

Case Report

Traumatic Female Urethral Avulsion Associated with Pelvic Fracture: A Case Report

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Abstract

Traumatic female urethral avulsion is rare and there are no consensus in the management. There is also paucity of report of similar case in tropical Africa. Most cases of female urethral injury are partial tears. Complete female urethral avulsion is uncommon and usually traumatic in origin from road traffic accident or fall from height. We present a 55 year old post-menopausal woman who had a complete circumferential transection of the urethra with extensive posterior and anterior vaginal wall laceration following pelvic fracture and also a left hand injury from a motor vehicular accident. The aim reporting this case is to increase the awareness of traumatic female urethral avulsion injury with pelvic fractures in a poly-traumatized patient post-menopausal female and emphasize the place of immediate primary repair in achieving optimal outcome. The management can be very challenging because the impact can involve the pelvic bone, bladder, vagina and rectum with will invariably increase morbidity and mortality. This patient was managed in a multidisciplinary approach which consisted of primary repair of the urethra and vaginal lacerations as well as repair of the hand injury with conservative management of pelvic fracture. The outcome was favorable and uneventful as the anatomic function of all involved structures were restored.

Keywords

Urethral Injury, Pelvic Fracture, Motor Vehicular Accident, Female

1. Introduction

Complete circumferential injury of the urethra is rarely reported and is usually associated with pelvic fracture. [1] Most cases of female urethral injury are partial tears. [2] The female urethra has only the posterior urethra. Blunt trauma alone rarely injures the female urethra and most injuries are

associated with pelvic fracture. The adult female urethra is approximately 4 cm long, and extends from the urethrovesical junction (UVJ) at the bladder neck to the vaginal vestibule. [3] The female urethra is short and freely mobile in relation to the pubic arch hence giving it some protection. [4] However, the

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entire posterior length of the urethra is closely adherent to the anterior wall of the vagina making it prone to simultaneous injury. [5] Management can be challenging and there are no consensus. [6, 7] A high index of suspicion in the presence of deep vaginal lacerations, hematuria, labial edema, inability to pass urine and failure to pass catheter is necessary to consider the diagnosis. Diagnosis of female urethral injury is often not done using retrograde urethrogram. Diagnosis of these injuries may be done by direct vision via urethroscopy. It is important to make an accurate diagnosis on whether it is a partial or complete urethral injury as that guides and determines the treatment.

We report a rare case of traumatic female urethral avulsion with pelvic fracture in a post-menopausal female. The aim of presenting this case report is to increase the awareness of traumatic female urethral avulsion injury in association with pelvic fractures in polytraumatised patient and emphasize the place of immediate primary repair in achieving optimal outcome.

2. Case Report

A 55 year old post-menopausal female who was involved in a motor vehicular accident three days prior to presentation. She was thrown off the top of a farmers' truck when the driver attempted to negotiate a bend on a bumpy road. She landed on her buttocks and left hand. Her injuries consisted of a severe hip pain and inability to bear weight on the lower limbs, copious bleeding per vagina with associated inability to pass urine despite the urge and an open left hand injury.

Examination revealed, a pale middle aged woman, conscious, pulse rate of 108 b/min, blood pressure of 100/60 mmHg. A 12 cm laceration on the dorsum of the left hand with fractures of the second and third digits with a 2 cm bone loss of the second metatarsal. Had a mild suprapubic tenderness and palpable bladder, bruises over the right lumbar region and positive pelvic compression tenderness. Vaginal examination revealed, two ragged lacerations on the posterior and anterior walls of the vagina each measures about 7 cm in length, with an exposed portion of the pubic bone through the defect. This was further delineated with the balloon of a foley's catheter protruding through the defect as shown in [figure 1](#).

Abdominal ultrasound findings showed that the urinary bladder was full and tender with no intra-abdominal collection. Pelvic X ray showed a left vertical shear fracture of the pelvis with left superior and inferior pubic rami and left sacroiliac joint disruption. X ray of the left hand showed fracture of the metacarpals of the second and third digits.

The management followed a multidisciplinary approach with the urologist, gynecologist, orthopedic and plastic surgeons. She was promptly resuscitated and informed consent obtained. She had an emergency primary repair with urinary diversion under general anesthesia.

Open suprapubic cystostomy (SPC), rail roading of the

urethra and end to end anastomosis over a size 16 French catheter was done via the transvaginal route. The vaginal lacerations were repaired in 2 layers as shown in [figure 2](#).

Pelvic fracture was managed by the orthopedic surgeons and other injuries were managed appropriately with uneventful post-operative period. The urethral catheter was removed six weeks after a satisfactory pericatheter retrograde urethrogram. She had a good urinary stream, but with mild stress incontinence. This was managed with kegel exercises and tolterodine tablets. Subsequent clinic follow up at 3 months reported good urinary stream and minimal stress incontinence which later stopped after 6 months.



Figure 1. Balloon of a foley's catheter protruding through the defect.



Figure 2. The vaginal lacerations were repaired in 2 layers.

3. Discussion

Female urethral injury secondary to trauma is rare but has been described in association with pelvic fracture in as 6% of cases. [3] The adult female urethra is approximately 4 cm long and extends from the UVJ at the bladder neck to the

vaginal vestibule. [3] Urethral injuries associated with pelvic fractures are much less common in females. [8] Some authorities have postulated that the female urethra is at a lower risk of injury because of its shorter length and its greater mobility in relation to the pubic arch. [4] However the entire posterior length of the urethra is closely adherent to the anterior wall of the vagina making it prone to simultaneous injury. [5] Our patient had complete urethral avulsion involving the vagina with pelvic fracture and hand injury. This is in keeping with the report of Al-Asbahi WA who noted that the female urethra and anterior vagina wall are prone to simultaneous disruption. However, complete female urethral rupture as we reported in this case is rare. [9]

Female urethral injuries are usually partial in nature and associated with concomitant bladder perforation or vaginal laceration. [2] This report is at variance with our index case who had a complicated complete avulsion of the female urethra involving the vagina and pelvic bone. Review of the literatures shows scanty data on female urethral injuries in Nigeria. In a retrospective review of traumatic urologic injuries in Ile-ife South-west Nigeria, urethral injuries constituted 58.9% and all were seen males with no occurrence in females. [10] Majority (73.6%) resulted from automobile accidents, straddle injuries occurred in 34% and falls from a height was seen in 5.7%. [10] This further concurs with many reports as well as our finding that female urethral trauma is very rare.

The urethral injury in our index case resulted is traumatic from motor vehicular accident. This is in keeping with the report of Tijani KH et al that noted increasing trend of traumatic urethral injury worldwide with automobile accident leading in Nigeria. [11] Symptoms of urethral injury in females include includes vaginal/urethral bleeding or laceration, hematuria, labial swelling/edema and inability to void. Venn SN et al reported a 75% incidence of vaginal injury and a 33% incidence of rectal injury. [13] Luckily, our index patient did not sustain any rectal injury. This may be due to the fact that the impact was not severe enough to involve the rectum. However our index case sustained vaginal laceration which is in keeping with the report of Venn SN et al that vaginal injury is a more frequent association with female urethral injury.

The management of traumatic female urethral injury can be very challenging because the impact can involve the pelvic bone, bladder, vagina and rectum. [5, 12] This was the case in our patient who also sustained vaginal and pelvic injury. Where facilities are available, urethroscopy is preferred to retrograde urethrogram in confirming diagnosis. [14] Because these injuries are rare, a classification system and accepted guidelines for therapy is yet to be formally established. [3] The female urethra can be repaired primarily through the bladder in cases of joint bladder injury and proximal urethral injury. It can also be primarily repaired through the transvaginal route if the tear is more distal. [15] Our patient had primary transvaginal repair and assessment of competence following repair was satisfactory. The orthopedic surgeons managed the associated pelvic injury conservatively with

impressive outcome. This further supports the report of Martínez-Piñero L et al that primarily tranvaginal repair is recommended for distal urethral injury to enable other team members address associated injuries. Some authors have also proposed initial suprapubic urinary diversion followed by delayed retropubic urethroplasty when patient is not stable for primary repair. Philipraj SJ et al noted that suprapubic diversion of urine with delayed urethroplasty achieves good outcome especially in children. [16] Though they achieved good results, we believe delayed repair can interfere with the action plan of other teams and increase the length of hospital stay with increased morbidity and mortality.

4. Conclusion

Early recognition and proper management with primary urethral and vaginal repair can prevent the subsequent risk of morbidity and reduce length of hospital stay.

Abbreviations

UVJ	Ureterovesical Junction
SPC	Suprapubic Cystostomy

Author Contributions

Obiatuegwu Kenenna: Funding acquisition, Methodology, Supervision, Visualization, Writing – original draft, Writing – review & editing

Magnus Felix: Conceptualization, Methodology, Project administration, Writing – original draft

Otabor Christopher: Funding acquisition, Supervision, Validation

Onwuasoanya Uzodimma: Writing – review & editing

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Ethical Approval

There is no ethical clearance needed for this manuscript according to local hospital ethical committee.

Conflicts of Interest

The authors declare no conflicts of interest.

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