

Assessment of the urological patient: History and examination

Assessment of the urological patient involves taking a complete and detailed history, a thorough physical examination and analysis of a urine sample. As with all history taking the enquiry should include details of the presenting complaint and its history, the relevant past medical history and a family and drug history. The examination should include the abdomen, external genitals and a digital rectal examination in men and a vaginal examination in women, if clinically indicated. The urinalysis is most readily performed by dipstick testing; a formal microscopic analysis may be required to investigate any abnormality.

History

Communication skills

It is perhaps even more important with urology than with other specialities, because of the personal nature of some of the symptom complexes, for the clinician to create a personal rapport and a warm environment to facilitate enquiry into sometimes intimate problems. Stand up to greet the patient and welcome him/her warmly. Introduce yourself and make an

initial assessment of the patient's age, built, demeanour, intelligence and socio-economic group and adapt your consultation style accordingly, based on your experience, in an attempt to make the patient feel comfortable. An ice-breaker such as 'I hope you haven't been waiting too long' or 'Did you manage to park easily?' can help the patient to relax. Aim to project a caring, experienced and open but professional image that will put the patient at ease and facilitate communication.

Then begin with, 'How old is your patient and what is his/her occupation? How can I help', or 'Your GP has written to us saying you have a problem with...please tell me about it', which are good open questions to start the consultation. Look out for signs that the patient may not be able to describe the problem due to anxiety or embarrassment or a language barrier. Then listen. Listen until you are clear on the nature of the problem, or the patient has gone off on a tangent and you feel you have to gently redirect him/her. Once you are clear on the presenting complaint, obtain a history of it and ask more specific questions aimed at eliciting the important diagnostic points. The following are common complaints initiating a consultation.

Basic symptoms

Haematuria

The presence of blood in the urine is termed haematuria. Haematuria has many causes ranging from the insignificant to life-threatening cancers and is often a result of urinary tract infection (UTI). The patient should therefore be asked whether the blood was accompanied by symptoms of urinary tract inflammation such as dysuria, pain, urinary frequency or whether the urine smelled offensive. In all patients with a history of haematuria, the urine should be examined by dipstick and cultured if this suggests infection (see later). The extent of investigation required for a confirmed infection is guided by patient characteristics; however, all patients with symptomatic infections should be treated with appropriate antibiotics and the urine retested for blood once the infection has resolved. It is important to remember that UTI itself can be the first sign of serious urinary tract pathology. Uncommonly, urine discolouration that is reported as haematuria may be caused by myoglobinuria, beetroot intake and drugs such as rifampicin. It is generally advisable to investigate for haematuria anyway. Haematuria may be visible or non-visible and associated with other LUTS or asymptomatic, and this is the starting point for subsequent enquiry.

Visible haematuria

Visible haematuria is arguably the most important symptom in urology as it implies urological cancer until proven otherwise, and all patients including those with demonstrated infection should undergo investigation. The patient may notice the blood at the beginning, throughout or at the end of the urinary stream, and this sign may give an indication of its origin and cause. Initial haematuria often originates from the prostate or urethra and as such is less likely to reflect bladder or upper urinary tract pathology, whereas haematuria throughout the stream implies the blood emanates from the bladder or above. Terminal haematuria may indicate upper tract bleeding. This differentiation is unreliable, however, and all patients require the same investigation with upper urinary tract cross-sectional imaging by

computerised tomography including a urographic phase and cystoscopy as a minimum.

Non-visible haematuria

Non-visible or microscopic haematuria is defined by the presence of more than three erythrocytes per high-power field on microscopy or at least 1+ on dipstick of a fresh midstream urine sample. It is usually detected in the community on routine urine testing or during the investigation of symptoms. A few erythrocytes in the urine are common and often found after heavy exercise. After exclusion of infection as a cause, a single episode of non-visible haematuria accompanied by LUTS or persistent asymptomatic haematuria is clinically significant and should be investigated.

Asymptomatic non-visible haematuria commonly represents early chronic kidney disease, and patients under the age of 40 with no other risk factors for urothelial malignancy should be investigated with urine protein/creatinine ratio and first referred for nephrological rather than urological opinion if evidence of deteriorating glomerular filtration rate, significant proteinuria or hypertension is present. The patient should be asked if there has been a recent upper respiratory tract infection as this may be associated with glomerulonephritis.

Urological investigation with urinary tract ultrasound and cystoscopy of all other patients is recommended, and in some centres computerised tomography is also performed. The incidence of finding a significant urological abnormality in patients with asymptomatic non-visible haematuria is less than 10%.



KEYPOINTS

- Haematuria has many causes ranging from the insignificant to a range of malignancies. Infection should always be excluded; however, it may also be the first sign of serious pathology.
- Asymptomatic non-visible haematuria is commonly nephrological, not urological.
- Visible haematuria is caused by malignancy until proven otherwise.

Lower urinary tract symptoms

LUTS are a common reason for someone to seek a urological opinion with over a half of the population likely to experience them at some point in their lifetime; the incidence, as might be expected, increases with age. LUTS occur in both sexes, reminding us that these symptoms are not specific to the enlarged prostate and are currently classified as either *voiding* or *storage* symptoms.

Voiding symptoms

Hesitancy – This is a delay in the start of micturition. Normally it takes a second or so to start passing urine.

Intermittency – This is a stop/start pattern that happens involuntarily during micturition and is generally due to prostatic obstruction.

Poor flow – This is a decreased flow of urine and can be due to prostatic obstruction or urethral stricture. This happens over a long period of time.

Straining – This is due to the use of abdominal muscles to empty the bladder.

Terminal dribble – This is passing drops of urine at the end of micturition and is generally an early sign of obstruction secondary to prostatic enlargement.

Feelings of incomplete bladder emptying – This is the feeling of needing to void again soon after voiding.

Storage symptoms

Frequency – A normal adult will pass urine 3–7 times during the day with volumes of around 200–400 mL per void. Urinary frequency is either due to increased urinary output (polyuria) or decreased bladder capacity.

Nocturia – This is getting up at night more than once. It can be due to either increased urine production or decreased bladder capacity. Frequency without nocturia is usually psychological. On the other hand, nocturia without frequency can be related to heart failure or diabetes insipidus.

Urgency – The International Continence Society defines urgency as ‘a complaint of a sudden compelling desire to pass urine, which is difficult to defer’.

Dysuria – This is a painful micturition and is generally felt both suprapubically and over the urethral meatus. It is usually a sign of inflammation in the urinary tract.

While often attributed to bladder outflow obstruction and functional bladder problems, LUTS are not disease or organ specific. Storage symptoms in particular may reflect a wide range of pathologies from impaired fluid and solute handling problems to non-specific inflammation of the urinary tract and can also be a sign of underlying malignant processes. Identical storage and voiding symptoms may be caused by either bladder muscle dysfunction or outflow tract obstruction due to benign or malignant prostatic enlargement. It is therefore important to determine the presence of individual voiding and storage symptoms, to quantify their severity and to elucidate other symptoms and signs that may indicate their origin.

Polyuria

Polyuria is the excessive production of urine, usually defined as over 2.5L/24h in an adult. It should not be forgotten that someone who drinks large volumes of anything, particularly diuretics such as caffeine-containing drinks and alcohol, is likely to need to void more often due to increased urine production. In addition to the fluid load, caffeine increases bladder smooth muscle excitability directly and can precipitate urinary storage symptoms. A history of fluid intake is therefore valuable. It is also important to remember the impact of non-urological diseases on urinary symptoms, specifically those influencing renal fluid and solute handling such as diabetes mellitus, which causes glycosuria and an osmotic diuresis, and less commonly diabetes insipidus. Random serum glucose and electrolytes should therefore be analysed.

Nocturia

Nocturia is the need to wake from sleep to pass urine at night. In normal health, nocturnal urine output is reduced to less than the bladder capacity so that we don’t need to get up to void. Nocturia may be caused by either the functional bladder reservoir volume being reduced, such as occurring

in patients with large post-micturition residual urine volumes, or by producing too much urine at night so that the bladder is unable to store it. This may reflect general polyuria, or nocturnal polyuria, a specific entity in which more than a third of 24h urine production occurs at night. Congestive cardiac failure may cause nocturia through several mechanisms, as can obstructive sleep apnoea. A history of the symptoms and signs of heart failure and the presence of snoring should therefore be sought. As with polyuria, evening intake of pharmacological and non-medicinal diuretics such as caffeine and alcohol is an obvious but often overlooked cause of nocturia.

Nocturia is more common in the elderly, and a loss of the circadian secretion of antidiuretic hormone, which normally reduces nocturnal urine production, may be present. It is therefore important to assess the patient's fluid intake, urine output and voided urine volume to allow identification of polyuria, reduced functional bladder capacity and nocturnal polyuria, and this is performed using a frequency-volume chart.

Overactive bladder syndrome

Overactive bladder syndrome is a condition with characteristic symptoms of 'urinary urgency', usually accompanied by frequency and nocturia, with or without urgency incontinence (i.e. storage LUTS), in the absence of urinary tract infection or other obvious pathology. The condition may be associated with involuntary contractions of the bladder, and this is termed detrusor overactivity (see Chapter 12); however, these contractions are not always associated and are present in many asymptomatic patients.

Evaluation of LUTS

A detailed history of the speed of onset of LUTS is important: uncomplicated bladder outflow obstruction tends to be insidious, whereas the rapid onset of severe symptoms suggests an alternative diagnosis. A history of previous urological

intervention, including catheterisation, or surgery should be obtained as often a resected prostate may regrow and iatrogenic urethral and bladder neck strictures are common. The presence of specific additional symptoms suggestive of pathology in addition to bladder outflow obstruction should also be determined. These include haematuria, nocturnal enuresis (the involuntary loss of urine at night), which is strongly suggestive of high-pressure chronic urinary retention when occurring in adults, or associated sensory disturbances or back pain, which should initiate investigations to exclude disruption of the bladder's neurological control such as spinal cord compression. Furthermore, symptoms and signs of inflammation of the urinary tract may indicate an inflammatory cause for urinary storage symptoms or bladder outflow obstruction complicated by infection.

In the absence of polyuria and symptoms suggestive of alternative diagnosis, the most likely causes of LUTS are bladder outflow obstruction and bladder dysfunction, that is, either overactive or underactive detrusor contraction. The subsequent management of LUTS is strongly influenced by their severity and the impact on the patient – this is quantified using the International Prostate Symptom Score (IPSS) patient questionnaire. Functional bladder problems and bladder outflow obstruction can sometimes only truly be differentiated from each other by pressure-flow urodynamic studies.

Incontinence

Incontinence is the involuntary loss of urine. It is highly prevalent in the community and occurs more commonly in females in an



KEYPOINTS

Investigation of the patient with LUTS is focused on excluding disorders of fluid handling; detecting a specific infective, inflammatory or malignant urological cause; and quantifying the severity and impact on quality of life of the symptoms. This is achieved using the urine dipstick, the frequency-volume chart and the IPSS questionnaire.

age-dependent manner. Incontinence causes considerable morbidity and expense, and when taking the history the urologist should first determine whether the incontinence is continuous or intermittent – the latter category may be subclassified into stress, urge, mixed stress and urge or overflow incontinence. Symptom questionnaires are useful in documenting symptoms, and a voiding diary of fluid intake and urine output compiled over at least 3 days should be recorded. Further insight into the aetiology of incontinence can be gained by careful history taking.

International Continence Society definitions

- **Stress urinary incontinence:** Involuntary urine leakage on effort or exertion or on sneezing or coughing.
- **Urgency urinary incontinence:** Involuntary urine leakage accompanied by or immediately preceded by urgency.
- **Mixed urinary incontinence:** Involuntary urine leakage associated with both urgency and exertion, effort, sneezing or coughing.
- **Overactive bladder:** Urgency that occurs with or without urgency urinary incontinence and usually with frequency and nocturia. Whether occurring with incontinence (wet) or without incontinence (dry).

Continuous incontinence

Continuous incontinence implies complete failure of the sphincter mechanism, as occasionally occurring after bladder outflow tract surgery and more commonly after radical prostatectomy, or the presence of an abnormal urinary tract allowing bladder or ureteric urine to bypass the sphincter mechanism. This may be a fistula occurring after gynaecological surgery or as is common in third world countries as a result of tissue necrosis after poorly managed childbirth. Rarely congenital abnormalities such as an ectopic ureter may open distal to the urinary sphincter causing continuous incontinence from birth.

Intermittent incontinence

- **Urge urinary incontinence** is the complaint of involuntary leakage accompanied by or immediately preceded by urinary urgency – the feeling of the need to pass urine that is difficult to defer. Urge incontinence may be caused by an overactive bladder, a complex and incompletely defined abnormality of bladder smooth muscle contractility or by bladder inflammation. It is important to determine the cause by assessing the presence of accompanying symptoms and abnormalities on urine analysis. The presence of suprapubic pain, haematuria, dysuria and voiding urinary symptoms all suggest a cause other than idiopathic overactive bladder.
- **Stress urinary incontinence** is the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing. In women this occurs due to weakening of the pelvic floor neuromuscular mechanisms that support the urethra and bladder and can occur after childbirth or in association with aging. It is also a sign of urinary sphincter weakness and may occur after prostatectomy in men. A detailed obstetric history of respiratory disease and smoking, pelvic irradiation and pelvic surgery and bowel habit is therefore required to evaluate stress incontinence.
- Both stress and urge incontinence may occur together for a number of reasons, and management is initially directed according to which type of incontinence predominates. Sometimes determining this requires a pressure-flow urodynamic studies.
- **Overflow incontinence** is characterised by intermittent dribbling of small amounts of urine and nocturnal enuresis – the involuntary loss of urine occurring during sleep. This occurs as the normal inhibitory mechanisms and voluntary sphincter contraction that occurs during the day in an effort to minimise leakage is suppressed in sleep. Overflow incontinence occurs in association with a chronically distended bladder that never empties and is caused by bladder outflow obstruction or neurological disease and may be insidious. When occurring in association with bladder

**KEYPOINTS**

When evaluating incontinence, the history should focus on determining whether it is continuous or intermittent. Intermittent incontinence is characterised by stress, urge, mixed stress and urge or overflow incontinence. The pathophysiology of the incontinence can subsequently be ascertained with minimal additional investigation.

outflow obstruction, nocturnal enuresis may be a sign of upper urinary tract obstruction and renal impairment termed high-pressure chronic urinary retention.

Urological pain

General

Pain originating from the urological tract is generally caused by either distension of a viscus due to obstruction of the flow of urine, for example, a ureteric stone, or inflammation. The pain caused by inflammation is more severe when the parenchyma of an organ is involved, for example, testis or kidney, as this causes the capsule to be stretched. As with all types of pain, a careful history of its site, duration, type (dull, sharp or burning), radiation, exacerbating and relieving factors and other associated symptoms should be obtained.

Loin pain

The term loin refers to the area between the lower ribs and the pelvis and is used to describe both human and animal anatomy. There are many causes of pain in this area and many of these are non-urological. Loin pain truly originating from the kidney is more accurately referred to as renal angle pain; this is the area between the lateral borders of the erector spinae muscles, the 12th rib and the iliac crest. Renal angle pain results either from distension of the renal pelvis, which occurs with ureteric obstruction, or from distension of the renal capsule, which occurs with acute inflammation of the renal parenchyma in association with pyelonephritis.

The pain associated with renal inflammation is generally constant and severe and may be associated with systemic signs of sepsis. It may also be associated with gastrointestinal symptoms due to the close proximity of the peritoneum and intra-abdominal organs, and a careful history and examination may be required to determine the true origin. Occasionally, loin pain may be caused by small calculi in the renal collecting system, particularly if they are still adherent and blocking a papilla.

Ureteric colic

Ureteric or renal colic refers to the pain that results from acute obstruction of the ureter associated with the passage of a urinary stone. It is historically compared in severity to the pain of childbirth, and in the age of modern obstetric analgesia, renal colic can reasonably be considered the most severe pain one might be likely to suffer other than through trauma. Renal pain is intermittent and intensifies with ureteric peristalsis, which, in the presence of obstruction, causes the intrarenal pressure to rise and characteristically causes the patient to writhe and unable to get into a comfortable position. This feature differentiates it from other, generally more morbid, causes of acute abdominal pain that are generally minimised by lying still.

It is sometimes possible to clinically determine the site of ureteric obstruction from the location of the pain. Pain originating from the upper two-thirds of the ureter (that above the pelvic brim) may be referred to the iliac fossa on either side and must be differentiated from surgical causes. A stone in the lower third of the ureter near the bladder may cause LUTS and strangury: this is an unpleasant sensation of a constant need to void that is not relieved by voiding and suprapubic and urethral pain at the end of voiding. Pain may also be referred to the tip of the penis or labia.

Pain caused by chronic insidious obstruction of the ureter, for instance, by a slow-growing ureteric tumour or gradual extrinsic compression, is considerably less severe than acute ureteric colic and may be a chronic dull ache or not clinically significant. Non-urological causes of loin pain

are common and can be difficult to diagnose. Musculoskeletal back pain is common and is typically associated with movement or particular positions; however, it can be difficult to identify. Other less common causes include pain originating from the pleura, gastrointestinal tract, spleen and liver.

Suprapubic pain

Acute distension of the bladder associated with acute urinary retention causes intense pain that is relieved by catheterisation. Chronic bladder distension, however, is painless, and the bladder may contain litres of urine with no discomfort. Constant suprapubic pain unrelated to voiding is unlikely to be urological and may originate from other pelvic organs or distal bowel; intermittent pain associated with bladder filling relates to inflammation most commonly caused by bacterial cystitis. Severe inflammation of the bladder may cause peritoneal involvement and signs of localised peritonitis.

Scrotal pain

Scrotal pain may be acute or chronic. Acute scrotal pain in a child is caused by torsion of the testis or testicular appendage (hydatid of Morgagni) and the resulting ischaemia unless proven otherwise, and urgent surgical exploration of the scrotum generally indicated. Pain due to torsion is generally of sudden onset and may awake the patient. There may be associated vomiting and previous episodes of intermittent pain. The clinical presentation of testicular torsion is varied, however, and pain may be transient and have resolved at the time of examination.

Testicular torsion may present with non-specific discomfort in the lower abdomen or have clinical features of appendicitis; it is therefore imperative to examine the scrotum in any patient presenting with abdominal pain. Urinary symptoms are sometimes present with testicular torsion and cannot, therefore, be taken as indicating urinary infection, which is far less common than torsion in children. No surgeon ever regretted operating on an acutely painful scrotum, and surgical exploration should be regarded as an investigation rather than a treatment.

Acute scrotal pain in adults may also be due to torsion but is more common in this age group caused by infections and trauma. A history of LUTS and those suggestive of infection, as well as a recent change in sexual partners, is therefore important to elicit. Trauma is usually evident; however, a history of trauma does not exclude other causes of the pain such as torsion and tumour. It is not unheard of for an adult to present with testicular pain not resolving after seemingly minor trauma and found to have a torped ischaemia testis requiring removal.

Scrotal pain may also originate from inflammatory conditions affecting the scrotal wall; these include cutaneous abscess, cellulitis and Fournier's scrotal gangrene. Chronic scrotal pain may be caused by chronic epididymitis or non-inflammatory conditions such as hydrocele or epididymal cyst. Varicocele is an abnormally dilated collection of veins draining the testis and characteristically causes a chronic dull ache worse during standing for long periods and relieved by lying. Chronic scrotal pain may also be referred from the retroperitoneum, reflecting the embryological origin of the testis, or an inguinal hernia.

Urethral pain

Pain felt in the urethra is usually caused by inflammation. Dysuria refers to urethral pain that occurs during voiding and is felt at the external urethral meatus. It is commonly caused by lower UTI or inflammation. Urethritis is accompanied by urinary frequency and urgency.

Prostatic pain

Pain originating from prostatic pathology may be difficult to describe and be poorly localised. Pain is often localised to the perineum, between the anus and the scrotum, and may be referred to the testis, suprapubic area or back. Pain on ejaculation is strongly suggestive of prostatic pathology, and there are often associated both storage (due to inflammation) and voiding (due to obstruction) LUTS. Prostatic pain is generally caused by inflammation; locally advanced prostate cancer can cause a similar pain when it invades periprostatic tissues.

**KEYPOINTS**

By taking a careful history and examination, most causes of urological pain can be elucidated without further investigation.

Distension of a urological viscus and stretching of the capsule of an organ due to inflammation are the main mechanisms of urological pain.

Loin pain has many non-urological causes.

Scrotal pain in children is an emergency and usually necessitates surgical exploration to exclude testicular torsion.

Erectile dysfunction

Erectile dysfunction is the inability or reduced ability to attain a satisfactory penile erection. There are a number of causes, and the history should be aimed at differentiating between them. It is firstly necessary to confirm the problem as truly erectile dysfunction and not another sexual dysfunction such as failure of or pain on ejaculation, anorgasmia or psychological causes in nature; the most important point to elicit here is whether morning erections occur and whether the dysfunction occurs all the time or just in a particular situation. A reduced libido is a sign of both psychological causes and testosterone deficiency.

Erectile dysfunction may be caused by trauma both to the penis itself and the pelvis, and this history is important to elicit as traumatic vascular damage is the only cause that is, sometimes, correctable by surgery. The next step is to identify any reversible causes other than trauma, which although rarely resulting in complete return of erections can often improve the situation and are important to identify for other reasons. The most prevalent of these are smoking and alcohol. It should not be forgotten that erectile dysfunction may be the first symptom of atherosclerotic vascular disease and may predate ischaemic heart disease, and a general assessment of the patients' cardiovascular risk status and lipid profile is indicated. The history should also determine whether the patient is fit cardiovascularly enough to resume sexual activity should his erections be artificially improved.

Urinary tract infections

UTI is the symptomatic inflammatory response of the urothelium to the presence of microorganisms and is usually associated with bacteriuria (the presence of bacteria in the urine). UTIs are a common reason for referral. The presentation may be varied, depending on the organism and site of resulting inflammation, and it is important to elicit the precise symptoms resulting from the purported infection. Bacteriuria itself may be asymptomatic; the urine of most patients with long-term catheters contains bacteria and this only requires treatment when associated with symptoms of inflammation.

Lower UTIs are those in which the inflammation is confined to the urethra and bladder and typically present with dysuria which is the sensation of urethral pain on voiding and commonly referred to as burning urine or passing broken glass. Dysuria is usually accompanied by urinary frequency, urgency and suprapubic pain relieved by voiding when the bladder is inflamed, and the urine may be cloudy or smell bad. This symptom complex is commonly termed cystitis. A substantial proportion of lower UTIs present with visible haematuria and termed haemorrhagic cystitis.

Infections involving the upper urinary tracts (ureters and kidneys) present differently, although lower tract symptoms may also be present if secondary to an ascending infection. Infection of the renal parenchyma promotes a systemic inflammatory response, and the patient is febrile and unwell. The combination of loin pain, tenderness and fever with evidence of bacteriuria or pyuria is termed acute pyelonephritis.

Pneumaturia

Pneumaturia is the presence of air in the urine. It is an uncommon symptom and is almost pathognomonic for the presence of an abnormal communication between the bladder and bowel – a vesico-colic fistula. This occurs in the presence of bowel inflammatory disease such as diverticulitis, or malignancy, and is also predisposed to by pelvic radiotherapy.

Examination

Examination of the urological patient should include a general examination, examination of the abdomen, the external genitalia and when indicated a digital rectal examination and vaginal examination. The urologist should be gentle and sensitive to the patient, and the intimate nature of the examination and verbal permission for each aspect of the examination should be sought. It is wise and mandatory when a male urologist is examining a female patient to have a nurse chaperone present who will record their details in the medical record to document their presence.

General

Non-specific signs of anaemia, cachexia, lymphadenopathy, hepatomegaly and uraemia may all be urologically related, and the abdomen and external genitalia should first be properly inspected. With the increasing advancement of minimally invasive surgical techniques, it is becoming less common to see the large deforming thoraco-abdominal, 'roof top' or extended paramedian scars of the open nephrectomy, and it may be difficult to see the small punctures through which laparoscopic ports are inserted. The combination of two small punctures with a 4–5 cm iliac fossa scar suggests a nephrectomy, whereas three small punctures are created during laparoscopic pyeloplasty or partial nephrectomy. Similarly a series of lower abdominal punctures may conceal a major operation such as radical prostatectomy or cystectomy; a cystectomy may not necessarily involve creation of a stoma if an orthotopic bladder reconstruction has been performed. A lower midline or Pfannenstiel scar may indicate any open pelvic operation and is used during both urological and gynaecological procedures, again less commonly.

Abdomen

Urological examination of the abdomen is focused on detecting an enlarged kidney, suggesting tumour, or bladder, suggesting urinary

retention. Traditional signs of an enlarged kidney are a bimanually palpable mass in the loin which moves up and down with respiration, and which you can get above it.

An enlarged bladder may not be palpable if the patient is large, and it is often not possible to reliably differentiate by palpation between an enlarged full bladder and a pelvic mass

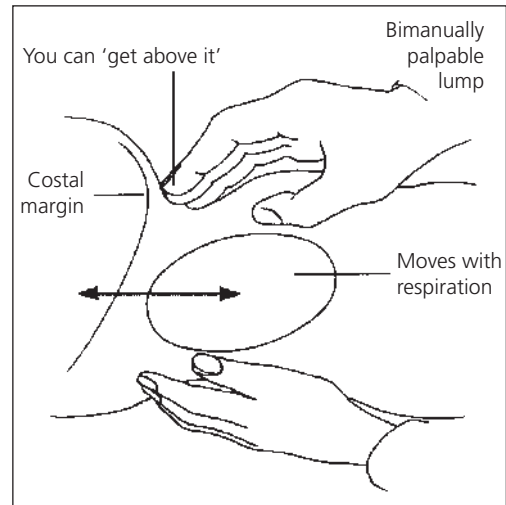


Figure 1.1 Physical signs of an enlarged kidney.

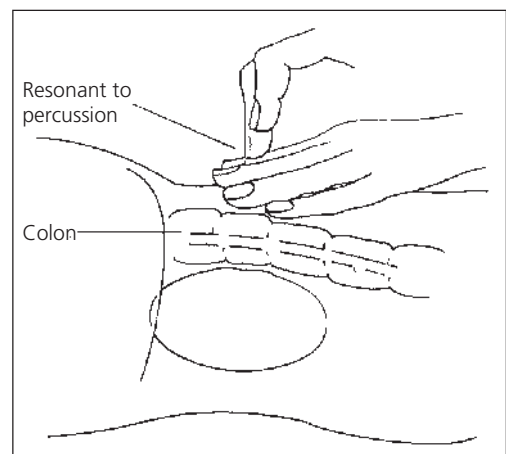


Figure 1.2 There is often a band of resonance in front of the kidney from gas in the colon.

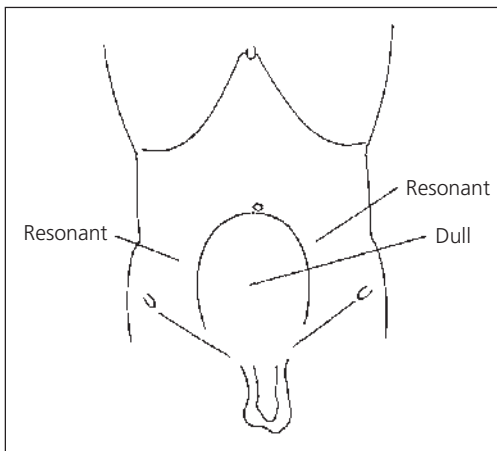


Figure 1.3 The bladder is dull to percussion.

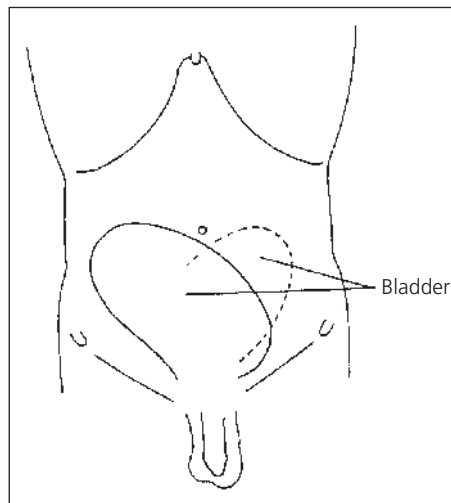


Figure 1.4 An enlarged bladder may go to one or other side.

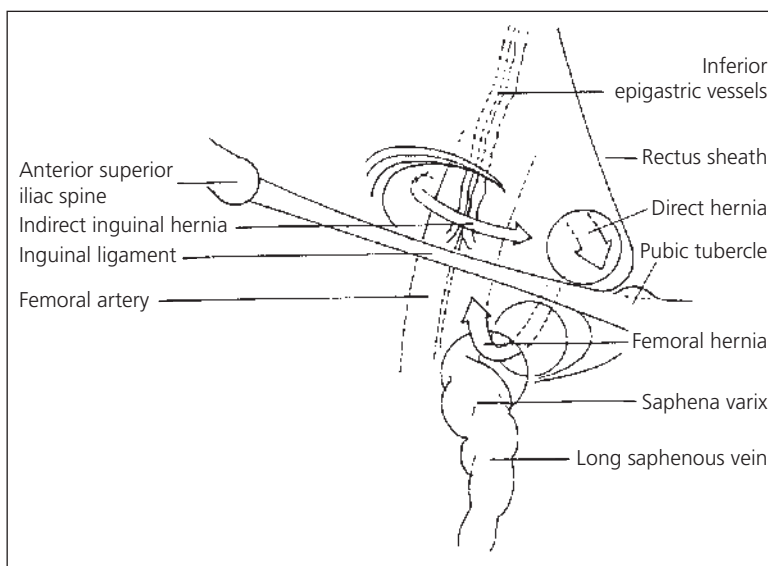


Figure 1.5 Landmarks for groin hernias.

(Figures 1.3 and 1.4). It is therefore important to re-examine the patient after catheterisation, if clinically indicated, as a pelvic mass will still be present. An ultrasound will also reliably distinguish between solid and cystic swellings.

Examination of the groins is an important part of the urological investigation. Although inguinal and femoral herniae are dealt with by general surgeons, they often account for symptoms that initiate urological referral (Figures 1.5 and 1.6).

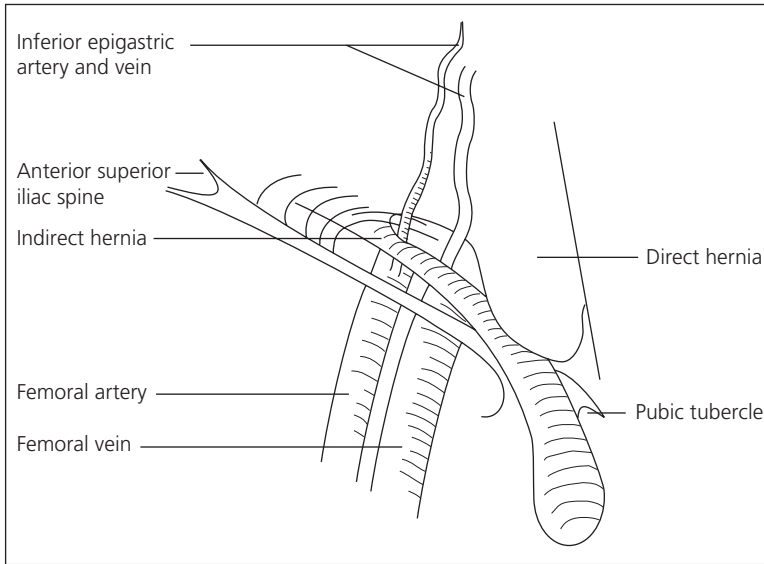


Figure 1.6 Pantaloon hernia.

Inguinal lymph nodes drain the external genitalia and lower limb and may be enlarged in infections or tumours of these regions. Examination of the groin for enlarged lymph nodes is particularly important when there is a penile cancer. Small, so-called 'shotty' nodes, a reference to shotgun pellets, are normally palpable in thin individuals; tenderness or persistent enlargement over 1 cm in size is a sign of concern. Groin nodes may also be involved in metastatic spread from pelvic disease but not testis cancer unless this has advanced to involve the scrotal wall.

External genitalia

Penis

The penis should also be routinely examined. The foreskin may give rise to a number of symptoms, and when inflamed or phimotic (tight and scarred), it can be implicated in the aetiology of UTIs, LUTS, pain and haematuria. The foreskin should be gently retracted after asking the patients permission or alternatively asking the patients to do this themselves to allow inspection of the external urethral meatus. The meatus may

be strictured and involved with a transitional cell carcinoma or ectopic. The glans penis should also be examined, specifically as it may harbour a premalignant skin lesion or overt squamous cell carcinoma. Palpation of the penile shaft will identify the hard localised plaques that cause erectile deformity and dysfunction in Peyronie's disease, and severe strictures of the penile urethra may also be palpated ventrally.

Scrotum

Examination of the scrotum should take place with the patient both lying and standing. The scrotum should at first be inspected with the patient standing, looking for skin lesions and the characteristic bag of worms' appearance of the varicocele (Figure 1.7).

With the patient lying, the scrotum should be gently palpated looking for abnormal lumps. If one is found, the following questions should be answered.

- Can you 'get above' the lump? If you can it must be scrotal, and if not it is probably an inguinal hernia (Figure 1.8).
- Is the swelling solid or cystic? This is tested by determining the presence of fluctuance in

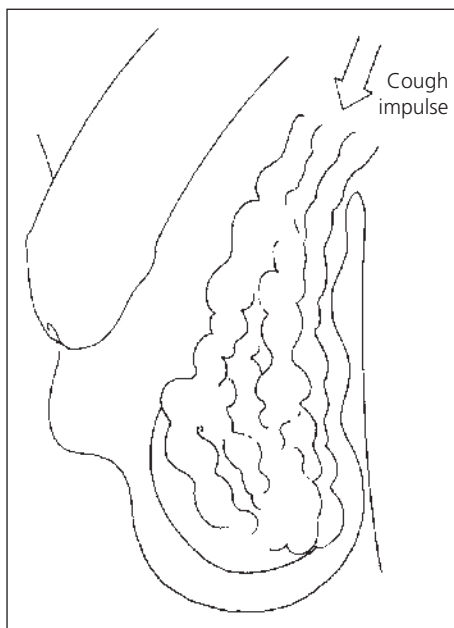


Figure 1.7 Varicocele: enlarged testicular veins. There is a cough impulse and the swelling disappears when the patient lies down.

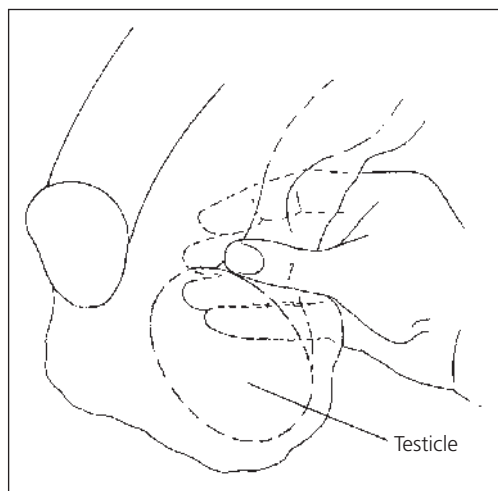


Figure 1.8 Lump in the scrotum: can you get above it?

two planes (Figure 1.9). A cystic lesion also usually transilluminates, that is, lights up if a torch is pressed against it in a darkened room (Figure 1.10).

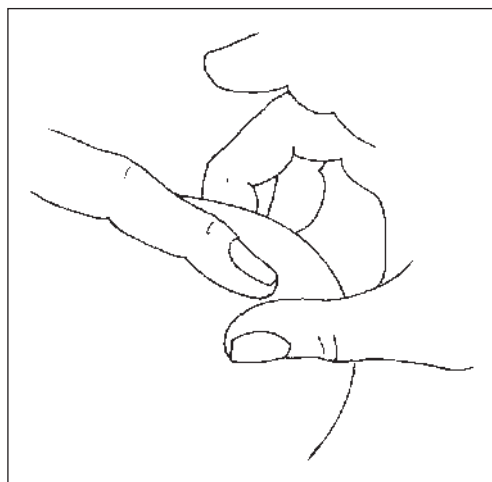


Figure 1.9 Lump in the scrotum: check whether it is solid or fluctuant. Determine fluctuation in two planes.

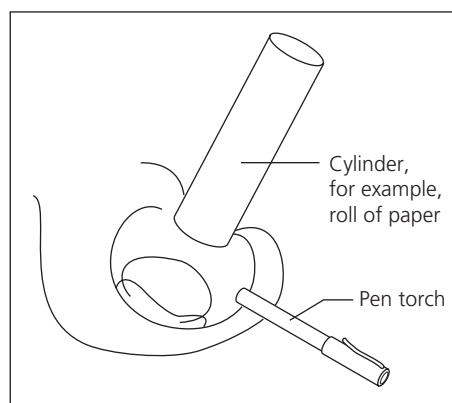


Figure 1.10 To see if light shines through a swelling, it helps to use a cylinder, for example, one made from rolled-up paper.

- Is the lump separate from the testis or not? A cystic swelling inseparable from the testis is probably a hydrocele (Figure 1.11).
- A cystic lump separate from the testis is probably an epididymal cyst (Figure 1.12). In practice it is often difficult to differentiate these two entities; this is not clinically important.
- If the lump is solid, it is crucially important to determine whether it is separate from the testis or not. If it is separate, it is most likely to be an

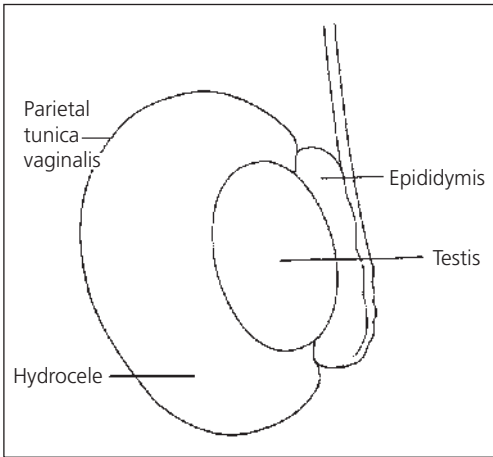


Figure 1.11 Hydroceles lie in front of the testis and tend to surround it.

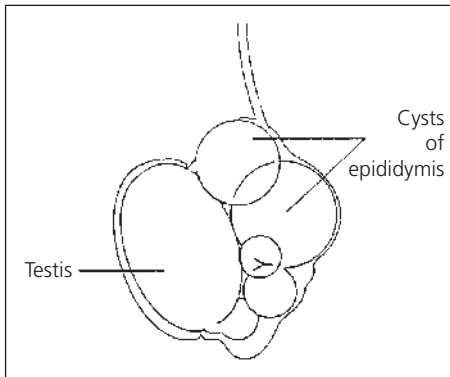


Figure 1.12 Cystic swellings behind the testis are cysts of the epididymis.

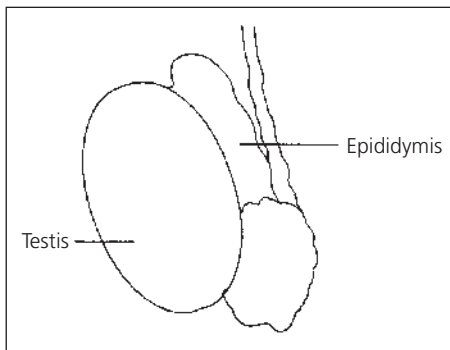


Figure 1.13 Solid swellings in the epididymis are usually inflammatory.

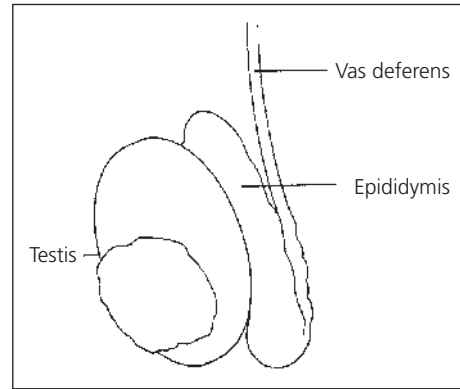


Figure 1.14 A solid swelling in the testis is a cancer until proven otherwise.

area of inflamed epididymis or sperm granuloma after vasectomy (Figure 1.13). If it is not separate from the testis, it should be considered a testicular tumour until proven otherwise (Figure 1.14), and an urgent ultrasound will confirm.

- The vas deferens lies posterior to the spermatic cord. If it is inflamed, it can feel thickened and firm. If it has been operated upon, for example, vasectomy, it might show a nodule along its course. If multiple knotty swellings are felt, this would strongly suggest tuberculosis (Figure 1.15).

Vaginal examination

Vaginal examination should be performed in women with LUTS or incontinence, haematuria or pelvic pain. The external urethral meatus should be inspected for signs of surgery or stenosis and the patient asked to cough both in the lying and standing positions to assess urethral hypermobility, the presence of pelvic organ prolapse and stress incontinence. Although rare, urethral carcinoma may cause urethral stenosis and first present as LUTS.

Uncommonly, a urethral diverticulum may be palpable. This presents as a cystic mass in the anterior vaginal wall and is associated with persistent dysuria, dyspareunia (painful sexual intercourse) and UTI.

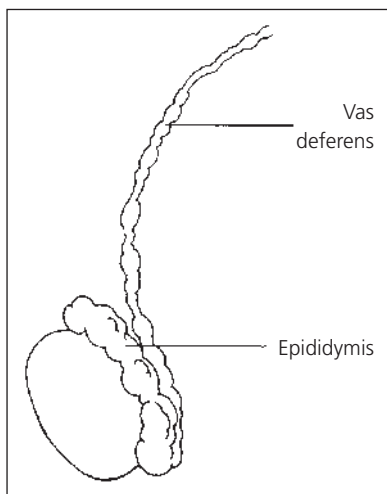


Figure 1.15 Multiple knotty swellings in the epididymis and a ‘beaded’ are highly suggestive of tuberculosis.

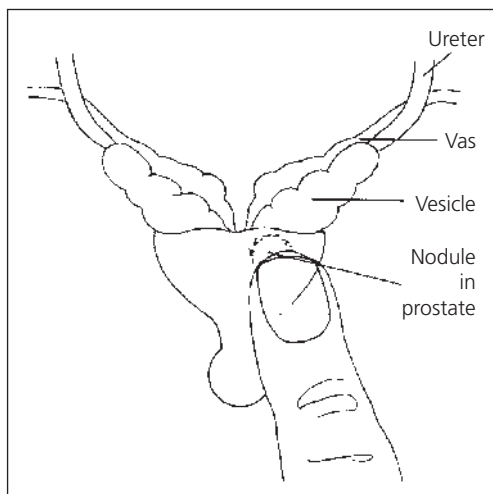


Figure 1.16 Anatomical landmarks that may be felt per rectum.

Digital rectal examination

Rectal examination although included in the general abdominal examination is arguably not mandatory for all urological complaints, although generally advisable when dealing with pelvic or LUTS and haematuria. One may perform a rectal examination in both sexes in the left lateral position. Inspection of the anal margin is mandatory, for anal carcinoma or external thrombosed piles, and always ask the specific permission of the patient and exclude the presence of an anal fissure or painful haemorrhoids first.

Introduce the gloved index finger carefully and slowly with plenty of lubrication. Once inside the rectum, carefully palpate circumferentially to exclude a low rectal tumour. Then palpate the prostate gland, which is found anteriorly. Palpate for nodules, a discrepancy between the two lateral lobes, and firmness (Figure 1.16). The examination will often be uncomfortable but should not be painful; a tender prostate is a sign of inflammation.

A more thorough examination of the pelvis in both sexes may be performed using bimanual



KEYPOINTS

- As with all surgical examinations, a general and organ-specific examination is required.
- Great sensitivity should be applied when examining intimate organ systems and specific permission always sought.
- A chaperone is required during the urological examination.
- Inspection should precede palpation, including during the rectal and vaginal examination.
- Vaginal examination is important in women with recurrent infections and unexplained urinary symptoms.

examination under a light general anaesthetic with the patient in the lithotomy position. In the male one finger is placed in the rectum, and in the female two fingers are placed in the vagina, and the organs are examined by compressing them against the other hand placed on the anterior abdominal wall suprapubically.