Percutenious Nephrolithotomy (PCNL) in Paediatric Urolithiasis: Our 15 Years Experience

Introduction and Objectives: In India there is a high prevalence of urolithiasis in our region. Minimally invasive treatment of urinary tract calculi in children is recommended due to high chances of stone recurrence. PCNL is an established treatment used in children with renal calculi. We report our last 15 years experience with PCNL for treating renal stone in children.
Materials and methods: We retrospectively reviewed the results and outcome of PCNL in children (below 15 years old) who were treated at the three different urology departments from 1997 to 2012. One-hundred-twenty-two patients in the age group of 2 to 15 years underwent PCNL for nephrolithiasis during this period. Among these patients, 90 were male & 32 were female. Ninety-five patients had single stone & 27 had multiple stones. The stone sides varied from 9 mm to 3.1 cm and average size was 2.2 cm. The commonest presenting features were urinary tract infection, pain and heamaturia. Patients had preoperative blood & urine analysis, ultra-sonography of KUB, IVU, CT-KUB were done. All Patients underwent PCNL in single stage using wolf adult nephroscope with only inner sheath. Since last 2 years we have been using dedicated pediatric nephroscope. All procedures were done under general anesthesia. Puncture and tract dilatation was done under fluoroscopic control. The size of amplatz was 20 F initially and then 16 F. Pneumatic lithotripsy was used to fragment the stone. We reviewed operative time, Hb drop, stone clearance & complications. Follow-up KUB X ray was done in all cases to check stone clearance. Variables assessed include patient age, sex and stone burden. PCNL root, calyceal access and number of puncture tracts also recorded.
Results: One-hundred-twenty-two PCNL procedures were performed. Patient age at operation was ranging from 2 years to 15 years. About 30% patients were of preschool age group (≤5years of age). M: F ratio was 2.9:1. Stone burden ranged from 9mm to 3.2cm with average size 2.2cm. During the procedure mean Hb drop was 1.16±0.7 gm. About 8.2% patients required blood transfusions. Intra and post-operative complications includes extravasation of fluid in 2.6% and urosepsis in 1.9%.Complete clearance was achieved in 89% of patients in immediate post-operative period and 8% patients who had stone fragments less than 5mm which cleared at 3 months follow-up.
Conclusions: PCNL is safe & effective procedure in pediatric age group. It can be performed in single stage. Even complex and staghorn calculi can be tackled with this approach with good clearance rates and acceptable morbidity. Miniaturization of instruments will decrease the morbidity.