

Urethral Injuries and its Management: A Cross-sectional Study from SMBB Medical University Larkana

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ABSTRACT

Objective: To determine the frequency, type of urethral injury, the outcome of patients, and rate of complications in our setting.

Study Design: A cross-sectional study

Place and Duration of Study: This study was conducted at the conducted at the Urology Department, SMBB Medical University Larkana, Pakistan for 2 years from July 2018-July 2020.

Materials and Methods: A total of 40 consecutive patients were enrolled in the study. Sociodemographic profile, type of injury patterns, causes of injury, management, and outcome were recorded for study participants and also examined the complication rate.

Results: There were a total of forty patients. Common causes of urethral injuries were: pelvic fractures, iatrogenic injuries, penetrating injuries, among others. 18 out of forty (45%) patients experienced complications. The most common complication was stricture formation in 8 (44.4%), followed by extravasation or voiding difficulties in 3 (16.6%) patients, impotence, and painful ejaculation was observed in 2 (11.1%) patients, each.

Conclusion: Urethral injuries were more common in male patients. The most common cause of injury was iatrogenic, followed by blunt/crushing trauma. Education modules on urological anatomy and catheter safety along with a thorough physical examination can aid in the prompt diagnosis and prevention of such injuries.

Key Words: bulbar urethra, catheter, stricture, urological emergency, urethral injuries.

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INTRODUCTION

The urethra is a very important organ of the human body. Its structure resembles that of a tube as it is responsible for emptying urine from the bladder. Although urethral trauma is a rarity they have become more common due to increasing road traffic accidents¹. These accidents often result in blunt trauma to the urethra, injuries to the pelvis, or trauma to the sexual organs². A quick diagnosis is required to avoid future complications such as incontinence, the stricture of the urethra, and impotence³. Injuries to the posterior urethra are for instance linked to fractures of the pelvis in both males and females⁴. These lead to breakages at the level of the prostate in males who may present with blood at the meatus, difficulty in voiding urine, fracture of the

pelvis alongside hematoma of the pelvis, blood in urine, inability to insert a catheter for urine and prostate which is not palpable. In females, however, laceration or bleeding of the vagina, bleeding in the urethra, blood in urine, difficulty in urination, and swelling of the labia⁵. The primary goal of the management of urethral injuries is to at first stabilize the patient presenting to the emergency room with a blunt trauma force. If there is excessive loss of blood, then it should be replaced as quickly as possible to avoid leading to complications such as shock or cardiac arrest⁶. It has to be managed promptly with a well-organized team and triage should be performed. After which, the injury of urethra will be treated for. While managing injuries to the urethra, special care should be given to allow a previously well-functioning urethra to work well. The treatment for urethral trauma includes prompt management during the first 48 hours of the trauma and treatment which will be postponed between 2 to 14 days of the trauma⁷. Delayed management is also considered which will be done within 3 months of the trauma due to poor resources especially in developing countries⁸. The management however differs with the severity and location of the injury⁹. Injuries that are not so severe can easily be treated by placing a Foley's Catheter in the urethra for approximately 14 to 21 days. If the injury is resolved after the use of the catheter while

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viewing it on an X-ray, the catheter is removed. However, in more severe cases, such as crush injuries, urethral injuries are seen alongside other injuries which makes the management all the more difficult. In severe injuries, there is a high risk of leakage of urine which can lead to infection and inflammation⁹. Although the posterior urethral injury is considered to be more complicated, management such as drainage or primary repair is recommended to preserve the penile tissue of male patients¹⁰. Disruptions can be done on the tissue such as with the use of a catheter, performing only a primary repair, or doing a suprapubic cystostomy. A follow up would be needed after 6 months to check for the normal function of the urethra and any postoperative complications¹⁰.

MATERIALS AND METHODS

An Observational, cross-sectional study was carried out at the Urology department SMBB Medical University, Larkana, Pakistan period between July 2018 to July 2020 (02 years). In current study, consecutive sampling technique (non-randomized) was used to select the consented patients, and then written consent was taken from every participant. Patients were also informed about the risk associated with withdrawing blood samples such as the risk of pain, bleeding, irritation, or infection. However, they were ensured that it is a very low probability. Ethical approval was obtained from the Institutional Review Board of Chandka Medical College and Teaching Hospital, SMBBMU, Larkana, Pakistan.

Data regarding demographic as well as other variable were collected in a proforma. The patient's gender, age, comorbidities, site and type of injury, signs, and symptoms of trauma were observed. Urethral trauma and injuries were confirmed using urethrography and ureteroscopy.

Patients who were unable to pass urine or had a history of pelvic fractures, suprapubic cystostomy, and decompression were used to release the urine. In the case of bruising or blunt trauma, debridement was done followed with a sterile dressing. For iatrogenic injuries, mainly due to traumatic catheterization, strictures were more likely which were either treated using dilatation, urethroplasty, or urethrotomy. For superficial lacerations, primary suturing was done using prolene 3/0 stitches. For open urethral injuries, surgical exploration and debridement were needed. All patients were administered intravenous broad-spectrum antibiotics, analgesics, and fluid replacement if the patient was actively bleeding. Patients' vitals were monitored regularly. Complete cell count of all patients were sent pre- and post-intervention. Any irregularities in the blood pressure, respiratory rate, pulse rate, oxygen saturation, and temperature were noted. Blood transfusions were done in case of very low hemoglobin level or deranged platelet counts. For observation of

treatment and complication need of four week follow up visit of patient. All data were recorded in a predefined proforma and entered into excel sheets.

A successful outcome was considered if no complications were observed in follow-up or no secondary procedure was done. An unsuccessful outcome was referred to cases that were followed up with a secondary procedure or intervention or complications were observed.

Statistical analysis: SPSS version 24 was applied for analyzing the data. Patient age, body mass index and other continuous variables were presented as mean and standard deviation. The categorical data were represented with frequency and percentage.

RESULTS

In current study, totally 40 patients were examined. Common causes of urethral injuries were: pelvic fractures, iatrogenic injuries and penetrating injuries, among others. See table.1.

Table No.1: Demographic and Clinical Profile of Patients in the Study (n=40)

Mean Age (SD) in years	35.4 (14.3)
Gender	
Male	34 (85%)
Female	6 (15%)
Body Mass Index in kg/m²	
Underweight (< 18.5)	5 (12.5%)
Normal (18.5 – 24.9)	18 (45%)
Overweight (25.0 –29.9)	8 (20%)
Obese (> 30.0)	9 (22.5%)
Causes of Injury	
Iatrogenic injuries	16 (40%)
Road traffic accidents	12 (30%)
Penetrating Injuries	5 (12.5%)
Others	7 (17.5%)
Injury patterns	
Crushing	10 (25%)
Bruising	12 (30%)
Laceration	8 (20%)
	2 (5.0%)
Clinical Signs and Symptoms	
Penile Pain in males	21 (52.5%)
Bleeding per urethra	15 (37.5%)
Swelling and edema	8 (20%)
Hematoma	5 (12.5%)
Others	4 (10%)
Complications	
Strictures	8 (44.4%)
Impotence	2 (11.1%)
Painful ejaculation	2 (11.1%)
Extravasation of Urine or Voiding difficulties	3 (16.6%)
Vulvar edema in females	2 (11.1%)
Life-threatening sepsis	1 (5.5%)

18 out of forty (45%) patients experienced complications. The most common complication was stricture formation in 8 (44.4%), followed by extravasation or voiding difficulties in 3 (16.6%) patients, impotence, and painful ejaculation was observed in 2 (11.1%) patients, each. Graph. 1.

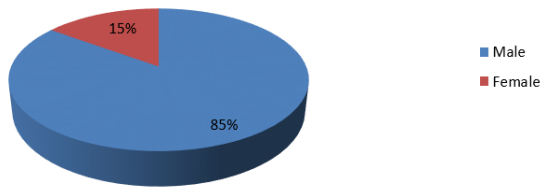


Figure No.1: Gender Distribution of Participants
COMPLICATIONS OF URETHRAL INJURY

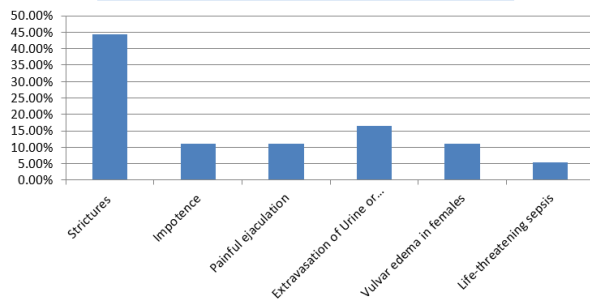


Figure No. 2: Complications of Urethral Injury (n=18)

DISCUSSION

The male gender is 10 times more prone to suffer a urethral trauma compared to their counterparts. This predilection is a result of significantly different urologic anatomy. Females have a rather shorter and more mobile urethra which contributes to their lower chances of experiencing urethral injuries¹¹. Nevertheless, even in females, the incidence of urethral injury with pelvic fractures or blunt injuries is as high as six percent¹². Studies showed that significantly high prevalence rate of urethral injury was observed in male as contrast to female.

In many cases of urethral trauma, 1st stretch occur in membranous part of urethra furthermore broken occur at the junction of bulb membranous (partial or complete). Prostatic urethral to bladder neck trauma occur only in child age group. In female urethra injury mostly partially tearing of the anterior wall and not often complete tearing of urethra (proximal or distal portion)¹³

Regarding previous studies, mostly suturing the disrupted ending of urethra resulting high rate of complication may arise such incontinence (21%) and impotence (56%)¹⁴.s in a meta-analysis, it was concluded that primary realignment (PR) has a lower risk of stricture formation in patients with posterior urethral injuries in comparison with suprapubic cystostomy (SPC)¹⁵.

In male, both procedures (surgical and endoscopic) are not compete but quite balance in different treatment in

different situation. Such as indwelling catheter for trauma of urethra stretch, suprapubic cystostomy or endoscopic stenting for incomplete rupture. Suprapubic cystostomy or endoscopic realignment for complete rupture (minimal distraction defect) and surgical realignment (wide distraction defect) Injuries to the bladder, neck of the bladder, or rectum dictate immediate exploration for repair, but not necessarily the location of the urethral injury. Treatment modalities for women determine the level of urethral injury, including urgent retropubic realignment or in the case of proximal injury need suturing and injury in lower part (distal) by advance transvaginal urethral process¹⁴⁻¹⁵.

In female patients, it is of utmost importance to have a comprehensive physical examination to avoid misdiagnosis or delayed diagnosis. In the current study, a female patient presenting with a history of blunt trauma injury was not diagnosed until life-threatening sepsis was detected. Patients with a history of road traffic accidents, blunt, or penetrating injuries must be thoroughly examined for bleeding per urethra. In a study by Perry and Husmann, it was found that two-thirds of patients would have been promptly diagnosed if they had been examined properly¹⁶.

Kashefi et al. assessed the urethral injuries in male secondary to improper insertion of a catheter¹⁷. A total of 14 out of 4,310 patients suffered urethral injuries due to improper insertion of a urinary catheter. In study subjects penile pain as well as bleeding were the very important symptoms. They used an education program that was designed to promote catheter safety and basic urological anatomy. The authors then compared the pre- and post-intervention rates of urethral injuries secondary to catheterization. It was found that the post-intervention rate was significantly reduced to 0.7 per 1,000 adult males (p=0.006). Therefore, it is recommended to implement such courses in our setting as well to promote catheter safety in male patients to avoid urethral injuries.

CONCLUSION

Urethral injuries were more common in male patients. The most common cause of injury was iatrogenic, followed by blunt/crushing trauma. The most common post-intervention complication was stricture formation followed by extravasation or voiding difficulties. Education modules on urological anatomy and catheter safety along with a thorough physical examination can aid in the prompt diagnosis and prevention of such injuries.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

- Singh L, Sharma PK. Managing urethral injuries in suburban India—general surgeon's perspective. *Med J Armed Forces Ind* 2012;68(2):159-64.
- Kommu SS, Illahi I, Mumtaz F. Patterns of urethral injury and immediate management. *Current Opinion in Urol* 2007;17(6):383-9.
- Mark SD, Keane TE, Vandemark RM, Webster GD. Impotence following pelvic fracture urethral injury: incidence, aetiology and management. *Br J Urol* 1995;75(1):62-4.
- Cass AS, Godec CJ. Urethral injury due to external trauma. *Urol* 1978;11(6):607-11.
- Kielb SJ, Voeltz ZL, Wolf Jr JS. Evaluation and management of traumatic posterior urethral disruption with flexible cystourethroscopy. *J Trauma and Acute Care Surg* 2001;50(1):36-40. https://journals.lww.com/jtrauma/Abstract/2001/01000/Evaluation_and_Management_of_Traumatic_Posterior.6.aspx.
- Koraitim MM. Pelvic fracture urethral injuries: evaluation of various methods of management. *J Urol* 1996;156(4):1288-91.
- Barratt RC, Bernard J, Mundy AR, Greenwell TJ. Pelvic fracture urethral injury in males—mechanisms of injury, management options and outcomes. *Translational Androl Urol* 2018;7(Suppl 1):S29. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5881191/>
- Mundy AR, Andrich DE. Urethral trauma. Part II: Types of injury and their management. *BJU International* 2011;108(5):630-50.
- Coffield KS, Weems WL. Experience with management of posterior urethral injury associated with pelvic fracture. *J Urol* 1977;117(6):722-4.
- Cavalcanti AG, Krambeck R, Araujo A, Rabelo PH, Carvalho JP, Favorito LA. Management of urethral lesions in penile blunt trauma. *Int J Urol* 2006;13(9):1218-20.
- Chapple CR. Urethral injury. *BJU Int* 2000;86(3):318-26.
- Mundy AR, Andrich DE. Urethral trauma. Part II: Types of injury and their management. *BJU Int* 2011;108(5):630-50.
- KORAITIM MM. Pelvic fracture urethral injuries: the unresolved controversy. *J Urol* 1999;161(5):1433-41.
- Martínez-Piñeiro L, Djakovic N, Plas E, Mor Y, Santucci RA, Serafetinidis E, et al. EAU guidelines on urethral trauma. *Eur Urol* 2010;57(5):791-803.
- Barrett K, Braga LH, Farrokhvar F, Davies TO. Primary realignment vs suprapubic cystostomy for the management of pelvic fracture-associated urethral injuries: a systematic review and meta-analysis. *Urol* 2014;83(4):924-9.
- Perry MO, Husmann DA. Urethral injuries in female subjects following pelvic fractures. *J Urol* 1992;147(1):139-43.
- Kashefi C, Messer K, Barden R, Sexton C, Parsons JK. Incidence and prevention of iatrogenic urethral injuries. *J Urol* 2008;179(6):2254-8.