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Minimal access management of urinary stones in toddlers and children – Our experience

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Objectives: Management of stone disease in children is challenging due to their body habitus, vulnerability to alteration in internal milieu, possible need of miniature instruments and specialized expertise. We document our initial experience, indications, patient and anatomical characteristics, techniques and short term clinical outcomes in children undergoing minimal access stone surgery (PCNL/RIRL).

Material and Methods: A prospective study on 26 toddlers and children treated consecutively over 2 years by a single surgeon with experience in adult PCNL.

Results: The mean age was 66 months (range 14-168months). 57.7% (n=15) were females. PCNL was done in 15 patients, all in prone position. The stone size varied from 10-26mm with 3 branching (staghorn) calculi. Tract size used varied from 16-20Fr. Adult bare nephroscope (without sheath) was preferred over the mini nephroscope due to efficacy with irrigation, visibility and ease of stone clearance. Ultra-thin ureteroscopy & laser lithotripsy was done in 8 patients (stone size 7-18mm) & RIRL in 2 patients (stone size 8mm & 14mm). Percutaneous trans-vesical removal of a large stone inside a ureteroceles was done in one child aged 32 months. Holmium laser lithotripsy was used in all patients. Of the 26 patients 18 were stone free & 5 had clinically insignificant residual stones. Three patients had significant residual stones needing further intervention with ureteroscopy & laser. No blood transfusions were required. There were no major morbidities (Clavien grade>III) or mortality.

Conclusion: Minimal access surgical intervention for urinary stones in children sometimes utilizing novel technical adaptations shows promising results. Such methods prevent scar related complications and issues related to future access to the kidney in the likely event of stone recurrence. We believe that our experience in PCNL in adults contributed significantly to the success of similar techniques and adaptations in toddlers and children.