

1. ANURIA

Oliguria and anuria may be caused by acute renal failure (due to the shock or dehydration), fluid-ion imbalance, or bilateral ureteral obstruction. (Smith)

2. URINARY RETENTION

Inability to empty the bladder.

2.1 ACUTE URINARY RETENTION

Sudden inability to urinate may supervene. The patient experiences increasingly agonizing suprapubic pain associated with severe urgency and may dribble only small amounts of urine.

2.2 CHRONIC URINARY RETENTION

Chronic urinary retention may cause a little discomfort to the patient even though there is a great hesitancy in starting the stream and marked reduction of its force and calibre. Constant dribbling of urine (paradox incontinence) may be experienced, it may be likened to water pouring over a dam. (Smith).

3. HEMATURIA

Hematuria is a danger signal that cannot be ignored. Carcinoma of the kidney or bladder, calculi, and infection are a few of the conditions in which hematuria is typically demonstrable at the time of the presentation. It is important to know whether urination is painful or not, whether the hematuria is associated with symptoms of

vesical irritability, and whether blood seen in all or only a portion of the urinary stream. The hemoglobinuria that occurs as a feature of the haemolytic syndromes may also cause the urine to be red.

3.1. HEMATURIA IN RELATION TO SYMPTOMS AND DISEASES

Hematuria associated with renal colic suggests a ureteral stone, although a clot from a bleeding renal tumor can cause the same type of pain.

Hematuria can be associated with nonspecific, tuberculous, or schistosomal infection of the bladder. The bleeding is often terminal (bladder neck or prostate), although it may be present throughout urination (vesical or upper tract). Stone in the bladder often causes hematuria, but infection is usually present, and there are symptoms of bladder neck obstruction, neurogenic bladder, or cystocele.

Dilated veins may develop at the bladder neck secondary to enlargement of the prostate. These may rupture when the patient strains to urinate, resulting in gross or microscopic hematuria.

Hematuria without other symptoms (silent hematuria) must be regarded as a symptom of tumor of the bladder or kidney until proved otherwise. It is usually intermittent; bleeding may not recur for months. Because the bleeding stops spontaneously, complacency must be condemned. Less common causes of silent hematuria are staghorn calculus, polycystic kidneys, benign prostatic hyperplasia, solitary renal cyst, sickle cell disease, and hydronephrosis. Painless bleeding is common with acute glomerulonephritis. Recurrent bleeding is occasionally seen in children suffering from focal glomerulitis. Joggers and people who engage in participatory sports frequently develop transient proteinuria and gross or microscopic hematuria.

3.2 TIME OF HEMATURIA

Learning whether the hematuria is partial (initial, terminal) or total (present throughout urination) is often of help in identifying the site of bleeding. Initial hematuria suggest an anterior urethral lesion (eg urethritis , stricture, meatal stenosis in young boys). Terminal hematuria usually arises from the posterior urethra, bladder neck, or trigone. Among the common causes are posterior urethritis and polyps and tumors of the vesical neck. Total hematuria has its source at or above the level of the bladder (eg, stone, tumor, tuberculosis, nephritis).

4. RENAL COLIC

Renal **colic** typically begins in the flank and often radiates to the **hypochondrium** (the part of the anterior abdominal wall below the **costal margins**) or the **groin**. It is typically colicky (comes in waves) due to **ureteric peristalsis**, but may be constant. It is often described as one of the strongest pain sensations known¹

4.1. LOCAL AND REFERRED PAIN

Two types of pain have their origins in the genitourinary organs: local and referred.

The later is especially common.

Local pain is felt in or near the involved organ. Thus, the pain from the diseased kidney (TH10-12, L1) is felt in costovertebral angle and in the flank in the region of and below the 12th rib. Pain from an inflamed testicle is felt in the gonad itself.

Referred pain originates in a diseased organ but is felt at some distance from that organ. The ureteral colic caused by a stone in the upper ureter may be associated with severe pain in the ipsilateral testicle ;this is explained by the common innervation of these two structures (TH11-12). A stone in the lower ureter may cause pain referred to the scrotal wall; In this instance, the testis itself is not hypersthetic. The burning pain with voiding that accompanies acute cystitis is felt in the distal urethra in females and in the glandular urethra in males (S2-3).

Abnormalities of urologic organ can also cause pain in any other organ (eg, gastrointestinal, gynecologic) that has a sensory nerve supply common to both.

4.1.1 KIDNEY PAIN

Typical renal pain is felt as a dull and constant ache in costovertebral angle, just lateral to sacrospinalis muscle

And just below 12th rib. This pain often spreads along the subcostal area toward the umbilicus or lower abdominal quadrant. It may be expected in the renal diseases that cause sudden distension of the renal capsule. Acute pyelonephritis (with its sudden edema) and acute ureteral obstruction (with its sudden renal back pressure) both cause this typical pain. It should be pointed out, however, that many urologic renal diseases re painless because their progression is si slow that sudden capsular distension does not occur. Such diseases include cancer, chronic pyelonephritis, staghorn calculus, tuberculosis, polycystic kidney, and hydronephrosis due to chronic ureteral obstruction.

4.1.2 URETERAL PAIN

Ureteral pain is typically stimulated by acute obstruction (passage of a stone or a blood clot). In this instance, there is a back pain from renal capsular distension combined with severe colicky pain (due to renal pelvic and ureteral muscle spasm) that radiates from the costovertebral angle down toward the lower anterior abdominal quadrant, along the course of the ureter. In men, it may also be felt in the bladder, scrotum or testicle. In women, it may radiate into the vulva. The severity and colicky nature of this pain are caused by the hyperperistalsis and spasm of this smooth muscle organ as it attempts to rid itself of foreign body or to overcome obstruction. The physician may be able to judge the position of ureteral stone by the history of pain and the site of referral. If the stone is lodged in the upper ureter, the pain radiates to the testicle, since the nerve supply of this organ is similar to that of the kidney and upper ureter (TH11-12). With stones in the midportion of the ureter on the right side, the pain is referred to McBurney's point and may therefore simulate appendicitis; on the left side, it may resemble diverticulitis or other diseases of the descending or sigmoid colon (TH12, L1). As the stone approaches to the bladder, inflammation and edema of the ureteral orifice ensue, and symptoms of vesical irritability such as urinary frequency and urgency may occur. It is important to realise, that in mild ureteral obstruction, as seen in the congenital stenosis, there is usually no pain, either renal or ureteral.

5. SCROTUM ACUTUM

Acute pain in scrotum can be due to trauma, infection or torsion of the spermatic cord. Pain is severe and is felt locally, although there may be some radiation or discomfort along the spermatic cord into the lower abdomen. Uninfected hydrocele,

spermatocele, and tumor of the testis do not commonly cause pain. A varicocele may cause a dull ache in the testicle that is increased after heavy exercise. At times, the first symptom of an early indirect hernia may be testicular pain (referred). Pain from the stone in the upper ureter may be referred to the testicle.

Acute infection of the epididymis can present as scrotum acutum. The pain begins in the scrotum and inflammatory reaction involves the adjacent testis as well, further aggravating the discomfort. In the early stages of epididymitis, pain may be first felt in the groin or lower abdominal quadrant. On the right side may simulate appendicitis. This may be referred type of pain but can be secondary to associated inflammation of the vas deferens.

6. PHIMOSIS

Children are presented with a phimosis more frequently than men. Balanoposthitis tends to occur in patients with phimosis and circumcision may be curative.

Population-based data reveal that although neonatal circumcision is highly protective for invasive penile cancer, it does not afford the same level of protection for carcinoma in situ. [Schoen and colleagues \(2000\)](#) evaluated the incidence of invasive penile cancer or carcinoma in situ during a 10-year period and found only 2 cases of 89 (2.3%) occurring among neonatally circumcised men, whereas of 118 men with carcinoma in situ, 16 cases were noted among 102 men who were circumcised at birth for an incidence of 15.7%. Considering that the protective effects of circumcision on invasive penile cancer are likely to be mediated by avoidance of phimosis, it is noteworthy that another study associated phimosis with the development of invasive penile cancer but not carcinoma in situ ([Hung-fu et al, 2001](#)). Male circumcision has also been shown to be effective against HIV type 1 (HIV-1) infection. This effect was

shown to be specific by [Reynolds and colleagues \(2004\)](#). There was no protective effect of circumcision for other sexually transmitted diseases, such as herpes simplex virus type 2 infection, syphilis, or gonorrhea. Phimosis may obscure a lesion and allow a tumor to progress silently. Eventually, erosion through the prepuce, foul preputial odor, and discharge with or without bleeding call attention to the disease. Phimosis, or the inability to retract the foreskin, can result from repeated episodes of balanitis. In older patients, balanitis may be a presenting sign of diabetes. In these cases, circumcision may be warranted. Phimosis, or the inability to retract the foreskin, can result from repeated episodes of balanitis. In older patients, balanitis may be a presenting sign of diabetes. In these cases, circumcision may be warranted. Elective circumcision in the neonate remains controversial. Circumcision has several potential benefits, including the prevention of penile cancer, UTIs, sexually transmitted diseases including human immunodeficiency virus (HIV) infection, and phimosis, as well as lessening of the risk of balanitis.

7. PARAPHIMOSIS

Penile pain may be produced by paraphimosis, a condition in which the uncircumcised penile foreskin is trapped behind the glans penis, resulting in venous obstruction and painful engorgement of the glans penis. Paraphimosis, or painful swelling of the foreskin distal to a phimotic ring, occurs if the foreskin remains retracted for a prolonged time. Swelling is sufficient to make reduction of the foreskin over the glans difficult. In a very young child, paraphimosis is often seen after the foreskin has been traumatically reduced during an examination or sometimes by overzealous parental attempts at hygiene. Traumatic, sudden reduction of a tight foreskin should be avoided in all ages and circumstances. To

reduce a paraphimosis, gentle steady pressure must be applied to the foreskin to decrease the swelling; with a child, this is best accomplished in a quiet room by a parent squeezing it in the hand. Elastic wrap may be helpful in some cases. Putting an ice pack on the area for a short time before gentle compression is helpful as an analgesic. When the swelling has been reduced, the surgeon can push against the glans with the thumbs, pulling on the foreskin with the fingers. Because paraphimosis tends to recur, a dorsal slit at a minimum or a circumcision should be carried out as an elective procedure at a later date. An occasional patient presents with acute paraphimosis that has been present for many hours to days; this is typically seen in an adolescent who is reluctant to reveal the problem to his parents. In these cases, reduction may be impossible, and paraphimosis should be dealt with by emergency dorsal slit or circumcision. Considerable postoperative edema is the rule in these cases.

8. PRIAPISM

Priapism, a prolonged penile erection sustained for longer than 4 hours with the absence of both physical and psychological stimulation, is commonly painful.

Tumescence is usually restricted to the corpora cavernosa, and in some cases the corpus spongiosum involves the glans. Priapism can be categorized into three types:

1. Ischemic (veno-occlusive, low-flow) priapism is characterized by little or no cavernous blood flow, and cavernous blood gases are hypoxic, hypercapnic, and acidotic. The corpora are rigid and tender to palpation.
2. Nonischemic (arterial, high-flow) priapism is caused by unregulated cavernous arterial inflow. Typically, the penis is neither fully rigid nor painful. There is often a history of antecedent trauma resulting in a cavernous artery or corpora cavernosa

fistula.

3. Stuttering (intermittent) priapism is a recurrent form of ischemic priapism with painful erections with intervening periods of detumescence.

Low-flow priapism is most commonly secondary to homozygous sickle cell disease, which is characterized by predominance of sickle hemoglobin (HbS). Other causes include leukemia, other hemoglobinopathies, and local malignancy

Sickle cell–induced priapism occurs in 2% to 29% of males with the disease

The priapism associated with sickle cell disease is generally related to sickling of red blood cells within the sinusoids of the corpora cavernosa during normal erection, resulting in venous stasis. The resulting decreased pH and local oxygen tension potentiates further stasis and sickling. Priapism typically occurs during sleep, when mild hypoventilatory acidosis depresses oxygen tension and pH in the corpora or as a result of oxyhemoglobin desaturation. The pain that is experienced is a sign of ischemia.

Transient prolonged erections lasting less than 2 hours, stuttering priapism, is more common than prolonged erections in the patient with sickle cell disease.

Pseudoephedrine, an oral α -adrenergic agent, given at bedtime promotes muscle contraction within the erectile tissue. If this treatment is unsuccessful, other agents can be used, including an oral β agonist. Recently, preliminary findings have suggested that the use of continuous, long-term oral phosphodiesterase type 5 (PDE5) inhibitor therapy may prevent recurrent priapism based on the hypothesis that PDE5 dysregulation may be involved in priapism. The initial treatment of low-flow priapism resulting from sickle cell disease is conservative, with hydration, oxygenation, alkalization, analgesia, and exchange transfusion aimed at reducing

HbS concentration. Evacuation of blood and irrigation of the corpora cavernosa along with intracavernous injections of α -adrenergic sympathomimetic agents, such as phenylephrine or epinephrine solution, can be a concurrent therapy.

Surgical shunt procedures to facilitate corporal drainage are indicated in the absence of response to medical therapy. Surgical shunting bypasses the veno-occlusive mechanism of the corpora cavernosa and thereby enhances blood drainage.

Shunt procedures include distal cavernoglanular shunt (Winter, Ebbehøj, and Al-Ghorab shunts) proximal cavernospongiosal shunt (Quackels and Sacher shunts) or saphenous vein anastomosis to one of the corpora cavernosa (Grayhack shunt).

Parents should be educated on the potential side effects from intervention, including cavernosal fibrosis and erectile dysfunction.

High-flow priapism is usually a result of perineal trauma, such as a straddle injury.

Other causes include Fabry disease and sickle cell anemia. Corporal irrigation is diagnostic and therapeutic. Typically, the aspirated blood is bright red and the aspirate is similar to arterial blood on blood gas analysis. Color Doppler ultrasonography (CDUS) often will demonstrate the fistula. The initial management is observation because spontaneous resolution may occur. Superselective embolization of cavernous and penile arteries is the next line of therapy.

A fourth type of priapism is a spontaneously resolving form observed in neonates.

Causes may include idiopathic factors, birth trauma, and polycythemia. No intervention is necessary because the priapism usually resolves in 2 to 6 days without adverse results.

