

tional age, preoperative imaging modality, type of anesthesia, intraoperative imaging, operative time, outcome of ureteroscopy and outcome of pregnancy were collected.

RESULTS: Fifty pregnant women who underwent ureteroscopy for presumed stone were identified. Mean age was 27 years, mean gestational age was 24.5 weeks. Twenty-three (46%) of the women had a pre-operative low-dose computed tomography (CT) scan, 22 (44%) had an ultrasound (US), and 5 (10%) had a magnetic resonance urogram (MRU). Negative ureteroscopy, defined as no ureteral stone seen on direct visual inspection, occurred in 7 of the 50 patients (14%). Patients who had a pre-operative CT scan had the lowest rate of negative ureteroscopy at 4.3% (1/23 patients). Patients with pre-operative ultrasound alone had the highest incidence of negative ureteroscopy at 27% (6/22 patients), and patients with pre-operative MRU had a 20% incidence of negative ureteroscopy (1/5 patients). Positive predictive values of CT, MR, and US were 95.7%, 80%, and 72.7% respectively.

CONCLUSIONS: In pregnant women undergoing ureteroscopy in our series, the rate of negative ureteroscopy was 14% overall. In the group taken to surgery after imaging with ultrasound alone, 27% had no ureteral stone, giving it the lowest positive predictive value of the modalities utilized in our series. When planning management of suspected renal colic in pregnancy, this information may be useful for both urologist and patient as they together weigh the risks and benefits of a more definitive imaging study (i.e. CT scan) and the risk of an unnecessary anesthetic and procedure.

Pre-Operative Imaging Modality	Total Performed	False Positive	Positive Predictive Value
Low-Dose CT	23	1	95.7%
Ultrasound	22	6	72.7%
MR Urogram	5	1	80%

Source of Funding: None

Transplantation, Urolithiasis & Hydronephrosis

Video

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10:30 AM-12:30 PM

V1713

EX VIVO EVALUATION OF A NOVEL URETERAL OCCLUSION DEVICE

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INTRODUCTION AND OBJECTIVES: The XenX stone retention device (Xenolith Medical, Israel) has been developed to serve the dual purpose of preventing retrograde stone migration and serving as a guidewire over which a stent can be placed. Our objective was to evaluate its safety and efficacy in an ex vivo porcine model.

METHODS: A 6mm CaOx stone was inserted in the mid ureter of a porcine model (600 lb hog). The XenX was advanced alongside a semi-rigid ureteroscope (Wolf 6/7.5F) past the stone until the tip was located in a major calyx of the kidney. The device was deployed past the stone, and a 200 μ m Ho laser fiber was inserted into the working channel of the scope to begin lithotripsy. A stone basket (Scared Heart Medical Halo, 1.5F) was used to remove large retained fragments. The ureter and kidney were separated, and migrated and retained stone fragments were collected by flushing irrigation toward the proximal end of the ureter. Fragments were later analyzed for size distribution. The ability to place stents was evaluated with the Inlay Optima (7F, Bard Urological), Percuflex (6F, Boston Scientific), and Silhouette (4.6F, Applied Medical) using an ex vivo porcine kidney with attached ureter.

Stent compatibility was first evaluated while the outer sheath of the XenX remained on the device, and re-evaluated with each stent after removing the sheath.

RESULTS: Retained stone fragments and those that migrated past the XenX during lithotripsy ranged from 1.0-3.0 mm, and 0.5-1.1 mm in their largest diameter, respectively. The XenX was easily maneuvered within the ex vivo model, and demonstrated the ability to place stents. When the outer sheath remained on the XenX, the 7F Inlay Optima was found to be most compatible. When the outer sheath of the device was removed, the 4.6F Applied Silhouette most easily passed over the device.

CONCLUSIONS: The XenX serves as an effective stone retention device with the potential to increase the efficiency of ureteroscopic stone extraction.

Source of Funding: Xenolith Medical, Ltd.

V1714

MULTIPERC PERCUTANEOUS NEPHROLITHOTOMY: GOOD PRACTICE APPROACH

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INTRODUCTION AND OBJECTIVES: Percutaneous nephrolithotomy is the standard therapy used for staghorn calculi. The debate between the strategic placement of multiple tracts vs. single tract nephrolithotomy, with or without flexible instrumentation for complete stone clearance is still ongoing. However, we consider that multiperc access is able to achieve the primary objective of stone burden clearance with the highest probability. A guideline for a good practice approach for multiperc percutaneous nephrolithotomy has not been described concisely. We present a video illustrating the step by step methodology that is used in our center for this kind of surgery.

METHODS: First of all we evaluate the renal collecting system anatomy and the kidney accesses are planned. One of the entrances should be the main one through which most of the stone is going to be cleared, the rest of them are accessory tracts. A strong recommendation is to start the surgery with all punctures and stabilize all of them with a guidewire. This practice guaranteed a higher success rate. A middle age female patient was present in the video with staghorn calculi. Punctures were accomplished with the simplified technique, as it is described. Guidewires were left in place as it was mentioned. Then metallic telescopic dilation of each tract was done until 26 Fr for the main tract, and 24 or less for accessory tracts. Ultrasonic lithotripsy was performed on the stones. Medium caliber nephrotomy tubes were finally placed.

RESULTS: Stone free status was reached with the sample patient. Surgery was accomplished in 118 minutes, a decrease of hemoglobin of 1.8 was seen, 2 days of hospital stay, and no complications were observed. Last nephrostomy was withdrawn at 48 hours after the surgery.

CONCLUSIONS: With the multiperc approach staghorn stone clearance can be achieved in a cost-effective and safe way. A meticulous methodology is necessary to guaranteed stone clearance and to avoid potential serious complications.

Source of Funding: None

V1715

LAPAROSCOPIC ANATROPHIC NEPHROLITHOTOMY FOR COMPLEX STAGHORN CALCULI WITH EARLY UNCLAMPING AND CONTROLLED HYPOTENSION - AN ATTEMPT TO PRESERVE RENAL FUNCTION

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INTRODUCTION AND OBJECTIVES: There are clear indications for the treatment of complex staghorn stones by Anatomic

Nephrolithotomy. When a reasonable number of sittings are unlikely to clear the calculus, b. other endourologic interventions have failed, c. an associated structural anomaly needs correction or d. percutaneous access is technically unfeasible, anatomic nephrolithotomy is the recommended procedure. Laparoscopy offers a minimally invasive option to these patients.

METHODS: Laparoscopic anatomic nephrolithotomy was performed in 8 patients with complex staghorn calculi. Mean patient age was 49 years (35-62), mean stone size was 53 mm (35-70). The principles of open anatomic nephrolithotomy are followed. The hilum is dissected; the artery and vein isolated and controlled with bulldog clamps. An incision is made with a laparoscopic knife in the avascular plane along Brodel's line, approximately 1 cm from the lateral aspect of the kidney. The stone is extracted. The large vessels that are visualized are oversewn individually. Controlled Hypotension is applied minutes prior to hilum release. The clamps are removed within 20 minutes. Any additional bleeding vessels are oversewn. The blood pressure is gradually restored. As hemostasis is confirmed, the parenchyma is closed in a running fashion.

RESULTS: All patients were completed laparoscopically. Mean operative time was 142.5 min, mean warm ischemia time was 20.8 min. Average blood loss was 315 cc, mean average stay was 3.5 days. Complete clearance of the calculus was obtained in 5 patients. The 3 months post-operative scan showed an average reduction of 6.6%, which returned to normal in the long-term follow-up.

CONCLUSIONS: Our goal, besides removing the stone, is to preserve renal function. The technique has evolved achieving excellent hemostasis with an accurate incision along Brodel's line and early unclamping along with controlled hypotension, to reduce ischemia time. Advantages of this technique are that it diminishes ischemia time, ensures hemostasis prior to kidney closure and decreases the risk for arteriovenous fistula or aneurysm formation. We hope this technique leads to preservation of renal function in patients with staghorn calculi.

Source of Funding: None

V1716 **ROBOTIC PARTIAL NEPHRECTOMY AND PYELOLITHOTOMY IN A HORSESHOE KIDNEY**

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INTRODUCTION AND OBJECTIVES: Horseshoe kidney represents the most common of all renal fusion anomalies with a reported incidence of 1 in 400. Myriad configurations of horseshoe kidney have been reported with the degree of ascent limited by the Inferior Mesenteric Artery (IMA). The majority of horseshoe kidneys demonstrate anteriorly oriented renal pelves and ureters and a highly variable and complex blood supply. Patients with horseshoe kidney are at a comparably higher risk of stone formation given their anomalous anatomy. In addition, renal tumors have been reported in patients with horseshoe kidneys but at a rate comparable to the general population. We present our experience with robotic partial nephrectomy and concomitant pyelolithotomy in a horseshoe kidney.

METHODS: A 54 year old male presented with radiographic evidence of an approximate 7cm complex cystic renal mass involving the leftward moiety of his horseshoe kidney. In addition, an approximate 4cm partial staghorn calculus was identified involving his left renal pelvis. Following informed consent, the patient was positioned in the flank position and ports were placed in a somewhat more caudad location. The colon was reflected and the aorta identified. The anomalous arterial branches were identified and dissected out in preparation for hilar clamping. The tumor was exposed and intraoperative ultrasound performed. The tumor was excised with a margin of normal renal parenchyma. Reconstruction was performed using 2-0 Vicryl and 0-Vicryl sutures for the parenchyma and capsule, respectively. Next, the left ureter was identified and followed cephalad towards the renal pelvis. The renal pelvis was opened, the stone extracted, and the pyelotomy closed using running 4-0 Vicryl suture.

RESULTS: Operative time was 160 minutes. Estimated blood loss was 100cc. Warm ischemia time was 22 minutes. There were no acute intraoperative complications. The patient did develop a DVT postoperatively and was treated accordingly. Pathology demonstrated a pT1b renal cell cancer with negative margins as well as a 4cm x 2.5cm calcium oxalate stone.

CONCLUSIONS: Based on our experience, robotic partial nephrectomy in a horseshoe kidney is feasible and safe. Meticulous attention to the patient's arterial anatomy is paramount to avoid hemorrhagic complications. An individualized approach to port placement is necessary to avoid instrument clashing and to facilitate optimal access to the kidney.

Source of Funding: None

V1717 **ROBOTIC-ASSISTED LAPAROSCOPIC SURGERY FOR LARGE UPPER TRACT NEPHROLITHIASIS**

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INTRODUCTION AND OBJECTIVES: In certain rare cases of urolithiasis, an open or laparoscopic approach to treatment may be more effective than commonly employed endoscopic or percutaneous techniques. Conditions such as extreme size, aberrant anatomy, and need for urinary reconstruction are potential indications for these approaches. In this video, we demonstrate the use of single-stage Robotic-Assisted laparoscopic surgery for nephrolithotomy in two patients with extremely large upper tract stones, who have complex anatomy and require urinary reconstruction.

METHODS: In this video, two patients with large upper tract nephrolithiasis underwent robotic-assisted nephrolithotomy using the da Vinci Surgical System. Each case was recorded using a high definition camera, edited, annotated, and moderated using professional grade software.

RESULTS: In both cases the patients were rendered stone-free in a single-stage procedure. In both cases reconstruction of the urinary tract was performed at the time of surgery.

Blood loss was minimal, and there were no complications in either case. Patients tolerated their procedures well.

CONCLUSIONS: Robotic surgery represents an effective and minimally invasive approach to treating complicated and rare cases of upper tract stone disease which require a non-endoscopic approach. Robotic surgery is an excellent modality for upper urinary tract reconstruction.

Source of Funding: None

V1718 **SURGICAL TECHNIQUES OF PERCUTANEOUS NEPHROLITHOTOMY FOR CALYCEAL DIVERTICULAR AND RENAL PARENCHYMAL STONES**

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INTRODUCTION AND OBJECTIVES: To report our surgical techniques of percutaneous nephrolithotomy (PNL) which were performed in challenging cases including calyceal diverticular and renal parenchymal stones.

METHODS: 42 years old man (patient 1) and 48 years old woman (patient 2) were referred for persistent right flank pain. The two patients had been treated with shock wave lithotripsy under diagnosis of renal calyceal stones at other hospitals, but not fragmented. After 3-phase CT scans, the patients were diagnosed with 2.9 cm sized, calyceal diverticular stone and 2.2 cm sized, renal parenchymal stone, respectively. The two patients were treated with PNL. Patient 1: After retrograde placement of an occlusion balloon ureteral catheter, direct puncture into the calyceal diverticulum was performed under fluoroscopic guidance. After tract dilation using 10-mm balloon catheter, 30-Fr Amplatz sheath was placed into the diverticulum. After removing