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DIAGNOSIS AND MANAGEMENT OF MALE URETHRAL INJURY: A SHORT REVIEW

***[1]Kumar Rajeev, [2]Gupta A. K., [3]Sharma P. K., [4]Shashi Prabha**

[1]Assistent Professor, Shalya Tantra Department Patanjali Bhartiya Ayurvigyan Evum Anusandhan Sansthan Uttarakhand, India.

[2]Professor, Shalya Tantra Rishikul Campus Haridwar UAU Harrawala Uttarakhand.

[3]Professor, Shalya Tantra Rishikul Campus Haridwar UAU Harrawala Uttarakhand.

[4]P.G. Scholar Shalya Tantra Rishikul Campus Haridwar UAU Harrawala Uttarakhand.

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***Corresponding Author**
Dr. Kumar Rajeev
Assistent Professor, Shalya Tantra Department Patanjali Bhartiya Ayurvigyan Evum Anusandhan Sansthan Uttarakhand, India.

ABSTRACT

Urethral injuries are uncommon and usually occurs in men.[1] It arise from a variety of different insults, ranging from external violence to urethral instrumentation. Most result from blunt trauma, with penetrating injuries. The male urethra is anatomically subdivided into anterior and posterior segments at the level of the urogenital diaphragm[2]. Posterior urethral injury usually occurs as a result of pelvic fracture. It is said about 10-15% of cases of fractured pelvis[3]. Anterior urethral injuries usually occur due to straddle type fall. Certain clinical signs and symptoms will point the clinician toward a possible urethral injury like blood at the meatus. inability to urinate, full bladder etc. Once the presence of a urethral injury has been diagnosed, the injury may be subclassified according to well-defined radiographic findings. Management of all type of urethral injuries are different which is discussed in this article.

KEYWORDS: Urethral Injury, pelvic fracture.

INTRODUCTION

Urethral injury is relatively uncommon. It is 10-20% of all injured patients. Victims are mostly males, but can happen in females. It is usually associated with pelvic fractures or straddle-type falls. Various parts of the urethra may be lacerated, transected, or contused in this injury. The vast majority are due to blunt trauma. If a clinical case came with Gross

hematuria and pelvic fracture, a diagnosis of urethral injury should be made until proven otherwise

The big 4 clues to urethral injury:

- Blood at meatus
- Gross hematuria
- Inability to void
- swelling of penis/labia majora

ANATOMICAL CONSIDERATIONS[4]

The male urethra is About 8 inches (20cm) long, extends from the neck of bladder to the external urinary meatus on the tip of the glans penis. It is divided into the anterior and posterior sections by the urogenital diaphragm. The posterior urethra consists of the prostatic and the membranous urethra. The anterior urethra consists of the bulbar and penile urethra.

Prostatic urethra

- Length=3 cm
- Extends from neck of bladder inside prostate gland
- Structures openings into prostatic urethra: Ejaculatory ducts & Ducts of prostate gland.

Membranous urethra

Length=1 cm

Surrounded by external urethral sphincter

Penile (spongy) urethra

Length=16 cm

Extends inside penis & opens externally through external urethral orifice

The urethral injury is divided into[5]

1. Anterior &
2. Posterior urethral injuries

POSTERIOR URETHRAL INJURIES[6]

Etiology

The mechanism of injury is violent external force. Bilateral pubic rami fractures (straddle fracture) and sacroiliac fracture are common in this injury. Pelvic fractures are associated

with 25% cases of Posterior urethral injury. Associated bladder rupture in this injury is 10-17%. Rectal injury can lead to urethral-rectal fistula in 8% of cases.

There ate two types posterior urethral trauma

a. Complete 73 %
b. Partial 27 %

Symptoms

There is complain of lower abdominal pain along with history of crushing injury to the pelvis Usually gross hematuria (98%) is obtained. Other common symptom is inability to void.

Signs

Blood at the urethral meatus is seen macroscopicly (Urethroragia). Suprapubic tenderness and the presence of pelvic fracture is common. Large developing pelvic hematoma may be palpated.Perineal or suprapubic contusions are often noted.There could be large pelvic hematoma with the prostate displaced superiorly on DRE.

Laboratory Findings

Anemia due to hemorrhage may be noted

Urine usually cannot be obtained initially, since pt should not void and catheterization should not be attempted.

Instrumental Examination

The only instrumentation involved should be for urethrography. Catheterization should not be done due to increased risk of hematoma, infection, and further damage to partial urethral disruptions.

Retrograde Urethrogram

Post-voiding x-ray will either be: 1.Normal, 2.Partial urethral injury (some dye in bladder, some extravascation) or 3. Complete urethral injury (no dye in bladder).

Diagnosis

-Blood at meatus: 50%

-High riding prostate: 34%

-Inability to urinate

-Inability to place urethral catheter

-Rarely, perineal hematoma (late finding)

-Triad:

Blood at the meatus

Inability to urinate

Full bladder

Management

Shock and hemorrhage should be treated.

Conservative therapy for patients with nonpenetrating damage of urethra:- rest, cool compresses, and antibiotics.

If no concern for injury/ retrograde urethrogram normal, put a foley in

Partial tear: Careful passage of 12-14 Fr. Foley (If any resistance: Urology)

Complete tear: Urology + suprapubic catheter. Initial management is suprapubic cystostomy to provide urinary drainage.

A midline lower abdominal incision should be made. Bladder should be opened and carefully inspected for lacerations. If laceration, bladder should be closed with absorbable suture material & a cystostomy tube inserted for urinary drainage. The suprapubic cystostomy is maintained in place for about 3 months. This allows resolution of the pelvic hematoma Prostate and bladder will slowly return to their anatomic positions.

Urethral reconstruction[7] **-** After prostatic disruption can be undertaken within 3 months. Before reconstruction, an urethrogram should be done to determine the exact length of the resulting urethral stricture A single-stage reconstruction of the urethral rupture defect with direct excision of the strictured area anastomosis of the bulbous urethra directly to the apex of the prostate. A 16F silicone urethral catheter should be left in place along with a suprapubic cystostomy. Catheters are removed within a month, and the patient is then able to void.

What 4 things are necessary before you can attempt to pass a foley catheter? 4 things allowing you to pass a foley safely:

1. No pelvic and suprapubic tenderness / #
2. No penile, scrotal, or perineal hematoma
3. No blood at the urethral meatus
4. No abnormal findings on DRE

ANTERIOR URETHRAL INJURY

Etiology

It is more common than posterior urethral injury. Usually there is no pelvic fracture. Two commonest causes are

Straddle injury: May cause laceration or contusion

Instrumentation: May cause disruption of urethra

Symptoms and signs

H/o of direct perineal trauma

H/o instrumentation

Local pain in perineum

Inability to void

Blood at meatus (the most important predictor)

Perineal and scrotal swelling

Very tender perineum, Sometime a mass may be found

Rectal examination

Normally placed prostate

If Buck's fascia intact, blood & urine remain within the penis 'sleeve hematoma'

If Buck's fascia disrupted, blood & urine can spread to the scrotum & perineum

Extravasation into the perineum 'butterfly sign"

X-ray finding

Contused urethra - No evidence of extravastion

Urethrogram - Shows extravastion & location of injury

Management

Urethral Contusion

Urethrography: urethra remain intact & no extravasations allow voiding:

A. Voiding without pain /bleeding require no additional treatment

B. If bleeding persist go for urethral catheterisation

Urethral Laceration

Severe straddle injury resulting in laceration of part of urethral wall go for Suprapubic cystostomy followed by wait for 2-3 week, When healing present at injury site, allow voiding

Urethral Laceration With Urinary Extravasation

Urinary extravasation may involve perineum, scrotum & lower abdomen. One should drain these area. If there is Infection followed by abscess formation, the treatment is drainage of abcess.

Immediate Repair

Primary repair for stab wounds

Surgical management is conservative debridement & primary end-to-end anastomosis.

COMPLICATIONS[8]

1. **Urethral Stricture –** It is most common compluication, treated by urethroplasty
2. **Urinary Incontinence –** It occurs due to severe damage to external sphincter mechanism.It seldom require transpubic reconstruction.
3. **Impotence –** It may vary from 30 to 80% of cases. Seems due to disruption of nerve supply at the time of fracture. It is permanent in 10% of cases.

CONCLUSION

Urethral injuries are uncommon, originates from a number of well-defined trauma. Cardinal signs and symptoms of urethral

Injury are- Blood at meatus
Gross hematuria
Inability to void
swelling of penis/labia

Timely radiographic diagnosis and classification Is essential for management of urethral injuries. Conservative debridement, Suprapubic cystostomy, urethroplasty[9] & primary end-to-end anastomosis are some kind of management discussed above.

Urethral injuries may lead to sequelae (eg, stricture disease, incontinence, erectile dysfunction), which linger long after other injuries have disappeared.

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