Pediatr Urol Case Rep 2025; 12(6):545-546 DOI: 10.14534/j-pucr.20222675718

PEDIATRIC UROLOGY CASE REPORTS
ISSN 2148-2969
http://www.pediatricurologycasereports.com

Severe Postcircumcision Meatal Stenosis Leading to Upper Tract Dilatation in a Toddler

Hiroshi Nakayama*

Department of Pediatric Urology, Coastal Asia Children's Medical University, Busan, South Korea

✉ ***Hiroshi Nakayama***
Department of Pediatric Urology,
Coastal Asia Children's Medical University,
Busan, South Korea
E-mail: h.nakayama.cacmu@urokidsmail.org

Received: *28-Nov-2025, Manuscript No. PUCR-25-189824;* ***Editor assigned:*** *01-Dec-2025, PreQC No. PUCR-25-189824 (PQ);* ***Reviewed:*** *15-Dec-2025, QC No. PUCR-25-189824;* ***Revised:*** *22-Dec-2025, Manuscript No. PUCR-25-189824 (R);* ***Published:*** *29-Dec-2025, DOI: 10.14534/j-pucr.20222675718*

Description

A two-year-old male toddler was brought to a pediatric urology clinic with a history of poor urinary stream, prolonged voiding time, and recurrent urinary tract infections over the past six months. The parents reported that the child strained during urination and often wet his underwear shortly after voiding. There was no history of fever in the early neonatal period, but multiple febrile episodes had occurred recently, each treated with oral antibiotics [1].

The child had undergone routine circumcision at six months of age at a local clinic. According to parental history, the immediate postoperative period was uneventful, and no follow-up abnormalities were noted until urinary symptoms gradually appeared several months later. On physical examination, the external urethral opening appeared markedly narrowed with a pinpoint appearance and surrounding whitish fibrotic tissue. The bladder was palpable and mildly distended [2]. No genital anomalies other than postcircumcision changes were observed. Abdominal examination revealed no tenderness, but suprapubic fullness was present after voiding attempts. Laboratory evaluation demonstrated pyuria and positive nitrite on urinalysis. Urine culture grew Escherichia coli sensitive to nitrofurantoin. Serum creatinine was mildly elevated for age [3]. Ultrasonography revealed thickening of the bladder wall with significant postvoid residual urine volume of approximately 80 ml. Mild bilateral hydronephrosis was also detected, raising concern for upper tract involvement. An uroflowmetry study showed a markedly reduced peak flow rate with prolonged voiding time consistent with distal urethral obstruction. The diagnosis of severe meatal stenosis was established based on clinical findings and imaging correlation [4].

Initial management included topical emollients and calibration attempts; however, symptoms persisted with ongoing infection and worsening bladder emptying. Surgical correction was therefore indicated. Under general anesthesia, a ventral meatotomy was performed. The fibrotic tissue at the meatal opening was carefully incised to create an adequate urinary channel. The stenotic segment was excised until healthy mucosal edges were identified. Fine absorbable sutures were placed to maintain patency and minimize restenosis risk. Postoperatively, the child demonstrated immediate improvement in urinary stream strength and reduction in voiding time [5]. A short course of antibiotics was administered to treat existing infection. The parents were instructed on topical care and gentle dilation exercises during healing.

At six-week follow-up, ultrasonography showed complete resolution of hydronephrosis and normalization of bladder wall thickness. Postvoid residual urine volume decreased to less than 10 mL. The child remained symptom-free at three-month review with no recurrence of urinary tract infection. Meatal stenosis is a recognized complication following circumcision in male children, resulting from chronic irritation, ischemia of the distal urethral mucosa, or inadequate healing at the glans [6]. Although often mild, severe narrowing may lead to significant bladder outlet obstruction and secondary upper urinary tract changes if untreated. Clinical presentation may include weak urinary stream, spraying of urine, prolonged voiding, and postvoid dribbling. In young children, these symptoms may be misinterpreted as behavioral issues or delayed toilet training, resulting in delayed diagnosis.

Repeated urinary tract infection in the setting of meatal narrowing occurs due to incomplete bladder emptying and urinary stasis. Persistent obstruction increases intravesical pressure, which may eventually transmit to the upper urinary tract, producing hydronephrosis as seen in this patient. Ultrasonography plays an important role in evaluating secondary effects of distal obstruction. Findings such as bladder wall thickening and residual urine volume provide indirect evidence of functional obstruction. Uroflowmetry, though limited in very young children, can assist in confirming reduced flow when cooperation is adequate.

Conclusion

Definitive treatment consists of surgical meatotomy or meatoplasty, which restores a normal urethral caliber. The procedure is typically straightforward and associated with excellent outcomes when performed before irreversible upper tract damage occurs. Postoperative care includes ensuring adequate hydration, maintaining local hygiene, and monitoring for recurrence of narrowing. Preventive strategies after circumcision include proper postoperative wound care and early recognition of abnormal urinary patterns. Education of caregivers is essential to avoid delayed presentation in cases of progressive obstruction. This report highlights a case of severe meatal stenosis after circumcision leading to urinary tract infection and bilateral hydronephrosis in a toddler. Timely surgical correction resulted in complete resolution of symptoms and restoration of normal urinary function without residual renal impact.

References

1. Crimmins CR, Rathbun SR, Husmann DA. Management of urinary incontinence and nocturnal enuresis in attention-deficit hyperactivity disorder. J Urol. 2003;170:1347-1350.

2. De Bruyne E, Van Hoecke E, Van Gompel K, et al. Problem behavior, parental stress and enuresis. J Urol. 2009;182:2015-1521.

3. Van Herzeele C, Dhondt K, Roles SP, et al. Desmopressin (melt) therapy in children with monosymptomatic nocturnal enuresis and nocturnal polyuria results in improved neuropsychological functioning and sleep. Pediatr Nephrol. 2016;31:1477-1484.

4. Farhat W, Bagli DJ, Capolicchio G, et al. The dysfunctional voiding scoring system: quantitative standardization of dysfunctional voiding symptoms in children. J Urol. 2000;164(3):1011-1015.

5. Vesna ZD, Milica L, Stankovic I, et al. The evaluation of combined standard urotherapy, abdominal and pelvic floor retraining in children with dysfunctional voiding. J Pediatr Urol. 2011;7:336-341.

6. McKenna P. Current role of biofeedback for pediatric lower urinary tract symptoms. J Urol. 2015;193:14-15.