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## **Comparison of Laser Lithotripsy Techniques for Treatment of Large Renal Calculi: Holmium vs. Thulium Fiber Laser**

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Management of large renal stones remains challenging despite advances in endourology. This prospective study compared holmium:YAG and thulium fiber lasers (TFL) in stone fragmentation efficiency, operative time, and complications during flexible ureteroscopy. Sixty patients with renal calculi >2 cm were randomized to holmium or TFL lithotripsy. Stone-free rates (SFR), operative parameters, and postoperative outcomes were recorded. TFL demonstrated significantly faster stone ablation rates and shorter operative times (mean

45 vs. 60 minutes,  $p < 0.01$ ) with comparable SFR (~85%). Complication rates were low and similar between groups. The results suggest TFL may offer advantages in efficiency without compromising safety for large renal stones.

### **Biography**

Elena Sokolova specializes in minimally invasive urological surgeries and has pioneered the adoption of thulium fiber laser technology in Russia. Her research focuses on optimizing laser parameters to enhance patient outcomes in stone disease.