

UROLOGICAL EMERGENCY

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Testicular Torsion

Types of torsion:-

- Intravaginal** –torsion spermatic cord within tunica vaginalis
- Exravaginal** _in newborn tunica vaginalis is not adherent to dartos so ,the spermatic cord and tunica vaginalis can twist as a unit.

Predisposing factors:-

- Undescended testis (cryptorchidism)
- Bell clapper deformity

Presentation :-

- Torsion is most common in males 12-18 years of age , but it can occur in any age .

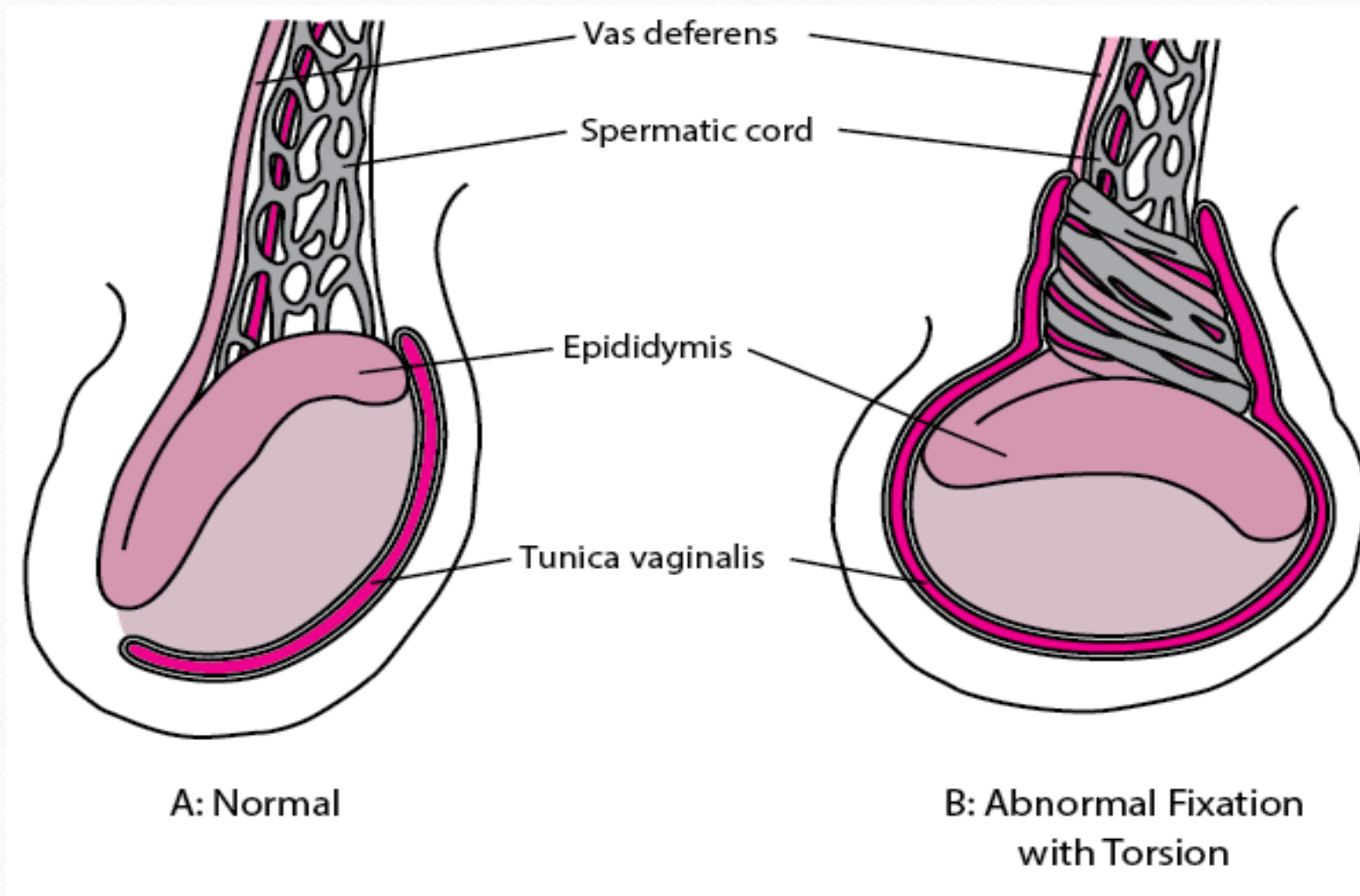
Acute onset severe testicular pain with or without swelling , some males may have a history of intermittent torsion .

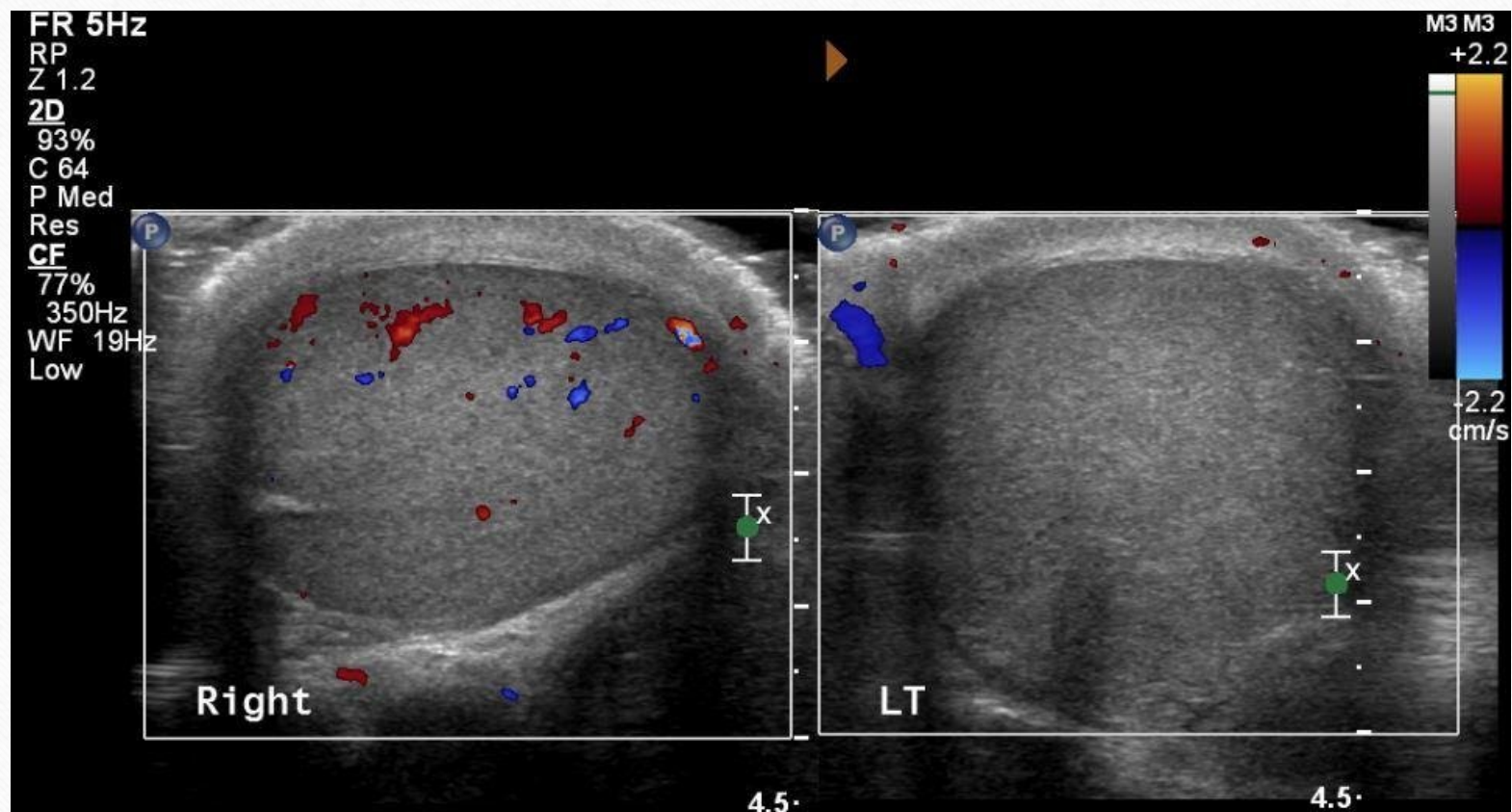
Physical finding include a tender firm testicle , high riding testicle , horizontal lie , absent cremasteric reflex , no pain relief on elevation the testis , thick or knotted spermatic cord.

The diagnosis is based on clinical suspicion.

If testicular torsion suspected, do not delay exploration for imaging.

Doppler ultrasound of torsed testis showed minimal or no blood flow compared to normal testis.





Treatment

If testicular torsion suspected immediate surgical exploration is mandatory because delay may result in death of testis.

During exploration, testis is detorsed then if it is not viable after period of time with using hot foment so orchiectomy is performed . If it is viable orchiopepy is performed for detorsed and contralateral testis .

Differential diagnosis

Acute Epididymitis vs Testicular Torsion

Acute Epididymitis

- Gradual onset of scrotal pain (days)
- Normal cremasteric reflex
- Usually no nausea & vomiting
- More common in sexually active men
- HPI & exam support a diagnosis of urethritis or urinary-tract infection
- Empiric treatment & follow-up

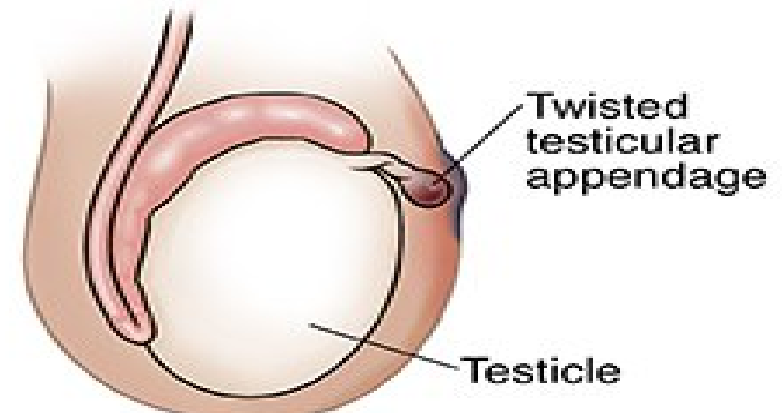
Testicular Torsion

- Sudden onset of scrotal pain (hours)
- Abnormal cremasteric reflex
- Nausea & vomiting common
- More common in adolescents and in men without evidence of inflammation or infection
- HPI & exam do not support a diagnosis of urethritis or UTI
- Surgical emergency

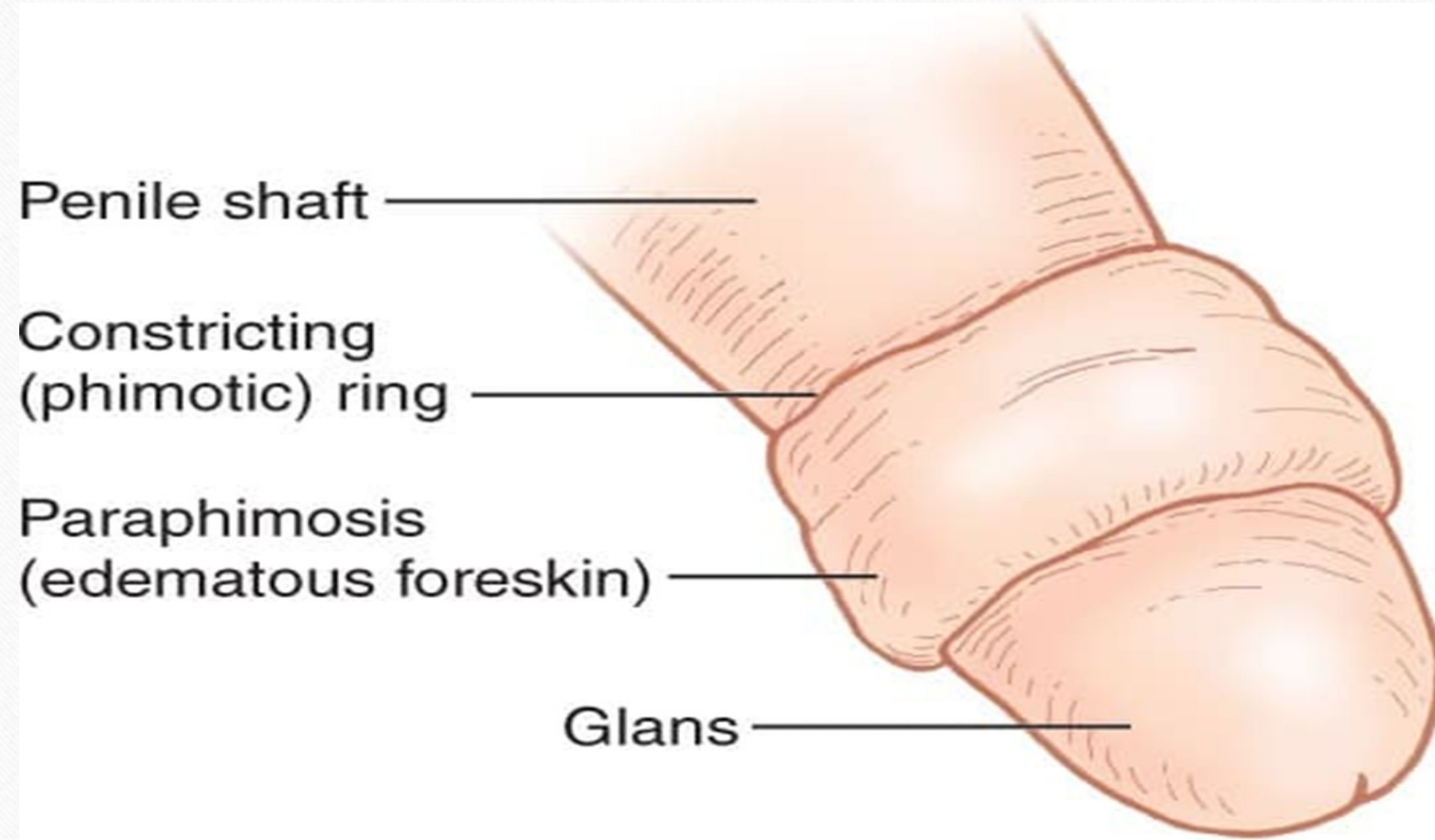
Torsion of testicular appendages

The appendix testis (hydatid of Morgagni—a remnant of the Müllerian duct) and the appendix epididymis (a remnant of a cranial mesonephric tubule of the Wolffian duct) can undergo torsion, causing pain that mimics a testicular torsion.

At scrotal exploration, they are easily removed with scissors or a diathermy probe.



Paraphimosis



Paraphimosis

Occur when the foreskin becomes stuck behind the glans.

Paraphimosis should be reduced immediately to prevent penile necrosis.

Topical anesthesia , penile block, pain medication or sedation may help relieve the pain associated with reducing the paraphimosis .

If the paraphimosis can't reduced manually , an emergent dorsal slit or circumcision may need to performed .

To reduce paraphimosis , you must first squeeze edema out of the penis by applying a firm grip on edematous tissue and squeezing
After resolution of the edema place the index and middle finger of both hands on the opposite side of constricting area , the thumb of both hands placed on the glans .

The thumbs push on the glans while the index and middle pull the foreskin over the glans . (similar to inject the syringe).



Difference Between Phimosis and Paraphimosis

Phimosis

↳ Inability to retract the foreskin



Cannot retract foreskin

Can be normal up to 3 years old
Clinically significant after age 4

Treatment

- Topical steroid cream
- Periodic gentle retraction
- Signs of ischemia - dorsal slit procedure

Paraphimosis



Paraphimosis

- Inability to reduce the foreskin back to anatomic position
- Urologic emergency

Priapism

Definition:-

Prolonged, unwanted erection, in the absence of sexual desire or stimulus, lasting >4h.

Classification:-

1. **Low-flow (ischaemic)** priapism: due to veno-occlusion, Commonest form (accounts for 95%). which manifests as a painful, rigid erection, with absent or low cavernosal blood flow.

Blood gas analysis shows hypoxia and acidosis.

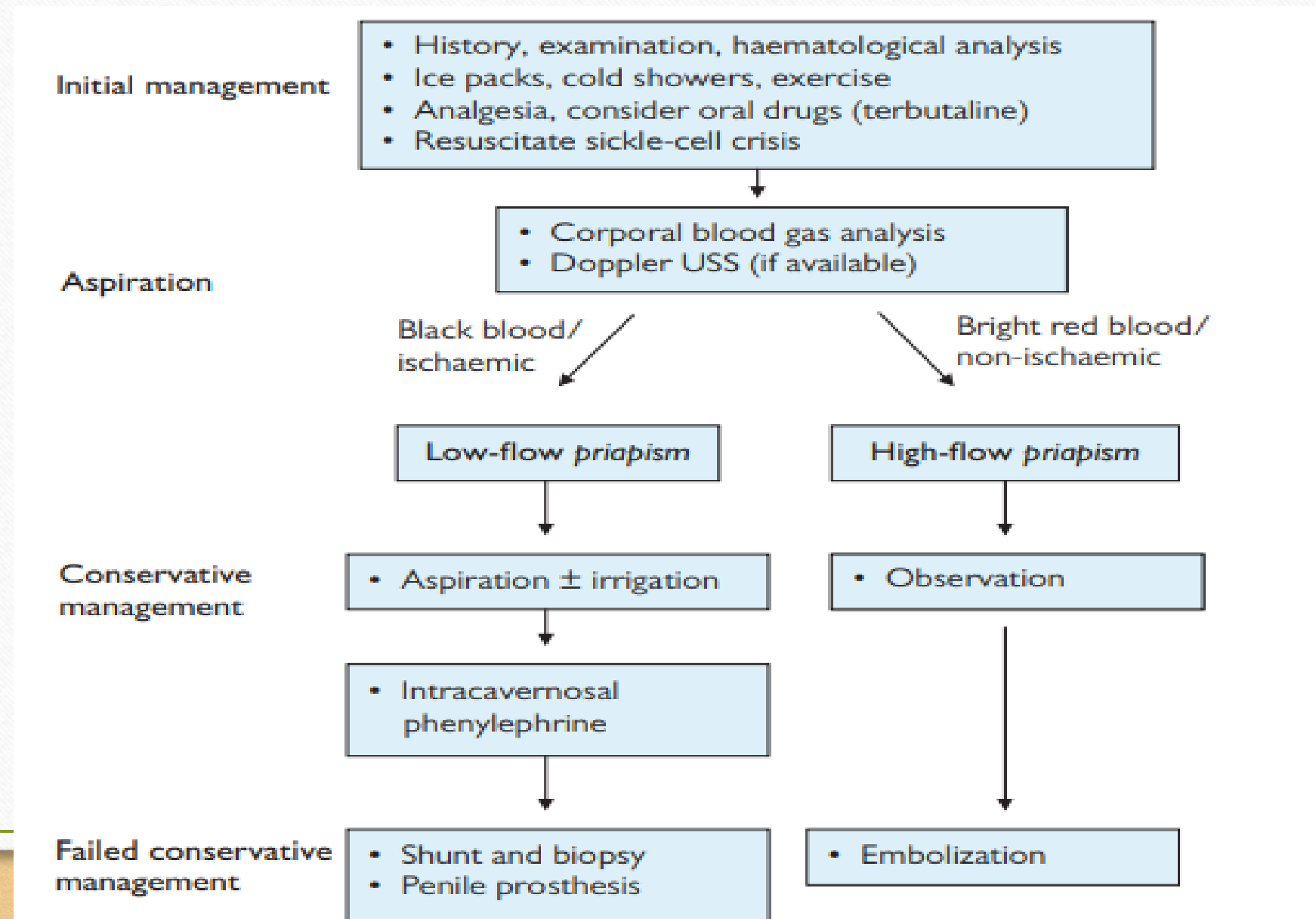
Aetiology of ischaemic priapism

Causes are primary (idiopathic) or secondary, including:

1. **Intracavernosal injection** therapy: papaverine, alprostadil.
2. **Oral drugs**: • α -blockers: • Antihypertensives: • Antidepressants: Antipsychotics• Psychotropics• Anxiolytics: hydroxyzine. • Anticoagulants: warfarin, heparin. Recreational drugs: cocaine, marijuana, alcohol excess.
3. **Hormones**: GnRH; testosterone.
4. **Thromboembolic**: sickle-cell disease, leukaemia, thalassaemia, fat emboli.
5. **Neurogenic**: spinal cord lesion/injury, autonomic neuropathy, spinal anaesthesia.
6. **Infection**: malaria, rabies, scorpion sting, genitourinary sepsis.
7. **Other**: prostate or bladder cancer extending into the penis, amyloidosis

2. **High-flow (non- ischaemic)** priapism: due to unregulated arterial blood flow, presenting with a semi-rigid, painless erection. Caused by trauma (or surgery) to the penis or perineum. It is often self-limiting. Blood gas analysis shows similar results to arterial blood.
3. **Recurrent (or stuttering)** priapism: intermittent, recurrent ischaemic episodes of priapism, of relatively short duration, which are often painful. Most commonly seen in sickle-cell disease.

Management of priapism.



Penile Fracture

Rupture of the tunica albuginea of the erect penis (i.e. rupture of one or both corpora cavernosa, rupture of the corpus spongiosum with rupture of the urethra).

The tunica albuginea is 2mm thick in the flaccid penis. It thins to 0.25mm during erection and is therefore vulnerable to rupture if the penis is forcibly bent (e.g. during vigorous sexual intercourse).

By history: The patient usually reports a sudden 'snapping' or 'popping' sound and/ or sensation with sudden penile pain and detumescence of the erection.

By exam :

- i. The penis is swollen and bruised, sometimes resembling an eggplant . If Buck's fascia has ruptured, bruising extends onto the lower abdominal wall and into the perineum and scrotum.
- ii. A tender, palpable defect may be felt over the site of the tear in the tunica albuginea.
- iii. If the urethra is damaged, there may be blood at the meatus or haematuria and pain on voiding or urinary retention.



Fig. 1. a Eggplant. **b** Classical clinical picture of eggplant deformity.



Fig. 2. Right corpora cavernosa and tunica albuginea tear on MRI.

Treatment

There has been a trend away from conservative management towards surgical repair (lower complication rate, e.g. reduced penile deformity, less chance of penile scar tissue, and prolonged penile pain).

_Conservative: application of cold compresses to the penis; analgesics and anti-inflammatory drugs; abstinence from sexual activity for 6– 8wk to allow healing.

_Surgery: expose the fracture site in the tunica albuginea; evacuate the haematoma, and close the defect in the tunica.

If suspected with urethral injury we can use flexible cystoscopy during repair of penile fracture.

Emphysematous Pyelonephritis (EP)

EP is a urologic emergency characterized by an acute necrotizing parenchymal and perirenal infection caused by gas-forming uropathogens.

The condition usually occurs in patients with diabetes and in the setting of urinary tract obstruction.

Urine culture is invariably positive, most commonly with *E. coli*. *Proteus* and *Klebsiella* are less common.

CT will demonstrate mottled gas distributed in the renal parenchyma.



Most patients are septic and require intensive care.

Fluid resuscitation, glucose and electrolyte management, and broad-spectrum antimicrobial therapy are essential.

Patients may initially be managed via placement of a ureteral stent or percutaneous nephrostomy tube.

Nephrectomy is advised in cases where patients do not respond to conservative management or if there is extensive and diffuse gas with renal destruction

Pyonephrosis

An infected hydronephrosis where pus accumulates within the renal pelvis and calyces. It is associated with damage to the parenchyma, resulting in loss of renal function.

The causes are essentially those of hydronephrosis where infection has supervened (e.g. ureteric obstruction by stone, PUJO).

Presentation : Patients with pyonephrosis are usually very unwell, with a high fever, flank pain, and tenderness

Risk factors : Stone disease, previous UTI, or surgery

Pyonephrosis

Investigation:

- USS: shows evidence of obstruction (hydronephrosis) with a dilated collecting system, fluid–debris levels, or air in the collecting system.
- CT: shows hydronephrosis, stranding of perinephric fat, and thickening of the renal pelvis.

Treatment:

- IV fluids and IV antibiotics (as for severe pyelonephritis), with urgent percutaneous drainage (nephrostomy) and/or ureteric stent

Fournier's gangrene

Necrotizing fasciitis of the external genitalia and perineum, primarily affecting and causing necrosis and subsequent gangrene of infected tissues. It is a urological emergency.

Causative organisms:-

_Culture of infected tissue reveals a combination of aerobic bacteria (E. coli, enterococci, Klebsiella, S. aureus, Streptococcus spp.) and anaerobic organisms which are believed to grow in a synergistic fashion

Predisposing factors

Diabetes mellitus.

Chronic alcohol excess.

Local trauma to the genitalia and perineum (e.g. zipper injuries to the foreskin, peri- urethral extravasation of urine following traumatic catheterization, or instrumentation of the urethra).

Surgical procedures such as circumcision.

Paraphimosis.

Perianal and perirectal infections

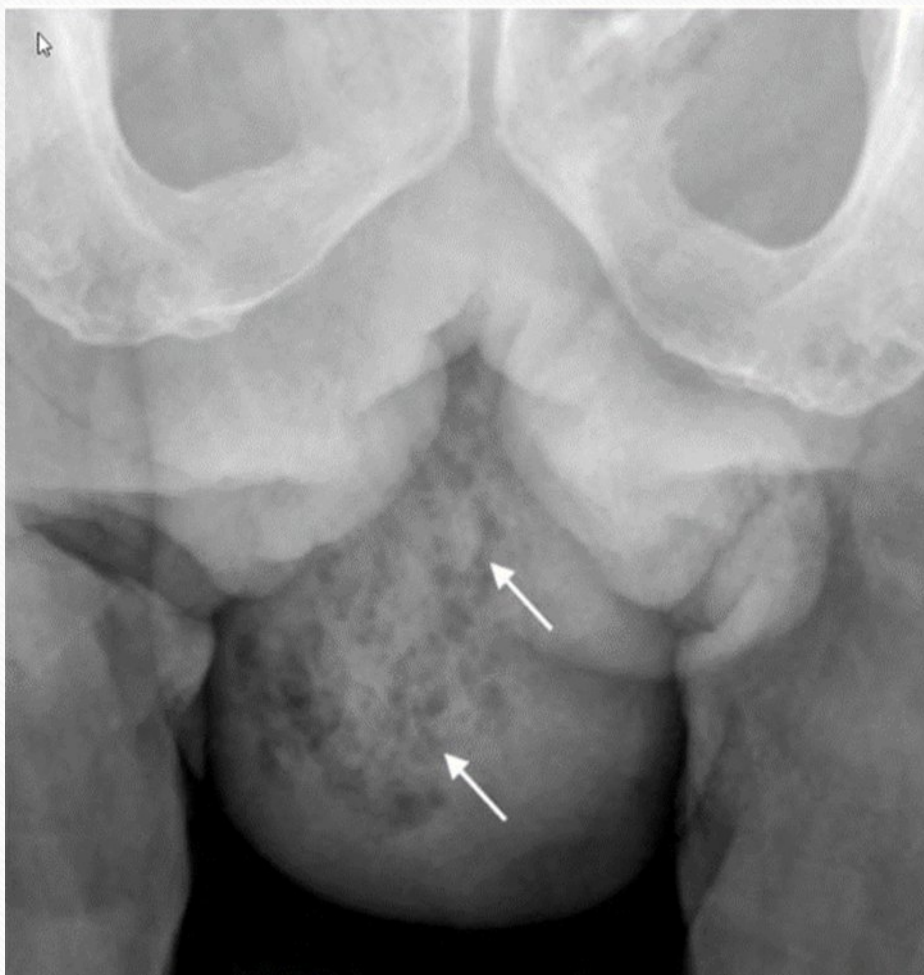
Presentation:-

- Early clinical features include localized skin erythema, tenderness and oedema, and sometimes associated LUTS (dysuria, difficulty voiding, urethral discharge).
- This progresses to fever and sepsis, with cellulitis and palpable crepitus in the affected tissues indicating the presence of subcutaneous gas produced by gas-forming organisms.
- As the infection advances, blisters (bullae) appear in the skin, and within a matter of hours, areas of necrosis may develop, which spread to involve adjacent tissues (e.g. lower abdominal wall).

The diagnosis is a clinical one and is based on the awareness of the condition and a high index of suspicion.

In early stages of disease, abdominal Xray and scrotal USS or CT may demonstrate the presence of air in tissues.

Mortality is in the order of 20– 30%. Mortality rates are reported to be higher in patients with a degree of immunocompromise (diabetics, alcohol excess) and those with anorectal or colorectal disease/ involvement



Management

Do not delay.

Resuscitate the patient.(Start IV fluids; administer oxygen)

Broad- spectrum parenteral antibiotics are given immediately to cover both Gram- positive and Gram- negative aerobes and anaerobes.

Transfer the patient to theatre as quickly as possible for debridement of necrotic tissue until healthy bleeding tissue margins are found, but it is unusual for the testes or deeper penile tissues to be involved and these can usually be spared.

Send tissue for culture

If there is extensive perineal/ perianal involvement, faecal diversion with colostomy may be required.

Wound irrigation with hydrogen peroxide may be used at the end. catheter (urethral or SPC) is inserted to divert urine and allow monitoring of urine output.

Repeat examination under anaesthetic ± further debridement to remove residual necrotic tissue is required at 24h and then guided by clinical progress.

Vacuum- assisted closure of wounds can hasten patient recovery.

Reconstruction can be contemplated when wound healing is complete

Malignant ureteric obstruction

Locally advanced Prostate Cancer, and bladder or ureteric cancer may cause unilateral or bilateral ureteric obstruction. Locally advanced non-urological malignancies can also obstruct the ureters (e.g. cervical cancer, rectal cancer, lymphoma).

*Unilateral ureteric obstruction:-

- Often asymptomatic; an incidental USS finding that requires no specific treatment in the presence of a normal contralateral kidney.
- Occasionally, loin pain and systemic symptoms may develop due to infection of the obstructed upper urinary tract. In this circumstance, drainage by nephrostomy or stenting is required.

*Bilateral ureteric obstruction:-

-A urological emergency. The patient presents either with symptoms and signs of renal failure or anuric without a palpable bladder. A mass will probably be palpable on rectal examination.

-Investigations: renal USS will demonstrate bilateral hydronephrosis and an empty bladder; CT- KUB will confirm the presence of dilated ureters down to a mass at the bladder base.

Immediate treatment of bilateral ureteric obstruction

After treating any life- threatening hyperkalaemia, options include bilateral percutaneous nephrostomy or ureteric stenting.

Insertion of retrograde ureteric stents in this setting is usually unsuccessful, because a tumour involving the trigone obscures the location of the ureteric orifices. More successful is antegrade ureteric stenting following nephrostomy insertion.

The full- length double- J silicone or polyurethane ureteric stents require periodic (4- to 6- monthly) changes to prevent calcification or blockage.

Acute urinary retention

Bladder outlet obstruction :-

_Urethral catheterization to relieve pain (suprapubic catheterization if the urethral route not possible). Record the volume drained— this confirms the diagnosis, determines subsequent management, and provides prognostic information with regard to outcome from this treatment.

Haematuria

Visible haematuria (VH), previously referred to as 'frank' or 'gross' haematuria is when the patient or doctor has seen blood in the urine or describes the urine as red or pink.

Causes of haematuria:-

- I. Cancer: bladder [transitional cell carcinoma (TCC), squamous cell carcinoma (SCC)], kidney (adenocarcinoma), renal pelvis and ureter(TCC), prostate.
- II. Stones: kidney, ureteric, bladder.
- III. Infection: bacterial, mycobacterial [tuberculosis (TB)].
- IV. Inflammation: cyclophosphamide cystitis, interstitial cystitis.
- V. Trauma: kidney, bladder, urethra (e.g. traumatic catheterization), pelvic fracture causing urethral rupture.

- VI. Renal cystic disease (e.g. medullary sponge kidney).
- VII. Other urological causes: benign prostatic hyperplasia (BPH)
- VIII. Nephrological causes of haematuria: immunoglobulin A (IgA) nephropathy, post- infectious glomerulonephritis; less commonly, membranoproliferative glomerulonephritis
- IX. Other 'medical' causes of haematuria: include coagulation disorders—congenital (e.g. haemophilia), anticoagulation therapy (e.g. warfarin), sickle- cell trait or disease, renal papillary necrosis, vascular disease (e.g. emboli to the kidney cause infarction and haematuria).

Acute Management of Hematuria patient

First , check Is patient stable ?

- If Yes , request (Urine C&S , Cytology , Abdominal U/S , Cystoscopy)

- If Not ,

Start with ABCs .

Then , IV fluids .

Then , Transfuse if necessary .

Request (Urine C&S , Cytology , Abdominal U/S,Cystoscopy)

secondary to advanced bladder cancer or hemorrhagic cystitis

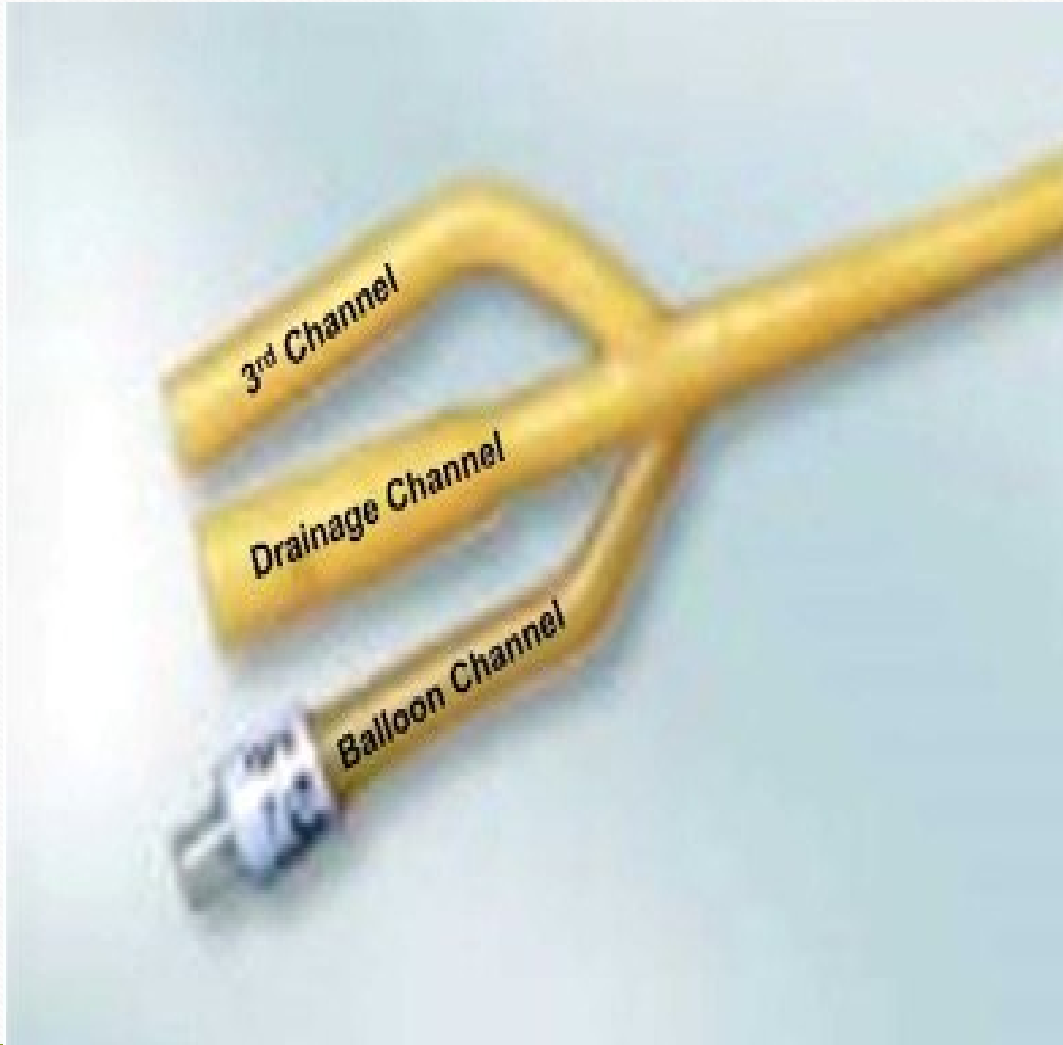
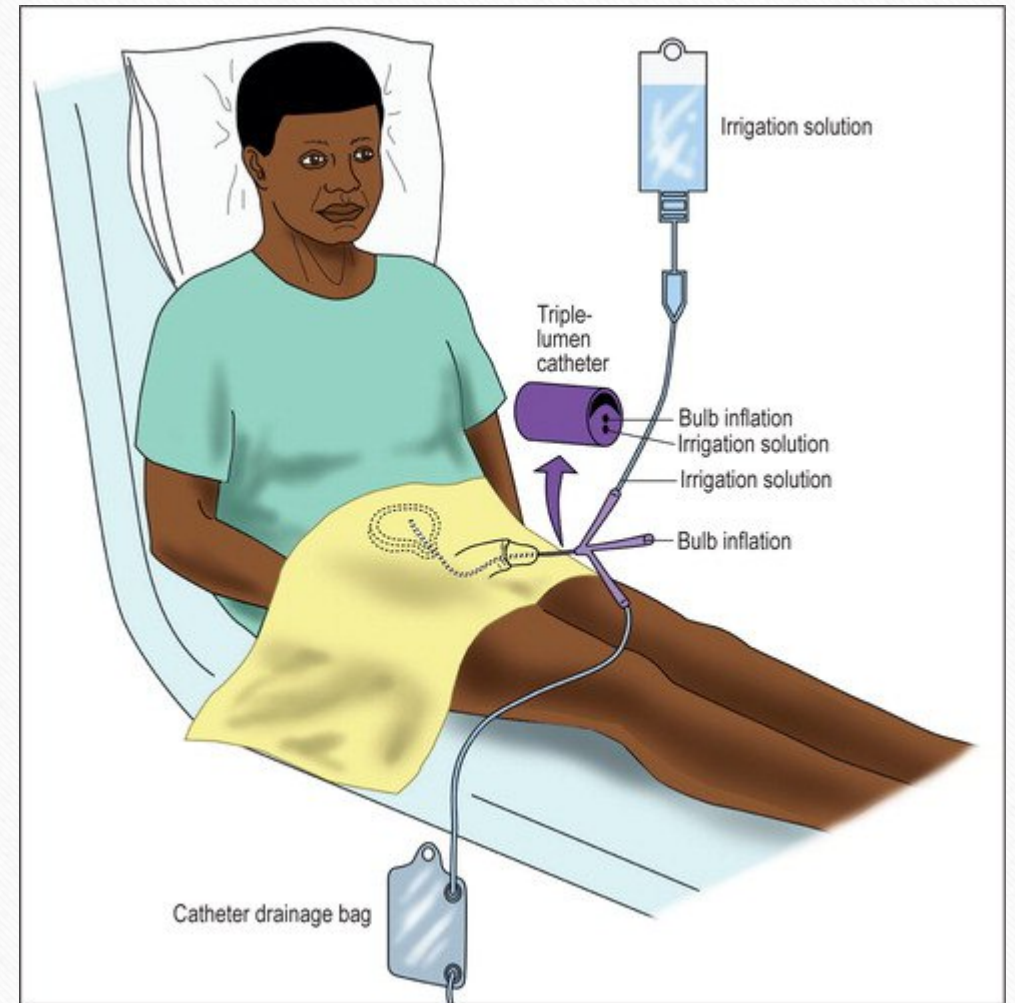
- _manual irrigation via catheter with normal saline to remove clots

- _start continuous bladder irrigation (CBI) using large (22-26 Fr) 3-way Foley if bleeding is minimal to help prevent clot formation

- _cystoscopy if bleeding quite active

 - identify resectable tumours

 - coagulate obvious sites of bleeding.





Thank You!

