

Comparison of Trifecta Outcomes in Standard Versus Mini Percutaneous Nephrolithotomy (PCNL) for Renal Stone Management

Background

Kidney stones are highly prevalent worldwide. PCNL is the gold standard for large stones (>20mm). Mini-PCNL was introduced to reduce morbidity but may compromise stone clearance. Trifecta outcome = Stone-free + No complications + No auxiliary procedures.



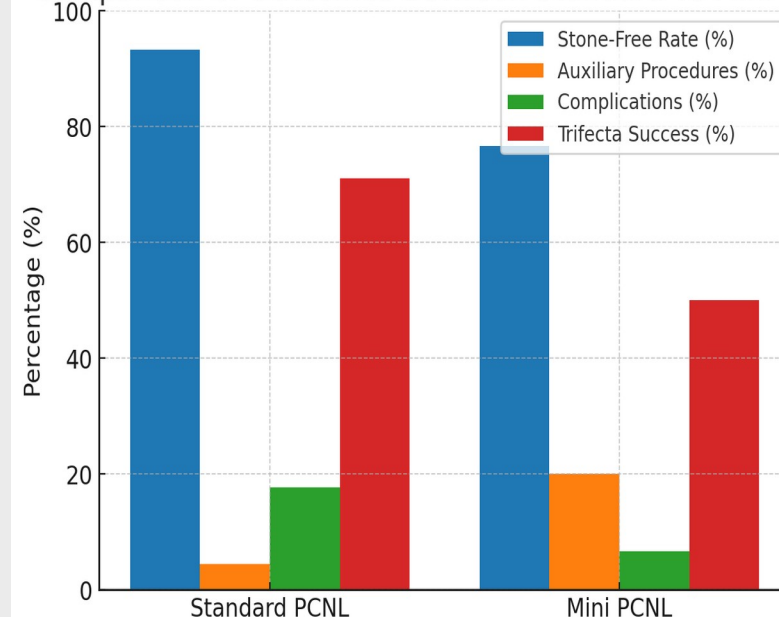
Methods

Prospective cohort (2022–2024), 180 patients randomized (90 each group).
Standard PCNL: tract 30 Fr | Mini PCNL: 16–20 Fr.
Outcome: Trifecta success, SFR, no complications, and no need for auxiliary procedures.

Results

- Stone-free: 93.3% (Standard) vs 76.7% (Mini)
- Auxiliary procedures: 4.4% vs 20%
- Complications: 17.7% vs 6.6%
- Trifecta success: 71% vs 50% (p=0.01)

Comparison of Outcomes Between Standard vs Mini PCNL



Implications

- ✓ Standard PCNL achieves superior stone clearance and trifecta outcomes.
- ✓ Mini PCNL is safer with fewer complications but requires more secondary interventions.
- ✓ Choice should be individualized based on stone size, density, and patient safety.