

Factors affecting the success of ureteroscopy in management of ureteral stone diseases in children

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Purpose: We retrospectively investigated the factors that affect the success of rigid ureteroscopy in the pediatric population for the management of pediatric ureteral stones.

Patients and Methods: We present a retrospective review of 61 consecutive pediatric patients who underwent 66 rigid ureteroscopy procedures for ureteral stone management. The effects of sex, age, stone diameter, stone localization, and degree of associated ureterohydronephrosis (UHN) on the success of ureteroscopy were evaluated.

Results: The mean age of the patients was 8.1 years (range 6 mos-16 yrs). The average stone diameter was 8.22 mm (range 4-20 mm). In 56 cases (84.8%), all of the stones were extracted. In five (7.6%) cases, clinically significant residual fragments were detected and extracted by second-look ureteroscopy. In five cases (7.6%), the operations ended in failure. The final stone clearance rate after ureteroscopic stone treatment was higher in lower ureteral stones than in middle and upper ureteral stones; thus, the difference was statistically significant ($P = 0.011$). Also, there is a significant negative correlation between stone size and success rate ($P = 0.007$). The final stone clearance rate after ureteroscopic stone treatment was higher in patients with no and mild UHN than in patients with moderate and severe UHN, but the difference was statistically insignificant ($P = 0.118$). Statistical analyses revealed no significant relationship between success rates with regard to the sex and age of the patients ($P = 0.643$ for sex, $P = 0.390$ for age).

Conclusion: The stone localization and stone size are the factors that affect the success of the procedure.

Editorial Comment

The study spans a time period of 11 years - such that an average of 6 patients were treated per year. In addition, six urologists participated in this study - such that on average each urologist performed only one procedure. This raises the question - should collaboration between pediatric and adult urologist be encouraged for endoscopic stone procedures - maintaining facility in instrumentation and technique for advanced ureteroscopic procedures may require a higher case volume.

The success rate of 85% is excellent. The addition of flexible ureteroscopy, holmium laser lithotripsy, small caliber semirigid (4.5/6F) ureteroscopes and 1.5F stone baskets could further advance ureteroscopy in the pediatric population. One would anticipate that the addition of these instrumentations would minimize the impact of stone location as a predictor of success.

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