

## Case Report

# Pediatric acute urinary retention due to impacted urethral meatal calculus: a rare case report

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## ABSTRACT

Urethral calculus is rare in pediatrics, especially with acute urinary retention. The diagnosis of urethral calculus is made by proper history taking, physical examination, and imaging studies. In this case, the diagnosis was made mainly by anamnesis, inspection, and palpation of the calculus in the external urethral meatus. Invasive and less invasive procedures such as open surgery, meatotomy, or laser lithotripsy procedure, can be a management of urethral calculus. In this case, simple extraction was performed without meatotomy or other invasive procedures. A 5-year-old, boy was reported to come to the emergency department because of severe pain in his penis and acute urinary retention. The patient had a history of dysuria, a habit of delaying urination, and low fluid intake. On physical examination, it was found a distention in the suprapubic area and a green-white solid mass at the external urethral meatus. A 10-millimeter calculus was successfully extracted from the external urethral meatus with simple extraction procedures under local anesthesia. This case report demonstrated a rare case of pediatric acute urinary retention secondary to impacted urethral meatal calculus in an emergency setting of a low-level hospital. Immediate and proper management was required due to the patient's condition and considering the lack of facilities. The extraction of calculus with minimal urethral damage was the recommendation.

**Keywords:** Urinary retention, Pediatric, Urethral calculus, External urethral meatus

## INTRODUCTION

Pediatric urolithiasis is a rare condition. It's about twenty times (20X) less than in adults, approximately ten percentages of total cases.<sup>1-3</sup> The kidney, ureter, and the bladder are the most common locations of the urolithiasis.<sup>4</sup> The incidence of urethral calculus is only one to two percentages of all urolithiasis.<sup>5</sup> Urethral diverticulum, abscess, as well as the urethra-cutaneous fistula are frequent complications of urethral calculus. Urethral calculus can obstruct urine flow resulting in acute urinary retention that requires emergency procedures.<sup>6</sup> This paper presents an acute urinary retention secondary to impacted the urethral meatal calculus in the emergency department.

## CASE REPORT

A 5-year-old boy patient came to the emergency department with the main complaint of acute severe pain in his penis and could not urinate for about 10 hours before coming to the hospital. The complaint was initially by very frequent voiding and dysuria in the last 3 months. The pain was also felt in the lower abdomen with distention. Patient had a history of dysuria and frequent voiding about 1 year ago but improvement with oral drug therapy and urinary tract infection was the diagnosis in the primary health care. The patient had habits of delayed voiding and low fluid intake. There was no history of fever, vomiting, flank pain, trauma, or hematuria. Other predisposition factors such as long-term drug therapy,

family history of urolithiasis, or congenital disease were denied. Patient was circumcised 2 months ago.



**Figure 1: Lower abdominal distention suggest fullness of the bladder.**



**Figure 2: Visualized calculus in external urethral meatus.**



**Figure 3: 10-millimeter urethral calculus post-extraction procedure.**



**Figure 4: External urethral meatus post-extraction of the calculus.**



**Figure 5: Plain abdominal radiography showing no calculus after procedures**

On physical examination confirmed 16 kg boy with heart rate of 101 beats per minute, respiratory rate of 24 cycles per minute, and temperature of 36.9<sup>0</sup> C. In the abdominal examination, there was distended and pain in the lower abdominal region with tension and fullness of the bladder, as shown in Figure 1. There was a green-white mass at the external urethral meatus, solid, and pain on palpation, as shown in Figure 2. Acute urinary retention secondary to impacted urethral meatal calculus was the diagnosis. A calculus 10-millimeter was extracted by the simple procedure of local anesthesia, lubricant, and extraction by anatomical pincet, as shown in Figure 3 and 4. The patient could void spontaneously after the procedure. Plain abdominal radiography was performed to confirm there was no other calculus, as shown in Figure 5. The patient was advised to get adequate fluid intake and should not delay voiding. There was no complaint after 2 months of follow-up.

## DISCUSSION

Urolithiasis usually occurs in the kidneys, ureters, and bladder. Urethral calculus is a very rare condition about

1-2% of total urolithiasis. Urethral calculus was reported as 7 per 100.000 population. Urethral calculus is only 0.3% of total pediatric urolithiasis.<sup>7,8</sup> Urolithiasis can occur primary or secondary. Anatomical defects usually cause primary urolithiasis such as urethral stricture and urethral diverticulum. This condition can cause stasis and decrease the flow of urine leading to precipitate and formation of the calculus.<sup>9</sup> Secondary calculus mainly forms in the upper urinary tract and migration to the lower part.<sup>9</sup> A study of 1440 samples Rizvi et al the etiology of urethral calculus 12% anatomical abnormality, 25% metabolic defect, 7% urinary tract infection, and 55% idiopathic.<sup>10</sup> In the case of the 5-year-old boy, the calculus was located on the external urethral meatus without any history of anatomical abnormality but the mother said that the patient had a history of dysuria. The mother also said the patient had a habit of delaying urination and low fluid intake.

The symptoms of pediatric urethral calculus are dysuria, penile edema, colic abdomen, hematuria, vomiting, and anorexia. In the physical examination, it was found abdominal distention and signs of infection.<sup>8</sup> In this case there were several symptoms such as acute pain in the penis and anorexia with the sign of abdominal distension due to fullness of the bladder. Initial evaluation with radiography imaging and ultrasonography was not performed in this case due to the lack of facilities. The treatment of urethral calculus has not been standardized due to its rarity. Calculus larger than 10-millimeter can cause obstruction and often require invasive procedures whereas calculus smaller than 8-9 mm can expulse spontaneously.<sup>7</sup> The treatment of urethral calculus depends on the size and location of the calculus. Large urinary calculus is usually extracted by open surgery or less invasive surgery such as lithotripsy procedures. A meatotomy would be necessary if the location of the calculus is in the proximity of the external urethral meatus.<sup>5</sup> In this case, meatotomy or other invasive procedures were not performed due to calculus location. It was confirmed that the half of calculus was impacted in the meatus whereas the other half was palpated inside the navicular fossa. Under the circumferential local anesthesia in the root of the penis and topical gel lubrication on the meatus, the calculus was gently milked and extracted using anatomical pincet. The patient was able to urinate spontaneously after the procedures. The limitation of this report is no imaging or ultrasonography before the procedures and no evaluation of calculus composition due to the lack of facilities.

## CONCLUSION

Although urethral calculus is rare in pediatrics, a clinician should consider it as a cause of acute urinary retention in

children. History taking and physical examination are very important for diagnosing urethral calculus. Imaging may help determine the location of calculus and to evaluate other calculus. The treatment of urethral calculus can be done by less invasive or invasive procedures depending on the size and location of the calculus. Prompt and careful clinical decisions are very important.

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