

The diseases of the urethra and penis

INJURIES TO THE URETHRA

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

Various parts of the urethra may be lacerated, transected, or contused. Management varies according to the level of injury.

INJURIES TO THE POSTERIOR URETHRA

Etiology : The membranous urethra is the portion of the posterior urethra most likely to be injured. Pelvic fractures occur from blunt trauma, the membranous urethra is sheared from the prostatic apex at the prostatomembranous junction. The urethra can be transected by the same mechanism at the interior surface of the membranous urethra.

Clinical Findings

A. SYMPTOMS: Patients usually complain of lower abdominal pain and inability to urinate with a history of crushing injury to the pelvis .

B. SIGNS: Blood at the urethral meatus is the single most important sign of urethral injury. An attempt to pass a urethral catheter may result in infection of the periprostatic and perivesical hematoma and conversion of an incomplete laceration to a complete one. The presence of blood at the external urethral meatus indicates that immediate urethrography is necessary to establish the diagnosis. Suprapubic tenderness and the presence of pelvic fracture are noted on physical examination. A large developing pelvic hematoma may be palpated. Rectal examination may reveal a large pelvic hematoma with the prostate displaced superiorly. Rectal examination can be misleading, because a tense pelvic hematoma may resemble the prostate on palpation. Superior displacement of the prostate does not occur if the puboprostatic ligament remains intact. Partial disruption of the membranous urethra (currently 10% of cases) is not accompanied by prostatic displacement.

C. x-ray findings: Fractures of the bony pelvis are usually present. A urethrogram shows the site of extravasation at the prostatomembranous junction. Ordinarily, there is free extravasation of contrast material into the perivesical space . Incomplete prostatomembranous disruption is seen as minor extravasation, with a portion of contrast material passing into the prostatic urethra and bladder.

D. instrumental examination: The only instrumentation involved should be for urethrography. Catheterization or urethroscopy should not be done.

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

Complications: Stricture, impotence and incontinence.

1. Stricture: following primary repair and anastomosis occurs in about 50% of cases. If the preferred suprapubic cystostomy approach with delayed repair is used, the incidence of stricture can be reduced to about 5%.

2. Impotence : after primary repair the incidence is 30—80% (mean, about 50%). This figure can be reduced to 30-33% by suprapubic drainage with delayed urethral reconstruction.
3. Incontinence: in primary reanastomosis is noted in one-third of patients. Delayed reconstruction reduces the Incidence to less than 5%.

Treatment

A. emergency measures: Shock and hemorrhage should be treated.

B. surgical measures: Urethral catheterization should be avoided.

1. Immediate management—Initial management should consist of suprapubic cystostomy to provide urinary drainage. The suprapubic cystostomy is maintained in place for about 3—6 months. This allows resolution of the pelvic hematoma, and the prostate and bladder will slowly return to their anatomic positions. Incomplete laceration of the posterior urethra heals spontaneously. The suprapubic cystostomy can be removed within 2-3 weeks. The cystostomy tube should not be removed before voiding cystourethrography shows that no extravasation persists.

2. Delayed urethral reconstruction—Reconstruction of the urethra after prostatic disruption can be undertaken within 3 months, assuming there is no pelvic abscess or other evidence of persistent pelvic infection.

3. Immediate urethral realignment—Some surgeons prefer to realign the urethra immediately. Persistent bleeding and surrounding hematoma create technical problems. The incidence of stricture, impotence, and incontinence appears to be higher than with immediate cystostomy and delayed reconstruction. However, several authors have reported success with immediate urethral realignment.

Prognosis: If complications can be avoided, the prognosis is excellent. Urinary infections ultimately resolve with appropriate management.

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 extravasation of urine. If the extravasation 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 and serious morbidity.

UROLOGY

Clinical Findings

A. symptoms: There is usually a history of a fall, 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 extravasation is noted, sudden swelling in the area will be present.

B. signs: The perineum is very tender, and a mass may be found. Rectal examination reveals a normal prostate. The patient has the desire to void, but not be allowed until assessment of the urethra is complete. No attempt should be made to pass a urethral catheter, but if the patient's bladder is overdistended, percutaneous suprapubic cystostomy can be done as a temporary procedure. When presentation of such injuries is delayed, there is massive urinary extravasation 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 extravasation and the location of injury. A contused urethra shows no evidence of extravasation.

Complications: Heavy bleeding from the corpus spongiosum injury may occur in the perineum as well as through the urethral meatus. , urinary extravasation, and infection. Stricture at the site of injury is a common complication.

Treatment

A. general measures: Major blood loss usually does not occur from straddle injury. If heavy bleeding does occur, local pressure for control, followed by resuscitation, is required.

B. specific measures:

1. Urethral contusion—The patient with urethral contusion shows no evidence of extravasation, and the urethra remains intact. After urethrography, the patient is allowed to void; and if the voiding occurs normally, without pain or bleeding no additional treatment is necessary.

2. Urethral lacerations—Instrumentation of the urethra following urethrography should be avoided. a suprapubic cystostomy tube can be inserted, allowing complete urinary diversion while the urethral laceration heals. Percutaneous cystostomy may also be used in such injuries. If only minor extravasation is noted on the urethrogram, a voiding study can be performed within 7 days after suprapubic catheter drainage to search for extravasation. In more extensive injuries, one should wait 2—3 weeks before doing a voiding study through the suprapubic catheter.

3. Urethral laceration with extensive urinary extravasation—After major laceration, urinary extravasation may involve the perineum, scrotum, and lower abdomen. Drainage of these areas is indicated. Suprapubic cystostomy for urinary diversion is required. Infection and abscess formation are common and require antibiotic therapy.

4. Immediate repair—Immediate repair of urethral lacerations can be performed, but the procedure is difficult and the incidence of associated stricture is high.

C. treatment of complications: Strictures at the site of injury may be extensive and require delayed reconstruction.

URETHRAL STRICTURE

Acquired urethral stricture is common in men but rare in women. Most acquired strictures are due to infection or trauma. Large catheters and instruments are more likely than small ones to cause ischemia and internal trauma. External trauma, for example, pelvic fractures. Urethral strictures are fibrotic narrowings composed of dense collagen and fibroblasts. Fibrosis usually extends into the surrounding corpus spongiosum, causing spongiofibrosis. These narrowings restrict urine flow and cause dilation of the proximal urethra and prostatic ducts. Prostatitis is a common complication of urethral stricture. The bladder muscle may become hyperatrophic, and increased residual urine may be noted. Severe, prolonged obstruction can result in decompensation of the ureterovesical junction, reflux, hydronephrosis, and renal failure. Chronic urinary stasis makes infection likely. Urethral fistulas and periurethral abscesses commonly develop in association with chronic, severe strictures.

Clinical Findings

A. symptoms and signs: A decrease in urinary stream, spraying or double stream is often noted, and postvoiding dribbling. Acute cystitis or symptoms of infection are seen at times. Urinary frequency and mild dysuria may also be initial complaints. Indurations in the area of the stricture may be palpable. Tender enlarged masses along the urethra usually represent periurethral abscesses. Urethrocutaneous fistulas may be present. The bladder may be palpable if there is chronic retention of urine.

B. laboratory findings: the flow rate will be less than 10 mL/s (normal, 20—25 mL/s).

Urine culture may be indicated.

C. x-ray findings: A urethrogram or voiding cystourethrogram (or both) will demonstrate the location and extent of the stricture. Sonography has also been a useful method of evaluating the urethral. Urethral fistulas and diverticula are sometimes noted. Vesical stones, trabeculations, or diverticula may also be seen.

D. instrumental examination: Urethroscopy allows visualization of the stricture.

Differential Diagnosis: Benign or malignant prostatic obstruction, bladder neck contracture and Urethral carcinoma.

Complications: Include chronic Prostatitis, cystitis, chronic urinary infection, diverticula, urethrocutaneous fistulas, periurethral abscesses, and Vesical calculi may develop from chronic urinary stasis and infection.

Treatment

A. specific measures:

1. Dilation: Dilation of urethral strictures is not usually curative, but it fractures the scar tissue of the stricture and temporarily enlarges the lumen. As healing occurs, the scar tissue reformed.

2. Urethrotomy under endoscopic direct vision: Lyses of urethral strictures can be accomplished using a sharp knife attached to an endoscope. A catheter is left in place for a short time to prevent bleeding and pain.

3. Surgical reconstruction: If urethrotomy under direct vision fails, open surgical repair should be done.

B. treatment of complication:

1. Urinary tract infection in patients with strictures requires specific antimicrobial therapy, followed by long-term prophylactic therapy until the stricture has been corrected.
2. Periurethral abscesses require drainage and use of antimicrobial drugs.
3. Urethral fistulas usually require surgical repair.

PHIMOSIS

Phimosis is a condition in which the contracted foreskin cannot be retracted over the glans. Chronic infection from the poor local hygiene is its most common cause. Most cases occur in uncircumcised males, although excessive skin left after circumcision can become stenotic and cause phimosis. It may occur at any age.

The initial infection should be treated with broad-spectrum antimicrobial drugs. The dorsal foreskin can be slit if improved drainage is necessary. Circumcision, if indicated, should be done after the infection is controlled.

PARAPHIMOSIS

Paraphimosis is the condition in which the foreskin, once retracted over the glans, cannot be replaced in its normal position. This is due to chronic inflammation under the redundant foreskin, which leads to contracture of the preputial opening (phimosis) and formation of a tight ring of skin when the foreskin is retracted behind the glans. The skin ring causes venous congestion leading to edema and enlargement of the glans, which make the condition worse. As the condition progresses, arterial occlusion and necrosis of the glans may occur.

Paraphimosis usually can be treated by firmly squeezing the glans for 5 min to reduce the tissue edema and decrease the size of the glans. The skin can then be drawn forward over the glans. Occasionally, the constricting ring requires incision under local anesthesia. Antibiotics should be administered and circumcision should be done after inflammation has subsided.

Priapism

Priapism is an uncommon condition of prolonged usually painful erection with no sexual excitement or desire. The disorder is idiopathic in 60% of cases, while the remaining 40% of cases are associated with diseases (eg, leukemia, sickle cell disease, pelvic tumors, pelvic infections), penile trauma, spinal cord trauma, or use of medications. Currently, intracavernous injection therapy for impotence may be the most common cause.

Priapism may be classified into high and low-flow types. High-flow priapism (nonischemic) usually occurs secondary to perineal trauma, which injures the central penile arteries.

The patient with low-flow priapism (ischemic) usually presents with a history of several hours of painful erection. The glans penis and corpus spongiosum are soft and uninvolved in the process. The corpora cavernosa are tense with congested blood and tender to palpation.

Priapism must be considered a urologic emergency. The sludged blood can then be evacuated from the corpora cavernosa through a large needle placed through the glans with the addition of adrenergic agents administered via intracavernous irrigation. Patient with sickle cell anemia should be treated with hydration, hyperbaric oxygen, and blood transfusion while patients with leukemia should be treated with chemotherapy.