

The addition of retrograde flexible ureteroscopy to percutaneous nephrolithotomy improves safety and efficacy of the procedure: Results from 400 consecutive ECIRS (Endoscopic Combined IntraRenal Surgery) in the Galdakao-modified supine Valdivia position

Eur Urol Suppl 2019; 18(1);e24

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Introduction & Objectives: In recent years ECIRS (Endoscopic Combined IntraRenal Surgery), associating rigid/flexible percutaneous nephrolithotomy (PNL) and retrograde flexible ureteroscopy (fURS) with the patient in the Galdakao-modified supine Valdivia position, represented a consistent innovation in the treatment of large and/or complex urolithiasis. The aim of the present work is to report our experience (started in 2004), presenting the advantages of ECIRS in terms of safety and efficacy.

Materials & Methods: From 11/2010 until 11/2018 we performed 400 consecutive ECIRS, standardized intra- and post-operatively step-by-step. The semirigid 6.5F Wolf ureteroscope and the flexible Storz FlexX2/C ureteroscopes were used for retrograde access. Percutaneous access was ultrasound-assisted, fluoroscopy-guided +/- Endovision-controlled (24 Ch in 69% of the cases, 30 Ch in 26%, smaller accesses in 5%), using in 80% of cases one-step balloon dilation and in 95% of cases ballistic/ultrasound lithotripsy.

Results: Mean age of the 400 patients (260 males, 140 females) was 52 years +/- 21 s.d. (range 19 months-83 years). The ASA score was 1-3, mean BMI 31 kg/m² +/- 6 s.d., 11% urinary malformations, 7% skeletal deformities, 75% symptomatic for UTI/colics. Urolithiasis (210 left, 190 right renal stones, 18% bilateral, all compositions) had a mean stone size 52 mm +/- 25 s.d. (range 12-75 mm). Stones were single in 58%, multiple/staghorn in 42% of cases, with 22% concomitant ureteral stones. Mean operative time was 85 minutes +/- 32 s.d., including patient positioning. Preliminary semirigid ureteroscopy was performed in 83% of cases, subsequent flexible ureteroscopy in 60%, only flexible ureteroscopy in 10%. Endovision aid to fluoroscopy/ultrasound renal access (92% inferior calyx, 95% single access) was possible in 42% of cases. Retrograde fURS (for ureteral stone treatment, in situ lithotripsy, stone fragments retrieval in calyces parallel to the access tract, final combined exploration of all calyces) had an active role in 55% of cases. The stone-free rate was 88%, 93% after an early second percutaneous look during the same hospital stay. The overall complication rate was 7.8% (1.3% Clavien grade 3 and never more, no ureteral lesions). Mean fluoroscopy time of the Endovision cases was 3.2 minutes +/- 1.2 s.d., versus 5.6 +/- 2.8 s.d. of the non-Endovision ECIRS.

Conclusions: ECIRS has been demonstrated to be truly favourable, both in terms of efficacy and safety. The addition of retrograde fURS to PNL has a dual diagnostic and active role, allowing to tailor stone management on the dynamic anatomy of the collecting system and of the urolithiasis, to optimize stone-free rates, and to reduce complications and radiation exposure.