AC) has performed 41 urological surgical procedures from July 2021 to date. After this training we can highlight the advantages and potential of this system. We performed radical prostatectomies (19), radical nephrectomies (7), nephro ureterectomies (5), partial nephrectomies (4), renal cyst removal (3), pyeloplasty (2), ureteral reimplantation (1).

CONCLUSION

The main advantages of this new robotic system are the accessibility to the console, the ability to quickly adapt to any operating room, the 3D sharable magnified view, the V-Wrist. Otherwise we believe that the docking phase needs a long training to be done in acceptable time. We therefore believe that it could be considered by many centers that do not have the possibility to use other more expensive robotic systems and that need dedicated operating rooms.

KEYWORDS

Minimally invasive surgical procedures; robotic surgery, urological robotic surgery

A_12

A novel valve to overcome uncontrolled irrigation outflow during intraoperative flexible nephroscopy during percutaneous nephrolithotomy: a pilot study

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INTRODUCTION

To determine safety and efficacy of a novel silicone valve adapted to the open end of a 24 Fr. Amplatz sheath during flexible nephroscopy after percutaneous nephrolithotomy (PCNL).

MATERIALS AND METHODS

We prospectively evaluated patients who underwent PCNL in Galdakao-Modified Supine Valdivia (GMSV) position for renal stones > 2 cm, from January 2019 to February 2022 was performed. A total of 91 patients were randomized into two groups: traditional PCNL (n= 50) vs valve-PCNL (n=41). Exclusion criteria were, the presence of coagulation impairments, age of < 18 or > 75, presence of infection, and serious comorbidities. Patients were controlled with CT scan after 3 months. A negative CT or an asymptomatic patient with stone fragments < 5 mm size were the criteria to assess the stone-free rate (SFR). Treatment safety, efficacy, and complications were evaluated after surgery.

RESULTS:

Our cohort (n= 91) included single kidney stones (n= 27), multiple kidney stones (n= 51), and stag-horn kidney stones (n=13). Patient demographics, stone characteristics and stone location were comparable between the two groups (all $p > 0.05$). The mean stone size was 2.72 ± 3.3 cm in the traditional PCNL group vs 2.97 ± 3.7 cm in the valve-PCNL group ($p = 0.23$). The operation time was significantly shorter in the valve-PCNL group (99.3 ± 8.75 vs 83.4 ± 9.87 minutes; $p = 0.03$). Overall SFR achieved between the two groups was 87.5% vs 94.7% ($p = 0.04$). There were no significant differences in overall complication rate (11.4% vs 10.5%; $p = 0.71$), postoperative pain (visual analog scale score; 3.2 ± 0.8 vs 3.4 ± 0.9; $p = 0.69$), and hospital stay (3.5 ± 0.9 vs 4.1 ± 1.2 days; $p = 0.64$).

CONCLUSION

The introduction of a novel valve adapted to the open end of a 24 Fr. Amplatz sheath during PCNL in GMSV resulted in a reduction of the uncontrolled outflow and consequently in an improved pyelocaliceal visualization. Shorter operative time and SFR were observed in the valve-PCNL group. Thus, further studies with a larger population are needed to verify our outcomes.

A_13

Three-dimensional prostate model use and Augmented-reality guided frozen section analysis during robot-assisted radical prostatectomy

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INTRODUCTION

The Hyper Accuracy 3D (HA3D; MedicsTM) image reconstruction system creates a virtual 3D model of the prostate and the surrounding structures, obtained from multiparametric magnetic resonance imaging (mpMRI). Intraoperatively, these images could be used to guide nerve-sparing approach (TileProTM multi-input display technology) during robot assisted radical prostatectomy (RARP). Although previous authors demonstrated a reduction in the rates of positive surgical margins (PSMs) in patients treated with Augmented Reality (AR) RARP vs. standard RARP, the possibility to guide intraoperative frozen section analysis according to AR models has been poorly addressed.

MATERIALS AND METHODS

This is a monocentric, prospective, double-blinded randomized trial comparing the rates of PSMs at final pathology in patients treated with AR RARP vs. standard RARP. All patients aged <70 years, with a newly diagnosed low or intermediate risk prostate cancer (EAU guidelines), with a pre-operative IIEF score20 and with at least one visible lesion at mpMRI will be consecutively enrolled. After enrollment, patients with be randomized in a 1:1 ratio to:

- AR RARP: 3D reconstruction according to mpMRI. The model will be projected in the surgical field using the TileProTM technology. During intraoperative frozen section analysis, the virtual 3D model of the prostate with be overlapped to the explanted gland with the used of mixed reality (Hololens glasses, Microsoft, USA) and margins will be inked according to the 3D model;
- standard RARP: nerve-sparing approach according to mpMRI (no 3D models) and mpMRI-guided standard frozen section analysis (no mixed reality).

Primary outcome is the rate of PSMs in the two groups. Secondary outcomes are: 1) the rate of nerve-sparing approaches within the two groups; 2) 3-, 6- and 12-months IIEF score after surgery. Given the study design and a hypothetical expected difference of 10% between groups, to have adequate statistical power (80%), the required number is 159 patients per group. The trial started on 01/12/2021 and will recruit patients for up to 36 months.

RESULTS

At the time of this preliminary analysis (April 2022), 35 patients have been enrolled. Of those, 34 (97%) underwent AR RARP (n=17, 50%) and standard RARP (n=17, 50%). Patient (age, BMI, IIEF), disease (PSA, cT, ISUP GG) and mpMRI (PI-RADS score, lesion size) characteristics were similar between groups (all p>0.05). Median surgical time was superior for AR RARP vs. standard RARP patients (153 vs. 137 mins; p=0.04). Overall, 4 (23.5%) and 6 (35%) patients had PSM at final pathology in AR-RARP vs. standard RARP groups (p<0.001). The rate of bilateral full nerve sparing approaches was similar between the two groups (p=0.7).

CONCLUSION

AR RARP and intraoperative frozen section analysis according to AR models appear to reduce the rates of PSMs, relative to standard RARP, in patient candidates to nerve sparing approach. These preliminary data should be confirmed after study completion.

A_14

Thermal ablation for small renal masses: identifying the most appropriate tumor size cut-off for predicting perioperative and oncological outcomes

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INTRODUCTION

The EAU Guidelines recommend thermal ablation (TA) as a valid treatment for patients with 3 cm renal cell tumors. However, to the best of our knowledge, no external validation of this size cut-off has been previously reported.

MATERIALS AND METHODS

We retrospectively analyzed data of 432 T1 renal cell carcinoma patients treated with TA (radiofrequency [RFA] n=162; microwaves [MWA] n=270), at a single center (2008-2020). Variable of interest was tumor size, either continuously coded (mm) or stratified according to 1 cm cut-offs (2 vs. 2.1-3 vs. 3.1-4 vs. >4 cm). The outcome of the analyses was TRIFECTA achievement, defined as: 1) absence of CLAVIEN-DINDO3 complications; 2) complete ablation; 3) absence of 30% decrease in eGFR. Rates of local recurrences were also evaluated. First, logistic regression models and a minimum p-value approach were used for testing TRIFECTA achievement. Second, Kaplan Meier plots depicted local recurrence survival rates over time. A sensitivity analysis in RFA vs. MWA patients was conducted.

RESULTS

Median (IQR) tumor size was 2.5 (1.8-3.3) cm. Specifically, 162 (37.5%) vs. 140 (32.4%) vs. 82 (19.0%) vs. 48 (11.1%) patients harbored, respectively, 0.1-2 vs. 2.1-3 vs. 3.1-4 vs. >4 cm tumors.

Overall, 94 (21.8%) patients did not achieve TRIFECTA. In multivariable logistic regression models, tumor size was associated with higher rates of no TRIFECTA achievement (OR with 95% CI:1.11 [1.07-1.15]; p<0.001). Using a minimum p-value approach, an optimal tumor size cut-off of 3.2 cm was identified (p<0.001). Overall, 15 (9.3%) vs. 23 (16.4%) vs. 29 (35.4%) vs. 27 (56.2%) patients with 0.1-2 vs. 2.1-3 vs. 3.1-4 vs. >4 cm tumors did not achieve TRIFECTA, respectively. The same results were achieved in analyses that tested separately: 1) absence of CLAVIEN-DINDO3 complications; 2) complete ablation; 3) absence of 30% decrease in eGFR. In multivariable logistic regression models, 3.1-4 cm tumors (OR with 95% CI:1.27 [1.14-1.41]; p<0.001) and >4 cm tumors (OR with 95% CI:1.49 [1.31-1.70]; p<0.001), but not 2.1-3 cm tumors (OR with 95% CI:1.05 [0.96-1.14]; p=0.3) were associated with higher rates of no TRIFECTA achievement, relative to 0.1-2 cm tumors. The same results were achieved in separate multivariable logistic regression models testing TRIFECTA rates in RFA vs. MWA treated patients. Median (IQR) time follow-up was 22 (12-44) months. Overall, 32 (7.5%) local recurrences were observed. Specifically, 8 (4.9%), 8 (5.7%), 11 (13.4%) and 5 (10.4%) local recurrences were observed in tumors sized 0.1-2 vs. 2.1-3 vs. 3.1-4 vs. >4 cm, respectively (p=0.01)

CONCLUSION

As suggested by the EAU guidelines, a tumor size cut-off value of 3 cm is associated with higher rates of TRIFECTA achievement and lower rates of local recurrence over time in patients treated with TA for small renal masses.

A_15

Conditional survival of patients with low-risk prostate cancer: temporal changes in active surveillance permanence according to risk categories.

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INTRODUCTION

To test the conditional survival that examined the effect of event-free survival on active surveillance (AS) permanence of patients with prostate cancer (PCa).

MATERIALS AND METHODS

From 2012 to 2020 we retrospectively analysed 606 patients with PCa enrolled in our AS program. Kaplan-Meier (KM) plots depicted AS-exit rate after stratification according to their baseline PSA density (PSAd<0.15 vs. 0.15), number of biopsy positive cores (1 vs. 2) and PI-RADS score (2 vs. 3 vs. 4-5). Multivariable Cox regression models tested for AS-exit rate independent predictors. Patients were successively stratified into three risk groups: low (PSAd<0.15 and one positive core and PI-RADS score<2), high (PSAd0.15 and 2 positive cores and PI-RADS score 4-5), intermediate those who did not fit low or high-risk characteristics. Conditional survival estimates were used to calculate overall AS-exit rate after event-free survival intervals of 1, 2, 3 and 5 years, and after stratification.

RESULTS

In KM plots higher rates of AS-exit free survival were recorded in patients with PSAd<0.15 (68.8 vs. 53.0%; p-value=0.03), one positive core (66.1 vs. 49.7%; p-value<0.001) and PI-RADS score2 (67.7 vs. 59.7 vs. 37.8%; p-value<0.001). In multivariable Cox regression models, these variables achieved independent predictors status. Overall, according to conditional survival analyses, five-year AS-exit free rate was 59.7% at baseline, decreased to 58.6% and then increased to 67.3%, 74.7% and 89.4% in patients who survived respectively 1, 2, 3 and 5 years. After stratification, in those patients survived 5 years, five-year AS-exit free rates increased from 62.8 to 88.2% and from 53.0 to 91.7% in patients with a PSAd<0.15 vs. 0.15 respectively; from 67.7 to 95.5%, from 59.7 to 83.9% and from 37.8 to 83.9% in patients with a PIRADS score2 vs. 3 vs. 4-5 respectively; from 66.1 to 90.3% and from 48.7 to 87.5% in patients with a number of positive core 1 vs. 2 respectively. After stratification according to risk groups, five-year AS-exit free rates increased from 76.3 to 100%, 62.7 to 83.7% and from 42.3 to 87.5% in those survived 5 years, respectively in low, intermediate and high-risk patients. In multivariable analyses, intermediate (HR:2.27; p-value<0.01) and high-risk (HR:4.16; p-value<0.001) groups were independent predictors of higher AS-exit rate at baseline, relative to low-risk. A decrease in HRs was assessed over time in patients who survived.

CONCLUSION

Conditional survival models showed a direct relationship between event-free survival duration and subsequent AS permanence in PCa patients. Even patients with worst disease characteristics (high risk) may achieve survival probabilities similar to those with better disease after at least 5 years of event-free survival since AS entrance. In particular, conditional survival plots showed that the survival benefit starts to be relevant after 2 years since AS entrance.

A_16

First experience with supertullium fiber laser enucleation of prostate (Thuflep)

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INTRODUCTION

The new supertullium laser has the characteristic of being effective in the treatment of urinary stones. However, the possibility of changing the pulse from continuous to pulsed and the power of 60 w can also allow the treatment of soft tissues. The purpose of the work, in our first experience, is to demonstrate the usefulness of the supertullium laser in prostatic enucleation In a center of large experience with the thulium laser

MATERIALS AND METHODS

We recruited 33 patients on the list for thulep surgery. Inclusion criteria was the presence of infravesical obstruction (IPSS > 20, Qmax < 10 mL/s). Erectile function (EF) was assessed using the International Index of Erectile Function and IPSS was administered (IIEF-5) both prior to endoscopic examination, and at 3 months from surgery. Mean blood loss, operative time and catheterization time was evaluated. Statistical analysis was performed from baseline to 3 months results.

RESULTS

The mean age was 71,5 years old (±6,3yr) and the average prostate size was 83.5 ml (±9,3 ml). No statistical differences was found from the baseline of iief and iief. Mean operative time was 78 min (± 20 min). IPSS show a statistical difference from baseline at 3 months ($p<0.001$). Mean catheterization time was 1,5 dys and there was no statistical differences from baseline in IIEF at 3 monts and perioperative emoglobin. In only 1 patient there was a in only one patient there was a perforation of the capsule due to the mechanical dissection of the adenoma.

CONCLUSION

According to our current experience thuflep is a possible surgical technique but in surgeons with extensive experience in thulep. However, the surgical times are greater than those reported in the literature on thulep. No difference in terms of blood loss and catheterization days. In our experience, the greatest advantage is the possibility of having a tool that allows the treatment of stones and BPH.

A_17

New drug therapy for delayed ejaculation :the birth of CAMARUF 0.006%

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INTRODUCTION

Deleyed ejaculation (D.E.) ia probably the less studied male sexual disfunction but is not a such rare disorder with a prevalence of 15- 30% in the higher groups. Current treatments have only an anectodal success or important side effects, so often patient starts only a psicosexual therapy without unrealistic results

MATERIALS AND METHODS

Camarouf is an oleoresin-based cream with capsaicin and vanilloid that has the ability to stimulate the penile nerve endings and determine an increase in the penine blood flow giving an increase in the sensation of heat. Afer signing a specific informed consent from June 2018 to October 2019, we recruited 54 patients with D.E.. Patients performed a preventive sexological, urological and hormonal evaluation to rule out such an etiology. Only 48 patients were eligible for the study and they were randomized into two study groups of 24 patients: A groups start with Camarouf cream and B that use a placebo ones. With Topiclick® the dose was standardized at 0,25ml / week,15 min before sexual intercourse. After 2 months of therapy and 1 months of wash out, groups reversed treatment. IIEF 5 questionnaire, Quol questionnaire and IELTS were administreted at 2, 3 and 7 months. T student test was used to campare Ielts ad Δ mean Ielts (between treatment and wash out period) among two groups. Statistical analisis was performed with MEDCALC (Software, Ostend, Belgium)

RESULTS

At 2 months of therapy group A showed a statistically difference in Δ mean, Ielts and Quol compared with group B ($p<0,0001$) and the same was recorded by the group B at 7 months. No Ielts statistical differences was recorded in wash out period by two groups. IIEF 5 questionnaire showed no differences at 2, 3 and 7 months ($p=0,654$; $p=0,234$;$p=0,544$).Only 1 patient stopped therapy for severe penile burning, and 5 patients used cream every 2 weeks for bothersome penile inflammation.

CONCLUSION

Camarouf 0,006% has been shown to improve Ielts with a good patient safety and compliance profile.