84 Ultrasonic versus pneumatic lithotripsy during PCNL for staghorn calculi

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Introduction & Objectives: Percutaneous nephrolithotomy (PCNL) is a efficient method of treatment for large urinary lithiasis. The aim of this paper is to asses the safety and efficiency of percutaneous nephrolithotomy with ultrasonic lithotripsy versus classic pneumatic lithotripsy for the treatment of staghorn calculi.

Materials & Methods: The data of 72 patients diagnosed with staghorn calculi who were treated by percutaneous nephrolithotomy between 1st September 2015 – 1st September 2018 were reviewed retrospectively. A single percutaneous tract was used in 61 cases; additional tracts were required in 11 cases. The pneumatic lithotripter was used in 35 cases and the ultrasonic lithotripter was used in 31 cases; a combined ultrasonic and pneumatic approach was used in 6 cases. The two groups were compared regarding the mean stone burden, the operative time, the hospital stay and the stone free-rate (evaluated by abdominal ultrasound or plain renal X-ray).

Results: There were no significant differences between the two groups regarding the mean stone size (37mm vs 34mm) and the stone-free rate (85,7% vs 87,1%). The ultrasonic lythotripsy group had a shorter operative time (54 minutes vs 67.5 minutes) and a shorter hospital stay (4 days vs 5 days). No patient had significant hemorrhage; four patients required blood transfusion. No major complication occurred – hematuria was more frequent in the pneumatic lithotripsy group (22,8%) compared to the ultrasonic lithotripsy group (16%). The mean hemoglobin drop was higher in the pneumatic lithotripsy group (1,7 g versus 1,1 g).

Conclusions: Percutaneous nephrolithotomy with ultrasonic lithotripsy is an efficient method of treatment for renal staghorn calculi. The usage of ultrasonic lithotripsy can reduce the operative time, the hospital stay and the intraoperative blood loss.