

A Novel Technique of Management of Impacted VUJ Calculus: Laparoscopic Ureterotomy

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Abstract

Case Report

The incidence of urolithiasis in the pediatric population is on the rise. Endoscopic lithotripsy has become a technique of choice for the treatment of ureteral stones in children. Laparoscopic ureterolithotomy is a minimally invasive option for ureteric stones that are not amenable to ureteroscopy. We present a case of 7 years girl with right impacted vesicoureteric junction (VUJ) calculus with bullous cystitis managed innovatively with laparoscopic ureterotomy.

Keywords: pediatric urology, urolithiasis, laparoscopy.

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INTRODUCTION

The management of ureteral stones in children is becoming similar to that in adults and has evolved from an open surgical approach to less invasive procedures. Extracorporeal shock wave lithotripsy (ESWL) for the upper ureter and ureteroscopic lithotripsy for mid- and lower ureters has become the treatment of choice in the pediatric age group. Laparoscopic ureterotomy is available for stones that cannot be managed with conventional methods in children. Ours is one of the few cases where

vesicoureteric junction (VUJ) calculus was treated laparoscopically in a child.

CASE REPORT

A 7-year-old girl presented with abdominal pain and dysuria since 2 months. Ultrasound of the kidneys, ureters, and urinary bladder (KUB) showed right VUJ calculus with mild hydronephrosis (Fig 1). Urine and blood analysis findings were within normal limits. CT Urography (Fig 2) revealed 7 mm right VUJ calculus. On cystoscopy, bullous cystitis in the trigonal area was noted and the right ureteric orifice could not be visualized.

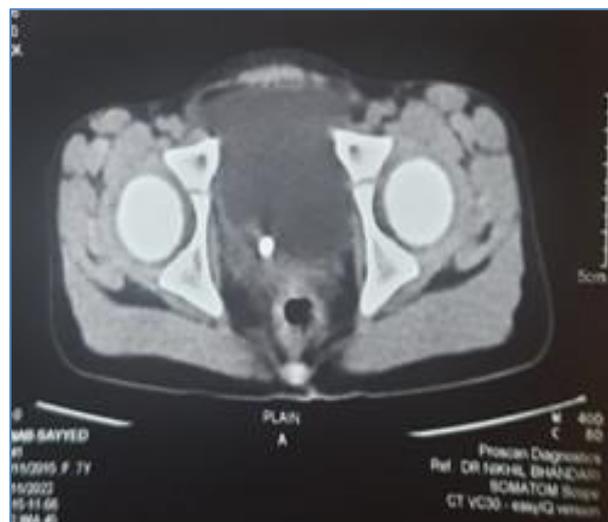


Fig. 1: X-ray showing right VUJ calculus



Fig. 2: CT Urography showing VUJ calculus

The patient was catheterized and given intravenous antibiotics for 7 days after which ultrasonography was repeated. It showed right VUJ calculus with an increase in hydronephrosis.

The patient was posted for ureteroscopy. Cystitis had decreased and the right ureteric orifice could be visualized. However, multiple attempts to cannulate with biprong forceps and guide wire failed. Hence, the decision was taken to do a laparoscopic ureterolithotomy. Three 5 mm ports were inserted with the infraumbilical as camera port and 10 mm Hg pressure with 2 liter flow was used.

The right ureter was mobilized, hitched and ureterotomy done near VUJ. As the stone could not be sounded with Maryland forceps (Fig 3a), an Infant feeding tube (IFT) was pushed through ureterotomy (Fig 3b). Simultaneous cystoscopy showed the stone and IFT coming out at the right ureteric orifice (Fig 3c). Attempted retrieval of stone with forceps resulted in crushing. Ureterotomy closed over 4 Fr 16 cm Double J stent and a drain placed near ureterostomy closure site. The Foley catheter was kept in situ for 3 days and the drain was removed after 2 days.

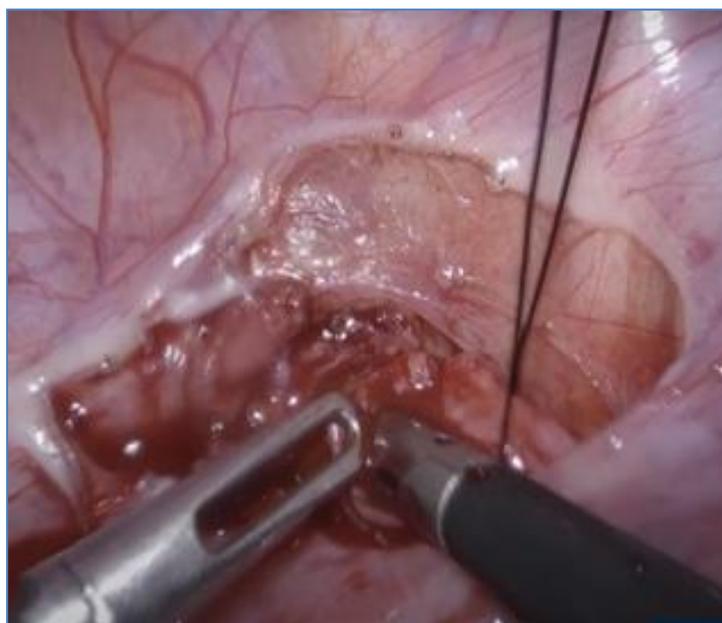


Fig. 3a: Laparoscopic ureterotomy - trying to sound stone with Maryland forceps



Fig. 3b: IFT passed through ureterotomy

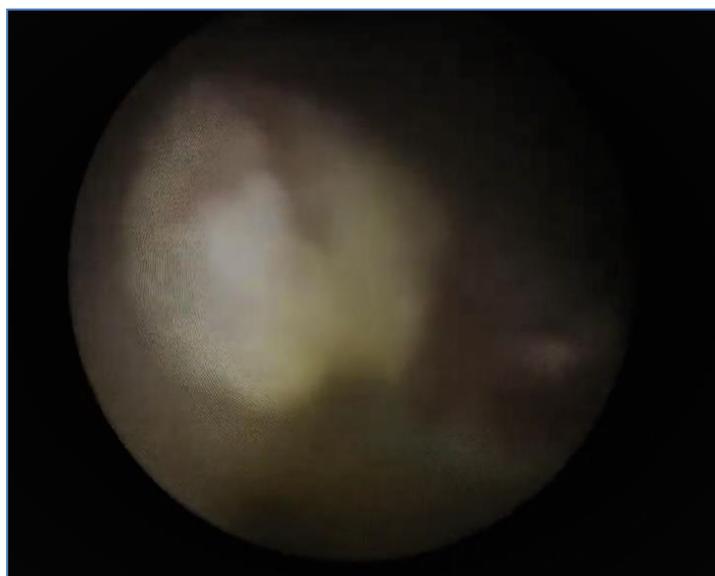


Fig. 3c: Cystoscopic view of stone with IFT

Cystoscopy with stent removal done after 6 weeks showed no residual stone fragments in the bladder. The patient is asymptomatic on regular follow-up.

DISCUSSION

The incidence of urolithiasis in the pediatric population is increasing. There have been a few conflicts about which stone to be treated surgically.

Van Savage *et al.*, Published their recommendations for modifying the adult American Urological Association (AUA) guidelines to be applied to the pediatric patient [2], concluding that calculi <3 mm would pass spontaneously but those larger than 4 mm would require surgical management. The size of the stone, its location, composition, and urinary tract

anatomy are important factors to be considered while selecting the procedure.

Currently, calculi throughout the entire upper urinary tract in children can be treated endoscopically with semi-rigid or flexible ureteroscopes [3, 4]. Despite this, there are ureteric stones that need to be treated with laparoscopic ureterolithotomy, a well-known technique for upper ureteric stones. However, the reports of ureteral stones removed from below the lower sacroiliac joint are very few, none of which are in children [5, 6].

CONCLUSION

Laparoscopic ureterotomy is a useful treatment modality for stones in children for whom conventional methods may be contraindicated.

Upper ureteric stones can be addressed retroperitoneally but the transperitoneal approach gives a better understanding of the anatomical landmarks, particularly for the lower ureteric stone.

In our case, impacted VUJ stone with cystitis made it difficult to treat endoscopically. We innovatively used laparoscopic ureterotomy with cystoscopy to treat the patient.

STATEMENTS AND DECLARATIONS

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Data Availability: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics Approval: Institutional ethics committee approval was obtained.

Consent to Participate: Informed consent was obtained from all individual participants included in the study.

Consent to Publish: The authors affirm that human research participants provided informed consent for publication.

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