



## Commentary

**A commentary on "Optimal management of large proximal ureteral stones (> 10 mm): A systematic review and meta-analysis of 12 randomized controlled trials" (Int J Surg 2020; 80:205–217)**


## ARTICLE INFO

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Complications

## Dear Editor,

The management of large proximal ureteral calculi remains challenging for urologists. Various treatment options have been proposed for large proximal ureteral stones including extracorporeal shockwave lithotripsy (ESWL), transurethral ureteroscopic lithotripsy (URSL), and percutaneous nephrolithotomy (PCNL). ESWL has poor overall success rates in treatment of large stones with significant possibilities of residual fragments. Also, ESWL may not be feasible due to coexisting anatomical abnormalities or comorbidities. When semi-rigid or flexible ureterorenoscopy with holmium: yttrium-aluminum-garnet (YAG) laser lithotripsy is used in managing proximal ureteral calculi, the reported stone-free rates are 89–100% [1]. However, some large proximal ureteral stone are difficult to approach using retrograde ureterorenoscopy. The inflammatory edematous mucosa or fibroepithelial polyp that is often found enveloping an impacted calculus may impede calculus exposure and impair lithotripsy. Although open surgery is rarely used as a first-line therapy, patients with large proximal ureteral stones may sometimes require open surgery or laparoscopic ureterolithotomy (LU). To avoid the increased risk of open surgery, other minimally invasive options such as percutaneous nephrolithotomy (PCNL) or mini-percutaneous antegrade ureterolithotripsy have been used.

To develop an evidence-based guide for clinicians treating adults with large proximal ureteral stones (LPUS) greater than 10 mm, Lai et al. [2] conducted a systematic review and meta-analysis of high-quality studies to assess the effectiveness and safety of these interventions for LPUS. They found that both PCNL and LU to be more effective and safe than URSL. However, LU had a higher risk of urine leakage and was more likely to incur trauma which required additional support.

The 2016 European Association of Urology guidelines recommend ESWL or URSL as the procedure for proximal ureteral stone smaller than 10 mm if indicated for active stone removal [3]. PCNL is recommended for proximal ureteral stones larger than 10 mm, as traditionally it uses a large (28–30F) working sheath, thus facilitating irrigation during the procedure, allowing free drainage of debris and direct removal of large

stone fragments. These features enable PCNL to achieve very high stone-free rates while reducing surgical morbidity when compared with open stone surgery. However, it is still associated with significant complications including uncontrolled hemorrhage, urinary leakage, and sepsis. Mini-PCNL has been introduced with the aim of decreasing morbidities associated with a large nephroscope and its access tract. Access sheaths which decrease from 13 to 8.5F have been used by researchers to decrease operative risks and complication rates in management of upper urinary stones [4].

LU can be performed by the transperitoneal or the retroperitoneal routes. Both these approaches have advantages and disadvantages. The retroperitoneal laparoscopic approach is technically difficult and complex in the urologist's learning-curve period. The learning curve of the transperitoneal is shorter than that of the retroperitoneal approach. However, it is significantly associated with more pain, greater analgesic requirements, prolonged ileus, and longer hospital stay. As LU has high morbidity rates, and it needs experienced clinicians to carry out, it is generally not used as a first-line treatment. However, LU still has a higher stone-free success rate irrespective of whether the procedure was carried out transperitoneally or retroperitoneally [5].

Although flexible ureteroscopy has many advantages, few published studies have been conducted comparing this technique with either PCNL or LU. Further high quality randomized controlled trials are required to determine the optimum method in improving clinical outcomes and ensuring surgery safety in these patients.

## Provenance and peer review

Commentary, internally reviewed.

## Ethical approval

This is comment. Therefore, ethics committee approval is not required.

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Xiaohua Qu: writing Yinchao Ma: study design.

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None.

**Guarantor**

Yinchao Ma.

**Declaration of competing interest**

No conflict of interest.

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