**Risk factors and recurrence rates of pediatric upper urinary tract stones following procedures for stone fragmentation and removal**

Background: Studies comparing recurrence rates of kidney stones between pediatric and adult patients have produced inconsistent findings. The current study aimed to evaluate the recurrence rate of kidney stones in children following surgeries for stone fragmentation and removal and to identify variables associated with kidney stone recurrence.

Methods: This retrospective study included children who underwent ureteroscopy or retrograde intrarenal surgery in our medical center between 2014 and 2020 and had image-based evidence of stone absence after surgery. Recurrence was determined by imaging during the follow-up period. Survival analysis was used to evaluate the rate of kidney stone recurrence and the variables associated with recurrence.

Results: The study included 51 children with a median age of 10 years (IQR 4.5–14). The median size of stones in the kidney and ureter was 8 mm (IQR 5–11) and 6 mm (IQR 4.5–7), respectively. Calcium oxalate stones were present in 31 (60%) children. The median follow-up period was 45 months (IQR 30–67), and kidney stone recurrence occurred in 20 (39%) children. Forty-one (80%) children completed post-operative urine collection. Metabolic abnormalities were identified in 25 (49%) children and included hypocitraturia, hyperoxaluria, hypercalciuria, and hypercystinuria in 9 (17%), 6 (12%), 5 (10%), and 5 (10%) children, respectively. Sixteen (31%) children showed good compliance with preventative therapy. The risk of kidney stone recurrence was approximately 50% within five years of surgery; metabolic abnormalities identified in urine collection, previous surgeries for stone removal, and high stone mass increased the risk of recurrence.

Conclusions: We found that the kidney stone recurrence rate in children was similar to that of adults, although children had a lower compliance with preventative treatment. Risk factors for early recurrence of kidney stones that should be monitored during follow-up include metabolic abnormalities in urine collection, previous surgeries for kidney stone removal, and a large stone mass.