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## Money talks

In this month's *CUAJ*, Shoeib et al performed a cost-effectiveness analysis of standard (s) vs. mini (m) percutaneous nephrolithotomy (PCNL) in a single Canadian institution<sup>1</sup> — an especially important topic considering the current era of escalating healthcare expenditures. The authors concluded that mPCNL is an efficacious and cost-effective option for the treatment of select stones.<sup>1</sup> Despite higher upfront costs for equipment acquisition, mPCNL provided a cost-benefit after approximately 20 cases due to lower operative, disposable equipment, and hospitalization costs compared with sPCNL.<sup>1</sup>

Hospitalization cost accounted for over two-thirds of the cost difference between mPCNL and sPCNL and was one of the biggest differences identified. Mini PCNL had a shorter hospital stay, resulting in a cost difference of \$2183.36 per patient.<sup>1</sup> This also included patients who had prolonged hospital stays secondary to postoperative complications, with a higher rate of complications being observed in the sPCNL group.<sup>1</sup> Previous studies, however, have demonstrated the safety and feasibility of ambulatory PCNL for both mini and standard techniques, which can provide a means of significant cost savings and mitigate a large difference in cost between the two techniques.<sup>2,3</sup>

While previous published literature has shown comparable stone-free rates (SFR) between sPCNL and mPCNL, the majority of these studies were conducted on stone sizes <2 cm, similar to the stone burdens included in the present study.<sup>4</sup> There are a select number of prior randomized controlled trials that have examined mPCNL for stones >2 cm; however, the majority of these studies used a pneumatic or ultrasonic lithotripter.<sup>5</sup> Regardless, mPCNL is still unable to completely replace sPCNL for the treatment of very large, complex, or complete staghorn calculi.<sup>5</sup>

Further confounding the debate is the introduction of the thulium fiber laser (TFL), which has demonstrated increased laser efficiency compared to the holmium:yttrium aluminum garnet (Ho:YAG) laser, by having a higher ablation speed, less stone retropulsion, superior dusting capabilities, and improved ureteroscope deflection with the 150 micron fiber.<sup>6</sup> While this has the potential to improve outcomes for mPCNL, it has also had a large effect on retrograde ureteroscopy. Early clinical trials examining TFL have demonstrated shorter operating times and improved SFR compared

to Ho:YAG.<sup>7,8</sup> While optimal laser settings for TFL are still being determined, TFL has the potential to evolve the landscape of ureteroscopy. The TFL laser may provide the ability to perform ureteroscopy more effectively on larger or lower pole renal calculi, which would have previously been managed with PCNL (either mini or standard), thereby avoiding the higher complication rates and longer hospital stays, and thus the higher costs associated with PCNL.

Given the current technology, while mPCNL can be a valuable technique, it is presently not able to completely replace sPCNL for very large, complex, or complete staghorn stones. As the authors very appropriately point out, mPCNL can provide a cost-effective option for **select** but not all stones. Exactly where mPCNL fits into the current armamentarium of stone treatment options remains to be seen. An important consideration to this will be further analysis to determine the cost-effectiveness of mPCNL in the era of ureteroscopy with TFL.

COMPETING INTERESTS: The author does not report any competing personal or financial interests related to this work.

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