

## Prostate cancer

### Risk factors

- Increasing age
- Male, black Afro-Caribbean
- 1<sup>st</sup> degree relative with prostate cancer

### Presentation

- Lower urinary tract symptoms (LUTS) are NOT specific for prostate cancer
- LUTS include voiding or obstructing symptoms such as hesitancy, urgency, poor and/or intermittent stream, straining, prolonged micturition, feeling of incomplete bladder emptying, dribbling

### Investigation

- *Initial* → **DRE** (hard, irregular & nodular) + **PSA**
  - ≥2 ng/ml at age 40-49 years
  - ≥3 ng/ml at age 50-69 years
  - ≥5 ng/ml at age 70 years or older
- *Definitive* → **Biopsy**

### Management

- **Leuprolide**, used in a continuous manner

- PSA isn't specific for prostate cancer but it's useful in follow-up & monitoring TTT
- Before PSA test, men should NOT have:
  - An active UTI
  - Ejaculated in the past 48h
  - Exercised vigorously in the past 48h
  - Had a prostate biopsy in the last 6 weeks

#### Biopsy-related prostatitis

- Normal → **E. coli**
- Immunocompromised → **Pseudomonas aeruginosa**

Leuprolide is a GnRH analog:

- If used in pulsatile fashion → agonist
- If used in a continuous fashion → antagonist

Local disease	Locally invasive	Metastatic
<ul style="list-style-type: none"> <li>• Raised PSA on screening</li> <li>• LUTS</li> <li>• UTI</li> </ul>	<ul style="list-style-type: none"> <li>• Hematuria</li> <li>• Hematospermia</li> <li>• <u>Obstruction</u> of ureters, causing loin pain, anuria, symptoms of AKI or CKD</li> </ul> <ul style="list-style-type: none"> <li>➤ <b>KUB US</b></li> </ul>	<ul style="list-style-type: none"> <li>• Bone metastasis → hypercalcemia → thirst</li> <li>• Bone pain or sciatica</li> <li>• Paraplegia 2<sup>ry</sup> to spinal cord compression</li> <li>• LN enlargement</li> <li>• Lethargy (anemia, uremia)</li> <li>• Weight loss</li> </ul> <ul style="list-style-type: none"> <li>➤ <b>MRI</b></li> </ul>

## Metastatic spinal cord compression

- An oncological emergency and an urgent **MRI** should be requested within 24h
- 20% of patients with spinal metastasis

### Features

- Neurological symptoms like radicular pain, limb weakness, difficulty in walking, sensory loss or bladder or bowel dysfunction
- Neurological signs of spinal cord or cauda equina compression

- DO NOT confuse between metastatic spinal cord compression and spinal metastasis. Spinal metastasis presents with pain in the thoracic or upper cervical spine, progressive lumbar spine pain or nocturnal spinal pain preventing sleep. Spinal metastasis isn't considered emergency

- Spinal metastasis + symptoms of decompression → **MRI**
- Spinal metastasis WITHOUT symptoms of compression → **Isotope scan**

- Most frequent sites for metastasis for prostate cancer are **bone** (by hematogenous spread) and **lymph nodes** of the obturator fossa, internal, external and common iliac arteries and presacral regions
  - **Prostate cancer** → Bone + LN
  - **Testicular cancer** → LN + Lungs

## Benign Prostatic Hyperplasia (BPH)

- An old male complaining of LUTS
- DRE reveals a large, firm and smooth prostate

## Interstitial cystitis

### Features

- Recurrent suprapubic pain
- **Worsened** by bladder filling
- **Relieved** by voiding but returns when bladder fills again
- LUTS: urine frequency, urgency & nocturia
- In women, symptoms are often worse during menstruation

### Investigation

- **Cystoscopy**, to exclude bladder malignancy
  - 10% have Hunner's ulcers, they're reddened mucosal areas associated with small vessels radiating towards a central scar
  - Glomerulations (petechial red areas)



### Management

- **1<sup>st</sup> line**
  - Bladder training
  - Pelvic floor relaxation techniques (avoid pelvic floor exercises)
  - Avoid triggers like coffee, citrus fruits or smoking which can exacerbate symptoms
  - Analgesics such as NSAIDs
- **2<sup>nd</sup> line**
  - Amitriptyline
  - Oxybutynin
  - Gabapentin

### Pyogenic cystitis

- *LUTS*
- *Fever*
- *Nitrates and leukocytes in urine*

*Bladder stones are rare in women*

## Bladder cancer

- Mostly transitional cell carcinoma
- Presents with ***painless visible hematuria***

➤ Whenever you see painless, gross hematuria in an elderly male, you should immediately be thinking of cancer

### Risk factors

- **Smoking** – the major cause
- Occupational exposure (industrial plants processing paint, dye (**aniline**), metal and petroleum products)
- Male
- Increasing age

### Investigations of Hematuria

- After a UTI has been excluded or treated, all patients with persistent microscopic or macroscopic hematuria require investigation of their upper tracts, bladder and urethra
  - >40 + frank hematuria → **Cystoscopy, CTU (CT-urography) & cytology**
  - >40 + non-visible hematuria OR <40 + hematuria (malignancy less likely) → **CT-KUB for stones**
  - For renal and ureteric malignancy → **CTU**
- CTU is faster than US or IVU in detecting renal and ureteric tumors. However, it carries a higher radiation dose and is more expensive. CTU also detects some bladder tumors, but may overcall bladder wall hypertrophy as tumor and will miss flat CIS and urethral pathology so it cannot replace cystoscopy

## Varicocele

- Abnormal enlargement of the testicular veins
- Incompetent valves of the internal spermatic veins lead to retrograde blood flow, vessel dilatation and tortuosity of the pampiniform plexus
- > 80% on the left side, the left testicular vein opens at a right angle to the left renal vein
- 2<sup>ry</sup> varicocele can be caused by a kidney tumor (causing obstruction of the left testicular vein)

### Features

- Classically described as a bag of worms
- Subfertility (due to elevated scrotal temperature which affects spermatogenesis)
- Usually asymptomatic (rarely causes pain, if so → scrotal heaviness)
- Swelling from varicocele may demonstrate cough impulse like hernia and they also tend to disappear when lying down (gravity allows drainage of the pampiniform plexus)

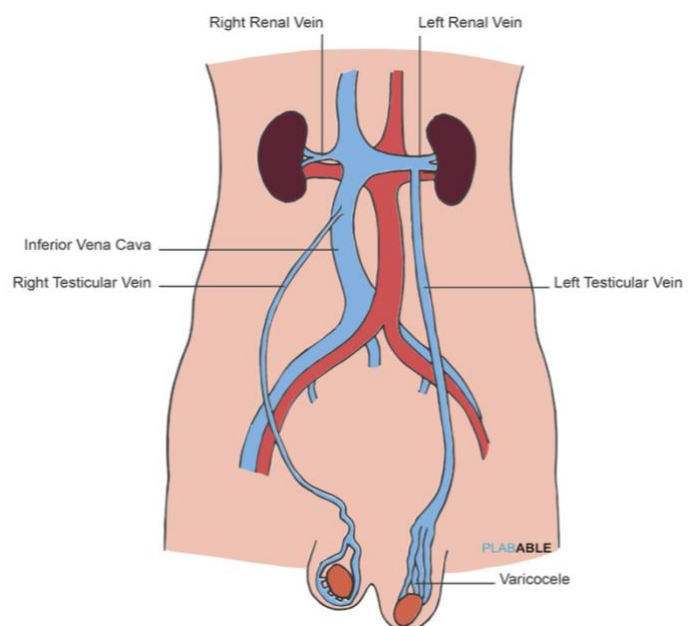
### Diagnosis

- Scrotal doppler US is diagnostic

### Management

- Usually conservative → **Reassure**
- Surgery is occasionally considered if there's significant ongoing pain, debatable in managing fertility

- *Newly diagnosed varicocele over the age of 40 years is very suggestive of RCC*



## Testicular torsion

### Key features

- Severe sudden onset testicular pain
- Usually affects adolescents and young males (<20 years)
- Possible history of trauma
- Could be recurrent → testis twisting and then spontaneously resolving
- On examination testis is tender and pain not eased by elevation
  - In **testicular torsion** → lifting the testis up over the symphysis increases pain
  - In **epididymitis** → usually relieves pain

### Other investigations

- **Color doppler US** → reduced arterial blood flow in testicular artery
  - **Radionuclide scanning** → decreased radioisotope uptake
- *If the clinical suspicion is high, surgical intervention should not be delayed for the sake of further investigations*
- DD**
- **Mumps orchitis**
    - 70% unilateral
    - A week-history of parotitis

### Management

- **Urgent exploratory surgery** (detorsion & orchidopexy) is needed to prevent ischemia of the testicle within 6h

## Epididymo-orchitis

- An infection of the epididymis with or without an infection of the testes resulting in pain and swelling
- Most commonly caused by local spread of infections from the genital tract (e.g. chlamydia & gonorrhoea) where there's a retrograde spread from the prostatic urethra and seminal vesicles
- It also could be caused by non-sexually transmitted organism causing UTI (e.g. E. coli)

### Features

- Unilateral scrotal pain and swelling
- Tenderness is usually localized to epididymis (may help distinguish from testicular torsion)
- Urethral discharge may be present, but urethritis is often asymptomatic
- Leukocytes & nitrates positive (e.g. E. coli)
- Fever and rigors in severe cases
- Tenderness may be relieved by elevating the scrotum  
→ **+ve Prehn's sign**

➤ Epididymo-orchitis in men VS. Salpingitis in women

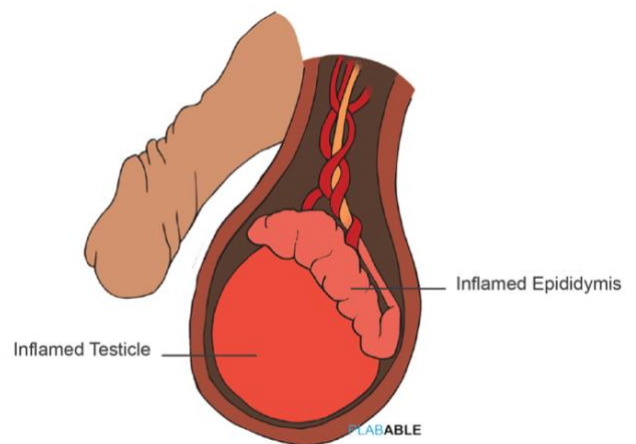
### Management

- Antibiotics

## Reiter's syndrome [AUC]

1. Urethritis
2. Arthritis
3. Conjunctivitis

- Triggered by chlamydia infection, and usually in conjugation with HLA-B27



## Testicular cancer

- Germ cell tumor mostly
  1. **Seminoma** → *the most common*
  2. Non-seminoma
- Usually present at earlier age (30-34 years old)

### Risk factors

- Cryptorchidism (undescended testis), increases the risk 10 times higher → Orchidopexy at age 6 months

### Features

- Painless lump in the body of the testis → *the most common presentation*

### Diagnosis

- US is the 1<sup>st</sup> line → [*This should be first line for any scrotal lump*]
- CT → for staging
- Tumor markers → **LDH** (seminoma), **B-HCG** or **AFP** (non-seminoma)

### Complications

- 2<sup>nd</sup> spread to the **para-aortic** LN rather than the inguinal LN
- Metastasis is rare, if happens → LNs, lungs

- No biopsy for testicular cancer for fear of seeding
- Enlarged scrotum → **Hydrocele**
- Enlarged testis → **Testicular cancer**

## Epididymal cyst

- Derived from the collecting tubules of the epididymis and contains clear fluid
- They develop slowly, lie within the scrotum & often multiple (multiloculated)
- Most common cause of scrotal swelling seen in primary care

### Features

- Painless
- Lie behind and above the testis

### Diagnosis

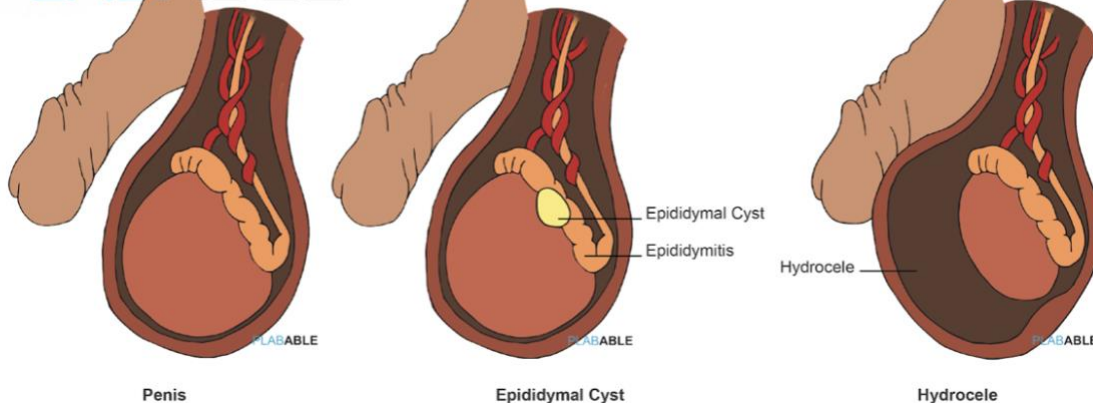
- US

### Management

- Usually supportive but surgical removal may be attempted for **larger** or **symptomatic** cysts

- **Epididymal cyst** → behind and above
- **Hydrocele** → anterior and below
- **Epididymal cyst** feels as a separate swelling from testis. However, in **hydrocele**, testis feels as a free-floating mass in scrotum

PLABABLE



## Nephrolithiasis

### Risk factors

- **Dehydration**
- **Hypercalcemia** (either due to hyperparathyroidism or sarcoidosis -raised vitamin D produced by macrophages-)
- **ADPKD**
- **Gout** → uric acid stones
- **Loop diuretics** → Ca excretion → hypercalciuria

### Features

- Sudden onset flank pain, radiating to the loin/groin
- Nausea and vomiting
- Hematuria (painful)

- Renal colic + joint pain → **uric acid stone**
- Triad of **gout** = arthritis + nephrolithiasis + tophi

### Types

- **Ca oxalate** → *most common*
- **Uric acid** (radiolucent)
- **Struvite stone (staghorn stone)** → alkaline urine (infection with urease producing bacteria, proteus & klebsiella)
- **Cysteine** → a child with recurrent episodes of renal colic

### Investigations

- Initial → **X-ray**
- If suspect a radio-lucent stone → **US**
- **Most accurate** → **non-contrast CT**
  - It can also exclude other causes of acute abdomen (e.g. ruptured AAA)

### Management

- **<5 mm** → manage conservatively by increasing fluid intake
- **5-10 mm** → medical therapy using CCB, analgesics and steroids with increased fluid intake
- **10 mm – 2 cm** → ESWL or uteroscopy (using dormia basket)
- **>2 cm (large and complex stone)** → percutaneous nephrolithotomy
- **Staghorn** → surgery

- Ca stones → **Thiazide diuretics**
- Uric acid stones → **K citrate**
- Besides increasing fluid intake, patient can be treated with:
  1. Tamsulosin (relaxes the bladder neck)
  2. Diclofenac (NSAID)

### An urgent percutaneous nephrostomy or uretic stent (JJ) may be needed

1. Infection + obstruction (fever, tender loin & pyuria)
2. Urosepsis (altered mental state, systolic blood pressure  $\leq$  100 mmHg, respiratory rate  $>22$  breath/min)
3. Intractable pain or vomiting
4. Impending AKI (azotemia or elevated creatinine and BUN)
5. Obstruction in a solitary kidney
6. Bilateral obstructing stones

### ➤ For ureteral stones

- **<5 mm** → *conservative*
- **>5 mm** → *CCB and Tamsulin, most pass in 48h, if not → ESWL or ureteroscope*
- *Larger stones, multiple or complex → percutaneous nephrolithotomy*

## Post-op ureteric injury

- May present in the first few days following surgery but it may also be delayed by weeks
- One of the most serious complications during gynecological & abdominal surgeries
- Ureter could be divided, ligated, angulated by a structure or damaged by a diathermy

### Features

- Ileus (due to urine in the peritoneal cavity)
- Fever
- Flank pain (if the ureter has been ligated)
- Abdominal pain
- Abdominal distension
- Retroperitoneal urinoma (a collection of urine)
- Urinary leakage (vaginally or via abdominal wound)

➤ Any investigation involving contrast media CANNOT be given in case of impaired renal function

### Investigations

- **Intravenous urography (IVU)**
  - Shows an obstructed ureter, extravasation of the dye from the site of injury or hydronephrosis
  - **The best imaging modality** to evaluate the continuity of the ureter in cases of ureteral injury after an operation
- **Renal US**
  - Best non-invasive method to visualize the kidney
  - Best when **renal function is impaired**
  - Shows hydronephrosis or retroperitoneal urinomas. However, it CANNOT assess the ureteric continuity
- **CT with contrast**
- **Retrograde urethrogram**

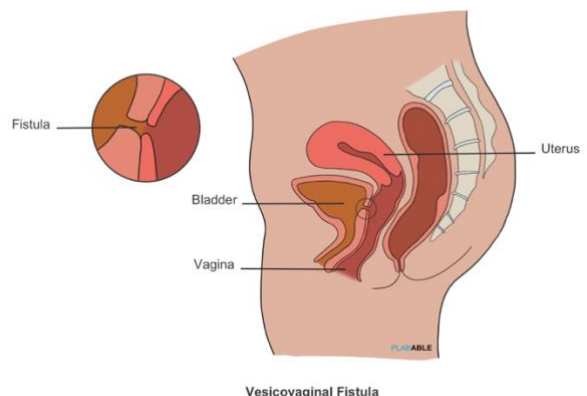
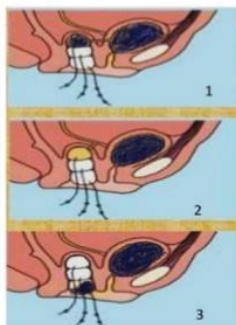
## Vesicovaginal fistula

- A continuous involuntary discharge of urine into the vaginal vault
- A possible complication after gynecological procedures (hysterectomy)
- A 3-swab test could identify a vesicovaginal fistula
  - 3 gauze swabs placed into the vagina using a speculum (top, middle & bottom)
  - Blue dye is inserted to the bladder by passing through a catheter
  - Catheter is removed and the patient is asked to walk around for an hour without urinating
  - Then, swabs are taken and evaluated for blue dye

## Three swab test

### Result of 3 swab test

1. Discolouration of topmost or middle swab → **vesicovaginal fistula**
2. Uppermost swab wetting but not discolouration → **Ureterovaginal fistula**
3. Discolouration of lower most swab but upper two swabs remain dry → **Urethrovaginal fistula**



## Syphilis

- An STI caused by **Treponema pallidum**
- More common in **homosexuals**
- Acquired syphilis is characterized by primary, secondary and tertiary features

### Incubation period

- Around 3 weeks

### Features

- Single painless genital ulcer → **Syphilis**
- Single painful ulcer → **Ducreyi**
- Multiple painful ulcers → **HSV**

#### 1. Primary features

- Chancre, **painless ulcer** at the site of sexual contact
- Local non-tender lymphadenopathy
- In women, they're found on the vulva, labia and can also be found on the cervix or within the anal canal

#### 2. Secondary features

- Appears 6 weeks after beginning of the primary lesion but may overlap or not appear for several months
- Systemic symptoms: fever, lymphadenopathy, headache, malaise
- A generalized polymorphic rash often affect the palms, soles and face
- Papules enlarge into condylomata lata (pink or grey discs) in moist warm areas

#### 3. Tertiary features

- Gummas (granulomatous lesions can occur in any organ but most commonly affect bone and skin)
- Cardiovascular syphilis → ascending aortic aneurysms, AR
- Neurological syphilis → tabes dorsalis, dementia

### Investigations

- Visible ulcer or infected LN → (GP → **PCR** // GUM physician → **Dark field microscopy**)
- Healed ulcer → **Serology** (VDRL, TPHA or treponemal antibody absorption)

### Management

- **Benzathine penicillin + oral azithromycin**

- Certain strains of **Chlamydia** can cause painless ulcer + lymphogranuloma venereum
- Classically found un Africa, India and Caribbean
- Outbreaks are possible in MSM

### DD of rash on palms and soles

1. **2<sup>ry</sup> Syphilis** by Treponema pallidum
2. **Hand, foot, mouth disease** by Coxsackie virus
3. **Rocky mountain spotted fever** by rickettsia

## Genital Herpes Simplex

- May be asymptomatic, or may remain dormant for months or even years
- When symptoms occur after infection, they tend to be severe
- It can be a chronic, lifelong infection
- Mostly caused by **HSV-1** (most common cause of both orolabial and genital herpes)

### Presentation

- Flu-like prodrome, followed by grouped vesicles/papules around genitals
- They burst and form shallow ulcers
- Dysuria is often present

### Investigations

- **NAAT** (nucleic acid amplification test)
- **PCR & viral culture**
- Recurrent/atypical genital ulcers with -ve culture or PCR → **Anti-HSV antibodies**

### Management

- **Oral acyclovir**



## Genital warts

- Benign epithelial skin tumors commonly seen as cauliflower-like growths
- Most commonly caused by **HPV 6 & 11**
- Around 30% can resolve spontaneously
- Transmitted by sexual intercourse
- **IP: 6 weeks to several months**

- HPV **16 & 18** are responsible for most cervical cancers in the UK

## Management

- Solitary, keratinized warts → **Gardasil**, protects against HPV 6,11, 16 & 18
- Multiple, non-keratinized → **Podophyllotoxin**
- **Ablative** (e.g. cryotherapy & excision under anesthesia)

## TURP \$

- Occurs when irrigation fluid enters the systemic circulation. It's caused by venous destruction and absorption of the irrigation fluid and it can be life threatening
- Characterized by **dilutional hyponatremia**
- Managed by fluid restriction

## Purple urine bag \$

- Resulted from co-existent UTI
- One of the most common causing bacteria is Providencia stuartii
- Managed by betadine lavage of the urethra and catheter change

## Infected indwelling urinary catheter

- Action → **Change the catheter**
- If symptoms of UTI → **Antibiotics**

<b>Urge incontinence /overactive bladder (OAB)</b>	<ul style="list-style-type: none"> <li>- Due to <u>detrusor overactivity</u></li> <li>- “when I have to go to the toilet, I really have to go”</li> <li>- “sometimes urine passes before reaching the toilet”</li> </ul> <p><b>Treatment</b> → <u>Bladder retraining, antimuscarinics (Oxybutynin, tolterodine or darifenacin)</u></p>
<b>Stress incontinence</b>	<ul style="list-style-type: none"> <li>- Leaking small amounts of urine when <u>coughing</u> or <u>laughing</u></li> <li>- Usually with a history of <u>many vaginal deliveries</u> as this would weaken the pelvic floor muscles</li> </ul> <p><b>Treatment</b> → <u>Pelvic floor exercise, tension-free vaginal tape, retropubic mid-urethral tape procedures, Duloxetine</u></p>
<b>Mixed incontinence</b>	<ul style="list-style-type: none"> <li>- A mix of both stress and urge incontinence</li> </ul>
<b>Overflow incontinence</b>	<ul style="list-style-type: none"> <li>- Involuntary release of urine from an overfull urinary bladder, often in the absence of any urge to urinate</li> <li>- Occurs in patients who have <u>blockage of the bladder outlet</u> (BPH, prostate cancer or narrowing of the urethra) or when the muscle that expels urine from the bladder is too weak to empty the bladder normally</li> </ul>
<b>Urethrovaginal fistula</b>	<ul style="list-style-type: none"> <li>- Opening between vagina and urethra</li> <li>- <u>Continual leakage</u> of urine from the vagina</li> <li>- Vagina would have a <u>foul smelling</u></li> </ul>