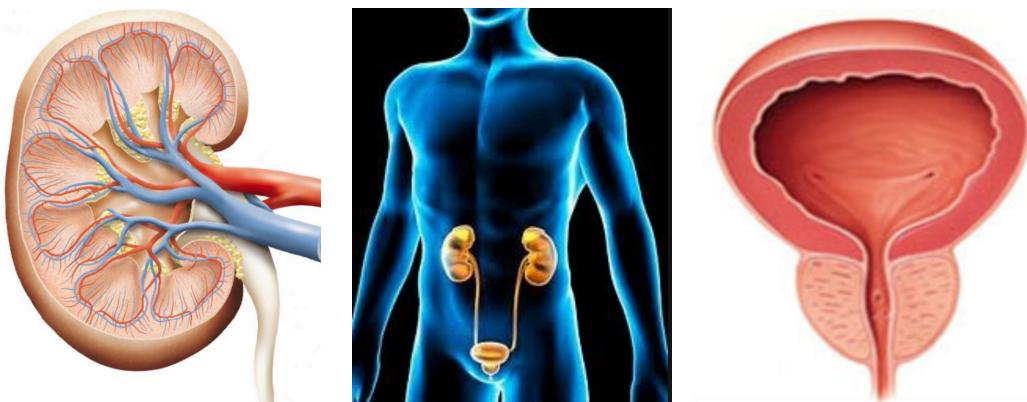




A guide to urological emergencies by the Wessex urology registrars' group



Last update September 2020

Introduction

The aim of this booklet is to provide a framework for the early assessment and management of acute urological admissions for junior doctors and nurse practitioners. The guidelines have been created by the Wessex urology registrars, supported by consultant urologists and will undergo regular review. Urologists from the following hospitals have been involved in writing these guidelines:

Royal Bournemouth Hospital
University Hospital, Southampton
Queen Alexandra Hospital, Portsmouth
Salisbury District Hospital
Royal Hampshire County Hospital, Winchester
St Richard's Hospital, Chichester

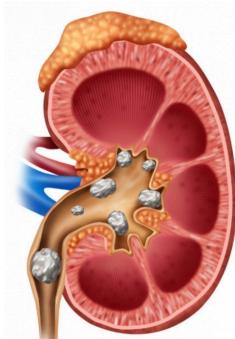
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Index

1. Renal Colic	Page 4
2. Haematuria.....	Page 6
3. Urinary retention.....	Page 8
4. Testicular torsion.....	Page 10
5. Catheters and catheter problems.....	Page 11
6. Paraphimosis.....	Page 13
7. Fournier's gangrene.....	Page 14
8. Penile fracture.....	Page 15
9. Priapism.....	Page 16
10. Sepsis after prostate biopsy.....	Page 17
11. Autonomic dysreflexia.....	Page 18

1. Renal Colic



Renal colic is the term commonly used to describe the symptom of severe loin pain due to obstruction of the ureter from a stone. The pain is caused by distention of the renal collecting system due to obstruction. Renal and ureteric stones are a common cause for admission to the urology ward, with a lifetime risk of 6-12% and peak presentation between 20 – 40 years of age.

History

- Sudden onset severe pain in loin and radiating to the groin.
- Stones in the distal ureter may cause suprapubic pain and difficulty voiding.
- Pain comes in waves and may be associated with nausea/ vomiting/ visible haematuria.
- Patients often writhe around with the pain (peritonitic patients lie very still).
- Central or bilateral loin pain is rarely caused by a stone, so alternate diagnoses should be considered first, including ruptured AAA.
- May present atypically without pain or with generalised sepsis or pain referred to the testicle/ penis/ labia.

Examination

- May be in obvious discomfort, groaning and sweating.
- Usually tender in the renal angle and in the abdomen on the corresponding side. Peritonitis on examination suggests an alternative pathology.
- Perform a general examination and look for other causes of pain such as appendicitis, AAA, cholecystitis, lower lobe pneumonia.
- Perform a testicular examination to exclude torsion/ testicular pathology.

Investigations

- Non-contrast CT of the kidneys, ureters and bladder (CT KUB) is the gold standard test with a 99% sensitivity for stones. The radiation exposure is low and there is no risk of renal impairment given the lack of intra-venous contrast.
- Renal ultra-sound scan is less accurate but is used to avoid radiation in young patients, pregnancy and those with multiple previous CT scans.
- Blood tests: FBC, U&Es, CRP, clotting, calcium, urate.
- Check an INR in case the patient requires surgical intervention.
- Perform a urine dipstick test for all patients and document it. 80% will have non-visible haematuria.
- If the urine dip is positive for blood, leucocytes or nitrites then send it for microscopy, culture and sensitivity (MC&S).

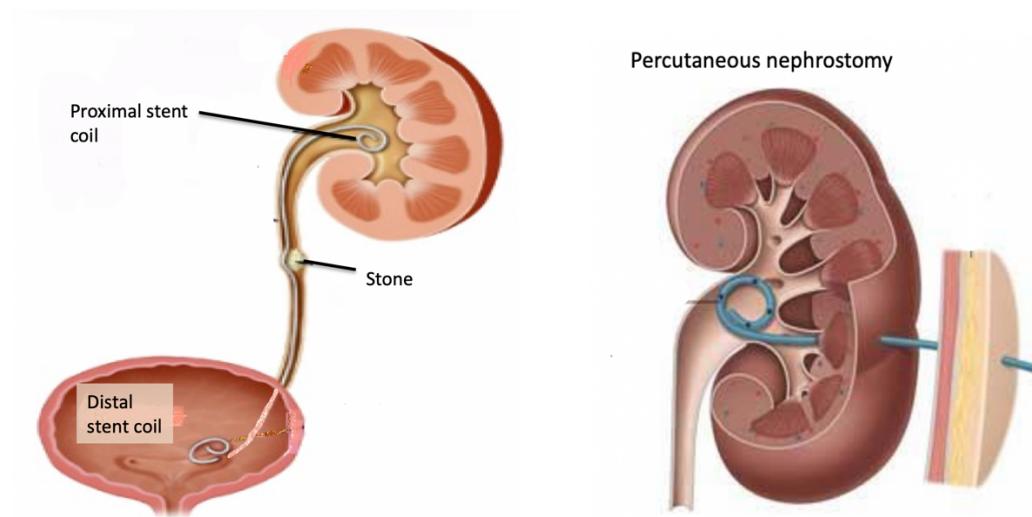
Management

- Initial ABCDE approach, particularly if there is any evidence of sepsis.

- Appropriate analgesia is very important. If there are no contra-indications, PR diclofenac 100mg STAT given with paracetamol is very effective. Oral 400mg ibuprofen tds or oral 50mg diclofenac tds is an alternative.
- Opiate analgesia, e.g. oramorph can be given concurrently.
- In the absence of sepsis, acute kidney injury or unmanageable pain there is no need for emergency surgical intervention.
- 95% of ureteric stones <5mm in size pass spontaneously.
- A 28-day course of tamsulosin 400mcg OD can be given to those undergoing conservative management of obstructing stones as there is evidence it helps passage of stones 5-10mm in size in the distal ureter.
- Avoid tamsulosin in elderly patients at risk of falls and inform the patient that this use is off license.
- Patients with infection and a stone, acute kidney injury or unrelenting pain require emergency intervention to drain the obstructed kidney. This is done with a ureteric stent under general anaesthetic on the CEPD list, or with a percutaneous nephrostomy tube under local anaesthetic in the interventional radiology theatres (see pictures below).
- The majority of patients will be able to be discharged with conservative management and urgent outpatient stone follow up.
- All patients with ureteric stones that are managed conservatively require urgent follow up to ensure the stone is progressing. Follow up protocols vary between hospitals, so follow your local guidance.

Standards of Care

- The presence of an infection in a patient with an obstructed kidney is a urological emergency. Obtain imaging, manage sepsis and escalate promptly.
- Obstruction of solitary kidneys are indications for urgent drainage with a stent or nephrostomy.



2. Haematuria



Haematuria is the presence of blood in the urine which can be visible or non-visible (detected on urine dipstick or microscopy). Self-limiting haematuria can be investigated as an out-patient, but those with persistent bleeding or those who develop retention due to blood clots (clot retention) require emergency admission.

History

- A good history is key and will often tell you the likely diagnosis.
- For older patients with new painless visible haematuria urinary tract malignancy should be the main concern. Bladder cancer is the most common but renal cancer, prostate cancer, urethral and ureteric cancer can all cause significant haematuria.
- Irritative voiding symptoms with fevers and supra-pubic discomfort suggests a urinary tract infection.
- Severe associated loin pain and haematuria is usually due to a ureteric stone (but be aware of 'clot colic' where blood clots in the ureter mimic a stone).
- Older men with enlarged prostate due to BPH may develop significant haematuria.
- Duration, associated symptoms and pain, fevers, previous urological surgery, smoking history and anti-coagulation are other key points in the history.

Examination

- May not yield much but you should examine the abdomen for a palpable bladder or abdominal/ loin mass.
- Perform a digital rectal examination to assess for a pelvic mass and note the size and consistency of the prostate.

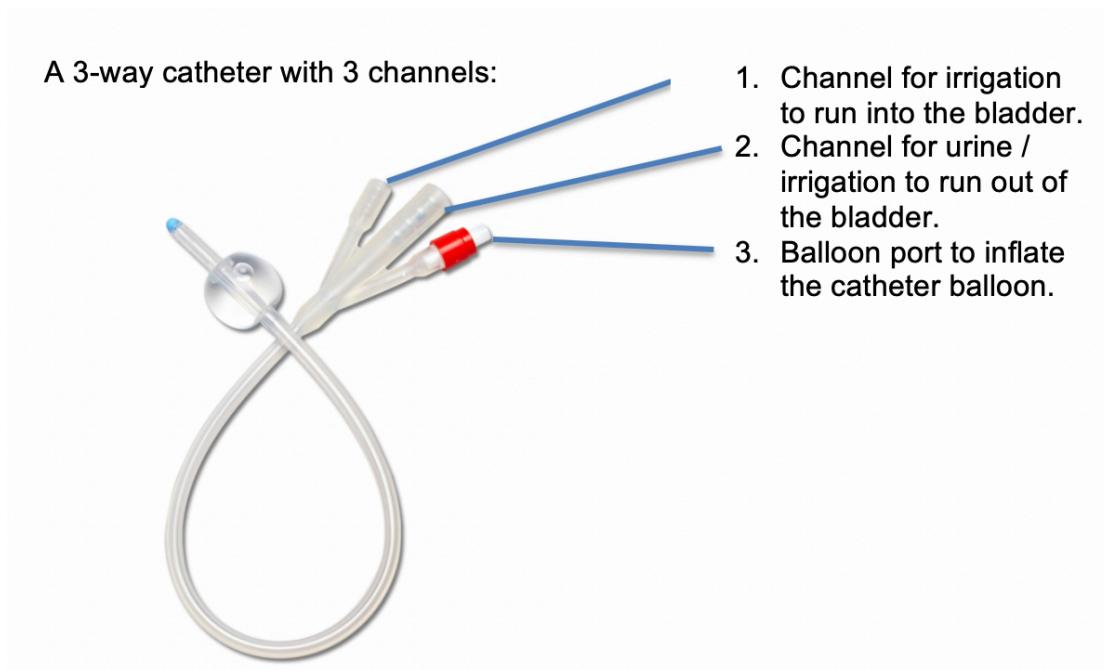
Treatment

- If unstable ABCDE approach until adequately resuscitated.
- Large bore intravenous access.
- Send bloods for FBC, U+Es, CRP, clotting, group and save.
- Consider holding or reversing anticoagulation.
- Transfuse with red blood cells if Hb <80g/L and ongoing bleeding.
- If passing clots and/or struggling to pass urine then insert a 3 way catheter with the following steps:
 1. 22 French or 20 French 3-way catheter.
 2. Insert to the hilt and when blood or urine drains inflate 20mls of water into the balloon.
 3. Perform a thorough bladder washout with water or saline using a 50ml bladder syringe until all clots are gone.
 4. Once clot free, continue irrigation of saline through the 3-way catheter.

- Patients with clot retention often develop concurrent urinary tract infection, so have a low threshold for sending blood and urine cultures and starting intra-venous antibiotics.
- Occasionally bleeding is heavy or persistent and fails to stop using the above steps, which may necessitate a formal bladder washout under general anaesthetic in theatre.
- If the haematuria is mild and self-limiting and the haemoglobin is stable, conservative management without catheterisation is appropriate.

Investigations

- All patients with visible haematuria require either an ultrasound or CT scan of the kidneys and a cystoscopy along with a PSA and digital rectal examination in men.



3. Urinary Retention



Urinary retention is the inability to pass urine and can be acute (<24 hours and painful) or chronic (develops over a much longer time period and is painless). Acute and chronic retention are managed very differently, so take a detailed history and be alert to some of the more rare but serious causes of urinary retention, including pelvic mass and cauda equina.

Acute Retention

- **Painful** retention of short duration (<24 hours).
- Residual volumes are typically around 700-1000ml and the pain is relieved by catheterisation.
- There is no deterioration in renal function.
- Common causes are constipation, post-operative retention, drug causes (opiates/ amitriptyline), UTI or obstruction due to urethral stone/ trauma.
- Treatment is with a urethral catheter until the causative factor is dealt with.
- Men who have underlying benign prostatic hyperplasia are usually started on an alpha blocker (tamsulosin) which improves the chance of subsequent successful trial without catheter (TWOC) 1-2 weeks later.

Chronic Retention

- This is retention of at least 300mls that has come on gradually (months to years) and is **painless**.
- Residuals may be large (>1 litre).
- Chronic retention can be high pressure or low pressure.
- Patients with low pressure chronic retention have normal renal function and large, 'floppy' bladders due to failure of the detrusor muscle in the bladder wall.
- High pressure chronic retention (HPCR) has a very different pathophysiology and patients may be critically unwell with renal failure.

High Pressure Chronic retention

- This is a serious condition where high pressures in the bladder are transmitted to the kidneys leading to renal impairment.
- It is usually seen in males and most commonly due to prostatic enlargement.
- A typical patient will be an older man with a long history of obstructive lower urinary tract symptoms and nocturia who goes into retention then becomes unwell due to renal impairment.
- The cardinal symptom is of *new nocturnal incontinence*.
- On examination they have a palpable, tense and painless bladder.
- Digital rectal examination will typically reveal an enlarged prostate, although small prostates can cause HPCR as well.
- A firm or craggy prostate suggests a new diagnosis of prostate cancer, which will require urgent follow up.
- After relief of obstruction many patients will develop a post-obstructive diuresis, whereby the kidneys produce large volumes of dilute urine.

- The cause of the diuresis is multi-factorial. In the first 24-48 hours it is a normal *physiological* response of the body excreting excessive fluid build up. Later the diuresis becomes *pathological* and is predominantly due impairment of the kidney's ability to concentrate urine. At this later stage patients are at risk of profound hypovolaemia and hyponatraemia.

Treatment

- Insert a urinary catheter and document the residual volume in the clerking booklet clearly. There is no need to clamp the catheter on and off.
- Check a full set of blood tests including U+Es and a serum pH.
- Manage acute kidney injury and hyperkalaemia appropriately (this may be profound and require acute dialysis).
- Measure hourly urine volumes and highlight this to the nursing team.
- Patients need ample overall fluid input to maintain intra-vascular volume, too much fluid however can lead to ongoing diuresis and longer hospital stays.
- In the first 24 hours for patients who have a diuresis (urine output is >200ml hour after initial drainage) we recommend replacing 50% of their urine output with normal saline IV (see figure 1 below).
- Monitor daily for a postural drop >10mm/Hg, suggesting reduced intra-vascular volume.
- Daily review of U+Es and fluid balance.
- Imaging is not necessary in all patients with a clear diagnosis of HPCR, but sometimes the line between acute and chronic retention is grey. In these situations the presence of unilateral or bilateral hydronephrosis on CT or ultra-helps to confirm HPCR which may lead to a change in management.

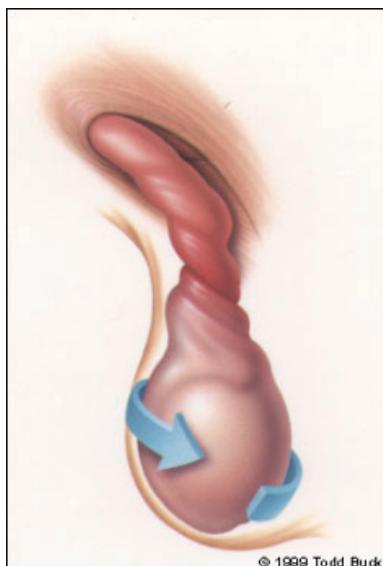
Long term management

- It is essential that you do not allow patients with HPCR to undergo trial without catheter as they will go back into renal failure.**
- Those who are fit enough for surgery usually undergo bladder outflow obstruction surgery, which traditionally is a trans-urethral resection of the prostate (TURP). Those who are not fit enough for this are generally managed with long term catheters which can be urethral, supra-pubic or clean intermittent self catheterisation (CISC).

Figure 1. An example of a fluid chart for a patient with post-obstructive diuresis.

Parenteral Drug Infusions All sections MUST be completed							
CHECK ALLERGIES & SENSITIVITIES							
Prescribing							
Date	Infusion Fluid	Volume	Rate	Route	Drug Added	Dose	Prescriber's Signature and Bleep No.
11/3/17	0.9% Saline	1L	L	IV			
					↳ 50% per hour urine output, recheck every hour		

4. Testicular torsion



This is a urological emergency whereby the spermatic cord and testis twist within the scrotum. Initially venous outflow is reduced leading to increased intra-testicular compartment pressures followed by reduced arterial flow and tissue ischaemia. Salvageability of the testis begins to fall after 6 hours from the onset of pain and is poor after 24 hours. Torsion can occur at any age but is rare in older men and the peak is in the pubertal years.

History

- Typically a boy or young man (peak age 12-18) with a short duration (<24 hours) of severe unilateral testicular pain.
- Often there is nausea +/- vomiting secondary to pain.
- A history of undescended testis that was managed conservatively, or a lateral lie of the testis known as a *bell clapper deformity* are risk factors.
- Rarely, torsion can present atypically with intermittent testicular pain or vague abdominal pain.

Examination

- The patient will look pale and uncomfortable from the end of the bed.
- Do a brief abdominal examination to exclude a hernia or abdominal pathology with pain radiating to the testis.
- They will have a very tender testicle that is difficult to examine due to pain.
- The testis may be high riding or have a *bell-clapper deformity*.
- A red and swollen testis suggests early necrosis.
- An absent cremasteric reflex may be noted, but this shouldn't be used solely to diagnose or exclude torsion.

Treatment

- Suspected torsion requires immediate surgical exploration in theatre.
- Inform the theatre team and anaesthetist early so they can prepare.
- Nil by mouth, analgesia, anti-emetics and IV fluids.

Standards of Care

- See referrals for suspected torsion immediately.
- Suspected torsion requires immediate surgical exploration in theatre.
- Ultra-sound scan only has a role when a senior clinician has made a decision not to operate immediately.

5. Catheters and catheter problems



Due to an ageing population, problems with long term catheters falling out, blocking or causing bothersome symptoms are an increasingly common cause for admission to hospital. Prompt assessment by a competent practitioner with replacement of the catheter and management of any infection can avoid lengthy admissions for patients who often have extensive comorbidity.

History

- Long term catheters may be inserted for a number of reasons including urinary retention, neuropathic bladders and incontinence.
- Commonly they are a last resort option for patients who are unfit for surgical treatment in view of their co-morbidities.

Blocked catheters

- Blocked catheters should be flushed promptly to unblock them and replaced soon afterwards. Simply changing the catheter is an alternative.
- Larger catheters block less and may benefit some patients.
- Regular bladder washouts with citric acid solutions such as 'Suby G' or 'Optiflo' in the community help to reduce debris formation for patients with recurrently blocking catheters.

Catheters that fall out

- When catheters continuously fall out due to balloons popping, there is usually a bladder stone which ultimately requires surgical removal.
- Consider a non-contrast CT to look for a bladder stone.
- If a supra-pubic catheter falls out and the supra-pubic tract is established (>4 weeks) then try to replace the catheter as soon as possible before the tract closes over (see SPC exchange below).

Difficult urethral catheterisation

- A good technique with the penis pulled straight and lots of instillagel is usually all that is needed to pass a catheter.
- Bigger or smaller catheter sizes may help in some situations.
- In older men, catheters that go a long way in then seem to 'bounce' are usually getting stuck at the prostate. Try with a 'Tiemann tip' catheter (shown above). The upward deflection of the tip should curve up towards the patient's head.
- Catheter introducers should only be used in very experienced hands.
- Patients with phimosis, penile oedema or buried penis due to obesity may need a 'blind catheterisation' where the meatus is identified through feel.
- Patients with urethral strictures can occasionally be very difficult to catheterise. Involve urology if the catheter doesn't pass easily.

Patients requiring emergency supra-pubic catheter insertion

- This is a dangerous procedure with a small but significant mortality, usually following inadvertent bowel injury in a comorbid patient.
- In rare circumstances supra-pubic catheters need to be inserted when there is failed urethral catheterisation.
- Supra-pubic catheters should only be inserted by practitioners experienced in their insertion and ideally with ultra-sound or cystoscopic guidance.

Supra-pubic catheter exchange

- For supra-pubic catheters (SPCs) with established tracts (>4 weeks) this is a simple procedure and can be performed easily and safely by any practitioner.
- Replacing supra-pubic catheters is easier if the bladder has some fluid in it, so put 100mls of saline or water into the bladder before exchanging the catheter.
- Use a long-term catheter. Under sterile conditions, dip the tip in instillagel and pass it through the SPC tract. You should feel it pass through the abdominal wall and into the bladder. Inflate the balloon when you see urine.

Difficult catheter removal

- Calcified catheter tips and balloons can ‘get stuck’ and be difficult to remove.
- Ensure all of the water has been removed from the balloon and be aware sometimes there is more than 10ml! Leaving a syringe engaged in the balloon port for 30 minutes sometimes helps it to drain.
- Try Instillagel down the urethra alongside the catheter with **gentle** traction.
- Sometimes a catheter balloon won’t deflate as saline has been used to inflate it. The salt crystallises out in the balloon channel causing obstruction.
- Cutting the balloon port off and passing a wire down the channel may clear the obstruction.
- Rarely suprapubic puncture is needed to pop the balloon by interventional radiology.

Special situations to be aware of

- After urethral reconstructive surgery, radical prostatectomy or following pelvic trauma there is the potential to cause a lot of urethral damage.
- A single **gentle** attempt at catheterisation is reasonable, but multiple attempts should not be performed.

Further points

- Have a low threshold for intravenous antibiotic prophylaxis, such as a single shot of gentamicin 2mg/kg, to cover difficult catheters or repeated catheterisation attempts.
- The urology team will support with difficult catheterisations but should not be misused as a catheterisation service for routine work.
- Emergency supra-pubic catheter insertions are dangerous procedures and should only be performed by experienced practitioners.

6. Paraphimosis

Paraphimosis describes a condition of the foreskin whereby it is retracted and acts as a constricting ring, reducing venous and lymphatic drainage from the penile glans. It is often painful and in severe cases can cause ischaemia to the glans, so it should be treated urgently.



Causes

- In hospital most cases are iatrogenic and are caused by the foreskin not being replaced after catheterization.
- Younger men with an underlying phimosis (tightness of the foreskin) may also present with painful paraphimosis after failure to replace the foreskin after intercourse.

Treatment

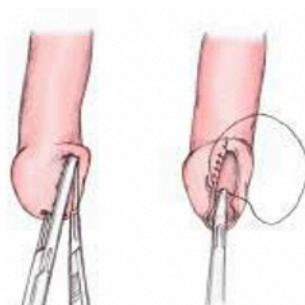
- The main treatment is applying gradual and sustained pressure to the glans and odematous foreskin until the foreskin can be reduced. Picture 2 below shows 1 technique;
- Entonox is helpful whilst replacing the foreskin.
- Various adjuncts are described, including use of ice, dextrose or lidocaine gels and making small stabs in the swollen skin with an orange needle to reduce swelling. But good analgesia with a lot of patience in the reduction is usually all that is needed.
- For more difficult cases a local anaesthetic penile block may be necessary.
- In severe cases that fail the above treatment an incision through the foreskin (dorsal slit) may be necessary.
- Circumcision may be offered at a later date.



1. Acute paraphimosis.



2. Manual reduction technique



3. Dorsal slit procedure

7. Fournier's gangrene



This is the term used for necrotising fasciitis of the external genitalia and perineum. Without prompt treatment the infection spreads to the skin and subcutaneous tissues of the rest of the body, leading to generalised sepsis and death. Early recognition, prompt management of sepsis and timely surgery are key to survival.

History

- A typical patient is an older man presenting with severe pain and erythema of the scrotum.
- Later, the affected skin and soft tissue becomes discoloured or black, starts to leak foul smelling fluid and signs of sepsis develop.
- Fournier's gangrene tends to develop in men with multiple co-morbidities.
- Alcoholism, diabetes, smoking, obesity, ischaemic heart disease, impaired immunity and self-neglect are key risk factors.

Examination

- Initially swelling, severe pain and erythema of the scrotum and perineum.
- Crepitus and necrosis are later signs.

Investigations

- CT scan may help if the diagnosis is unclear or to delineate the extent of the disease, but the diagnosis should be made clinically, and imaging should not delay definitive management.
- Gas in the sub-cutaneous tissues on imaging is diagnostic.

Management

- Initial management is with an ABCDE approach and treatment in line with the sepsis protocols.
- Speak to microbiology straight away regarding the antibiotic treatment.
- Typically, the infection is polymicrobial so an antibiotic regime with broad aerobic and anaerobic cover should be recommended.
- Inform the surgical team immediately, as speed to theatre followed by aggressive debridement of all affected tissue saves lives.
- Patients with sepsis due to Fournier's gangrene will usually go to intensive care after surgery, so inform them and their family early that they are critically unwell.

8. Penile fracture



Penile fractures are a result of rupture of the tunica albuginea, the fibrous sheath surrounding the corpora cavernosa of the penis, commonly as a result of sudden bending of the erect penis during sexual intercourse.

History and examination

- Sudden 'crack' or 'popping' noise immediately followed by pain and detumescence (sudden loss of erection is very typical of a penile fracture).
- Swelling of the penile shaft will occur shortly after as a result of a rapidly expanding haematoma.
- The penis will appear swollen and bruised, often compared to the look of an aubergine.
- Bruising may extend to perineum, scrotum or pubic area.
- Presence of haematuria or blood at the urethral meatus suggests a co-existent urethral injury which also requires operative repair.
- It is important to document if any pre-existing erectile dysfunction and evidence of or difficulty voiding.
- The diagnosis is clinical but a penile MRI or ultrasound may be used if the diagnosis is unclear or to delineate the extent of the injury.

Treatment

- Analgesia.
- Keep the patient nil by mouth.
- Traditional surgery is with a circumcision, penile degloving, drainage of haematoma and closure of the defect in the tunica albuginea.

Standards of care

- See patient without delay.
- Pain relief.
- Prepped for potential theatre.
- Document pre-existing erectile dysfunction.
- Ask specifically about blood at the meatus or difficulty voiding.

9. Priapism



Priapism is a painful, unwanted erection, in the absence of sexual desire or stimulus, lasting more than 4 hours. It can be broadly split into ischaemic and non-ischaemic. Ischaemic or 'low-flow' priapism is more common; and if left untreated, it will result in fibrosis and permanent erectile dysfunction. Non-ischaemic or 'high flow' priapism is usually a result of blunt trauma to the perineum, causing an arterio-venous fistula, and the initial treatment is usually conservative as it may be self-limiting.

History

- An unwanted erection lasting over 4 hours.
- Ischaemic priapism is painful whereas non-ischaemic priapism is not.
- Patients may have concurrent sickle cell anaemia or haematological malignancies (increased blood viscosity leads to the priapism).
- They may describe previous episodes which resolved spontaneously ('stuttering priapism').
- Drugs including cocaine, amphetamines, SSRIs, anti-coagulants, prostaglandins and PDE5 inhibitors such as Viagra are all potential causes.
- Trauma to the penis or perineum is the usual cause of non-ischaemic priapism due to arterio-venous malformation.

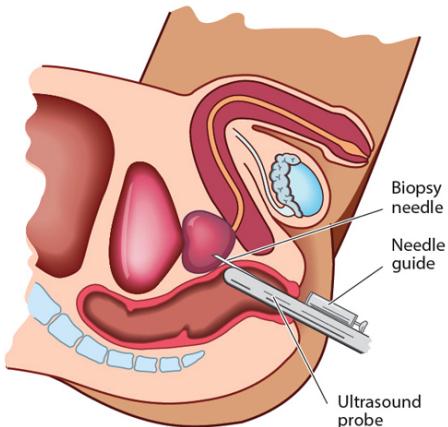
Management

- Overall aims are detumescence (loss of erection), pain relief and concurrent management of any haematological/ oncological issues.
- Patients with sickle cell crisis or haematological malignancy require IV access, fluids, and co-management with the haematology/ oncology team.
- Surgical treatment begins with a penile local anaesthetic block for pain relief, intra-venous antibiotics and aspirating blood from the corpora cavernosum for blood gas analysis.
- Ice packs to the groin and mobilising patients may help in some cases.
- Further surgical treatment includes penile aspiration and injection of phenylephrine, which is an alpha-adrenergic agonist causing vasoconstriction. This requires cardiac and blood pressure monitoring.
- If the above interventions don't work patients are likely to require surgical intervention with 'shunt' procedures under general anaesthetic in theatre.
- Late presentations >72hours and those who fail with the above interventions may require transfer to a specialist centres for primary penile implant insertion.

Standard of Care

- See patients urgently and give adequate analgesia.
- Co-manage sickle cell crisis or haematological malignancy with haematology/oncology.

10. Sepsis after prostate biopsy.



The traditional method of prostate biopsy to investigate for prostate cancer is via the trans-rectal route under local anaesthetic. As the needle passes through the rectum into the prostate there is a risk of translocation of rectal bacteria into the blood stream, hence a small percentage of men will present after the procedure with sepsis which can be life threatening.

History

- Classically a man will develop flu-like symptoms and temperatures 1-2 days following prostate biopsy.
- As many of these men have enlarged prostates which swell during the procedure there may be concurrent urinary symptoms or retention.
- Subsequently, they may present with profound sepsis.

Examination

- Examine for a palpable bladder.
- Examine the testicles for concurrent orchitis.
- Prostate examination is not mandatory as they are already under investigation for prostate cancer and it may be very painful.
- However, for patients who are very unwell or in those who are not improving with treatment, a prostate examination is required to feel for a fluctuant abscess.

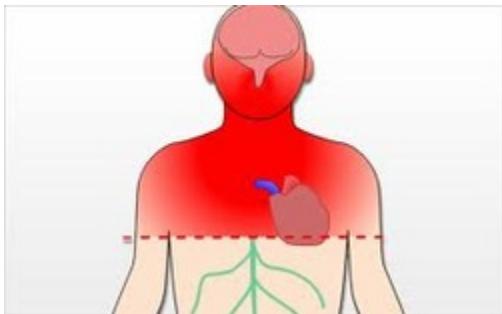
Investigations

- Initial diagnosis is clinical, but imaging such as prostate MRI, CT or ultrasound may become necessary to look for a prostate abscess in those not improving with initial treatment.
- Bladder scan is helpful to assess residual bladder volumes.

Management

- IV access, bloods for FBC, U+Es, CRP.
- Blood and urine cultures.
- IV antibiotics in line with local guidelines for after cultures.
- Catheterise those with retention or high residual bladder volumes (>100mls).
- Use the *sepsis protocols* if necessary and consider informing intensive care if profoundly septic or not responding to adequate fluids and antibiotics on the ward.

11. Autonomic Dysreflexia



Autonomic dysreflexia (AD) is a potentially life-threatening condition that occurs in spinal cord injury patients with injuries at or above the T6 vertebrae. A painful stimulus below the level of the injury leads to a dysregulated autonomic response, which can lead to profound hypertension and bradycardia.

History

- AD is seen almost exclusively in spinal cord injury patients with an injury level at T6 or above.
- AD doesn't generally occur less than 6 weeks post spinal cord injury.
- The patient may have had prior episodes and be able to inform you how AD starts for them and they may carry a medical alert card.
- Common causes of AD include:
 - Urinary retention / blocked catheter / UTI.
 - Faecal impaction / constipation.
 - Pressure sores.
 - Muscle or bladder spasm.
 - In-growing nails.

Signs and symptoms

- Headache.
- Flushing above the level of injury, cool below.
- Visual disturbances.
- Anxiety.
- Nausea and vomiting.
- Profound hypertension (can result in stroke and death).
- Profound bradycardia (can result in death).

Management

- Life threatening condition, quick recognition and response required.
- ABCDE approach, monitoring BP/HR.
- Sit patient upright, legs down.
- Remove tight clothing.
- Identify and remove painful stimulus; ensure bladder empty and catheter draining, examine lower limbs for infection / ingrowing nails / injuries.
- STAT dose of **nifedipine** 10 mg sublingual OR **glyceryl trinitrate** 400mcg spray (1-2 sprays)
- If there is no obvious painful stimulus the patient may need admission to intensive care for BP control.