

Tubeless Pediatric Percutaneous Nephrolithotomy: Assessment of Feasibility and Safety

Abstract

Introduction: Tubeless pediatric percutaneous nephrolithotomy (TL-PCNL) is evolving and adult criteria are being safely applied to children. We examine the feasibility, safety, and outcomes of pediatric TL.

Materials and methods: A retrospective review of pediatric (≤ 18 years) PCNL patients at our institute was done. Patients eligible for TL but underwent tube (T) PCNL due to surgeon choice or protocol were compared with TL. Only children with 100% stone clearance were included, and those receiving nephrostomy for intraoperative complications were excluded from the study. Demographic, baseline, and stone characteristics were matched. Safety, outcome, and complications were assessed. Group T was classified into large bore (22F-LB) and small bore (16F-SB) based on nephrostomy size. Statistical analysis was done.

Results: A total of 46 children were eligible - TL in 17 (37%) and T in 29 (63%). Among T, SB was performed in 6/29 (20.7%) and LB in 23/29 (79.3%). TL had fewer complications. Urinary leak developed in 2 (6.9%) patients in T. Eight (27.6%) patients in T and 3 (17.7%) patients in TL had supracostal access with complications similar to infracostal access. SB had significantly lesser and analgesic requirement than LB. SB and TL had similar LOH and analgesic requirement. Adult expanded criteria such as supracostal access, 2 punctures, prior renal surgery, and larger tract size were feasible.

Conclusions: TL is safe, feasible, and less morbid alternative to T in uncomplicated pediatric nephrolithiasis. TL is feasible with supracostal access, 2 punctures, adult tract size (24F), and anomalous kidneys. SB nephrostomy is reasonable when tube is indicated.