

a center with high experience in this field. However, analysis of these cases is crucial in order to avoid future similar accidents.

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Migrated and calcified ureteral stents: A challenging problem (experience on 125 cases)

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Introduction and Objectives: The management of calcified or migrated ureteral stents may be a complex and difficult task. This study aimed to evaluate the efficacy of the endoscopic treatment in these cases.

Material and Methods: Between January 2000 and January 2009, we treated 67 patients with calcified stents (Group I) and 58 patients with migrated ureteral stents (Group II). Group I consisted of 34 cases with inferior loop calcification, 13 cases with superior loop calcification, 9 cases with both inferior and superior loop calcification, 8 cases with calcification of the ureteral segment, 3 cases with calcification of the entire stent length. The average stenting time was 14.6 months (range 3–36 months). Group II consisted in 52 cases with the distal loop ascended into the ureter and 6 cases with the stents completely migrated into the pyelocaliceal system.

Results: In Group I, we performed vesical ballistic lithotripsy (34 cases, 100% success), percutaneous nephrolithotomy (13 cases, 92.3% success), vesical ballistic lithotripsy and percutaneous nephrolithotomy (9 cases, 100% success), ureteroscopic lithotripsy (8 cases, 87.5% success), vesical ballistic lithotripsy, ureteroscopy and percutaneous nephrolithotomy (3 cases, 100% success). In Group II, we performed retrograde ureteroscopic extraction in 57 cases. In one case with a stent ascended superjacent to a neoplastic extrinsic ureteral stenosis, impassable in a retrograde fashion, we performed minipercutaneous stent's extraction using a semirigid ureteroscope antegradely inserted.

Conclusions: Calcified or migrated stents may be successfully managed using endoscopic techniques. Combined retrograde and antegrade endourological approach is often necessary, sometimes requiring advanced endoscopic skills.

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Ureteroscopy in proximal ureteral calculi: experience on 1238 cases

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Introduction and Objectives: In the past 25 years, the treatment of proximal ureteral lithiasis evolved from ureterolithotomy to extracorporeal shockwave lithotripsy and/or ureteroscopy. Our objective was to analyse, in a significant series, the results of retrograde ureteroscopy in proximal ureteral lithiasis.

Material and Methods: Between June 1994 and February 2009, in our clinical department 5102 patients underwent retrograde ureteroscopy (5534 ureteroscopic procedures). Upper urinary tract lithiasis was the main indication, which was used in 4562 cases. The proximal ureteral calculi were treated on 1238 cases, 442 and 796 being larger and respectively smaller than 1 cm.

Results: The stone-free rate after one procedure was 86.5%. According to stone size, the success rates were 81.9% for calculi over 1 cm and 88.9% for stones smaller than 1 cm. Treatment failures were related to ascending migration of stone fragments (7.2%), impossible approach of the calculus (5.2%) and aborting the procedure due to complications (1.1%). The intraoperative

incidents occurred in 1.3% of the cases: fixed stone extractors (0.6%), equipment damages (0.4%) or JJ stent malpositioning (0.3%). The incidence of intraoperative complications was 3.4%: mucosal abrasion (1.4%), false passage (1%), ureteric perforation (0.5%), extra-ureteral stone migration (0.1%), bleeding (0.1%), ureteric avulsions (0.2%). Early complications were described in 10.2%. We also found late complications such as ureteral stenosis (2 cases) and persistent vesico-ureteral reflux (1 case).

Conclusions: According to our experience, ureteroscopy represents a valuable option in proximal ureteral lithiasis treatment with high stone-free rates and minimum morbidity.

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Complications after 2000 percutaneous procedures

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Introduction and Objectives: Percutaneous nephrolithotomy (PCNL) is nowadays a widely practiced procedure. Despite the good stone-free rates, it still has a specific morbidity. Our goal was to describe the complications of this method on a significant series of patients.

Material and Methods: Between January 2001 and January 2009, 2115 patients (age between 18 and 81 years old) underwent PCNL (2301 procedures). We used 24 F rigid nephroscopes (2204 procedures) and 15F flexible ones (126 procedures). The mean follow-up period was 67 months (range 3 to 132 months).

Results: Intraoperative incidents were encountered during 92 procedures (4%): losing the percutaneous tract (43 cases), poor visibility due to bleeding and imposing the termination of the procedure (35 cases) and descendant stone fragments' migration imposing antegrade ureteroscopic removal (14 cases). The overall complications' rate was 22% (506 cases): significant bleeding requiring blood transfusions (72 cases), nephrectomy (2 cases) or open surgical hemostasis (3 cases), sepsis (3 cases), fever (89 cases), pyelocaliceal perforations (35 cases), hemoperitoneum (1 case), persistent lumbar urinary fistulae requiring retrograde JJ ureteral stenting (299 cases) and extrarenal stone fragments migration (2 cases). However, the majority of these complications were minor. The mortality rate related to PCNL procedures was 0%.

Conclusions: According to our experience, PCNL is a safe and effective technique. Most of the intraoperative incidents or complications are minor and easy to solve. However, an adequate training is imperative in order to reduce the associated morbidity.

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Bilateral single procedure percutaneous nephrolithotomy

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Introduction and Objectives: Unlike SWL or ureteroscopy, the percutaneous renal approach is not limited by stone size. However, the inherent complications of this technique, some of which really significant, necessitate a rigorous selection of the cases.

Material and Methods: Since introducing the percutaneous approach in our department in 2001, more than 2000 patients benefited from this surgical technique. With the continuously expanding experience, we approached more and more complex cases, with good results and a decreasing rate of complications. Among the 2103 patients with lithiasis, 174 presented bilateral disease. 6 patients were operated by single session percutaneous

approach. The selection criteria for these patients consisted of lack of urinary infections, severe associated diseases (such as renal failure, diabetes, heart failure, coagulation problems, extreme obesity etc.). Patients' choice was also decisive. The surgical procedure was continued on the contra-lateral renal unit only when the first intervention took place in good conditions, without complications.

Results: The hospital stay was 5 ± 1 days, without major complications. After suppressing the nephrostomy tubes, 1 patient developed unilateral lumbar fistula, which necessitated ureteral stenting for 14 days. One patient presented upper urinary tract infection, which required antibiotherapy.

Conclusions: The renal percutaneous approach continues to remain an important alternative in the treatment of renal lithiasis, with no limitations related to stone size. Single session bilateral percutaneous nephrolithotomy may be used only in rigorously selected cases, in order to limit any eventual complications.

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Ureterorenoscopy in treating ureteral calculi: experience of Croatian Reference Center for Urolithiasis

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Introduction and Objectives: Initial treatment options for patients with ureteral stones who require active stone removal are both extracorporeal shock-wave lithotripsy (SWL) and ureterorenoscopy (URS). SWL is usually described as less invasive and safer, but URS has lower retreatment rate. The aim of this retrospective study was to present our results of URS in treating ureteral calculi and to analyze stone-free and complication rates, along with auxiliary procedures performed.

Material and Methods: We present the analysis of 210 URS treatments, the first portion of a larger scale study of 587 URS procedures performed at our Department from 1987 to 2008. URS was performed with Storz semirigid ureterorenoscopy, using mostly electrokinetic and rarely ultrasonic lithotripsy. Mean age of the patients was 54 ± 13.4 years (age \pm SD), range 12–82 years, with male to female ratio of 0.93. Location of the stones was proximal in 21.9%, mid-ureteric in 29.5% and distal in 48.6% of the cases. Median stone size was 10 mm (range 2–90 mm). Comorbidities were present in 58% of the patients, among which arterial hypertension was most common (74.6%). 51% of the patients had previously undergone SWL treatment of observed ureteral calculi. Stone-free rate (SFR) was determined as complete absence of stone fragments on plain abdominal film and ultrasonography after URS treatment.

Results: Overall SFR was 77.14%, with 58.7% for proximal, 79% for mid-ureteric and 84.3% for distal calculi. JJ stent placement during procedure was required in 41% of the patients. In 58.3% of non stone-free patients additional SWL session was sufficient for complete stone clearance, with modified overall SFR of 90.5%. The rest of the non stone-free patients had clinically insignificant residual fragments and were monitored in later follow-up, failed to show at the check-up or had undergone several SWL sessions. Complications were noted in 23 patients: 13 patients had fever, 6 required percutaneous nephrostomy and 4 open surgery.

Conclusions: We perform primary URS in younger patients and the high percentage of pre-URS SWL treatments of ureteral calculi is due to patients' age, comorbidities and avoidance of anesthesia. Nevertheless, URS showed to be safe and effective in removing ureteral stones, with additional SWL session when no spontaneous passage of the residual fragments occurred. We also reduced the number of stenting after uncomplicated URS and the trend is for URS to become the initial modality of ureteral stones removal because of its low retreatment and complication rate.

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Conventional fiberoptic flexible ureteroscope vs. 4th generation digital flexible ureteroscope: a critical comparison

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Introduction and Objectives: Development of flexible reno-ureteroscopy had a significant impact over the diagnosis and treatment of upper urinary tract pathology. During the last decades, a continuous technological improvement of flexible ureteroscopes was encountered. The aim of our study was to compare the performances of a standard fiberoptic flexible ureteroscope with those of a modern digital one.

Material and Methods: We compared subjectively and objectively the differences in maneuverability and visibility for a 7.2F Storz 11274AA fiberoptic flexible ureteroscope (FFU) and an 8.5F Olympus URF-Vo digital flexible ureteroscope (DFU). For that, in 44 diagnostic retrograde flexible ureteroscopic procedures (22 with the FFU and 22 with the DFU) the maneuverability and visibility were evaluated by the same urologist with a score ranging from 1 to 5. Also, the maximal deflection and the irrigation flow were measured with the working channel empty and with various accessory instruments inserted through it.

Results: FFU and DFU received mean scores of 3.64 vs. 4.27 for maneuverability and 3.27 vs. 4.68 for visibility. In 3 cases, approach of the narrow infundibulum was impossible using DFU with a larger diameter at the tip, imposing the use of the FFU. The irrigation flow through FFU and DFU (normal/pressure irrigation) was 54/144 ml/min vs. 60/150 ml/min with an empty working channel, 14/54 ml/min vs. 48/84 ml/min with the 1.6F EHL probe and almost 0 ml/min with 3F instruments inserted. The maximal deflection for FFU and DFU was 162° vs. 275° with the working channel empty, 143° vs. 275° with 1.6 EHL probe, 109° vs. 255° with the 3F triradiate grasper, 80° vs. 217° with the 3F extraction grasper and 149° vs. 257° with the ZeroTip basket.

Conclusions: The new DFU proved superior maneuverability and visibility, which may translate into improved performances. Larger tip of the DFU may decrease its accessibility, especially in narrow segments of the upper urinary tract. The modern DFU are very useful instruments, with a great potential for future development.

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Flexible ureterorenoscopy for kidney stones, our experience with 46 patients

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Introduction and Objectives: Flexible ureterorenoscopy (URS) with the use of holmium YAG laser fibres and nitinol tiplless baskets has made it possible to treat stones in all parts of collecting system of the kidney. The object of this poster is to present the efficacy and safety of flexible ureterorenoscopy in treating small and intermediate-size calculi in calices and pelvis. We report the results of 46 consecutive patients treated at our department.

Material and Methods: From march 2008 to may 2009 a total of 46 patients (27 males, 19 females; aged 22–82) underwent flexible URS for kidney stones, 6 of whom underwent second procedure for larger residual fragments. Calculi ranged from 5 to 35 mm, with 25 localized in lower calix, 5 in the middle, 3 in upper calix, 9 in the pelvis and in 9 patients the stones were in multiple calices. In 35 cases the holmium YAG laser was used, in 11 cases the stones could be extracted by the nitinol tiplless basket solely. 16 of the patients have undergone at least 1 session of unsuccessful extracorporeal shock-wave lithotripsy (ESWL) and in 3 patients flexible URS was used to treat intact