

increase of average Qmax from 7.3 to 20.7 ml/s vs 7,5 to 21.2 ml/s, a decrease in mean IPSS from 20.3 to 4.3 vs 21 to 4.5, and a PVR decrease from 65.2 ml to 15.5 ml vs 68.6 to 16.8 ml, respectively. The period of transitional macrohaematuria was 1.2 days vs 2.3 days respectively. The duration of catheterization was 1.5 days in the first group and 2.6 days in the second group. The complication rate was similar.

**Conclusions.** Transurethral Thulium laser resection of prostate is an effective alternative method in the treatment of BPH. Immediate postoperative results of Thulium laser prostate resection are similar to the results of the “gold standard” – monopolar TUR-P group. The high safety profile characteristic for Thulium laser resection of prostate is also to be mentioned.

**Key words:** laser, resection, prostate.

## 160. THE VALUE OF COMPUTED TOMOGRAPHY FOR THE DETECTION OF CROSSING VESSELS IN PATIENTS WITH URETEROPELVIC JUNCTION OBSTRUCTION

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**Introduction.** Ureteropelvic junction obstruction (UPJO) is defined as a blockage or obstruction of urine flow from the kidney into the proximal upper ureter that can lead to an increase in backpressure on the kidney, hydronephrosis, and progressive damage of the kidney function. The incidence of crossing vessels in patients with UPJO varies in the literature from 11% to 87%. Knowing about this anatomical situation preoperatively is important in the choice of therapeutic strategy and surgical technique. Preoperative diagnosis of the crossing vessels could determine the option for endoscopy, laparoscopy, or open surgery so as to have better control of the abnormal vessel.

**Aim of the study.** The goal of this study was to assess the use of Computed Tomography (CT) for the detection of crossing vessels in patients with UPJO.

**Materials and methods.** We analyzed prospectively 35 patients with UPJO diagnosed by CT, and treated by Hynes-Anderson pyeloplasty or nephrectomy in the Department of Urology, Dialysis and Renal Transplantation of the Republican Clinical Hospital between 2010 and 2014. Contrast-enhanced CT was performed by using arterial, venous, and excretory phases. The results obtained by imaging examination were compared with intraoperative aspects.

**Results.** From 35 patients, crossing vessels were identified in 15 (42.85%) cases. There were 10 males and 5 females with mean age 36.86 years (range 23 – 62). II degree of hydronephrosis was identified in 4 (26.6%) patients, III degree in 10 (66,7%) patients and IV degree in 1 (6,7%) patient. After comparing the intraoperative and imaging results, we obtained that contrast-enhanced CT has proven to be 100% sensitive for detecting crossing vessels. By using CT, we were able to identify the position, type and number of vessels.

**Conclusions.** CT is a valuable and accurate single-imaging method for preoperative diagnosis of crossing vessels associated with UPJO. It has the advantage of providing images that are easily understood and shows additional findings.

**Key words:** ureteropelvic junction obstruction, crossing vessels, computed tomography

## 161. ACTUALITIES IN UROLITHIASIS. THE RELEVANCE OF RANDALL'S PLAQUES

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**Introduction.** Renal calculi have been plaguing humanity since the advent of civilization. The majority of kidney stones consist of calcium oxalate, followed by calcium phosphate, uric acid, cysteine, and struvite stones. Many factors influence the development of a stone including diet, genetics, environment, and comorbid conditions.

**Aim of the study.** To describe a hypothesis for the initial events leading to urinary stones. A biomechanical perspective on Randall's plaque formation through form and function relationships is applied to functional units within the kidney, we have termed the 'medullo-papillary complex' - a dynamic relationship between intratubular and interstitial mineral aggregates.

**Materials and methods.** A complete research was performed to examine the existing literature on the anatomical and physiological relationships in the renal medulla and papilla. Sectioned human renal medulla with papilla from radical nephrectomy specimens were imaged using a high resolution micro X-ray computed tomography. The location, distribution, and density of mineral aggregates within the medullo-papillary complex were identified.

**Results.** Mineral aggregates were seen proximally in all specimens within the outer medulla of the medullary complex and were intratubular. Distal interstitial mineralization at the papillary tip corresponding to Randall's plaque was not seen until a threshold of proximal mineralization was observed. Mineral density measurements suggest varied chemical compositions between the proximal intratubular ( $330 \text{ mg/cm}^3$ ) and distal interstitial ( $270 \text{ mg/cm}^3$ ) deposits. A review of the literature revealed distinct anatomical compartments and gradients across the medullo-papillary complex that supports the empirical observations that proximal mineralization triggers distal Randall's plaque formation.

**Conclusions.** Randall's plaques may not be the entire explanation for lithogenic phenomena, they do play an important role in a subset of patients with calcium oxalate stones, whose incidence has been increasing in recent decades. The early stone event is initiated by intratubular mineralization of the renal medullary tissue leading to the interstitial mineralization that is observed as Randall's plaque. We base this novel hypothesis on a multiscale biomechanics perspective involving form and function relationships, and empirical observations. Additional studies are needed to validate this hypothesis.

**Key words:** calcification; kidney; physiological; urinary tract physiology; urolithiasis

## 162. ACUTE RENAL INJURY INDUCED BY SEPTIC PROCESSES

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**Introduction.** AKI is a common complication of sepsis and carries an ominous prognosis. Mortality was reported higher in patients with septic AKI (74.5%) than in those whose renal failure did not result from sepsis (45.2%). AKI risk factors include age, severity of the disease, the presence of other chronic pathologies.

**Aim of the study.** Analysis of cases of acute kidney damage caused by septic processes during 2016 in the following sections: septic surgery, general surgery, general therapy, urology, haemodialysis of the Republican Clinical Hospital.

**Materials and methods.** 147 patients were included in the study, fulfilling the following inclusion criteria: indicators of the presence of septic and AKI processes.