

# AB050. SOH23ABS\_006. Comparative evaluation of urolithiasis management options in patients with horseshoe kidney: a systematic review and meta-analysis

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**Background:** Horseshoe kidney (HK) is a rare congenital anomaly commonly complicated by urolithiasis. Extracorporeal shockwave lithotripsy (ESWL), ureteroscopy (URS) and percutaneous nephrolithotomy (PCNL) are treatment options for HK stones. The aim of this systematic review is to compare the benefits and risks of each management option.

**Methods:** The databases Medline, Embase, and Cochrane Library were searched from inception to February 2022. 516 non-duplicate studies were screened against the eligibility criteria. Studies comparing at least two interventions with  $\geq 10$  patients per intervention were included.

**Results:** Nine retrospective observational studies published from 2007–2021 with a total of 565 patients were included. The mean  $\pm$  standard deviation (SD) or mean (range) stone size for PCNL ranged between  $17.90 \pm 2.43$  and  $27.9 \pm 8.6$  mm for PCNL,  $8.4$  mm (2–25 mm)– $22.3 \pm 9.1$  mm for URS, and  $11.9 \pm 2.0$ – $16.8 \pm 4.4$  mm for ESWL. There was no difference in single session and overall stone free rate (SFR) between PCNL and URS, with a risk ratio (RR) of 1.04 (95% CI: 0.95–1.13,  $I^2=20.63\%$ ). URS had better stone clearance than ESWL with RR for overall SFR of 1.38 (95% CI: 1.04–1.82,  $I^2=0\%$ ). There was no statistically significant difference between PCNL and ESWL for overall SFR. Majority of URS and ESWL patients experienced Clavien–Dindo (CD) grade I–II complications. PCNL was associated with the highest complication rates with 5 CD grade III and

3 CD grade IV complications, and a mean postoperative haemoglobin drop ranging between 0.47–1.83 g/dL. There were no cases of CD grade V complications across all studies.

**Conclusions:** There was no difference in SFRs between PCNL and URS, and URS was associated with smaller stone burden and fewer and less severe complications. URS was also found to be more effective than ESWL with greater SFRs and comparable safety profile. Further large-scale randomised controlled trials are needed to confirm these findings.

**Keywords:** Horseshoe kidney (HK); kidney stones; ureteroscopy (URS); extracorporeal shockwave lithotripsy (ESWL); percutaneous nephrolithotomy (PCNL)

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## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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