

## Post Traumatic Female Urethral Stricture : A Case Report with Review of Current Literature

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### Summary :

*A girl of nine years age presented with a suprapubic catheter and she had been with it for two years. Immediately after an accidental blunt abdominal trauma, she was managed by laparotomy, bowel repair, enterostomy and suprapubic cystostomy (SPC). After closure of enterostomy, it was tried many*

*times to re-establish the patent lower urinary tract. She refused to go to school as she was ashamed of her body image. After multiple procedures over a span of six months, it was possible to provide a catheter free life to the girl.*

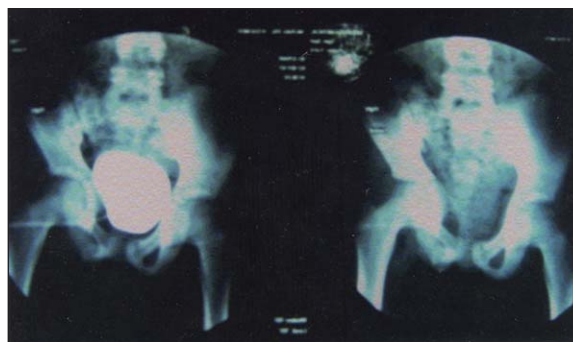
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### Introduction :

Historically, post-traumatic female urethral stricture has been considered virtually a non existent condition<sup>1</sup>. In recent years, more cases of female urethral trauma have been reported and the estimated incidence in association with pelvic fracture is 4.6 to 6%<sup>2</sup>. The rarity of female urethral injury with pelvic fracture can be attributed to its relative mobility, short length and the absence of rigid attachment to the pubic bone<sup>3</sup>. Accurate pre-operative diagnosis could be possible only in 50% of cases<sup>4</sup>. Initial minor voiding symptom, easy catheterization and overall low index of suspicion is the main cause to overlook or delay in diagnosis<sup>1</sup>. The delay in diagnosis or its management significantly increases the morbidity.

**Case Report :** A girl of nine years age with history of blunt abdominal trauma two years back, was referred to Urology department of Bangladesh Medical College Hospital, Dhaka. She was treated before as a case of acute abdomen with pelvic fracture and soft tissue injury of vulva and perineum. She underwent emergency laparotomy to repair rectal injury, protective proximal sigmoid colostomy, SPC and perineal wound toileting. She recovered from her injury but removal of suprapubic catheter was not possible because of post-traumatic complete urethral

stricture. After colostomy closure and stabilization of pelvic fracture, she was referred to the department of Urology. As per record she was evaluated thoroughly; diagnosed as a case of post-traumatic complete proximal urethral stricture with associated malunited pelvic fracture, distal urethro-vaginal fistula (Figure-1). It was attempted many times to re-establish normal urethral passage. The parents were counselled regarding the delayed management of post-traumatic complete female urethral stricture, the outcome of which is completely different to that of male. The parents were afraid of incontinence of their daughter following urethral reconstruction. Her parents consented after counselling and the girl was admitted under our care in Bangladesh Medical College Hospital, Dhaka. She was evaluated under anaesthesia (EUA) with colposcopy, simultaneous rigid paediatric cystoscopy, urethroscopy and flexible cystoscopy through suprapubic cystostomy route. It was seen that there was complete proximal urethral



**Fig. – 1 :** Pre-operative antegrade cystogram, showing healed mal united pelvic fracture, Urinary bladder is well outlined and no contrast material has passed through the urethra.

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stricture more than 1 cm in length with immediate distal urethro-vaginal fistula. The region of internal urethral meatus was totally smooth and it was not well identified. "Core-through visual internal urethrotomy" was not possible either due to failure of identification of the internal urethral meatus accurately through suprapubic flexible cystoscope or the Xenon cold light may have been inadequate to pass through long dense fibrous urethral stricture segment. In the second procedure the urethro-vaginal fistula was repaired through vaginal route preceded by an episiotomy like incision. Finally the urinary bladder was explored adequately. The land mark of internal urethral meatus was totally absent, the region was smooth and epithelialised. It was identified with the help of other important landmark like ureteric orifices & trigone and was confirmed by urethral dilator. A circular disk of thick tissue about 1.5×1.5 cm was excised with electrosurgery unit to reconstruct the internal urethral meatus. Vesico-urethral continuity was then established (OIU) with the help of a paediatric urethrotome. The neo-urethral passage was then calibrated upto 16 Fr. after keeping a safety wire in situ. Finally, otis urethrotomy (20 Fr.) was done in 3 and 9'o clock position and the urethra was stented with a 12 Fr. Foly's catheter. After three weeks a second look urethrocystoscopy was done to observe and confirm a satisfactorily epithelialised urethra and the bladder neck. Otis urethrotomy was repeated in the same session and the urethral catheter was continued for another 3 weeks. After a prolonged period of complete inactivity the urinary bladder was given full training supported with uro-selective anti-cholinergic drug (oxybutanine hydrochloride). It required two weeks to achieve almost its normal capacity, to reduce nocturnal frequency, to ensure a sound sleep at night. Before making her catheter free the importance and effectiveness of intermittent self dilation (ISD) of urethra in preventing the recurrence of urethral stricture was counselled to both the patient and the parents. Day after removal of catheter ISD was demonstrated to the mother and it has been ensured in every follow-up. At the third month of ISD, the post-operative outcome appeared excellent confirmed by uroflowmetry and contrast imaging study (retrograde cystogram; Figure-2 and micturating cysto-urethrogram (Figure- 3).



**Fig. – 2 :** *Post-operative retrograde cystogram showing healed mal-united pelvic fracture, contrast material is in the urethral catheter and urinary bladder is well outlined.*



**Fig. – 3 :** *Post-operative micturating cystourethrogram showing healed mal-united pelvic fracture, urinary bladder is well outlined and there is free passage of contrast material through the urethra.*

#### **Discussion :**

As late as 1965 female urethral injuries associated with pelvic fracture for all practical purposes were nonexistent<sup>2</sup>. Literature review had shown that till 1980 only 30 cases were reported<sup>5</sup>. In recent years more cases of female pelvic fracture with associated urethral injuries are reported. The excellent modern acute care facilities have resulted in increased survival of severely injured patients and is causing an apparent increase in the incidence of this previously rare entity<sup>4</sup>. Both male and female urethral injuries in association with pelvic fracture may result from following causes<sup>9</sup>.

Upward displacement of hemi-pelvis specially pubic rami resulting traction injury to the anterior and posterior urethral ligaments.

Sudden diastases of pubic symphysis damaging the posterior pubourethral ligament and urogenital diaphragm.

Bony spicule causing direct trauma to the urethra.

Overall, the risk of post-traumatic urethral injury is greatly influenced by sex, age and the types of pelvic fracture<sup>6</sup>. The incidence is 4.6 to 6%<sup>4</sup> in case of female and 9.9%<sup>7</sup> in case of male. High risk pelvic fracture and incidence of urethral injury is common in younger age group than in older patients<sup>6</sup>. Partial female urethral injury is most common, ( at 12'o clock position in variable length ) but the complete urethral injury involves the bladder neck and proximal urethral region, and is not seen to involve distal 5 mm<sup>4, 8</sup>.

The low incidence in female is due to short urethral length, relative increase mobility as well as absence of rigid attachment of it to pubic bone as in male<sup>2</sup>. Obviously pelvic fracture as they are intimately related to urethral injuries may be classified as no risk group :- isolated fractures of acetabulum, ilium and sacrum, low risk group :- single or ipsilateral ischiopubic rami fracture, high risk group :- straddle and Malgaigne fractures<sup>2</sup>.

Accurate clinical diagnosis of female urethral injury may be looked over in 50% of cases<sup>4</sup> specially when the patient gets multiple injuries that require urgent attention for other critical problem. In case of incomplete urethral injury which is more common, initial catheterization may be easier. So, the gynaecologists promptly repair the vaginal injury while the need for examination of urinary tract or need for urological consultation is not given adequate attention. A high index of suspicion is mandatory for the diagnosis of female urethral injury when there is pelvic fracture. Inability to void, hematuria, urethral bleeding, vaginal bleeding and laceration, labial oedema are common presenting features. Normal voiding and continence may be intact when urethral injury is in distal to external sphincter<sup>2</sup>.

The diagnostic reliability of the contrast urethrography in case of partial urethral longitudinal tear is still controversial. The double balloon urethrography (one outside the urethra another inside the bladder) proved to be beneficial<sup>1</sup>. However, the role of urethroscopy is generally recommended<sup>4</sup>.

The management options differ in male and female urethral injuries. For proximal urethral injury gold standard management in male is immediate suprapubic cystostomy and delayed urethral reconstruction<sup>1</sup>. The similar procedure in female urethral injury may lead to urethrovaginal fistula, urethral stenosis or complete urethral stricture. The delayed reconstruction presents a practical problem<sup>4</sup> as in this reported situation. For proximal urethral injuries immediate urethral re-alignment around a stent through suprapubic route is recommended. Vaginal injury is to be repaired simultaneously to prevent future urethrovaginal fistula or vaginal stenosis. Distal urethral injury is approached through vaginal route and the aim of management is to maintain adequate external meatus around a stent with or without proximal urethral advancement<sup>3</sup>.

In this case it was initially managed by general surgeons and major attention was given to laparotomy and management of bowel injury. Urethral injury was managed by suprapubic cystostomy. Post-traumatic female urethral injury is rare in Bangladesh. It is not surprising that practical experience in this regard is limited even among the urologist. The girl was referred to urologist after complete recovery following staged management of bowel injury. The morbidity of delayed presentation of post-traumatic female urethral injury is well documented in international literature. Similar morbidity was also seen in this case.

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