

# **INJURIES TO THE URINARY BLADDER**

## **(Bladder rupture)**

1. Injuries occur most often from external force (traffic collisions, industrial trauma, and blows to the lower abdomen) are often associated with pelvic fractures.
2. Penetrating wound to the lower abdomen.
3. Iatrogenic injury may result from:
  - a. gynecologic and other extensive pelvic procedures.
  - b. inguinal or femoral hernial repairs.
  - c. excision of the rectum.
  - d. transurethral operations.

# Clinical Findings

**Intraperitoneal rupture**

**Extraperitoneal rupture**

Pelvic fracture accompanies bladder rupture in 60-90% of cases.

## **A. SYMPTOMS**

1. History of lower abdominal trauma. Blunt injury or gunshot or stab wound in the lower abdomen.
2. inability to void.
3. gross haematuria .
4. pelvic or lower abdominal pain .

## B. SIGNS

Hemorrhagic shock: heavy bleeding associated with pelvic fracture , usually from venous disruption of pelvic vessels.

Marked tenderness of the suprapubic area and lower abdomen.

An acute abdomen may occur with intraperitoneal bladder rupture.

It may be difficult to distinguish extraperitoneal rupture from rupture urethra.

On rectal examination, landmarks may be indistinct because of a large pelvic hematoma.

## C. Investigations:

Catheterization usually is required in patients with pelvic trauma .

A plain abdominal film generally demonstrates pelvic fractures. There may be haziness over the lower abdomen from blood and urine extravasations.

Retrograde cystography.

Both plain and CT cystography have a comparable sensitivity and specificity. However, CT cystography is superior in the identification of bony fragments in the bladder and bladder neck injuries as well as other abdominal injuries.

## **Cystoscopy**

Cystoscopy is the preferred method for detection of intra-operative bladder injuries.

## **Ultrasound**

Demonstration of intraperitoneal fluid or an extraperitoneal collection suggests intraperitoneal or extraperitoneal perforation, respectively. However, US alone is insufficient in the diagnosis of bladder trauma.





# Treatment

## A. EMERGENCY MEASURES

Shock and hemorrhage should be treated.

Associated injuries

## B. SURGICAL MEASURES

### 1. Extraperitoneal bladder rupture—

Can be successfully managed with urethral catheter drainage only.  
(Typically 14 days).

Immediate open repair to prevent complications such as fistula, abscess, and prolonged leak.

Explorative laprotomy due to associated injuries.



**2. All penetrating or Intraoperative injuries—**  
should be operatively repaired .

**3. Injury during operation:**

A. recognized during op.= Repair+ catheter for 7 days.

B. unrecognized during op.= as above (rupture)

C. endoscopic surgery (TUR)

Catheter + Antibiotics

Drian

laprotomy

## **INJURIES TO THE URETHRA**

Urethral injuries are uncommon and occur most often in men, usually associated with pelvic fractures or straddle type falls. They are rare in women.

The urethra can be separated into 2 broad anatomic divisions:

The posterior urethra, consisting of the prostatic and membranous portions,

The anterior urethra, consisting of the bulbous and pendulous portions.

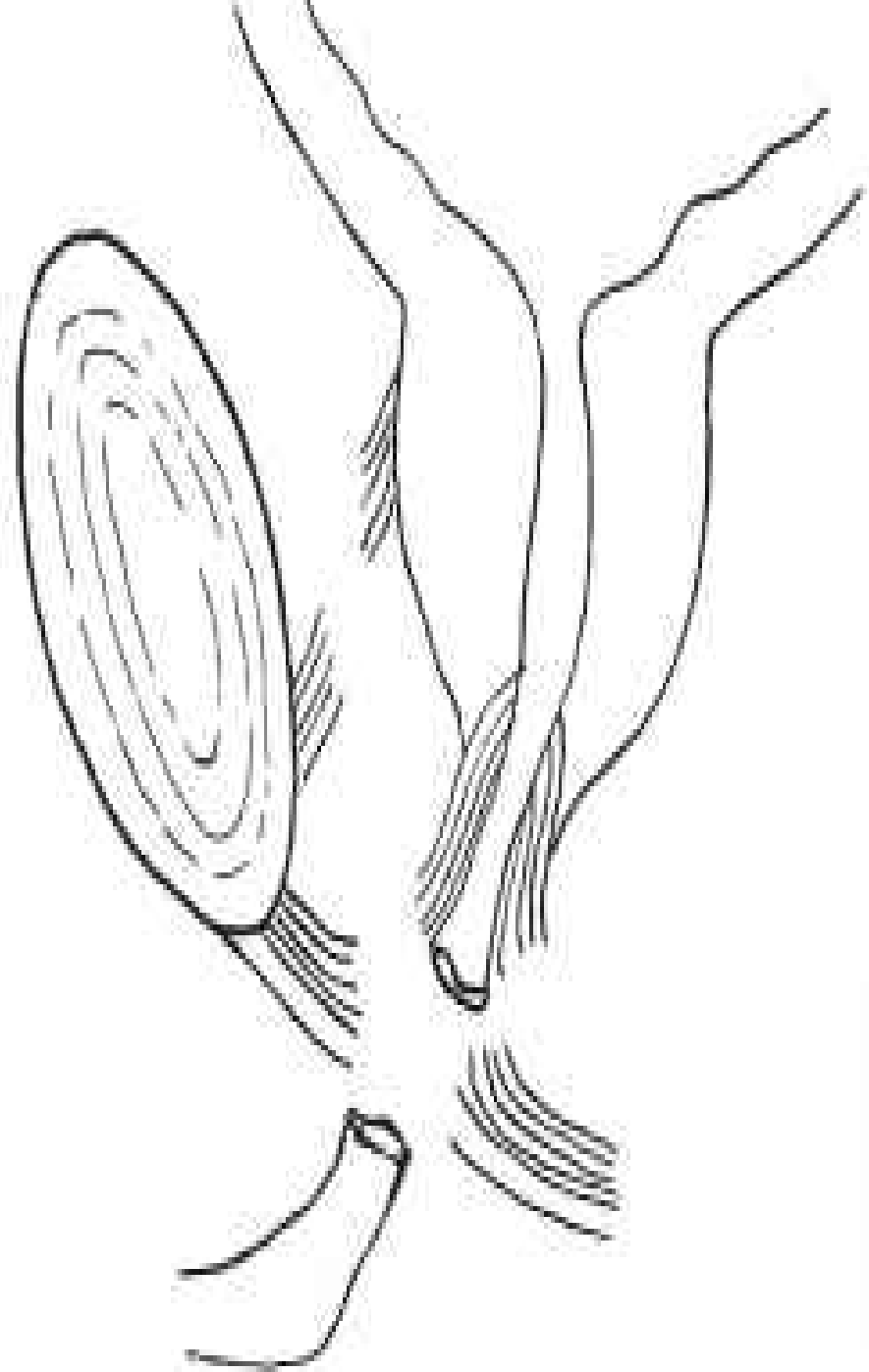
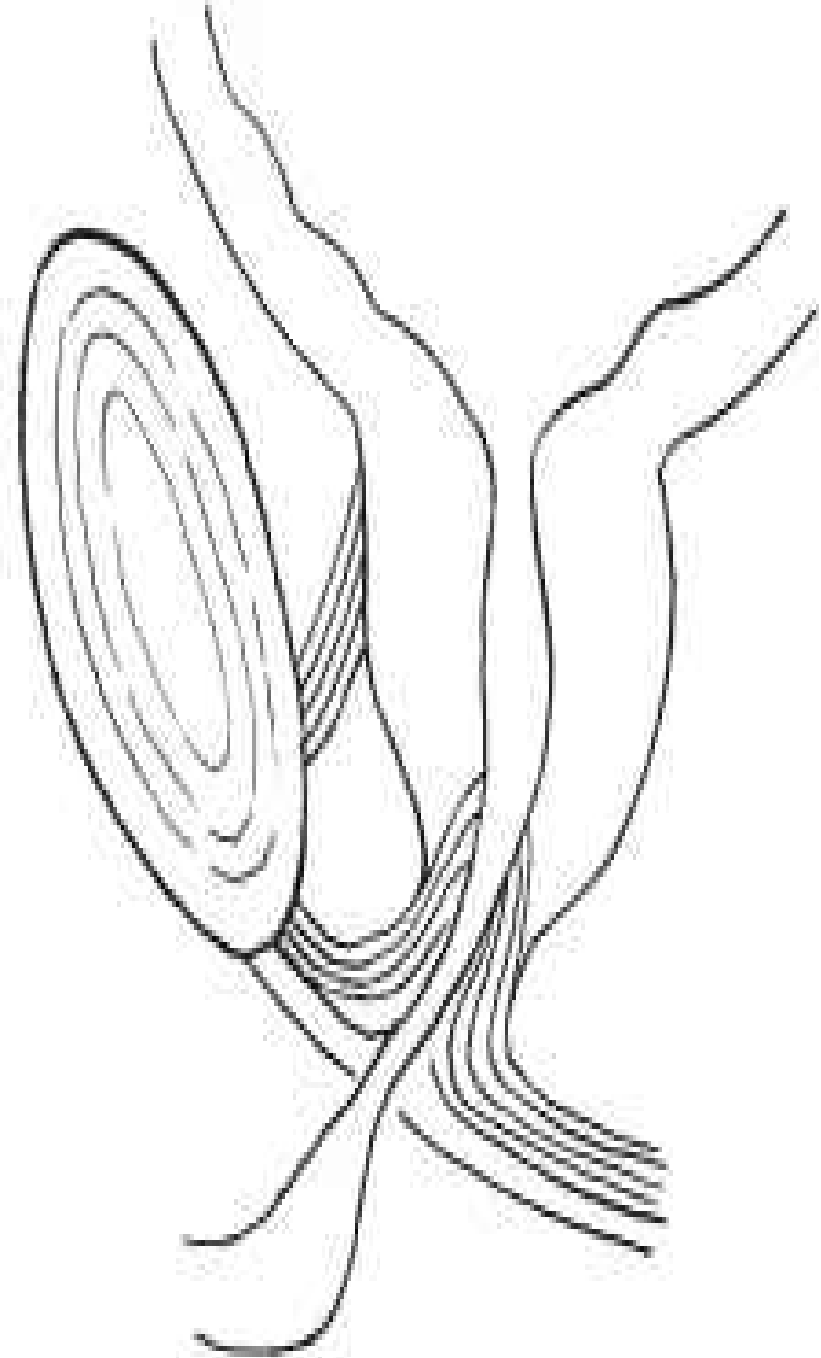


# **INJURIES TO THE POSTERIOR URETHRA**

## **Etiology**

The membranous urethra passes through the pelvic floor and voluntary urinary sphincter and is the portion of the posterior urethra most likely to be injured.

When pelvic fractures occur from blunt trauma, the membranous urethra is sheared from the prostatic apex at the prostatomembranous junction.



# Clinical Findings

## SYMPTOMS

A history of crushing injury to the pelvis, RTA, or falls is usually obtained. Patients usually complain of lower abdominal pain and inability to urinate.

## B. SIGNS

Blood at the urethral meatus is the cardinal sign of urethral injury.(the absence does not rule out the urethral injury).

Inability to void

Palpable bladder.

Suprapubic tenderness and the presence of pelvic fracture are noted on physical examination.

Perineal or suprapubic contusions are often noted.

Rectal examination may reveal a large pelvic hematoma with the prostate displaced superiorly.( unreliable sign)

## C. X-RAY FINDINGS

Fractures of the bony pelvis are usually present.

The presence of blood at the external urethral meatus indicates that immediate urethrography is necessary to establish the diagnosis.

A urethrogram (using 20–30 mL of water-soluble contrast material) shows the site of extravasations at the prostatomembranus junction.





## **Staging of urethral injuries**

Stretched but intact

Partial disruption

Complete disruption

Complex (involves bladder neck/rectum)

## **Differential Diagnosis**

Bladder rupture may be associated with posterior urethral injuries in approximately 20% of cases.

## **Complications**

Stricture,

impotence,

and incontinence

# Treatment

## A. EMERGENCY MEASURES

Shock and hemorrhage should be treated.

Associated injuries ( head, thorax, abdomen).

## B. SURGICAL MEASURES

### Immediate management—

A single attempt of urethral catheterization with experienced hands.

**Initial management should consist of suprapubic cystostomy to provide urinary drainage. This approach involves no urethral instrumentation or manipulation.**

### Partial posterior urethral rupture

Partial tears of the posterior urethra can be managed with a suprapubic or urethral catheter.

Urethrography should be performed at two-weekly intervals until healing has occurred .

Injuries may heal without significant scarring or obstruction if managed by diversion alone.

## Complete posterior urethral rupture

**Primary realignment: <48 hours**

**Delayed primary re-alignment: within 14 days**

catheter or Flexible cystoscope.

Lower stricture rate.

Scaring of subsequent stricture is shorter.

Urethroplasty technique is easier.

### **Immediate open reconstruction(urethroplasty)**

Some surgeons prefer to realign the urethra immediately. Persistent bleeding and surrounding hematoma create technical problems. (has been abandoned)

The incidence of complications appears to be higher than with immediate cystostomy and delayed reconstruction.

### **Delayed urethral reconstruction—**

direct excision of the stricture area and anastomosis of the bulbous urethra directly to the apex of the prostate.

### **TREATMENT OF COMPLICATIONS**



# **INJURIES TO THE ANTERIOR URETHRA**

## **Etiology**

The anterior urethra is the portion distal to the urogenital diaphragm.

Straddle injury may cause laceration or contusion of the urethra.

Self-instrumentation or iatrogenic instrumentation may cause partial disruption.

# Pathogenesis & Pathology

## A. CONTUSION

Contusion of the urethra is a sign of crush injury without urethral disruption. Perineal hematoma usually resolves without complications.

## B. LACERATION

A severe straddle injury may result in laceration of part of the urethral wall, allowing extravasations of urine.

If the extravasations is unrecognized, it may extend into the scrotum, along the penile shaft, and up to the abdominal wall.

It is limited only by Colles' fascia and often results in sepsis, infection, and serious morbidity.

# Clinical Findings

## A. SYMPTOMS

There is usually a history of a fall astride a projecting object, and in some cases a history of instrumentation.

Bleeding from the urethra is usually present.

There is local pain into the perineum and sometimes massive perineal hematoma.

If voiding has occurred and extravasations is noted, sudden swelling in the area will be present.

## B. SIGNS

The perineum is very tender; a mass may be found, blood at the urethral meatus.

Rectal examination reveals a normal prostate.

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When presentation of such injuries is delayed, there is massive urinary extravasations and infection in the perineum and the scrotum. The lower abdominal wall may also be involved. The skin is usually swollen and discolored.





## **C. X-RAY FINDINGS**

A urethrogram, with instillation of 15–20 ml of water-soluble contrast material, demonstrates extravasations and the location of injury .

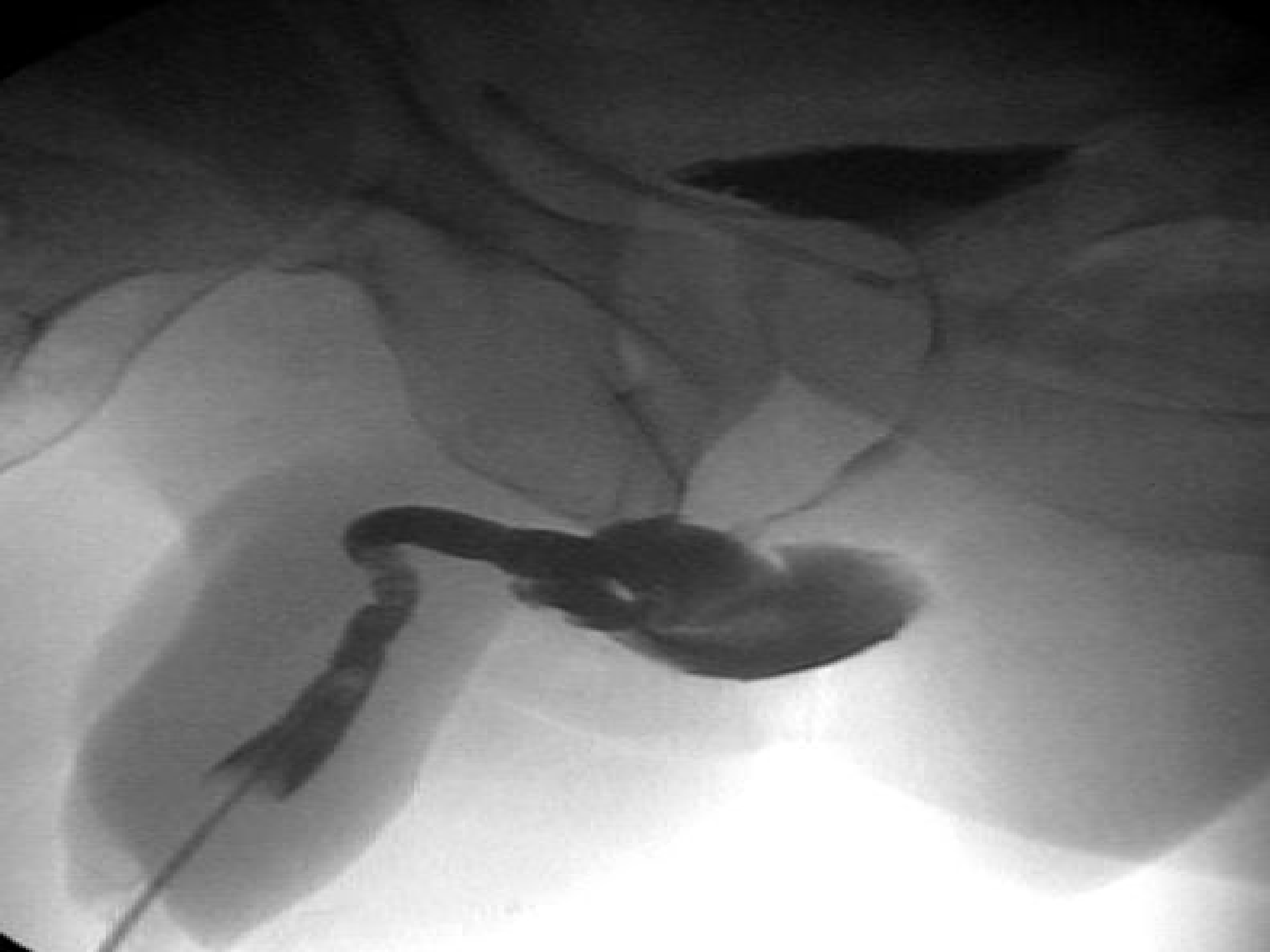
A contused urethra shows no evidence of extravasations.

## **Complications**

Heavy bleeding from the corpus spongiosum injury .

Urinary extravasations can causes sepsis and infection.

Stricture at the site of injury is a common complication.





# Treatment

## A. GENERAL MEASURES

## B. SPECIFIC MEASURES

### 1. Blunt anterior urethral inj—

a. Suprapubic cystostomy.

Suprapubic cath maintained for 2week in partial disruption or 3 weeks in complete disruption.

b. or trial of early endoscopic realignment with transurethral catheter.

### 2. Penetrating anterior urethral inj:

Immediate exploration is advised.

## C. TREATMENT OF COMPLICATIONS

Strictures at the site of injury may be extensive and require delayed reconstruction.( anastomotic urethoplasty)

# Injuries to the scrotum

Laceration : debridement and primary closure.

Blunt trauma : Conservative management.

## Testicular Injuries:

Blunt:

Pain, nausea and vomiting

Heamatoma.

Ultrasography

Repaired.