Journal of Paediatric Surgeons of Bangladesh (2026) Vol. 17 (1)
Official Journal of the Association of Paediatric Surgeons of Bangladesh
https://doi.org/10.3329/jpsb.v17i1.91332

Journal of Paediatric Surgeons of Bangladesh

Case Report

Case Report: Urethral Duplication in a 7 Years Old boy

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Abstract

Urethral duplication is a rare congenital anomaly, predominantly seen in males, with very few cases reported in females. This anomaly can be partial or complete and manifests with a variety of clinical symptoms including deformed penis, double urinary streams, urinary tract infections (UTIs), incontinence, urethral discharge, and outflow obstruction. This case report discusses the diagnosis, surgical management, and follow-up of a 7 years old boy with Type II A2 urethral duplication.

Keywords: urethra, dorsal, congenital, double, duplication

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Introduction

Urethral duplication is a rare congenital abnormality affecting more in males.[1], It consists of the junction of two or more channels having a smooth muscular wall and lined by excretourinary mucosa.[3] It can be complete or incomplete.[4] It occurs mainly in the sagittal plane but also in the frontal plane.[3] Several anatomical variants have been reported where an accessory urethra opens in either a normal or abnormal position. Clinical manifestation depends on the variation of anatomic patterns.[5] The therapeutic approach can be complex, depending on the anatomical type.[1] Radiological investigations are of great interest in all cases.[3] This case report discusses the diagnosis, surgical management, and follow-up of a 7-year-old boy with urethral duplication, classified as Type II A2.

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Clinical Presentation: A 7-year-old boy was admitted to the Paediatric Surgery Department of SOMCH with complaints of a double urethral opening and dribbling of urine through the dorsal urethral opening. The patient had a history of recurrent UTIs and previous hospitalizations. The patient is apparently healthy.

Genital Examination:

Penis: Uncircumcised with two urethral openings (figure 1)

□ Primary urethral opening: Normal in size, located at

the tip of the glans.

- Accessory urethral opening: Smaller in size, located dorsally about 0.5 cm proximal to the primary urethral meatus.

Scrotum: Normal. Both testis are palpable and normal.

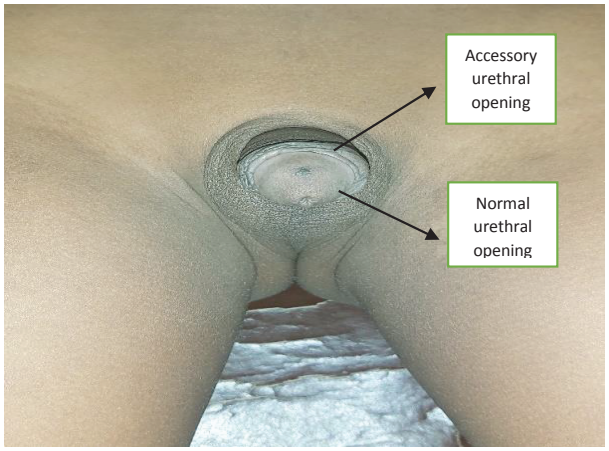


Figure 1

Investigations:

1. **Ultrasonography (USG):** Revealed a malrotated right kidney with complete bladder emptying.
2. **Retrograde Urethrogram (RGU):** Demonstrated a parallel linear smooth tubular structure along the anterior urethra connected to the membranous urethra.(figure 3)
3. **Voiding Cystourethrogram (VCUG)/MCU:** Showed short segmental narrowing in the membranous urethra causing upstream mild dilatation and contrast leakage through a suprapenile tract. (figure 2)
4. **Fistulogram:** A linear tubular structure above and parallel to the anterior urethra, connecting to the membranous urethra. (figure 3)



Figure 2

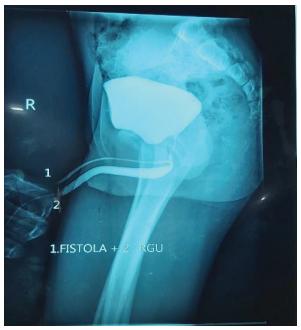


Figure 3

Surgical Management:

1. Cystourethroscopy:

- Normal urethra with intact external sphincter and urinary bladder mucosa.
- Accessory urethra was cannulated with a 0.035 mm guide wire, confirming continuity with the bladder. (figure 4)

2. Surgical procedure:

- An 8 Fr Foley catheter was inserted into the normal urethra.(figure 4)
- A longitudinal incision was made on the dorsal penile surface along the guide wire.
- The accessory urethra was excised down to the membranous urethra.(figure 5)
- The wound was closed using delayed absorbable sutures (Vicryl).(figure 6)
- Foley catheter kept in situ for 8 days.



Figure 4

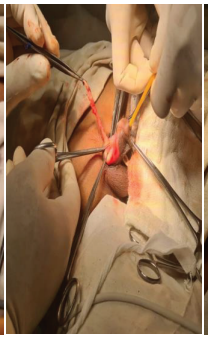


Figure 5

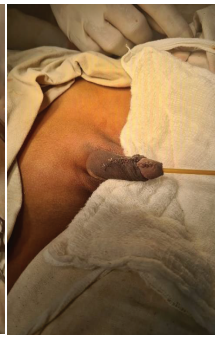


Figure 6

3. Postoperative Course:

- The patient was discharged on the 10th postoperative day.
- Follow-up over six months revealed a single urinary stream with no incontinence.

Discussion:

Urethral duplication, first described by Aristotle, is a rare congenital anomaly with approximately 300 cases documented in the literature[2]. Urethral duplication can be caused either by the growth arrest of the urogenital sinus 6 or abnormal Müllerian duct termination or misalignment of the termination of the cloacal membrane with genital tubercle.[7]

Clinical Features and Diagnosis:

- Symptomatic patients often present with recurrent UTIs, double urinary streams, dysuria, or incontinence.[8] Diagnosis typically occurs before 12 months of age, though late presentations, as in this case, are possible.

- Imaging studies such as RGU & VCUG and magnetic resonance imaging (MRI) are essential[7]. Occasionally cystoscopy is necessary to visualize the verumontanum and other urethral characteristics.[7] In our case, RGU and VCUG were diagnostic.
- Urethral duplications are classified per Effman's system into Types I, II, and III.9 (figure 7)

Type I: Blind-ending accessory urethra (incomplete duplication).

Type II: Complete duplication, further sub classified:
- Type II A1: Two non-communicating urethras arise from the bladder.
- Type II A2: Y-shaped configuration, as observed in this case.
- Type II B: Two urethras unite into a common distal channel.

Type III: Accessory urethra arises from a duplicate or septate bladder.

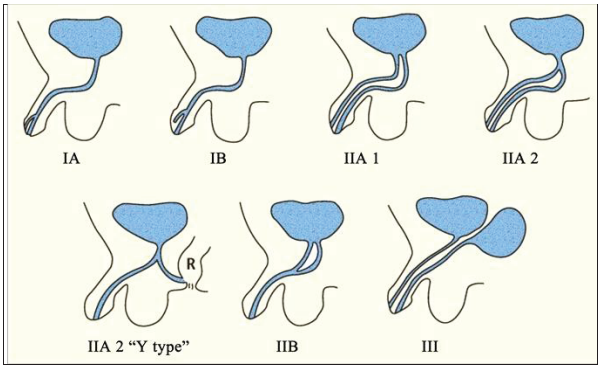


Figure 7

Management: Treatment depends on anomaly's type and severity. Complex cases may require multiple surgeries, while milder forms may not require intervention. In this case, complete excision of the accessory urethra resolved the symptoms.

Conclusion: A comprehensive diagnostic approach using imaging and Cystourethroscopy is essential for identifying urethral duplication. Individualized surgical planning based on the type and severity ensures optimal outcomes. Our patient, diagnosed with Type II A2 urethral duplication, underwent successful surgical excision of the accessory urethra with an uneventful postoperative recovery and resolution of symptoms.

Acknowledgement

We are very thankful for all the support provided by the Paediatric surgery department of Sylhet MAG Osmani Medical College Hospital. Conflict of interest statement The authors declare no conflict of interest. Ethics statement This case did not involve experiments on humans and animals. Consent Informed written consent was taken from the patient's parents prior to his inclusion in this study.

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