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Efficacy of endoscopic combined intrarenal surgery in the prone split-leg position for staghorn calculi

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Purpose: To evaluate the efficacy of endoscopic combined intrarenal surgery using retrograde flexible ureteroscopy and miniature percutaneous nephrolithotomy for the treatment of patients with staghorn calculi in the prone split-leg position.

Patients and Methods: We retrospectively reviewed the records of 42 patients with staghorn calculi (45.8 ± 3.2 mm) who underwent endoscopic combined intrarenal surgery using retrograde flexible ureteroscopy and miniature percutaneous nephrolithotomy in the prone split-leg position for the treatment of staghorn calculi in our center between December 2010 and August 2013. A flexible ureteroscope with a laser fiber was inserted through a ureteral access sheath, and lithoclast lithotripsy was performed through a mini-percutaneous tract. Both procedures were performed simultaneously by two urologists. Surgical parameters including surgical time, stone free rates, modified Clavien complication grades, and risk factors for residual stones were analyzed.

Results: Fifteen patients (35.7%) had complete staghorn calculi. Among the 42 staghorn calculi treated, 23 had 0–5 stone branches, 14 had 6–10 stone branches, and 5 had ≥ 11 stone branches. All procedures were performed successfully using a single lithotripsy tract with the patient in the prone split-leg position. The mean surgical time was 143.2 ± 9.2 min. The initial stone-free rate was 71.4%, and the final stone-free rate was 83.3% after further treatment. One patient required a blood transfusion (2.4%), but no patient experienced a ≥ 3 Clavien grade complication. Risk factors for residual stones were stone size, stone surface area, complete staghorn calculi, and the number of stone branches.

Conclusions: Endoscopic combined intrarenal surgery for staghorn calculi in the prone split-leg position is a safe, efficient, and versatile method for the effective management of staghorn calculi without the creation of multiple percutaneous tracts.