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<http://www.pediatricurologycasereports.com>**Laser lithotripsy in management of large bladder calculi following primary repair of bladder exstrophy: A case report****Apoorva Kulkarni, Vishesh Dikshit, Abhay Gupta, Geeta Kekre, Paras Kothari***Department of Pediatric Surgery, LTMMC & GH, Mumbai, India***ABSTRACT**

A 4-year-old girl was admitted with the complaint of pain in lower abdomen and dysuria. She had exstrophy repair at 6th month of life. Radiographic investigations revealed a large bladder calculus. An innovative treatment in the form of laser lithotripsy was carried out to prevent damaging an already highly compromised urinary bladder with an open surgery.

.Key Words: Bladder exstrophy; laser lithotripsy; vesical calculus; child.

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Introduction

Bladder stones account for approximately 5% of all urinary system stones and they occur for reasons, such as, infravesical obstruction, neurogenic voiding dysfunction, urinary tract infection, foreign bodies and metabolic risk factors [1,2]. The incidence of bladder exstrophy in India ranges between 1 in 10,000 to 1 in 50,000 live births [3]. The age of presentation varies according to the accessibility of the patients to adequate healthcare facilities in India and also with awareness of the general population. As a result, patients can seek medical attention at a relatively late stage. Both bladder and urethral stones were detected in these patients [4].

Incidence of vesical calculus formation in operated patients of exstrophy bladder is around 15% [5]. We here presented a report of laser lithotripsy in the management of large bladder stone following primary repair of bladder exstrophy in a 4-year-old girl

Case report

A 4 year old girl patient, operated by our department at the age of 6 months for anatomical repair of bladder exstrophy, presented with complaints of pain in her lower abdomen for 5-7 days before admission. She also complaint of dysuria and turbidity of urine since the same time. There was no history of hematuria or flank pain. She had urinary incontinence with continuous dribbling. She has not undergone bladder augmentation. Plain radiograph showed a large radio-opaque shadow in the bladder region [Fig. 1]. Ultrasound scan of the urinary system revealed

a bladder calculus of size 3.5x3 cm. There was no other calculus found elsewhere. No hydronephrosis or hydroureter was noted.



Fig. 1. Appearance of the large bladder stone.

Routine blood investigations were normal. With this background, she was planned for surgical removal of the calculus. Since our lithotripter was not functioning at that time, we had two options- either suprapubic cystolithotomy or laser lithotripsy.

As the bladder already had a small capacity and reduced compliance, we wanted to avoid damaging the bladder further with an incision. The other option of laser lithotripsy was also unlikely because of the large size of the calculus.

The laser available at our institute is the holmium laser. With different combinations of energy and frequency, it can be used to cause different effects like fragmentation and pulverization. We decided to try and pulverize the stone as it seemed the best available option for the patient.

The patient was referred for laser lithotripsy and with a combination of fragmentation and pulverization, it took 2 and a half hours to break down the calculus completely [Fig. 2,3].

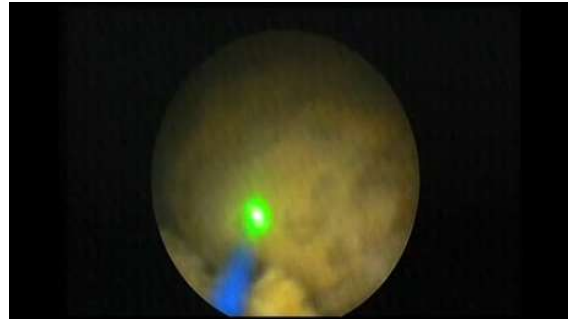


Fig. 2. Fragmentation and pulverization.



Fig. 3. Completely pulverized calculus debris.

Foleys catheter was kept in situ to drain the debris, removed next day and patient discharged. Repeat radiograph after 3 months showed no evidence of calculus [Fig. 4].



Fig. 4. Follow-up radiograph-no calculus

Discussion

Urolithiasis in the bladder exstrophy is related to some risk factors as a result of surgical reconstruction of this anomaly. The role of metabolic abnormalities that may predispose to

uroolithiasis is unknown, but under investigation by the researchers [6]. Additionally, there are many factors causing vesical calculi in patients with exstrophy bladder. First, they might develop on the suture material used to close the bladder. Second, a narrow bladder neck after repair predisposes to urinary stasis and infection, leading to stone formation [7]. Calculi are most commonly formed in the bladder, even after enterocystostomy. Other factors, such as, vesicoureteral reflux, urinary tract infections and foreign bodies also cause calculi [6]. Traditional treatment consists of open suprapubic cystolithotomy. However, the decision between endoscopic or open cystolithotomy depends on the size and number of the stones. If the stones are too large (>2.5 cm in diameter) or too numerous to be removed by endoscopic methods, open surgical removal may be necessary [2]. However, the case presented here was previously operated due to bladder exstrophy. Although it involves damaging an already hostile bladder, it was until now, the only option for removal of a large calculus. With the advent of laser, it was possible for us to attempt laser lithotripsy in this patient even with such a large calculus.

In conclusion, Holmium laser lithotripsy should always be evaluated as a good option in these patients.

Compliance with ethical statements

Conflicts of Interest: None.

Financial disclosure: None.

Consent: All photos were taken with parental consent.

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