

## **Flexible ureteroscopy and laser lithotripsy for stones >2 cm: a systematic review and meta-analysis.**

[Aboumarzouk OM](#)<sup>1</sup>, [Monga M](#), [Kata SG](#), [Traxer O](#), [Somani BK](#).

### **Abstract**

#### **BACKGROUND AND PURPOSE:**

Urinary stones >2 cm are traditionally managed with percutaneous nephrolithotomy (PCNL). Recently, flexible ureteroscopy and laser lithotripsy (FURSL) has been used to manage them with comparable results. In a comparative study of renal stones between 2 and 3 cm, FURSL was reported to need less second-stage procedures and be just as effective as PCNL. Our purpose was to review the literature for renal stones >2 cm managed by ureteroscopy and holmium lasertripsy.

#### **MATERIALS AND METHODS:**

A systematic review and quantitative meta-analysis was performed using studies identified by a literature search from 1990s (the first reported large renal stones treated ureteroscopically) to August 2011. All English language articles reporting on a minimum of 10 patients treated with FURSL for renal stones >2 cm were included. Two reviewers independently extracted the data from each study. The data of studies with comparable results were included into a meta-analysis.

#### **RESULTS:**

In nine studies, 445 patients (460 renal units) were reportedly treated with FURSL. The mean operative time was 82.5 minutes (28-215 min). The mean stone-free rate was 93.7% (77%-96.7%), with an average of 1.6 procedures per patient. The mean stone size was 2.5 cm. An overall complication rate was 10.1%. Major complications developed in 21 (5.3%) patients and minor complications developed in 19 (4.8%) patients. A subgroup analysis shows that FURSL has a 95.7% stone-free rate with stones 2-3 cm and 84.6% in those >3 cm ( $P=0.01$ ), with a minor complication rate of 14.3% and 15.4%, respectively, and a major complication rate of 0% and 11.5%, respectively.

#### **CONCLUSION:**

In experienced hands, FURSL can successfully treat patients with stones >2 cm with a high stone-free rate and a low complication rate. Although the studies are from high-volume experienced centers and may not be sufficient to alter everyday routine practice, this review has shown that the efficacy of FURSL allows an alternative to PCNL.