One Shot Tract Dilation for Percutaneous Nephrolithotomy: Is it Safe and Effective in Preschool Children? A Randomized Controlled Trial

Introduction and Objective: To evaluate the safety and feasibility of percutaneous tract dilation by the one stage method in preschool children.
Materials and Methods: This study was conducted at University Hospitals as a randomized controlled trial between April 2007 and March 2011. All preschool (<6 years) children candidate for percutaneous nephrolithotomy in the service of one of the authors whose parents agreed to participate were enrolled. Patients were assigned to dilation by serial metallic dilators (group I) or dilation by one stage Amplatz according to Frattini et al. (group II). Perioperative data and patients' demographic data was recorded prospectively by the operating surgeons. The primary endpoint of interest was fluoroscopy time. Secondary endpoints included tract creation and dilation time, success, and complications. Stone-free status was defined as residuals ≤ 3 mm.
Results: Twenty-two patients were enrolled (eleven patients in each group). Age, stone size, operation success and operation time was not statistically different between studied groups. The most stone composition was calcium oxalate in both groups. The mean ±SD of access times and fluoroscopy time times in groups I and II were 5.9±1.5 minutes versus 7.3±1.2 and 22.0±5.6 seconds versus 70.0±8.9. ($P>0.05$ and $P<0.001$ respectively). Postoperative complications included one case of postoperative fever lasting less than 48 hours in group I.
Conclusion: Percutaneous tract dilation by the single stage method is safe and effective. Also, it is associated with considerably less radiation exposure in preschool children.