85 T_h e urethra and penis

- Periurethral abscess
- Phimosis in adults
- Phimosis in boys
- Reiter’s disease (synonym sexually
- Short frenulum
- Strangulation of the penis
- T H E P E N I S Anatomy
- THE MALE URETHRA Anatomy
- Treatment
- Tropical sexually transmitted infections
- Urethral discharge
- acquired reactive arthritis)
- genital warts)

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Anatomy

Anatomy

The female urethra is around 4 /uni00A0 cm long, extending from the bladder neck to the meatus. The entire length of female urethra is sphincter active. There is extra support from the surrounding pelvic floor musculature. - Abnormalities of the female urethra include: /uni25CF caruncle; /uni25CF stricture; /uni25CF diverticulum; /uni25CF papillomas; /uni25CF carcinoma. Caruncle This is seen in elderly women. It presents as a soft, raspberry- like mass about the size of a pea. It is actually the prolapsed urethral mucosa at the 6 o'clock position (Figure 85.11). Occasionally , there is bleeding. If required it is treated by excision and diathermy coagulation of the base of the stalk. Stricture Urethral stricture is uncommon in women. The aetiology includes urethritis, trauma associated with a prolonged or di ffi cult labour or instrumentation. Urinary retention is an occasional consequence and is usually chronic. The stricture is initially managed by urethral dilatation. Urethroplasty). with buccal mucosa augmentation is advocated for recurrent - strictures. Diverticulum A female urethral diverticulum may be congenital or caused by rupture of a distended and infected paraurethral gland or by injury of the urethra during childbirth. Urine within the diverticulum becomes infected, causing local pain and repeated bouts of cystitis. Purulent urine is discharged if the urethra is compressed with a finger placed in the vagina. Diagnosis is by MRI or by transvaginal ultrasound. Excision of -

External urethral External opening urethral opening Urethral caruncle Vagina Anus Figure 85.11 A urethral caruncle.

the diverticulum through the anterior vaginal wall is e ff ective, but care must be taken not to damage the urethral sphincter (Figure 85.12). Papillomas/condyloma acuminata Condyloma acuminata (also known as anogenital warts) are a common sexually transmitted disease caused by human papillomavirus (HPV) types 6 and 11. Warts are small, skin coloured or pink growths and may be smooth and flat or raised with a rough texture. They are usually located on the labia, at the opening of the vagina or around or inside the anus. Most women with warts do not have an y symptoms at all. Less commonly , there may be itching, burning or tenderness in the genital area. The treatment options vary depending on the size. They include local application of podophyllotoxin or imiquimod; surgical treatments include cryotherapy , electrocautery , exci sion and laser therap y . Carcinoma of the urethra This occurs twice as often in women as in men. Whether a caruncle can become malignant is disputed, but caruncles and tumours often occur close together. Malignant swellings of the urethra feel harder than benign ones. Treatment is by radiotherapy or radical surgery . The overall prognosis is poor.

Figure 85.12 (a) Magnetic resonance imaging showing a diverticulum arising from the posterior wall of the urethra. It appears bright owing to accumulated urine and infected material (arrow). (b) Intraoperative picture of a urethral diverticulum in a female (arrow). (c) Endoscopic view of the diverticulum. (c)

Balanoposthitis

Balanoposthitis

Inflammation of the prepuce is known as posthitis; inflamma tion of the glans is balanitis. The opposing surfaces of the two structures are often involved, hence the term balanoposthitis (Figure 85.18). In mild cases, the only symptoms are itching ere inflammation, the glans and some discharge. In more sev and foreskin are red-raw and pus exudes. Treatment is by broad-spectrum antibiotics and local hygiene measures. Balano posthitis is common in patients with diabetes. Recurrent balanoposthitis requires circumcision.

Buschke –Löwenstein tumour

Buschke –Löwenstein tumour

The Buschke–Löwenstein tumour is uncommon. It has the histological pattern of a verrucous carcinoma. It is locally destructive and invasive but appears not to spread to lymph nodes or to metastasise. Treatment is by surgical excision. Frederic E Mohs , 1910–2002, twentieth century American physician and general surgeon, University of Wisconsin, Madison, WI, USA, developed the Mohs' micrographic surgical technique in 1938 for cutaneous malignant lesions. Abraham Buschke , 1868–1943, dermatologist, Berlin, Germany . Ludwig Löwenstein , 1885–1959, dermatologist, Berlin, Germany . Jean Alfred Fournier , 1832–1915, French syphilologist and founder of the V enereal and Dermatological Clinic, Hôpital St Louis, Paris, France. - - e

Figure 85.25 Fournier's gangrene.

CARCINOMA OF THE PENIS Aetiology

CARCINOMA OF THE PENIS Aetiology

Circumcision soon after birth confers immunity against carci - noma of the penis. Later circumcision does not seem to have the same benefit, with the assumption that smegma is in some way carcinogenic. Infection with HPV types 16 and 18 is a risk factor, as are LS (Figur e 85.23) and smoking. Phimosis and chronic balanoposthitis are known to be contributory factors - and there are definite precancerous states including leukoplakia - of the glans, which is similar to the condition seen on the tongue, and penile intraepithelial neoplasia (PeIN).

Figure 85.23 Early penile cancer seen in a patient with lichen scle rosus.

Clinical features

Clinical features

Many patients present late as a fungating/ulcerative growth (Figure 85.24), either because of embarrassment or because of misdiagnosis. About 10% of patients are under 40 years of age. By the time the patient presents, the growth is often large and secondary infection causes a foul, bloody discharge. There is typically little or no pain. Around 50% have inguinal lymph node enlargement at presentation but the nodal enlargement often reï¬,ects infection. In many , the prepuce is non-retractile and must be split to view the lesion. A biopsy should be performed to make the diagno - sis. Untreated, the w hole glans may be replaced by a fungating o ï¬€ ensive mass. Later, the inguinal nodes can erode the skin of the groin and, in rar e cases, death of the patient can result from erosion of the femoral or external iliac vessels.

Condylomata acuminata (synonym

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Congenital anomalies

Congenital anomalies

Posterior urethral valves The incidence of posterior urethral valves is around 1 in 8000 live male births. The valves are membranes that have a small posterior slit within them. They typically lie just distal to the verumontanum and cause obstruction to the urethra. They function as flap valves; although they are obstructive to antegrade urinary flow , a urethral catheter can be passed retrogradely without any di ffi culty . Posterior urethral valves need to be detected and treated as early as possible to minimise the degree of renal failure. Diagnosis Antenatal ultrasound shows a distended bladder, dilated prostatic urethra and hydroureteronephrosis. The presentation varies according to the severity of the obstruction. The more severe the obstruction, the earlier the presentation. If the diag - nosis is not made antenatally , babies typically are presented by parents because of voiding complaints and urinary tract infection (UTI). Rarely the valves are incomplete, and the patient may present in adolescence or adulthood. Impaired renal function is assessed by ultrasound to check r enal cortical thickness and by nuclear renography to check - for di ff erential r enal function. Investigations include a voiding cystourethrogram (VCUG), which shows a dilated posterior (prostatic) urethra (Figure 85.1). The bladder is hypertrophied and often shows diverticula. Typically , there may be vesicouret - eral reflux.

The diagnosis and treatment of phimosis • The diagnosis and treatment of erectile dysfunction • The common diseases of the penis and urethra and the • principles of their surgical management Figure 85.1 A voiding cystourethrogram showing a dilated bladder with a dilated prostatic urethra above an obstruction at the level of the posterior urethral valves (courtesy of Dr Shashank Shrotriya, Pune, India).

Initial treatment is by catheterisation to drain the urine and decompress the bladder and upper urinary tracts. The valves themselves can be di ffi cult to see on urethroscopy because the flow of irrigant sweeps them into the open position. Definitive treatment is by endoscopic ablation of the valves. Long-term follow-up is required in view of the associated vesi coureteral reflux, bladder dysfunction and renal impairment. Summary box 85.1 Posterior urethral valves /uni25CF /uni25CF /uni25CF /uni25CF The incidence of hypospadias is around 1 in 300 male live births. It is the most common congenital abnormality of the urethra. Diagnosis is made on physical examination. There are three characteristic features, including an ectopic ventrally located urethral meatus; usually a ventral penile curvature - (chordee); and an incomplete dorsal hood prepuce. Hypospadias is classified according to the position of the meatus (Figure 85.2a–d). /uni25CF Glanular hypospadias: the ectopic meatus is placed on the glans penis, but proximal to the normal site of the external meatus, which is marked by a blind pit. /uni25CF Coronal hypospadias: the meatus is placed at the level of the coronal sulcus. /uni25CF Penile hypospadias: the meatus is on the underside of the penile shaft. /uni25CF Penoscrotal hypospadias: the meatus is at the level of the penoscrotal junction. /uni25CF Perineal hypospadias: this is a rare and severe abnormal - ity . The scrotum is bifid, and the urethra opens between

Posterior urethral valves are congenital membranes that cause obstruction to the urinary tract in the male Antenatal ultrasound typically shows a distended bladder, dilated prostatic urethra and hydroureteronephrosis Treatment is by endoscopic valve ablation Patients need long-term follow-up in view of recurrent UTI, bladder dysfunction and renal impairment (a) Hooded foreskin Glanular Coronal Penoscrotal Perineal (c) (d) Figure 85.2 (a) Hypospadias classi /f_i cation. (b) Coronal hypospadias. tion in which

the scrotum is placed superior and anterior to the penis. (b) (e) (c) Midpenile hypospadias. (d) Hypospadias with penoscrotal transposi

(e) Urethrocutaneous /f_i stula seen in multiple failed hypospadias surgeries.

important to consider disorders of sexual development, which are usually associated with undescended testes, her nia and micropenis. Treatment Surgery for distal hypospadias is often for cosmetic reasons. This is usually treated by a tubularised incised plate urethro plasty . Proximal hypospadias with chordee needs surgical correction and may involve a two-stage repair. The first stage corrects the penile curvature and the second stage r epairs the urethra. Circumcision should be avoided as preputial skin may be required for future repairs or revisions. Surgery for hypospa dias is best performed by experts in hypospadias surgery and is typically undertaken before the age of 18 months. Failed hypospadias repair can present as urethrocutaneous fistula (Figure 85.2e). Epispadias Epispadias is very rare. In penile epispadias, the urethral opening is on the dorsum of the penis and is associated with an upward curvature of the erect penis (Figure 85.3). Epis padias often coexists with bladder exstrophy and other severe developmental defects. Summary box 85.2 Hypospadias /uni25CF /uni25CF /uni25CF /uni25CF Urethral diverticulum Congenital urethral diverticulum is rare. It is commonly seen post urethroplasty where genital skin is used for augmentation (Figure 85.4). Typically , patients present with postmicturition dribble. Diagnosis is made by urethrography and the divertic ulum is repaired by surgery .

Hypospadias is diagnosed clinically by a ventrally placed urethral meatus, a hooded foreskin and penile curvature In severe cases with coexisting testicular maldescent and micropenis, consider disorders of sexual development as a diagnosis Avoid circumcision as the prepuce may be used in procedures to correct the abnormality Surgical treatment should be undertaken by experts

DISEASES OF THE FORESKIN Phimosis

DISEASES OF THE FORESKIN Phimosis

There are physiological adhesions between the foreskin and the glans penis at birth. They begin to disappear around the age of 2 years and may persist until 6 years of age or later, giving the false impression that the prepuce will not retract. This condition (sometimes known as physiological phimosis) should not be confused with true phimosis in young boys.

FURTHER READING

FURTHER READING

Kaisary A V , Ballaro A, Pigott K. Urology: lecture notes , 7th edn. Hoboken, NJ: Wiley-Blackwell, 2016. Wein AJ, Kavoussi LR, Partin AW , Peters CA. Campbell–Walsh urology , 12th edn. Amsterdam: Elsevier, 2020.

Fracture of the penis

Fracture of the penis

Fracture of the penis usually occurs when the erect penis is bent suddenly . It leads to rupture of the tunica albuginea with extravasation of blood from within the penis. Usually the patient feels a cracking or popping sound. It is associated with pain and detumescence. Clinically there is bruising and penile haematoma (Figure 85.19). There may occasionally be an associated urethral injury . Investigations include ultrasound and MRI. Surgical man - agement involves early exploration of the penis with surgical repair of the ruptured tunica albuginea.

INFECTION AND INFLAMMATION OF THE PENIS AND URETHR

INFECTION AND INFLAMMATION OF THE PENIS AND URETHRA Fournier’s gangrene

This is progressive infection of the genitalia and perineum (Figure 85.25). It is usually caused by mixed bacterial flora (Escherichia coli , Bacteroides spp., Streptococcus pyogenes , Staphy - lococcus aureus). It may be associated with diabetes, cancer, malnutrition, recent urogenital or colorectal instrumentation or trauma. The hallmark is rapid progression from symptoms and signs of cellulitis. There is erythema, swelling, pain and blister formation with ultimately foul-smelling necrotic lesions. It is a surgical emergency . Progression from genitalia to perineum to risk of bacterial septicaemia. It will lead to death if untreated. Treatment involves a combination of broad-spectrum anti biotics and extensive surgical debridement.

INJURIES OF THE PENIS Avulsion of the skin of the

INJURIES OF THE PENIS Avulsion of the skin of the penis

Entanglement of clothing in rotating machinery and zip injuries are the usual causes. Partial injury to the penile skin can be repaired. Complete avulsion is treated by a two-stage procedure. Burying the penis in the scrotum is the ï¬rst stage and lifting it is the second stage. The scrotal skin now forms the covering of the penis. An alternative approach is initial debridement with skin grafting later.

Figure 85.19 Penile fracture. Note the extensive bruising of the penis and scrotum.

Injuries to the male urethra

Injuries to the male urethra

Bulbar urethral trauma The patient usually gives a history of a falling-astride injury , leading to blunt trauma of the perineum. Other common causes include falling from a tree, cycling, skating and indus trial accidents. The bulbar urethra is crushed upwards onto the pubic bone, typically with significant bruising. Clinical features The signs of a ruptured bulbar urethra are perineal bruising and haematoma, typically with a butterfly distribution. There is usually bleeding from the urethral meatus and retention of urine. - - - - - - Management Investigations include a retrograde urethrogram (RGU). A gentle attempt at catheterisation may be made. If the catheter fails to drain urine, a suprapubic cystostomy is performed (Figure 85.5). Delayed anastomotic urethroplasty is performed after 3 /uni00A0 months with excellent success rates.

(b) Figure 85.3 (a) Epispadias in an adult showing a dorsal urethral plate that is open and the meatus opened at the penopubic junction. (b) Dorsal chordee in a patient with epispadias (courtesy of Dr GV Datar, Pune, India).

Summary box 85.3 Bulbar urethral trauma /uni25CF /uni25CF /uni25CF /uni25CF (b) (a) The incidence of posterior urethral injury in pelvic fracture is approximately 10%. These are crush injuries. They are most commonly seen after road tra ffi c accidents. The site of injury is usually the bulbomembranous junc - tion. The bladder with the prostate and membranous urethra is disrupted from the bulbar urethra. The displacement can be both posterior and superior (Figure 85.6). The injury can be partial or complete. Occasionally the injury is complex with bladder neck disruption and rectourethral fi stula. Clinical features Initial treatment includes resuscitation and haemodynamic stabilisation of the patient. Clinical features include blood at the meatus and uri - nary retention. The injury is usually diagnosed on the ultra - sound or computed tomography (CT) scan done as part of trauma management (Focused Assessment with Sonography in Trauma [FAST]). To confi rm the diagnosis an RGU is per - formed (Figure 85.6). If the tear is partial a gentle attempt at catheterisation is made. If urine does not drain, a suprapubic cystostomy (percutaneous or open) is performed. Complex patients may need evaluation with a three-dimensional CT or magnetic resonance imaging (MRI) scan of the pelvis. Emer - gency laparotomy is required for bladder rupture and bladder neck injuries. A diverting colostomy is performed in associated rectal injuries. Treatment In some centres, early endoscopic realignment is attempted. Once the patient is stable, endoscopy is performed from a suprapubic cystostomy . A guidewire is passed from the urethral (c)

Figure 85.4 Urethrogram showing a urethral diverticulum in the penile urethra. The aetiology is usually blunt injury to the perineum Diagnosis is made by urethrography If a catheter fails to drain, suprapubic cystostomy is performed Delayed urethroplasty is the surgical treatment of choice Figure 85.5 (a) Percutaneous puncture of the bladder with passage of a guidewire into the bladder followed by dilatation of the track over the guidewire (b) , thereby allowing placement of a catheter

into the bladder (c) .

meatus and pulled up into the bladder through the haematoma. A Foley catheter is passed over the guidewire. This procedure is challenging and is not always successful. There is an increased risk of infection of the haematoma. If endoscopic realignment is successful, some patients may not need further surgery . Even if it fails, the gap may become shorter and easier to manage with urethroplasty . Delayed anastomotic urethroplasty is the treatment of choice and is performed after 3–6 months. It is a highly challenging procedure and should be undertaken at specialist centres where the surgery has higher success rates. Complications This is common after pelvic fracture with urethral injury . It can be vasculogenic (damage to dorsal arteries) or neurogenic (damage to cavernosal nerves). The erectile function is evaluated by penile Doppler ultra sound. Usually , an intracavernosal injection of a vasoactive agent (papaverine) is given prior to Doppler evaluation. Penile Doppler ultrasound is used to evaluate the velocity of blood flow in the cavernosal and dor sal penile arteries. Patients often recover from ED over a period of time (up to 1 year). Those who fail may require further treatment with oral agents such as sildenafil. If this fails they are treated with self-intracavernosal injection of vasoactive agents, a vacuum device or a penile implant. Incontinence is rare. In complex cases, the injury may a ff ect the prostate–membranous urethra Frederic Eugene Basil Foley , 1891–1966, urologist, Ancker Hospital, St Paul, MN, USA. Christian Johann Doppler , 1803–1853, Professor of Experimental Physics, Vienna, Austria, enunciated the ‘Doppler principle’ in 1842. incontinence. Stabilisation of the fractured pelvis ma y be performed by the orthopaedic team by either external or internal fixation. Summary box 85.4 Pelvic fractures and urethral injury /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF Penile and bulbar urethral stricture Aetiology The common causes of urethral stricture are: /uni25CF lichen sclerosus (LS); /uni25CF iatrogenic (post catheter and/or instrumentation); /uni25CF sexually transmitted diseases (gonorrhoea); /uni25CF post radiation; /uni25CF traumatic; /uni25CF idiopathic; /uni25CF congenital. Pathophysiology Postinflammatory strictures are less common since the introduction of e ff ective antibiotic treatment of gonorrhoea. The stricture is commonly seen in the bulbar urethra. There is infection in the periurethral glands, which persists after inadequately treated gonorrhoea. The infection spreads to cause a periurethritis, which heals by fibrosis. Most strictures appear within 1 year of infection but may not cause di ffi culty in micturition until later. LS (previously known as balanitis xerotica obliterans [BXO]) is a condition characterised by fibrosis of the foreskin, - resulting in phimosis. The glans may be involved and it pres - ents as w hite patches. There can be a meatal stenosis and penile urethral stricture. The cause of the condition is unknown. The majority of studies suggest that it is an autoimmune condition or caused by infection. LS is usually diagnosed by visual inspec - tion but a biopsy will confir m the diagnosis. It is seen in two forms: active and burnt out. Patients usually present with poor flow . A uroflowmetry study followed b y RGU and VCUG can help in making the diagnosis of stricture. The strictures produced are typically long and di ffi cult to treat. Common sites of stricture in LS are penile or panurethral. However, isolated bulbar urethral strictures are also seen in LS .

Figure 85.6 A retrograde urethrogram and voiding cystourethrogram in a patient with a pelvic fracture urethral injury showing the gap. The bladder along with the prostate is displaced upwards and there is a gap between the bulbar urethra and membranous urethra. Erectile dysfunction (ED). Urinary incontinence. Orthopaedic injuries. Suspect a pelvic fracture and associated urethral injury if there is retention of urine or blood at the meatus Diagnostic RGU is performed Partial tears can

be treated with a single gentle attempt at catheterisation Initial management is insertion of a suprapubic catheter Delayed anastomotic urethroplasty has a high success rate in specialised centres

Postinstrumentation strictures following an endoscopy or catheterisation may a ff ect any part of the urethra. Post transurethral resection of prostate (TURP) strictures are seen in the submeatal area, the bulbar urethra or penoscrotal junction. Bladder neck stenosis can occur following TURP and following radical prostatectomy for the treatment of prosta cancer. Clinical features Symptoms are usually hesitancy , poor flow and prolonged voiding time. The patients may complain of recurrent UTIs. Occasionally patients present with urinary retention. Investiga tions include uroflowmetry , urethroscopy , urethrography and ultrasound scanning to assess bladder emptying and to detect any upper tract dilatation. The urinary flow rate is typically prolonged and shows a box pattern (Figure 85.7). RGU and V CUG using a water-soluble contrast medium are performed (Figures 85.8 and 85.9). Urethroscopy is used to assess the stricture intraoperatively (Figure 85.10). Complications These include recurrent UTI, retention of urine, upper tract dilatation, bladder stones and periurethral abscess. Treatment The management of urethral strictures has changed consid erably over the past 25 years. Urethral dilatation is one of the oldest surgical procedures and has been performed for 5000 - years. In the past, serial metal dilators were used under local anaesthesia. The complications include pain, fever, b leeding and false passage creation. Nowadays, dilatation is performed over a guidewire using serial plastic dilators. Dilatation is te particularly e ff ective for soft and short strictures. It is also indicated for unfit patients, patients refusing urethroplasty or those with multiple failed urethroplasties. Urethral dilatation rarely cures stricture and most patients require repeated dilations. - DVIU is performed using an optical urethrotome. The stricture is incised under visual control using a cold knife passed through the sheath of a rigid urethrotome. Alternatively , a laser fibre (holmium/thulium) can be used. DVIU is indicated for short, non-traumatic bulbar strictures but should not be used in the penile urethra or the sphincter active membranous urethra. In self-dilatation, the patient inserts a small-calibre (12/14Fr), usually disposable catheter into the urethra at regular inter - vals. Thus, the patient dilates his own strictur e, but this is not a curative option. Patients who are not willing to undergo - urethroplasty may choose the option of self-dilatation.

(a) 40 35 30 25 20 (mL/s) ura 15 Q 10 5 0 (b) 40 35 30 25 20 (mL/s) ura 15 Q 10 5 0 Void on Figure 85.7 (a) A normal uro /f_l ow pattern. Normal /f_l ow is a bell-shaped curve with a maximum /f_l ow rate of more than 15 mL/s. rate trace from a patient with a urethral stricture. Note the prolonged /f_l ow with the typical box pattern (the vertical lines depict the start and end of micturition). Void off Void on Void off (b) A urinary /f_l ow Direct visual internal urethrotomy (DVIU). Self-dilatation/clean intermittent catheterisation.

There are two types of urethroplasty: anas tomotic and augmentation. Anastomotic urethroplasty is performed for bulbar urethral traumatic strictures where there is a gap in the urethra. This involves dissection of the tw ends of the urethra, spatulation and anastomosis. Augmen tation urethroplasty is performed for non-traumatic and long strictures. In this type of urethroplasty the structured segment of urethra is incised and augmented with a patch (graft). The usual choice of patch material for augmentation urethroplasty - is buccal mucosa. If required, lingual grafts can be harvested from the undersurface of the tongue. The techniques include dorsal onlay augmentation, dorsal inlay or ventral onlay . o - Panurethral stricture This is a long urethral stricture (Figure 85.9

). The aetiology includes LS and iatrogenic causes. The treatment is by

Figure 85.8 (a) A normal urethrogram. (b) An ascending urethrogram showing urethral stricture of the bulbar urethra (arrow). Figure 85.9 Panurethral stricture. Urethroplasty. Figure 85.10 Endoscopic appearance of a urethral stricture with a /f_i breoptic endoscope.

invaginated. The urethra is dissected along the full length on one side and a dorsal onlay buccal mucosa urethroplasty is performed. Use of flaps Preputial and penile fasciocutaneous flaps with their own vascular pedicle can be utilised for complex posterior urethro plasty to bridge long gaps in the urethra and postradiation strictures. Summary box 85.5 Treatment of urethral strictures /uni25CF /uni25CF /uni25CF /uni25CF

A newly diagnosed short bulbar stricture is best treated initially by DVIU Traumatic strictures need anastomotic urethroplasty Long non-traumatic strictures are treated by augmentation urethroplasty Anastomotic urethroplasty has a success rate of around 90%, while augmentation urethroplasty has a success rate of 85% over 10 years. Long-term follow-up is required

Introduction

CHAPTER

Investigations

Investigations

A biopsy should be performed. MRI is performed for local staging. Assessment of locoregional lymph node status is essential.

Learning objectives

Learning objectives

To recognise and understand: The common congenital anomalies of the urethra â€¢ The diagnosis and treatment of urethral trauma â€¢ The diagnosis and treatment of urethral stricture â€¢

Malignant melanoma of the penis

Malignant melanoma of the penis

This is an uncommon tumour with the principles of manage - ment being the same as for squamous cell carcinoma. Blood- borne metastatic disease is, however, more common.

Other abnormalities of the penis Erectile dysfunct

Other abnormalities of the penis Erectile dysfunction

ED is failure to attain or maintain an erection. It can arise as a consequence of psychological issues, but the commonest cause is vascular disease a ff ecting the penile arterial blood flow; as such, ED is associated with diabetes, hypertension, dyslipidae - mia and smoking. Other rarer causes include endocrine disease (hypogonadism and prolactin-secreting pituitary tumours), neurological disease (multiple sclerosis, spinal cord injury and prolapsed intervertebral disc), iatrogenic damage to the caver nosal nerves owing to radical pelvic surgery (e.g. radical prostatectomy , abdominoperineal excision of the rectum and radical cystectomy), neuropathy secondary to pelvic radio - therapy and drug-induced causes (including antihypertensive agents, antidepressants and antipsychotics). ED may be a marker of cardiovascular disease . Physical examination of the genitalia, measurement of the blood pressure and assessment of the secondary sexual sugar, the serum lipid profile and the serum testosterone is nec essary in all cases. Penile Doppler ultrasound is performed with the use of intracavernosal vasoactive agents such as papaver ine. Initially the ED is treated with phosphodiesterase type 5 inhibitors (such as sildenafil). A few patients need treatment with self-intraca vernosal injection of vasoactive agents. Vacuum erection devices are a non-inv asive alternative. Penile implants are br oadly of two types: semirigid and inflatable. Their use is becoming increas ingly popular. Summary box 85.7 Erectile dysfunction /uni25CF /uni25CF /uni25CF Peyronie’s disease Peyronie’s disease (PD) is characterised by penile deformity (Figure 85.20), palpable penile plaques inside the penis, Francois de la Peyronie , 1678–1747, surgeon to King Louis XIV of France and founder of the Royal Academy of Surgery , Paris, France. Baron Guillaume Dupuytren , 1777–1835, surgeon, Hôtel Dieu, Paris, France, described this condition in 1831. Reed Miller Nesbit , 1898–1979, urologist, University of Michigan Medical School, Ann Arbor - ably involves minor injury to the erect penis with secondary microhaemorrhage beneath the tunica albuginea and fibrosis. - The latter results in the palpable plaques that can be iden - tified on examination. The plaques may rarely be calcified (Figure 85.21). The presence of these relatively inelastic plaques causes the erect penis to bend towards the side of the plaque. The def ormity is commonly dorsal (towards the abdomen) and the deformity may prevent penetrative sexual - intercourse. While the aetiology is uncertain, there is an association with Dupuytren’s contracture. The natural history of the con - dition is tha t it typically progresses for 18–24 months before stabilising. During this active phase of the disease, surgery is not indicated; a variety of medical treatments have been tried, although none with any good evidence of benefit. The diagnosis is usually made on clinical e xamination but MRI may be helpful. Newer treatments include intralesional injections of colla - genase clostridium histolyticum (Xiaflex). Surgical correction can be performed in two ways. If the penis is of adequate length, it is possible to plicate the tunica albuginea on the side opposite to the maximum curvature. The plication can be done by Nesbit’s technique or a 16-dot tech - nique . The second option involves

incision of the plaque and a bovine pericardial patch. , MI, USA. Nesbit was a pioneer of transurethral resection of

Appropriate investigation involves identi /f_i cation of vascular risk factors Phosphodiesterase inhibitors are the /f_i rst-line treatment Penile implants are becoming popular for management of ED Figure 85.20 Dorsal deformity of the erect penis that is typical of Peyronie’s disease. Bladder Corpora Testes Figure 85.21 Magnetic resonance imaging in Peyronie’s disease showing plaque. The yellow arrow shows calci /f_i ed plaque; the red arrow shows active disease on the dorsal wall of the penis.

Peyronie’s disease /uni25CF /uni25CF /uni25CF Congenital curvature of the penis This penile deformity is similar and analogous to Peyronie’s disease and is occasionally seen in young men (Figure 85.22 In congenital curvature of the penis, the urethral length is normal and it typically results in a ventral deformity of the erect penis. If the deformity interferes with sexual activity , then surgery , usually a Nesbit procedure, will straighten the erect penis. Priapism Priapism means a persistent erection lasting longer than 4 /uni00A0 hours; it is a surgical emergency . There are two main types of priapism: ischaemic and non-ischaemic. Ischaemic priapism Ischaemic or veno-occlusive priapism is the more common. It is due to venous congestion, with consequent thrombosis and ischaemia. The penis remains erect and becomes painful. This is a pathological erection and the glans penis and corpus spongiosum are not involved. The condition is most commonly seen as a side e ff ect of medication, most notably antipsychotic medication and intracavernosal injections. It can also arise as a complication of hypercoagulable blood disorders such as sickle cell disease or leukaemia. A small proportion of cases are caused by malignant disease in the corpora cavernosa or the pelvis. Blood taken from the penis shows hypoxia, hypercapnia and acidosis, while Doppler scanning shows an absence of blood flow within the penis. An underlying cause should be excluded and the patient should be referred for specialist urological care. The condition is an emergency since dela y beyond 6 hours results in progres sive, irreversible damage to the corpora cavernosa tissue with subsequent fibrosis and ED. Aspiration of the sludged blood in the corpora cavernosa is the first-line therapy; if this fails, intracav ernosal injection of phenylephrine (an α -adrenocep tor agonist) is the next line of therapy . If that proves ine ff ective, it may be necessary to decompress the penis by creating a shunt between the cor pus cavernosum and either the glans penis or the corpus spongiosum. Treatment initiated after 24–36 hours rarely restores normal erectile function. Recurrent ischaemic (stuttering) priapism is seen in sickle cell disease. Non-ischaemic priapism This rarer form of priapism arises as a consequence of trau matic damage to the central penile artery , usually as a conse quence of blunt perineal trauma. A fistula develops between the artery and the sinusoidal space, which results in a persistent). Summary box 85.9 Ischaemic priapism /uni25CF /uni25CF /uni25CF erection that is painless, in contrast to ischaemic priapism. This is a high-flow priapism. Blood gas analysis shows the charac - teristics of arterial blood and Doppler scanning and selective arteriography will demonstrate the fistula. Treatment involves - androgen ablation therapy . If medical therapy fails, selectiv e arterial embolisation is performed. -

The disease has two phases: an initial active phase and a later stable phase There is no effective treatment in the active phase Surgery may be indicated in the chronic phase to correct deformity that interferes with sexual activity Figure 85.22 Congenital curvature of the penis. The characteristic clinical features are a painful erection not involving the glans penis Blood gas

analysis from the penis shows hypoxia, hypercapnia and acidosis Detumescence should be ideally achieved within 6 hours to avoid long-term ED

Other conditions of the urethra

Other conditions of the urethra

Urethral fistula This is seen after failed hypospadias surgery (Figure 85.2e Tight strictures with periurethral abscess can present as multi ple fistulae (watering-can perineum). Urethral calculi Urethral calculi can arise primarily behind a stricture or in an infected urethral diverticulum. More commonly , the stone is a renal calculus that has migrated to the urethra via the bladder. Clinical features Urethral calculi present as episodes of retention, pain or haematuria. Treatment A stone lodged within the prostatic urethra should be displaced back into the bladder and treated by laser or pneumatic fragmentation. Calculi in more distal parts of the urethra are fragmented in situ by a holmium/thulium laser. Open removal is indicated in large or multiple calculi inside a urethral diver ticulum. Neoplasms Bloody urethral discharge without infection should raise suspicion that the patient has a urethral tumour, although such tumours are rare. Multifocal transitional cell cancer of the bladder is sometimes associated with tumours in the prostatic urethra and occasionally more distally . They can be treated by local laser ablation but are associated with a tendency to distant spread. Squamous carcinoma may develop in an area of squamous metaplasia in patients with LS. It is treated by radical surgery and carries a poor prognosis.

Paraphimosis

Paraphimosis

A tight foreskin once retracted may be di ffi cult to return and a paraphimosis results. In this condition, the venous and lymphatic return from the glans and distal foreskin is obstructed and these structures become oedematous, causing even more pressure within the obstructing ring of prepuce (Figure 85.17). Gentle manual compression and injection of a solution of hyaluronidase in normal saline may help to reduce the swelling. A dorsal slit of the prepuce under local anaesthesia may be enough in an emergency . These patients can be treated by circumcision if careful manipulation fails.

Figure 85.17 Paraphimosis. Figure 85.18 Balanoposthitis.

Pathology

Pathology

Carcinoma of the penis is most typically a squamous cell carcinoma arising in the skin of the glans penis or the prepuce. It may be flat and infiltrating or warty in appearance. The former often starts as leukoplakia or PeIN; the latter results from an existing papilloma. Local growth continues for months or years. T1 tumours are confined to the skin, with T2 tumours invading the corpus spongiosum or the corpus cavernosum. T3 /uni00A0 tumours invade the urethra and T4 tumours invade adjacent structures. The earliest lymphatic spread is to the inguinal nodes (N1 and N2 disease) and then to the iliac nodes (N3 disease). Distant metastatic deposits are infrequent.

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Penile intraepithelial neoplasia (carcinoma in sit

Penile intraepithelial neoplasia (carcinoma in situ of the penis, Bowen’s disease, erythroplasia of Queyrat)

PeIN is typically seen as a red cutaneous patch on the penis. When it occurs on the glans penis, it is known as erythroplasia of Queyrat; when it occurs on the shaft of the penis, it is called Bowen’s disease. There are several other benign causes of red patches on the penis; when there is clinical doubt as to the underlying diagnosis a biopsy is indicated. When the diagnosis of carcinoma in situ is confirmed, treatment is by means of topical 5-fluorouracil cream, CO laser ablation or surgical 2 excision. John Templeton Bowen , 1857–1940, American dermatologist, described this condition in 1912. Louis Auguste Queyrat , 1856–1933, French dermatologist, described this condition in 1911.

Figure 85.24 A squamous cell cancer of the penis.

Periurethral abscess

Periurethral abscess

Periurethral abscesses were once common with high morbid ity but are now rare. Clinical presentation is varied but may include fever, dysuria, urethral discharge and swelling of the penis or scrotum. In untreated cases urethral fistulation and occasionally extensive cellulitis or necr otising fasciitis can occur. A penile periurethral abscess arises following a gonococcal or chlamydial infection of one of the glands of Littre. There can be a coexisting urethral stricture. There is usually penile sw elling with tender induration felt on the underside of the penis, which, if left untreated, may discharge externally , often leaving a fistula. Diagnosis can be helped by ultrasound of the urethra. Treatment should include both antibiotic treatment, as for urethritis, and surgical drainage into the urethra. A periurethral abscess in relation to the bulbar urethra is even more uncommon. It may be associated with a urethral stricture, urethral trauma or, rarely , a urethral cancer. The infecting organisms are varied and can include both strep tococci and anaerobic organisms. Extravasation of urine is not unusual. There is perineal pain with pyrexia, rigors and tachycardia. Tenderness and swelling rapidly spread from the perineum to the penis and the anterior abdominal wall. Alexis Littre , 1658–1726, surgeon and lecturer in anatomy , Paris, France. - Ultrasound scanning and MRI are useful diagnostic aids and treatment with antibiotics is essential. Collections of pus should be drained and the urine should be diverted by a supra- pubic urinary catheter. A chronic periurethral abscess sometimes results from a - longstanding urethral stricture (Figure 85.26). The multiple loculi of pus should be drained and the stricture treated. Ure - thral fistula occurs either spontaneously or as a result of inci - sion of the abscess.

(c)

Bladder Penis Pus seen in the perineum appears bright on MRI

The commonest cause of a genital ulcer is genital herpes. Other less common causes include syphilis and chancroid. As with all STIs, the possibility of other infections (such as HIV) should always be borne in mind and, where appropriate, tested for. Genital herpes Genital herpes is caused by sexual transmission of the herpes simplex virus (usually HSV-2, occasionally HSV-1). Infection is lifelong with recurrent symptomatic attacks occurring in 50% or more of cases. Pain along the distribution of the sensory nerve, usually the genitofemoral nerve, precedes the eruption by 2 /uni00A0 days and may be particularly severe around the anus. A group of tiny vesicles rapidly erodes to form shallow ulcers, which are painful (Figure 85.27a). The first attack occurs around 4 days after exposure and is typically accompanied by fever, myalgia and inguinal lymphadenopathy . In female patients, the ulcers often spread onto the thighs during the attack. Involvement of the urethra may cause retention of urine, which may persist for up to 14 days if there is radiculitis of the S2 and S3 nerve roots. Diagnosis is made clinically or, when there is

doubt, by either cell culture or polymerase chain reaction (PCR)-based techniques. All primary infections should be treated by oral antiviral agents such as aciclovir (400 /uni00A0 mg three times a day for 7–10 days), valaciclo vir (1 /uni00A0 g orally twice a day for 7–10 days) or famciclovir (250 /uni00A0 mg three times a day for 7–10 days). to a fatal generalised herpes infection in the neonatal period. Caesarean section should be considered in these circum - stances. There is an increased risk of carcinoma of the cervix and annual cytology for life is recommended. Syphilis Syphilitic ulcers are typically painless, rubbery and indurated. Caused by the spirochaete Treponema pallidum , diagnosis was traditionally achieved by dark-field microscopy , but modern serological techniques are nowadays more appropriate. The incidence of syphilis is increasing since the advent of the retro- viral drugs used to treat HIV in the mid-1990s. Treatment is with long-acting penicillin.

(a) (b) Figure 85.27 (a) Genital herpes. (b) Ulcer seen in chancroid. (c) ital warts affecting the prepuce and glans (courtesy of Dr Narendra Patwardhan, dermatologist, Pune, India).

Phimosis in adults

Phimosis in adults

Scarring in adults occurs as a result of balanitis (inflammation of the glans penis), posthitis (inflammation of the foreskin) or LS. In LS (Figures 85.14 and 85.15) the normal pliant foreskin becomes thickened, typically whitish in appearance and forms a constricting band that prevents retraction. As a consequence, it is di ffi cult to keep the penis clean and there may be recurrent attacks of balanitis. Treatment In physiological phimosis, no treatment is necessary or appro priate. True phimosis causing symptoms requires circumcision. In emergency situations, such as when catheterisation is required, a dorsal slit under local anaesthesia ma y be required. -). Circumcision Circumcision has been practised since as early as 4000 /uni00A0 /b.sc/c.sc/e.sc . Circumcision should not be performed in the presence of hypospadias, penile curvature or buried penis. - In infants and young boys, circumcision is usually performed at the request of the parents for social or religious reasons. Medical indications for circumcision in boys include true phimosis, LS (rare under the age of 5 y ears), recurrent

(b) Figure 85.14 (a) Active phase of lichen sclerosus (LS). (b) Burnt-out phase of LS. Indications.

attacks of balanoposthitis and recurrent UTIs with abnormal ities such as high-grade vesicoureteral reflux. In adults, circumcision is indicated when there is inability to retract the foreskin for intercourse, for splitting of an abnor mally tight frenulum or for recurrent balanitis. Recently , evidence has emerged that circumcision protects against the spread of human immunodeficiency virus (HIV). The virus dies quickly on a dry penis. A large-scale programme of adolescent circumcision under the auspices of the World Health Organization is ongoing in some African countries. Under anaesthesia the prepuce is held in artery forceps and put on a gentle stretch. A circumferential incision in the penile skin is made at the level of the corona using a knife. The prepuce is then slit dorsally in the midline to within 1 /uni00A0 cm of the corona. (An alternative technique slits the prepuce first.) This converts the foreskin into two flaps. When the undersurface of the prepuce has been separated from the glans, the inner layer of each flap is again marked with a pen and then incised with a second circumferential inci sion, leaving about 0.5 /uni00A0 cm of the inner layer of the preputial skin. Cutting the remaining connective tissue completes the excision (Figure 85.16). V essels should be preferably secured with bipolar dia thermy or with absorbable sutures. The cut edges of the skin are approximated using interrupted sutures, making certain that the frenular vessels are ligated. In LS, the separation of prepuce from foreskin is at times di ffi cult. The excised skin should be sent for histology . Summary box 85.6 Circumcision /uni25CF /uni25CF /uni25CF Walter Hermann von Heineke , 1834–1901, surgeon and Professor of Surgery in Erlangen, Germany . Jan Mikulicz-Radecki , 1850–1905, surgeon and Director of Surgery in Krakow and Wroc ł aw , Poland. (c) - (d) (e) -

Figure 85.15 Lichen sclerosus is a genital skin disease and can involve the skin of the genitalia. Technique. Commonly performed for religious and cultural reasons Physiological phimosis does not

need circumcision Symptomatic phimosis is treated by circumcision Figure 85.16 (a–e) Stages in circumcision.

Phimosis in boys

Phimosis in boys

In true phimosis the prepuce does not retract (Figure 85.13 This may result in ballooning of the foreskin during micturition and may also result in infection (balanoposthitis).

Reiter’s disease (synonym sexually

Reiter’s disease (synonym: sexually

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Short frenulum

Short frenulum

- Phimosis should not be confused with the condition where the frenulum is short. It causes pain when the foreskin is retracted. Another possible presentation is tearing of the frenulum during sexual activity . Treatment is by frenuloplasty , which utilises the Heineke–Mikulicz principle to lengthen the frenulum.

Strangulation of the penis

Strangulation of the penis

Strangulation of the penis is caused by rings placed on the penis, usually for sexual pleasure. It can cause venous engorge - ment, which prevents their removal. The ring must be cut o ff with a ring cutter. -

T H E P E N I S Anatomy

T H E P E N I S Anatomy

- The penis is a sexual organ and composed of three tubular structures. The two dorsal structures, the corpora cavernosa, provide erectile function and are anchored posteriorly onto the pubic rami. The ventral tubular structure is the corpus spongiosum, which surrounds the urethra. It expands distally to form the glans penis. The corpora cavernosa have an outer tough covering of tunica albuginea. There is a septum between them. The tunica albuginea encloses the erectile tissue, which has a trabecular - structure with a network of sinusoidal spaces lined by endo - thelium within which blood pools during erection. The cen - tral arterial blood supply (cavernosal artery) is a branch of the internal pudendal artery . Sacral parasympathetic nerves are responsible for erection. They cause smooth muscle relaxation with increased arterial inflow , dilatation of the sinusoids and blood accumulation within the trabecular spaces. Simultane ously there is venous outflow occlusion by the coverings of the corpora cavernosa.

Figure 85.13 Phimosis in a child with inability to retract the prepuce.

THE MALE URETHRA Anatomy

THE MALE URETHRA Anatomy

The male urethra is a fibromuscular tube that extends from the bladder neck to the meatus. Functionally the urethra allows transport of urine from the bladder and semen from the ejaculatory ducts through the penis. The male urethra is subdivided into the following parts. The meatus is a vertical slit-like opening at the tip of the glans penis. The glandular part of the urethra is called the fossa navicularis. The penile urethra extends from the meatus to the penoscrotal junction. The bulbar urethra extends from the penoscrotal junction to the bulbomembranous junction. The penile urethra and bulbar urethra are surrounded by corpora spongiosa. The membra nous urethra extends from the bulbomembranous junction to the verumontanum. It is surrounded by the voluntary external sphincter, which consists of both the smooth muscle external sphincter and the striated rhabdosphincter. It is innervated by the pudendal nerve, originating from spinal segments S2–4. The prostatic urethra extends from the bladder neck to the verumontanum and is surrounded by the prostate. The bladder neck contributes to the maintenance of continence in the male. Its main role is to act as a genital sphincter that closes at the time of ejaculation. The bladder neck and external sphincter can independently maintain continence in men. The urethral lining changes from transitional cell epithelium proximally to stratified squamous cell epithelium distally .

Treatment

Treatment

Management is divided into treatment of the primary tumour and treatment of the inguinal nodes. Patients with small lesions surgery , such as limited excision, Mohs’ surgery or laser ablation. Mohs’ micrographic surgery is based on sequential tissue excision under repeat microscopic control. This helps in accurately identifying the tumour margin and maximally preserves the uninvolved tissues. For most primary tumours surgical excision is the mainstay of treatment, with the tradi tional view that a 2-cm margin of normal tissue be removed being superseded by a more recent, more conservative view , such that penis-preserving surgery with excision of m uch lower margins of normal tissue is now accepted. Tumours a ff ecting the glans penis require glansectomy , with more advanced tumours requiring partial penectomy . In advanced cases, total penectomy is required with the formation of a perineal urethrostomy . These techniques are indicated even in advanced metastatic disease for reasons of local control. Treatment of any associated enlarged inguinal lymph nodes should be delayed until at least 3 weeks after local treat ment of the primary lesion. Enlargement caused by infection will usually show signs of subsiding with antibiotic tr eatment. For palpable nodes, ultrasound-guided fine-needle aspiration will confirm the diagnosis and a block dissection of both groins should be undertaken. The management of patients wher the nodes are not palpable involves the use of sentinel lymph node biopsy (SLNB) followed by inguinal node dissection if the SLNB is positive. Management of the pelvic nodes is controversial. When they are involved on CT scanning, surgery probably has little role; however, when the iliac nodes ar e not enlarged in the presence of N2 disease, the options are observation, pelvic lymphadenectomy or radiotherapy . Chemotherapy is relatively ine ff ective and currently is reserved for palliation in those with metastatic disease. The prognosis for tumours confined to the penis is good with 5-year survival rates in excess of 80%. With nodal involvement the 5-year survival rate falls to around 40%. Summary box 85.10 Carcinoma of the penis /uni25CF /uni25CF /uni25CF

Enlargement of super /f_i cial inguinal lymph nodes may be caused by infection or metastatic spread Surgery is the mainstay of treatment Nodal involvement indicates a poor prognosis

Tropical sexually transmitted infections

Tropical sexually transmitted infections

Lymphogranuloma venereum Lymphogranuloma venereum is a sexually transmitted disease caused by C. trachomatis (chlamydia A) types L1–L3 and is primarily an infection of the lymphatics and lymph nodes. It can a ff ect both sexes. While it was considered rare in resource- rich countries, some recent outbreaks in Europe have occurred, usually in conjunction with HIV . The primary lesion is a fleeting, painless, genital papule or ulcer that develops 1–4 weeks after infection and is often unno - ticed by the patient. The inguinal glands become enlarged and painful around 2–6 weeks after the primar y lesion. The masses

(c) Gen

to give the ‘sign of the groove’. The overlying skin reddens, there may be fluctuance and the mass occasionally ruptures. There may be a proctitis, which can go on to produce a rectal stricture if untreated. Lymphatic obstruction leads to lymph oedema in the perineum and, occasionally , the lower limbs. Urethritis and urethral stricture occur in men. Diagnosis is confirmed clinically and by the detection of antibodies against the organism. Culture, direct immuno fluorescence and NAAT can be perfor med. Treatment is by a combina tion of antibiotics, which may include doxycycline, azithromycin, erythromycin and cipr ofloxacin. The multilocu lar lymphatic masses should not be incised, although aspiration is permissible to reduce discomfort. Lymphogranuloma inguinale This is a chronic and slowly progressive ulcerative tropical disease a ff ecting the genitals and surrounding tissue, but occasionally occurring elsewhere in the body . It is usually sexually transmitted and is caused by Klebsiella granulomatis is most commonly seen among socially deprived people. The incubation period varies greatly but is typically between 7 and 30 days. A painless vesicle or indurated papule, usually on the exter nal genitals but occasionally elsewhere on the skin, gradually erodes into a slowly extending ulcer with a beefy-red, gran ulomatous base. More chronic lesions may become greyish, especially at the edges, w here, after months or years, malignant change may develop. The ulcerated area may b leed if touched but is usually surprisingly painless. Without treatment healing is only partial and keloid is common. Diagnosis is by microscopy of material from the edges of the ulcer, which shows the presence of short Gram-negative rods within the cytoplasm of the lar ge mononuclear cells. Treatment is with azithromycin, although doxycycline, erythro mycin, trimethoprim–sulfamethoxazole and gentamicin are alternatives. Chancroid Chancroid is a sexually transmitted, acute, ulcerative disease caused by Haemophilus ducreyi , a Gram-negative facultative anaerobe. Following an incubation period of 3–10 days, a soft painful penile ulcer (Figure 85.27b) appears and is commonly followed by the

development of inguinal lymphadenopathy . Diagnosis is by bacterial culture or PCR techniques. Antibiotic Theodor Albrecht Edwin Klebs , 1834–1913, Professor of Bacteriology successively at Prague, Czechoslovakia, Zurich, Switzerland and Rush Medical College, Chicago, IL, USA. therapy .

Urethral discharge

Urethral discharge

The commonest cause of urethral discharge in men is urethritis; the two commonest causes of urethritis are non-specific urethritis (NSU) and gonococcal urethritis. Other related symptoms include dysuria and urethral pruritus while epididymitis can also be present. A sexual history should be sought, particularly a history of unprotected intercourse, oral sex and anal intercourse. A routine investigative screen includes a Gram stain of the discharge, dipstick testing and culture of a urine specimen as well as nucleic acid amplification testing (NAAT) of either a urine specimen or a urethral swab. If relevant, the same techniques can be used for vaginal, endocervical, anal and pharyngeal swabs. NAAT is a sensitive way of identifying both gonococcal and chlamydial urethritis. As with all sexually transmitted infections (STIs) the possibility of other infections (such as HIV) should always be borne in mind and, where appropriate, tested for. Non-specific urethritis (synonym: non - gonococcal urethritis) NSU is an STI that is the commonest cause of urethritis in the western world. In around 40% of cases it is due to mydia trachomatis , with other cases being caused by Ureaplasma urealyticum , Trichomonas vaginalis or Mycoplasma genitalium causative agent in up to 50% of cases is unknown. NSU can a ff ect both men and women and asymptomatic infection is common in both. In men, dysuria and a white mucopurulent urethral discharge appear up to 6 weeks after sexual intercourse. Dysuria is usual. The urine appears to be clear but may contain ‘threads’ or pus cells . Epididymitis is common and urethral stricture is a potential late complication. In women, the condition is usually asymptomatic, although it can present as vaginal discharge or as a form of urethrotrigonitis. It may result in cervicitis or pelvic inflammatory disease. Exclusion of gonorrhoeal infection is important. The diag nostic test of choice is NAAT: in men either a first-catch urine specimen or a urethral swab can be used; in women urine, endocervical or vaginal swabs can be used. If testing is positive, then partners should be screened. The standard treatment regimens are azithrom ycin as a single dose (1 /uni00A0 g) or doxycycline (100 /uni00A0 mg orally twice daily) for 7 days. Treatment is usually e ff ective, although relapse is com mon, especially in men, in w hom the prostate may act as a reservoir of infection. It is important to treat both partners as reinfection is probable if this is not done; retesting of both partners at 3 months is recommended. Hans Christian Joachim Gram , 1853–1938, Professor of Pharmacology (1891–1900) and of Medicine (1900–1923), Copenhagen, Denmark, described this method of staining bacteria in 1884. Albert Ludwig Siegmund Neisser , 1855–1916, Director of the Dermatological Institute, Breslau, Germany (now Wroc ł aw , Poland). Hans Conrad Julius Reiter , 1881–1969, President of the Health Service and Honorary Professor of Hygiene, Berlin, Germany , described this condition in 1916. He was subsequently convicted of war crimes as a consequence of his involvement in the death of hundreds of inmates in Buchenwald. Daniel Elmer Salmon , 1850–1914, veterinary pathologist, Chief of the Bureau of Animal Industry , Washington, DC, USA. Gonorrhoea is a sexually transmitted disease caused by Neisseria - gonorrhoeae (gonococcus), a Gram-negative kidney-shaped diplococcus that infects the anterior urethra in men, the urethra and cervix in women and the oropharynx, rectum and anal canal in both sexes, but especially men. It is transmitted by unprotected sexual intercourse and is the second commonest cause of urethritis in western

countries. Most men have symptoms of urethral discomfort and ure - thral discharge within a few days of infection. There is often scalding dysuria. In women it is often asymptomatic. There can be mild dysuria or slight urethral discharge, which can go unnoticed by the patient. Cervicitis can occur with about 10% su ff ering fr om pelvic inflammatory disease (salpingitis), which, if bilateral, may lead to infertility . A mother may trans - mit gonorrhoea to her newborn during childbirth, with the risk that blindness of the child can result. In addition, in both men and women exposed orally or anally , gonococcal infections can cause a predominantly asymptomatic pharyngitis or proctitis. Traditionally , the diagnosis was made by identifica tion of pus and gonococci in a Gram-stained urethral smear with sub - sequent culture. However, more recently , NAAT , whic h is more sensitive, has become the norm. Complications are prevented by e ff ective early treatment. In men complications include posterior ur ethritis, prostati - tis (acute or chronic), acute epididymo-orchitis, periurethral abscess and urethral stricture . Gonococcal arthritis, iridocycli - Chla - tis, septicaemia and endocarditis are unusual. Treatment is with antibiotics. Ceftriaxone (250 /uni00A0 mg intra - . The muscularly) and azithromycin (1 /uni00A0 g orally) are currently the treatment of choice. There is increasing antibiotic resistance to more traditional antibiotics such as ciprofloxacin or peni - cillin. Contact tracing is important in controlling the spread of the disease and management is usually by a genitourinary physician. Failure to respond to first-line treatment should raise the possibility of antibiotic resistance or co-infection with Chla - mydia .

acquired reactive arthritis)

acquired reactive arthritis)

Reiter’s disease is an autoimmune disease characterised by the triad of urethritis, conjunctivitis and polyarthritis. Common triggers include chlamydial urethritis, less commonly gonococ - cal urethritis and diarrhoea secondary to Salmonella , Shigella or Campylobacter . It is an HLA-B27-associated condition. The - conjunctivitis (present in around 50%) and arthritis typically occur 1–3 weeks after the primary infection. Diagnosis is made on clinical grounds and treatment is largely symptomatic, although antibiotic treatment of the precipitating infection is important. The urethritis and conjunctivitis frequently subside after a few weeks, but the arthritis may persist for months. Severe anterior uveitis and frequently recurrent attacks suggest a poor outlook.

Figure 85.26 (a) Periurethral abscess with pinpointing at the peno scrotal junction. (b) Retrograde urethrogram of a periurethral abscess. (c) Magnetic resonance imaging (MRI) in a patient with a periurethral abscess.

genital warts)

genital warts)

Genital warts are caused by infection with HPV and are sexu - ally transmitted. Infection is very common, with only a small - proportion of infected patients actually having visible warts. Most commonly due to HPV types 6 and 11, these viruses do not cause cervical cancer. Ordinary skin warts can occur - on the genitals by direct contact with a finger lesion, but they are less moist and soft and less often pedunculated than the genital variety . T he lesions most commonly occur under the prepuce in the coronal sulcus b ut may be found elsewhere, including inside the urinary meatus and on the outer prepuce (Figure 85.27c). In women, genital warts are most commonly found on the vulva, but they may line the vagina and occur on the cervix. Perianal warts are common. ; it Other associated sexually transmitted diseases should be excluded: in women mainly candidiasis and Trichomonas infec - tion and in men syphilis or gonorrhoea. Genital warts may complicate HIV infection. - Treatment is by chemical or physical means. Podophyllin is often e ff ective as a topical application. It is applied to the wart, - taking great care to av oid the surrounding skin, and washed o ff after 6 hours or so. An alternative agent is imiquimod. If chemical methods fail, the warts can be ex cised or they can be ablated with cryosurgery , electrosurgery or laser. Circumci - sion is sometimes advised if there are florid lesions under the foreskin.