reconstructed 3D surgical model of the targeted anatomy, named augmented reality (AR). We reported our experience of AR-assisted laparoscopic surgery (ARLS) on patients with retroperitoneal disease.

**Materials and Methods:** From January 2010 to August 2015, totally 41 cases with retroperitoneal disease were treated by ARLS in our hospital. 24 laparoscopic adrenalectomies, Ten laparoscopic pyeloplasty for Ureteropelvic Junction Obstruction (UPJO), three ureterorenorheterectomies for retrocaval ureter, three laparoscopic partial nephrectomies and one retroperitoneal tumor excision. Their medical records were analyzed, and the relevant literature was reviewed.

**Results:** All procedures were successfully completed without conversion to open surgery. There were no perioperative complications. There was neither postoperative mortality nor morbidity at the time of discharge and during follow-up.

**Conclusions:** AR provided precisely intraoperative decision-making by extensive understanding of the 3D topography of the surgical target, the 3D course of the surrounding vasculature, and the proximity of vital anatomic structures in advance of embarking on the actual surgical procedure.

**MP2-2:**
**BOWEL COMPLICATION IN RETROPERONEOSCOPIC NEPHROURETERECTOMY**
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**Purpose:** Bowel complication in retroperitoneoscopic nephroureterectomy is relatively rare condition. We reviewed the incidence and possible mechanisms of bowel complication in single medical center.

**Material and methods:** During 2006-2015 October, we performed 550 retroperitoneoscopic nephroureterectomy in NCKU hospital. We reviewed all cases including chart record, operation note, assessed the incidence of bowel complication and analyzed etiology, management and outcomes.

**Results:** 3 cases (0.55%) had bowel complication, including 2 bowel perforation and 1 small bowel obstruction. No intraoperatively bowel injury was identified. Two patients with bowel perforation were detected by massive drainage amount, and abnormal drainage color on postoperative 4th and 7th day. One patient developed small bowel obstruction 3 weeks after surgery. All 3 cases underwent exploratory laparotomy. In 2 cases of bowel perforation, no evidence of needle, cutting, or suture injury or thermal injury was noted around injury site. Possible mechanism of injury may related to previous abdominal operation history, which resulted in adhesion over intestine and peritoneum, and micro-injury may happen when we dissected retroperitoneal space. In the case of small bowel obstruction, the cause of small bowel obstruction was internal herniation due to peritoneal defect.

**Conclusion:** Previous abdominal operation history and locally advanced cancer may connected to higher bowel injury rate during retroperitoneoscopic nephroureterectomy. Careful retroperitoneal dissection, inspection of surgical field again after the surgery, and repair of peritoneal defect are needed in these cases. Monitoring surgical drainage can detect bowel injury earlier, and early intervention may lower morbidity and mortality.

**MP2-3:**
**USING A HARMONIC SCALPEL "DRILLING AND CLAMPING" METHOD TO IMPLEMENT ZERO-ISCHEMIC ROBOT-ASSISTED PARTIAL NEPHRECTOMY**
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**Purpose:** Robot-assisted partial nephrectomy (RAPN) has gradually become a popular minimally invasive nephron-sparing surgical option for small renal tumors. Ischemic injury should be minimized because it impacts renal function outcomes following partial nephrectomy. Herein, we detail the technique and present initial perioperative outcomes of our novel harmonic scalpel “Drilling and Clamping” method to implement zero-ischemic RAPN.

**Materials and Methods:** We prospectively collected baseline and perioperative data of patients who underwent zero-ischemic RAPN performed by our harmonic scalpel “Drilling and Clamping” method. From April 2012 to December 2014, a total of 19 consecutive zero-ischemic RAPN procedures were performed by a single surgeon.

**Results:** For 18 of the 19 cases, RAPN using our harmonic scalpel “Drilling and Clamping” method was successfully completed without the need for hilar clamping. The median tumor size was 3.4 cm (range: 1.8–6.2); operative time was 3.2 hours (range: 1.9–4.5); blood loss was 100 ml (range: 30–950); and postoperative hospital stay was 5 days (3–26). One patient required intraoperative blood transfusion. Two patients had intra or postoperative complications: one was converted to traditional laparotomy because of massive bleeding, while another had post-operative stress ulcer. Pathology confirmed renal cell carcinoma in 12 patients (63.2%), angiomyolipoma in 6 patients: (31.5%), and oncocytoma in one patient (5.3%). Mean pre- and post-operative serum creatinine (0.82 mg/dl and 0.85 mg/dl, respectively), estimated glomerular filtration rate (eGFR) (84.12 and 82.18, respectively), and hemoglobin (13.27 g/dl and 12.71 g/dl, respectively) were comparable.

**Conclusion:** We present a novel zero-ischemic technique for RAPN. We believe that this technique is feasible and reproducible. Our initial results are encouraging and further studies are ongoing.

**MP2-4:**
**THE NERVE BRANCHES BETWEEN THE DORSAL PENILE NERVES AND THE CAVERNOUS NERVES SHOULD BE THE DETERMINANT OF ERECTILE FUNCTION**
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**Purpose:** Literature showed the changes of neuronal nitric oxide synthases (nNOS) in the dorsal penile nerves (DPNs) are consistent with the cavernous nerves (CNs) injury in rat model. However, the anatomical relationship and morphological changes between the DPNs and the CNs after injury have never been clearly explored in rats.

**Materials and Methods:** There are 5 groups including a sham group, and four groups of 7th day, 14th day, 21st day and 28th day after BCNI. Anatomical relationships between the DPNs and the CNs were dissected. The erectile function, immunohistochemistry and transmission electron microscope were also done.

**Results:** The DPNs connect the CNs through communicating nerve branches in rats. In the 14th day, the number of the DPNs small branches is lowest and the worst damage of myelin sheath in BCNI group. The number of the nNOS positive nerves, including main and small branches of DPNs, is positively correlated with the ICP.

**Conclusion:** We demonstrated communicating nerve branches between the DPNs and the CNs in rats. The loss of small branches and reduced number of nNOS positive nerves could be a representative feature of the DPNs after BCNI. The communicating nerve branches could be the determinant of erectile function in rats.

**MP2-5:**
**IS IT APPLICABLE FOR POSTVAISECTOMY SEMEN ANALYSIS WITH THE IMPLEMENTATION OF AUA CLEARANCE PARAMETER**
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**Purpose:** To evaluate the postvasectomy semen analysis (PVSA) with the special clearance parameter suggested by American Urological Association.
Can that save the cost with avoidance of repeated semen analysis if the first semen analysis had nonmotile sperm density <100,000/ml.

**Materials and Methods:** From Jan 2010 to Dec. 2014 a total of 419 men underwent vasectomy for birth control in our hospital. Patients demographics and postvasectomy semen analysis results were collected retrospectively.

**Results:** During the period of recent 5 years, 419 patients underwent vasectomy in our hospital. Most of the patients has 2 or more children after marriage. Postvasectomy semen analysis was completed within the 3-6 months after surgery. No patient has motile sperm in their PVSa. Few patients had nonmotile sperm with the concentration <100,000/ml (AUA clearance parameter). Repeated semen analysis confirm the azoospermia later. The cost saving is not high.

**Conclusion:** The AUA special clearance parameter is not applied in our hospital. The cost saving is not efficacy than the compensation of legal problem. So repeated semen analysis is still warranted in our hospital until azospermia confirmed.

**MP2-6:**

**PEARLS, TRICKS, AND QUIRKS OF THE RECONSTRUCTION FOR HYPOSPADIAS AND CHORDEE**

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**Purpose:** We reviewed our 33 years experience in the management of hypospadias, chordee and their complications after reconstruction in order to understand their presenting Problems. We would recommend the factors of successful techniques for this congenital disease of penis.

**Materials and Methods:** We reviewed the records of 998 hypospadias and chordee patients between January 1981 and December 2014. The complications after reconstruction might be single or combined with several presenting problems in the same patient. This article represents a collection of recommendations, technical nuances, and innovative management techniques that have been found to contribute to the success of hypospadias and chordee surgery. We would classify the main problems of complications to be (1) 89 urethrocristaneous fistulae, (2) 36 urethral strictures, (3) 15 meatal stenosis (4) 38 remaining chordee, (5) 14 diverticula and (6) 6 hairy urethra. The penile shaft and perineum fistulae were repaired with the “pants-over-vest urethropasty modified to the procedure of Turner-Warwick. The coronal fistulae were converted into repair for coronal hypospadias. The remaining urethral plate was tubularized with or without a relaxing midline incision (Reddy-Snodgrass). We wrapped dorsal dartos or subcutaneous flap to cover the meatus for preventing urethrocristaneous fistulae. The meatal stenosis was performed with dorsal meatotomy, Y-V glans flap, meatal skin graft and transverse meatotomy. Residual chordee were performed with dorsal plication, excision the chordee, the urethral diverticula were excised and tailored for redo-urethroplasty. Hairy urethra were resected and then urethroplasty. We performed double-tube stent and vacuum drain in subcutaneous layer for prevention of bladder spasm, hematoma and infection.

**Results:** The over all successful rate is 85% in one stage surgery for the fresh cases. The number of redo-operations for their presenting problems of complications ranged from 1 to 8 attempts. The successful rate for urethrocristaneous fistula is 76%, for urethral strictures is 82%, for meatal stenosis is 70%, for chordee is about 70%, for diverticula is about 85%, for the hairy urethra is about 70%. We followed up the outcome of consequent surgery from 6 months to more than ten years.

**Conclusions:** The successful surgery of the hypospadias, chordee redo operation for them requires radical correction of all deformities. It is true that “Experience is by far the best teacher. It might be said that unless the technique and subsequent good results of an individual method are transferable to others, the technique as taught is suspect” said by Dr. John W. Duckett.

Moderated Poster-3

**Oncology**

**MP3-1:**

**ACCURACY OF MAGNETIC RESONANCE IMAGING FOR PROSTATE CANCER: EXPERIENCE IN CHANGHUA CHRISTIAN HOSPITAL**

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**Purpose:** To evaluate the accuracy of MRI acquisition for staging of prostate cancer (PCa) in robot-assisted laparoscopic radical prostatectomy (RALAP).

**Materials and Methods:** 33 consecutive patients underwent a multi-parametric MRI protocol prior to RALAP. Analyses were carried out to predict side-specific extracapsular extension using variables determined preoperatively, including 3.0-Tesla magnetic resonance imaging findings (T2-weighted and diffusion-weighted imaging). A prediction model was then constructed and applied to the validation study sample.

**Results:** Of 33 eligible patients, histology showed ECE 1 in 14 (42%) cases. MRI sensitivity and specificity to detect ECE were 40 and 86%.

**Conclusions:** MRI provides a high specificity and relatively low sensitivity for local staging of prostate cancer.

**MP3-2:**

**PURINE ANALOGUE ENERGI-F706 INDUCES APOPTOSIS OF 786-O RENAL CARCINOMA CELLS VIA 5’-ADENOSINE MONOPHOSPHATE-ACTIVATED PROTEIN KINASE ACTIVATION**

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**Purpose:** Purine compounds are known to activate 5’-adenosine monophosphate-activated protein kinase (AMPK), which has important roles in treatments for renal cell carcinoma (RCC). The present study was aimed to investigate the effects of the purine analogue ENERGI-F706 on the human renal carcinoma cell line 786-O and the underlying mechanisms.

**Materials and Methods:** Cell viability and cell cycle distribution were determined using the MTT assay in the absence or presence of ENERGI-F706 and flow cytometric analysis, respectively. Phosphorylation and protein levels were assessed by immunoblot analysis. The involvement of AMPK signaling was demonstrated using a specific inhibitor.

**Results:** ENERGI-F706 (0.2–0.6 mg/ml) significantly decreased the cell viability to up to 36.4 ± 2.4% of that of the control. Compared to 786-O cells, ENERGI-F706 exerted less suppressive effects on the viability of the human non-tumorigenic renal cell line HK-2. Flow cytometric analysis showed that ENERGI-F706 contributed to cell cycle arrest at S-phase and triggered apoptosis of 786-O cells. Immunoblot analysis revealed that anti-apoptotic B-cell lymphoma 2 (Bcl-2) levels were reduced and pro-apoptotic Bcl-2-associated X protein levels were diminished. In addition, activation of caspase-9, caspase-3 and poly(adenosine diphosphate ribose) polymerase (PARP) was promoted in 786-O cells in response to ENERGI-F706. Effects of ENERGI-F706 on AMPK cascades were investigated and the results showed that ENERGI-F706 enhanced phosphorylation of AMPKα1 (T172) and p53 (S15), a downstream target of AMPK. In addition, the AMPK activation, p53 (S15) phosphorylation, reduction of Bcl-2, cleavage of caspase-3 and PARP as well as suppressed cell viability induced by ENERGI-F706 were reversed in the presence of AMPK inhibitor compound C (dorsomorphin).

**Conclusions:** ENERGI-F706 significantly suppressed the viability of 786-O cells via induction of cell cycle arrest and apoptosis, attributing to AMPK and p53 activation and subsequent cell cycle regulatory and apoptotic signaling. It was therefore indicated that ENERGI-F706 may be suitable for the treatment of RCC.