Pediatr Urol Case Rep 2025; 12(6):723-724 DOI: 10.14534/j-pucr.20222675723

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

Severe Urethral Injury Following Accidental Bicycle Handlebar Trauma in a Prepubertal Boy

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Received: *02-Feb-2026, Manuscript No. PUCR-26-189819;* ***Editor assigned:*** *04-Feb-2026, PreQC No. PUCR-26-189819 (PQ);* ***Reviewed:*** *18-Feb-2026, QC No. PUCR-26-189819;* ***Revised:*** *25-Feb-2026, Manuscript No. PUCR-26-189819 (R);* ***Published:*** *04-Mar-2026, DOI: 10.14534/j-pucr.20222675723*

Description

A seven-year-old boy was admitted to the emergency department after falling from a bicycle while riding downhill near his home. According to witnesses, the child lost control of the bicycle and struck the perineal region forcefully against the exposed handlebar end during the fall. He cried immediately and was unable to stand because of severe pelvic pain. Blood staining around the underwear was noted shortly afterward [1].

On arrival, the patient appeared anxious and uncomfortable. Physical examination revealed extensive bruising and swelling involving the perineum and proximal scrotum. Blood was visible at the urethral meatus. The child complained of suprapubic pain and inability to urinate since the accident. Abdominal examination demonstrated mild lower abdominal distension without signs of intraperitoneal injury [2]. No lower limb neurological deficits were present. Initial laboratory investigations showed mild leukocytosis but stable hemoglobin concentration. Serum creatinine values remained normal. Pelvic radiography identified no pelvic fracture. Because blood at the urethral opening strongly suggested urethral trauma, urethral catheterization was avoided before imaging [3].

Retrograde urethrography demonstrated complete disruption of the bulbar urethra with contrast extravasation into the surrounding perineal tissues. No contrast reached the bladder. Computed tomography of the pelvis confirmed extensive soft tissue edema but excluded rectal injury and major vascular bleeding. A suprapubic catheter was inserted under ultrasound guidance to decompress the bladder. Broad-spectrum intravenous antibiotics and analgesic therapy were initiated [4]. After stabilization, the patient underwent cystoscopic evaluation under general anesthesia. Antegrade cystoscopy through the suprapubic tract demonstrated complete urethral separation measuring approximately 1.8 cm at the proximal bulbar segment. Because of marked tissue swelling and hematoma formation, immediate primary reconstruction was considered unsuitable. Delayed urethroplasty was therefore planned.

During hospitalization, the child remained clinically stable. Perineal bruising gradually improved, and no infectious complications developed. The family received detailed counseling regarding the need for staged management and future reconstructive surgery. The patient was discharged with a suprapubic catheter and scheduled for follow-up evaluation. Three months later, repeat urethrography demonstrated persistent obliteration of the bulbar urethral segment with fibrotic

narrowing extending over approximately 2 cm [5]. Elective urethroplasty was then performed through a perineal approach. Dense scar tissue surrounded the disrupted urethra. Excision of fibrotic tissue was followed by end-to-end anastomosis between healthy urethral ends without tension. Intraoperative flexible cystoscopy confirmed satisfactory luminal continuity.

Pediatric urethral trauma remains uncommon compared with adult injury patterns, largely because of anatomical protection offered by the developing pelvis and surrounding soft tissue structures. When injury does occur, blunt perineal compression against bicycle handlebars represents a recognized mechanism, particularly in active school-aged boys. The anterior urethra becomes vulnerable when crushed between the external object and underlying pubic structures [6]. Clinical findings such as blood at the urethral meatus, inability to void, and perineal ecchymosis strongly suggest urethral disruption. Attempts at blind catheterization in this setting may worsen tissue injury and convert partial tears into complete disruption. Radiographic assessment before instrumentation therefore remains essential whenever urethral trauma is suspected.

Bulbar urethral injuries differ from posterior urethral disruptions associated with pelvic fractures. In isolated anterior injuries, continence mechanisms and bladder neck structures are usually preserved. However, untreated fibrosis may produce severe urethral stricture with long-term voiding impairment. Early recognition and appropriate urinary diversion therefore remain important components of management. The decision between immediate reconstruction and delayed repair continues to generate discussion in pediatric trauma surgery. Extensive edema and hematoma in this patient increased the likelihood of operative difficulty and recurrent scar formation if acute reconstruction had been attempted. Delayed urethroplasty after resolution of inflammation allowed clearer identification of healthy tissue planes and facilitated tension-free anastomosis.

Suprapubic urinary diversion provided effective bladder drainage during the healing interval. Preservation of urinary sterility and prevention of catheter blockage required careful family education after discharge. Compliance with follow-up imaging proved especially important because recurrent fibrosis can develop gradually during recovery. Successful urethroplasty in children depends on complete excision of scar tissue and preservation of surrounding vascular structures. Pediatric tissues generally demonstrate favorable healing capacity, although long-term monitoring remains advisable throughout adolescence. Growth-related anatomical changes may occasionally influence future urethral caliber.

Psychological effects should also be considered after genital or perineal trauma in children. Fear of urination, anxiety regarding physical activity, and embarrassment may persist after discharge. Supportive communication with both the patient and caregivers contributes positively to postoperative adjustment and adherence to follow-up recommendations.

Conclusion

The favorable outcome in this patient reflected rapid diagnosis, appropriate urinary diversion, and carefully timed reconstructive surgery. Preservation of continence and normal urinary flow demonstrated successful restoration of urethral continuity without major postoperative complications. This case describes complete bulbar urethral disruption following accidental bicycle handlebar trauma in a prepubertal boy. The report emphasizes the importance of avoiding blind catheterization when urethral injury is suspected and supports delayed urethroplasty after initial stabilization in selected pediatric patients with severe anterior urethral disruption.

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