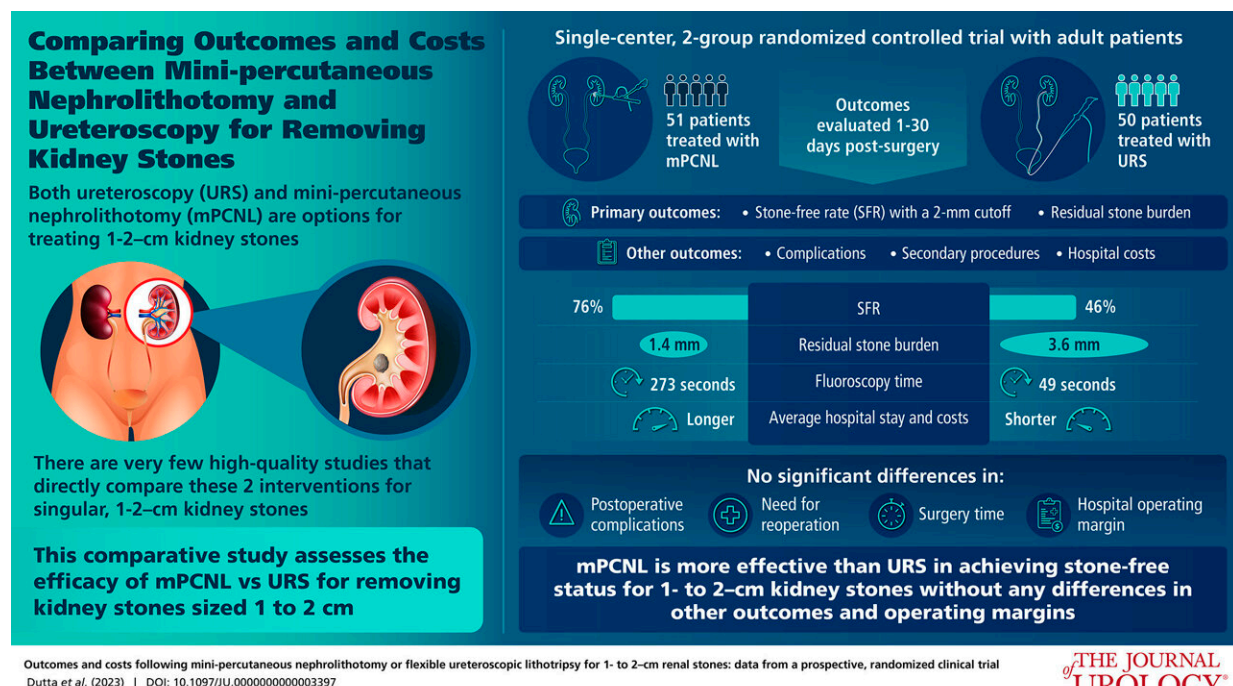


# 'Mini-PCNL' surgery has higher stone-free rate in treating intermediate-size kidney stones, finds randomized trial

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Graphical abstract. Credit: *Journal of Urology* (2023). DOI: 10.1097/JU.0000000000003397

For patients with kidney stones measuring one to two centimeters, a technique called mini-percutaneous nephrolithotomy (mini-PCNL) provides a higher stone elimination rate than another minimally invasive

procedure called ureteroscopy (URS), concludes a randomized trial in the *Journal of Urology*.

"In our clinical trial, mini-PCNL was more likely to achieve stone-free outcomes, compared to URS," comments senior author Jorge Gutierrez-Aceves, MD, of the Cleveland Clinic. "In patients with intermediate-sized kidney stones, mini-PCNL may offer a more effective procedure, with similar safety and cost impact."

## **Trial compares minimally invasive surgeries for intermediate stones**

Kidney stones are one of the problems most commonly seen by urologists. In [current AUA guidelines](#), conventional PCNL surgery is recommended for patients with stones larger than two centimeters, while less-invasive treatments are recommended for symptomatic stones smaller than one centimeter.

However, there is ongoing debate over treatment for intermediate-size stones—measuring one to two centimeters. In the URS procedure, kidney stones are approached using a small instrument (ureteroscope) placed through the urethra and bladder.

Mini-PCNL offers an alternative approach, with treatment carried out through a small incision (sometimes called a keyhole incision) in the patient's side. Previous studies comparing the outcomes of URS and mini-PCNL have had important limitations.

In the new study, 101 patients with one- to two-centimeter kidney stones were randomly assigned to treatment with URS or mini-PCNL. All patients had a single intermediate-sized stone in one kidney. In both procedures, once the surgeon visualized the stone through instruments

placed into the kidney, the stone was fragmented using a laser and removed using a basket device.

## **Mini-PCNL has higher stone-free rate than URS, with similar safety**

The main outcome of interest was the stone-free rate, defined as no residual stone larger than two millimeters on postoperative CT scans. By this definition, 76% of patients were stone-free after mini-PCNL, compared to 46% after URS. The mini-PCNL group also had a lower total volume of residual stone fragments after treatment: 3.6 versus 1.4 millimeters.

Postoperative complication rates were low in both groups: 2% after mini-PCNL and 4% after URS. Other safety outcomes were similar as well, including the need for a second procedure within 30 days and changes in creatinine as an indicators of [kidney](#) function.

In this study, patients in the mini-PCNL group spent a night in the hospital, compared to none in the URS group. The mini-PCNL procedure had [higher costs](#) compared to URS. However, these differences were offset by a nonsignificant operating margin between groups.

The study provides new information for the "nuanced" decision-making process for treatment of [kidney stones](#) measuring one to two centimeters. The researchers authors note their study is the largest North American [randomized trial](#) to directly compare mini-PCNL versus URS for this group of patients.

"Our results suggest that mini-PCNL is more likely to render patients stone-free than URS, with no difference in complications, surgical times,

and operating margins," Dr. Gutierrez-Aceves comments. The researchers also discussed the cost impact of mini-PCNL, including the impact on equipment and hospitalization costs.

**More information:** Rahul Dutta et al, Outcomes and Costs Following Mini-percutaneous Nephrolithotomy or Flexible Ureteroscopic Lithotripsy for 1-2–cm Renal Stones: Data From a Prospective, Randomized Clinical Trial, *Journal of Urology* (2023). [DOI: 10.1097/JU.0000000000003397](https://doi.org/10.1097/JU.0000000000003397)

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