

Meta-analysis of optimal management of lower pole stone of 10-20 mm: flexible ureteroscopy (furs) versus extracorporeal shock wave lithotripsy (eswl) versus percutaneous nephrolithotomy (pcnl)

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Abstrak

Background: the optimal management of lower calyceal stones is still controversial, because no single method is suitable for the removal of all lower calyceal stones. Minimally invasive procedures such as extracorporeal shock wave lithotripsy (ESWL), percutaneous nephrolithotomy (PNCL) and flexible ureteroscopy (fURS) are the therapeutic methods for lower calyceal stones. the aim of this study was to identify the optimal management of 10-20 mm lower pole stones.

Methods : a meta-analysis of cohort studies published before July 2016 was performed from Medline and Cochrane databases. Management of 10-20 mm lower pole stone treated by fURS, ESWL and PCNL with follow-up of residual stones in 1-3 months after procedure were include and urinary stone in other location and size were exclude. A fixed-effects model with Mantzel-Haenzel method was used to calculate the I2 statistic. All analyses were performed with review manager 5.3.

Result : we analyzed 8 cohort studies. The stone free rate from 958 patient (271 PCNL, 174 fURS and 513 ESWL), 3 months after operation, was 90.8% (246/271) after PCNL; 75.3% (131/174) after fURS; and 64.7% (332/513)after ESWL. Base on stone free rate in 10-20 mm lower pole stone following management, PCNL is better than fURS (overall RR was 1.32 (95% CI 1.13-1.55) ; $p < 0.001$ and $I^2 = 57\%$) and ESWL (overall risk ratio 1.42 (95% CI.30-1.55); $p < 0.001$ and $I^2 = 85\%$). But if we compare between fURS and ESWL, fURS is better than ESWL base on stone free rate in 10-20 mm lower pole stone management with overall RR 1.16 (95% CI 1.04-1.30; $p = 0.01$ and $I^2 = 40\%$).

Conclusion: percutaneous nephrolithotomy provided a higher stone free rate than fURS and ESWL. This meta-analysis may help urologist in makin decision of intervention in 10-20mm lower pole stone management.