Talley & O'Connor's

Clinical Examination

A systematic guide to physical diagnosis

NICHOLAS J TALLEY & SIMON O'CONNOR

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A systematic guide to physical diagnosis

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Foreword by Richard Murray

Medical knowledge continues to grow exponentially, bringing new complexities for clinicians. Over a century ago, Sir William Osler recognised this challenge, noting that "the extraordinary development of modern science" had driven both the need for specialisation and a fragmentation within specialties, creating the risk that people could "lose all sense of proportion in a maze of minutiae".

A person-centred and evidence-based approach to clinical assessment is essential to applying a growing body of medical knowledge effectively in patient care. Clinical examination provides key diagnostic insights, and physical touch during assessment may help express care, build rapport and even contribute to healing.

The ability to perform a thorough clinical assessment allows clinicians to practise medicine confidently and safely, even without ready access to advanced diagnostic tools or to colleagues with specialised expertise. This skill is especially valuable in rural, remote, and underserved communities where access to resources may be limited. In these settings, confident clinical assessment is integral to what is called "clinical courage"—the ability and preparedness to safely manage patient care at the limits of the clinician's usual scope.

Clinical assessment is equally valuable in resource-rich settings, where advanced tests and specialist input are readily available. A skilled clinician can empower patients to make better informed decisions about further investigations or referrals. Over-investigation can harm patients, impose unnecessary health system and environmental costs, and divert resources from those most in need. Excellence in clinical assessment supports the "triple aim" for health systems of improving the patient care experience, reducing healthcare costs, and enhancing population health.

This text has guided generations of learners toward expertise in the science and art of clinical examination, and I am pleased to commend it to all who seek to deepen their clinical examination skills.

Professor Richard Murray
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Foreword by Michelle Leech

It is my great honour to be asked to provide a foreword for this new edition of *Clinical Examination* by Talley and O'Connor. I have heard this book described in many hospitals' corridors and clinics over the last four decades as a "bible". My own prized first edition dates back to the last century, to 1988. Its enduring utility over decades for learners at all levels of medical training is remarkable and worth examining. In the often chaotic learning environments for clinical medicine, *Clinical Examination* provides a systematic structure and clear explication for eliciting, understanding and integrating clinical signs, with the ultimate aim of clinical diagnosis.

The value of clinical examination and clinical diagnosis cannot be overestimated. A thorough and dependable history and physical examination is the foundation upon which accurate diagnosis relies, and is becoming more and more important in a world where patients are experiencing a plethora of unnecessary investigations and fragmented multi-team assessments which often distract from and cloud diagnostic reasoning. In the age of increasingly precise testing and a myriad of imaging modalities, diagnostic error is a growing rather than diminishing problem. The capability of one doctor to examine all body systems and integrate and interpret findings is a remarkable human skill and cannot easily be replicated by any single investigation or group of investigations. The human connection to a patient that is central to history taking and physical examination may, in the world of artificial intelligence, be the one and only critical skill that we as human doctors can continue to provide. The power of observation, good listening and curiosity, supported by a systematic approach at the bedside and sound examination techniques not only leads to safer care, through more targeted investigation planning and diagnosis, but also more efficient, affordable and patient-centred care. These are surely skills worth preserving.

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Preface

In modern medicine, history taking and physical examination remain absolutely core clinical skills for correct diagnosis. Despite remarkable advances in medical care, sophisticated diagnostic testing, and the impact of artificial intelligence, you cannot practise modern medicine without having a thorough and practical understanding of these skills. Now entering its 10th edition, this book provides a detailed roadmap to promote your learning and application of these essential skills.

History taking is the art of obtaining a comprehensive understanding in chronological order of the patient's current illness. This includes understanding patients' concerns, expectations and goals, as well as ascertaining their medications and treatments, other current and past illnesses, their social, economic and environmental circumstances, and any family history of disease. As a clinician, you will synthesise the data obtained to create the individual's unique history, and then use your knowledge of anatomy, physiology, biochemistry, pathology, microbiology, pharmacology and disease to synthesise the information to identify the likely diagnosis (while also considering other realistic possibilities: the differential diagnosis). Working collaboratively with patients to address their needs is central to this process.

Physical examination generally follows history taking unless it is an emergency. Core skills—depending on the part of the body being examined—include astute bedside observation (inspection), pressing or feeling or moving (palpation), tapping (percussion) and listening (auscultation, usually with a stethoscope). A comprehensive physical examination is not as fashionable as it once was, and in some cases bedside tests are preferred by subspecialists (e.g. cardiac echo, bedside ultrasound). Yet examining a patient in a careful, systematic way, "the laying on of hands"*, offers very useful and sometimes critical diagnostic and prognostic information, and there is evidence it provides reassurance and itself has intrinsic healing value.

You will be tested on your clinical skills in barrier examinations, and this book is designed to guide you. As you progress in your clinical career after graduating from medical school, mastering of clinical skills will become essential and should continue to underpin your practice of medicine. History taking provides a sensible diagnosis in up to 80% of outpatients who present for care. Combinations of clinical signs can very accurately identify disease, especially in neurology but also in other body systems. Objective investigations can then confirm or rule out other possibilities. While artificial intelligence will likely complement and enhance history taking in the future (and perhaps eventually even replace it), the human interface remains at the heart of medicine and is crucial for effective patient care.

We are often asked why do we toil to prepare regular new editions of our textbook on clinical skills? Are these not time-honoured techniques that haven't changed since the days of William Osler in the early 20th century? The answer is clear: everything in medicine is evolving, and fast. Medical knowledge is now doubling approximately every two months, a rate never seen in history. The fundamental skills though, endure, despite gaps in our knowledge, and we hope some who read this book might be inspired to fill those gaps. In every edition we have worked to improve the content across chapters, based

*Attributed to Hippocrates, who lived 2400 years ago and is considered the father of modern medicine.

on new published studies, our own experience as practising clinicians and examiners, and the valuable suggestions and comments of expert clinician peer reviewers in every specialty.

We hope you will enjoy this textbook. We have deliberately inserted a little humour as we believe studying should be fun. Historical anecdotes are included too because "we stand on the shoulders of giants"[#]. There are references for further reading. We have marked sections clearly that discuss more advanced clinical skills to guide learning.

We thank our authors and peer reviewers for their excellent contributions. Thank you to the medical students and trainees who continue to inspire us. The support from our publisher and team has been invaluable.

Do write to the publisher if you detect any errors or omissions (we do pay attention, unless after checking the published literature and with experts we disagree!). Whether you've just embarked on your journey in medicine and clinical skills, or are building on years of experience, we wish you every success.

Nicholas J Talley AC
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Newcastle and Canberra

[#]Sir Isaac Newton, writing to Robert Hook in 1675, although the metaphor can be traced back to the Middle Ages.

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CHAPTER 14
The gastrointestinal examination

This lord wears his wit in his belly, and his guts in his head. WILLIAM SHAKESPEARE, *Troilus and Cressida*

Examination of the gastrointestinal system includes a complete examination of the abdomen. It is also important to search for the peripheral signs of gastrointestinal and liver disease. Some signs are more useful than others.[1]

EXAMINATION ANATOMY

An understanding of the structure and function of the gastrointestinal tract and abdominal organs is critical for the diagnosis of gastrointestinal disease. The mouth is the gateway to the gastrointestinal tract. It and the anus and rectum are readily accessible to the examiner, and both must be examined carefully in any patient with suspected abdominal disease. The position of the abdominal organs can be quite variable, but there are important surface markings that should be kept in mind during an examination.

The **liver** is the largest organ in the abdomen; it comprises a large right lobe and smaller left lobe divided into eight segments, including the caudate lobe (segment 1) squeezed in between. The lower border of the liver extends from the tip of the right tenth rib to just below the left nipple. Normally the liver is not palpable, but it may just be possible to feel the lower edge in thin healthy people.

The **spleen** is a lymphoid organ that underlies the ninth, tenth and eleventh ribs posteriorly on the left. It is usually not palpable in health (see Ch 21).

The **kidneys** lie anteriorly four finger-breadths from the midline and posteriorly under the twelfth rib. Normally, the right kidney extends 2.5 centimetres lower than the left. The lower pole of the right kidney may be palpable in thin, healthy people.

The **gallbladder** is a pear-shaped organ and the fundus (top) is at the tip of the right ninth costal cartilage. It cannot be felt in health. The **pancreas** is situated in the retroperitoneum (behind the peritoneum), with the head tucked into the C-shaped duodenum and the tail snuggling into the spleen. A huge pancreatic mass or cyst may rarely be large enough to be palpable.

The **aorta** lies in the midline and terminates just to the left of the midline at the level of the iliac crest. A pulsatile mass in the middle of the abdomen is likely to be arising from the aorta and may indicate an aneurysm.

The **stomach** is usually J-shaped and lies in the left upper part of the abdomen over the spleen and pancreas. It connects with the duodenum. The **small intestine** ranges from 3 to 10 metres in length and comprises the upper half (duodenum and jejunum) and the lower half (ileum). The small intestine lies over the middle section of the abdomen but is usually impalpable.

The **colon** is approximately 1.5 metres in length, and from right to left consists of the caecum, ascending colon, hepatic flexure, transverse colon, splenic flexure, descending colon, sigmoid colon, rectum and anal canal (anorectum). The **appendix** usually lies in the right lower abdominal area, arising posterior-medially from the caecum. The caecum and ascending colon lie on the right side of the abdomen, the transverse colon runs across the upper abdomen from right to left, and then the descending colon, sigmoid and rectum lie on the left side of the abdomen. Rarely, masses arising from the colon will be felt in the abdomen.

Other important anatomical areas include the **inguinal canal** and the **anorectum**, which are described later in this chapter in relation to examination of hernias and the rectal examination.

Gastrointestinal examination: positioning the patient

FIGURE 14.1

POSITIONING THE PATIENT

For proper examination of the abdomen it is important that the patient lies flat with the head resting on a single pillow (see Fig. 14.1). This relaxes the abdominal muscles and facilitates abdominal palpation. Helping the patient into this position affords the opportunity to make a general inspection.

GENERAL APPEARANCE

Jaundice

Jaundice occurs when the serum bilirubin level exceeds 3 mg per dL (51.3 μmol/L). The yellow discoloration of the sclerae (conjunctivae) and the skin that results from hyperbilirubinaemia is best observed in natural daylight. Whatever the underlying cause (see List 13.4), the depth of jaundice can be quite variable.

Weight and wasting

The patient's weight must be recorded. Failure of the gastrointestinal tract to absorb food normally may lead to loss of weight and cachexia. This may also be the result of gastrointestinal malignancy or alcoholic cirrhosis. Folds of loose skin may be visible hanging from the abdomen and limbs; these suggest recent weight loss. Obesity can cause fatty infiltration of the liver (non-alcoholic steatohepatitis) and result in abnormal liver function tests. Anabolic steroid use can induce increase in muscle bulk (sometimes considered desirable) and various liver tumours, including adenomas or hepatocellular carcinomas.

Skin

The gastrointestinal tract and the skin have a common origin from the embryoblast. A number of diseases can present with both skin and gut involvement (see Figs 14.2–14.7 and Table 14.1).[2]

Pigmentation

Generalised skin pigmentation can result from chronic liver disease, especially in haemochromatosis (due to haemosiderin stimulating melanocytes to produce melanin). Malabsorption may result in Addisonian-type pigmentation ("sunkissed" pigmentation) of the nipples, palmar creases, pressure areas and mouth.

Peutz–Jeghers[a] syndrome

Freckle-like spots (discrete, brown-black lesions) around the mouth and on the buccal mucosa (see Fig. 14.4) and on the fingers and toes are associated with hamartomas of the small bowel (50%) and colon (30%), which can present with bleeding or intussusception. In this autosomal dominant condition the incidence of gastrointestinal adenocarcinoma is increased.

Acanthosis nigricans

These are brown-to-black velvety elevations of the epidermis due to confluent papillomas and are usually found in the axillae and nape of the neck—intertriginous

[a] John Peutz (1886–1957), a physician at St John's Hospital, The Hague, The Netherlands, first described this condition in 1921. Harold Jeghers (1904–90), a professor of medicine at Boston City Hospital, USA, described it in 1949.

Dermatitis herpetiformis in coeliac disease

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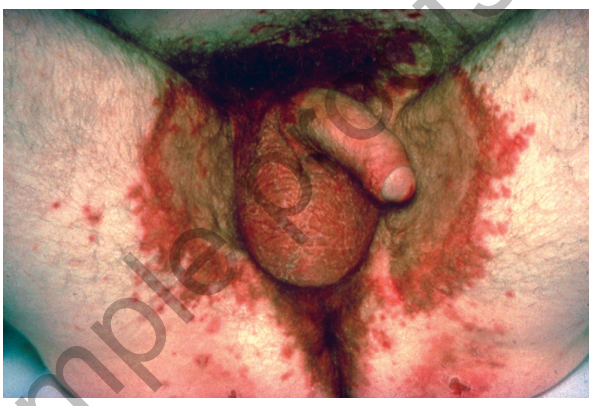
FIGURE 14.2



Glucagonoma: migratory rash involving the groin (very rare)

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FIGURE 14.3

areas (see Fig. 14.5). Acanthosis nigricans is a rare association of gastrointestinal carcinoma (particularly stomach) and lymphoma, as well as acromegaly and diabetes mellitus.

Hereditary haemorrhagic telangiectasia (Rendu–Osler–Weber syndrome[b])

Multiple small telangiectasias occur in this disease. They are often present on the lips and tongue (see Fig. 14.6), but may be found anywhere on the skin. When they are present in the gastrointestinal tract they can cause chronic blood loss or occasionally, torrential bleeding. Associated arteriovenous malformations may occur. This is an autosomal dominant condition and is uncommon.

Porphyria cutanea tarda

Fragile vesicles appear on exposed areas of the skin and heal with scarring (see Fig. 14.7). The urine is dark in this chronic disorder of porphyrin metabolism associated with alcoholism and hepatitis C.

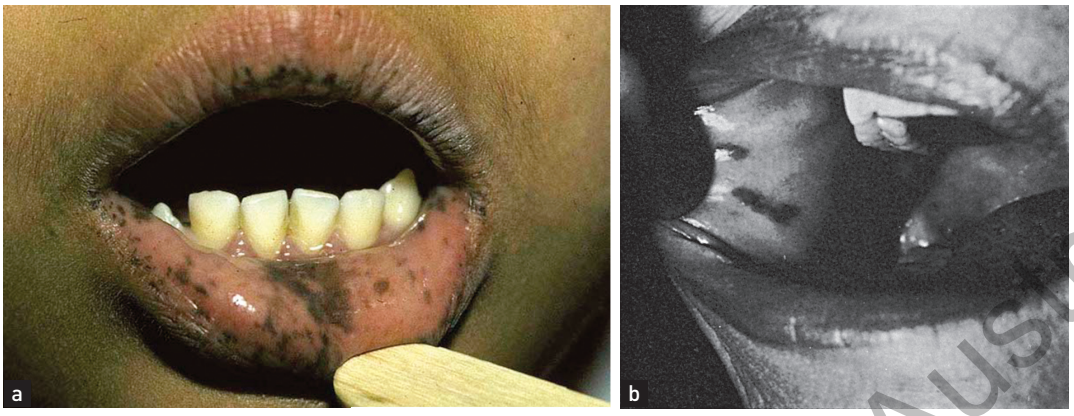
Systemic sclerosis

Tense tethering of the skin in systemic sclerosis is often associated with gastro-oesophageal reflux and gastrointestinal motility disorders (p 406).

Mental state

Assess orientation (p 540). The syndrome of hepatic encephalopathy, due to decompensated advanced cirrhosis (chronic liver failure) or fulminant hepatitis (acute liver failure), is an organic neurological disturbance. The features depend on the aetiology and the precipitating factors. Patients may have subtle symptoms such as disturbance of the normal sleep/wake cycle or fatigue. At the most severe end of the spectrum there may be stupor, coma and death. The combination of hepatocellular damage and portosystemic shunting due to disturbed hepatic structure (both extrahepatic and intrahepatic) causes this syndrome. It is probably related to the liver's failure to remove toxic metabolites from the portal blood. These toxic metabolites may include ammonia, mercaptans, short-chain fatty acids and amines.

[b] Henri Rendu (1844–1902), a French physician. Frederick Weber (1863–1962), an English physician. The condition was described in 1907.



Peutz-Jeghers syndrome: (a) hyperpigmented macules on lips of a child. The buccal mucosa, fingerpads and toepads also showed hyperpigmented macules; (b) Peutz–Jeghers syndrome, with discrete brown-black lesions of the lips

(Figure (a) from Hansen RC, Schachner LA, eds. *Pediatric dermatology*, 4th edn. Philadelphia: Elsevier, 2011, with permission. Figure (b) from McDonald FS, ed. *Mayo Clinic images in internal medicine*, with permission. © Mayo Clinic Scientific Press and CRC Press. Reproduced by permission of Taylor and Francis Group, LLC, a division of Informa plc.)

FIGURE 14.4

Acanthosis nigricans: (a and b) hyperpigmentation and leathery thickening of the skin are seen on the neck and in the axilla of an obese adolescent with the benign/idiopathic form of the disorder; (c) she also had velvety hyperpigmentation and prominence of skin lines over the knuckles of her hands and other bony prominences

(From Cohen BA. *Paediatric dermatology*, 2nd edn. London: Mosby, 1999.)

FIGURE 14.5

Multiple telangiectases on the tongue and lips in a patient with hereditary haemorrhagic telangiectasia

(From Venbrux AC, Mauro MA, Morgan RA et al, eds. *Image-guided interventions: expert radiology series*, 3rd edn. Philadelphia: Elsevier, 2021.)

FIGURE 14.6

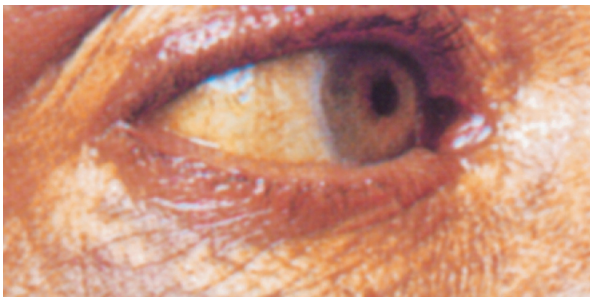
Porphyria cutanea tarda

FIGURE 14.7

The skin and the gut

Disease	Skin	Gut	Other associations
Gastrointestinal polyposis syndromes			
Peutz–Jeghers syndrome (autosomal dominant)	Pigmented macules on hands, feet, lip	Hamartomatous polyps (rarely adenocarcinoma) in stomach, small bowel, large bowel	
Gardner* syndrome (autosomal dominant)	Cysts, fibromas, lipomas (multiple)	Polyps, adenocarcinoma in large bowel	Bone osteomata
Cronkhite–Canada syndrome	Alopecia, hyperpigmentation, glossitis, dystrophic nails	Hamartomatous polyps, diarrhoea, exocrine pancreatic insufficiency	
Hormone-secreting tumours			
Carcinoid syndrome	Flushing, telangiectasias	Watery diarrhoea, hepatomegaly	Wheeze, right-heart murmurs
Systemic mastocytosis (due to mast cell proliferation and histamine release)	Telangiectasias, flushing, pigmented papules, pruritus, dermographism, Darier's† sign (rub skin lesion with the blunt end of a pen: a palpable red wheal occurs minutes later)	Peptic ulcer, diarrhoea, malabsorption	Asthma, headache, tachycardia
Glucagonoma (glucagon-secreting tumour)	Migratory necrolytic rash (on flexural and friction areas)	Glossitis, weight loss, diabetes mellitus	

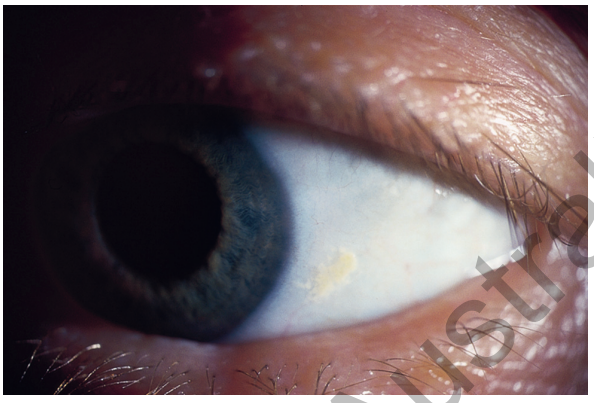
TABLE 14.1



Scleral icterus

(From Goldman L, Schafer AI. *Goldman-Cecil medicine*, 2-volume set, 26th edn. Philadelphia: Elsevier, 2020.)

FIGURE 14.14



Bitot spot: focal area of conjunctival xerosis with a foamy appearance

(From Mir MA. *Atlas of clinical diagnosis*, 2nd edn. Edinburgh: Saunders, 2003.)

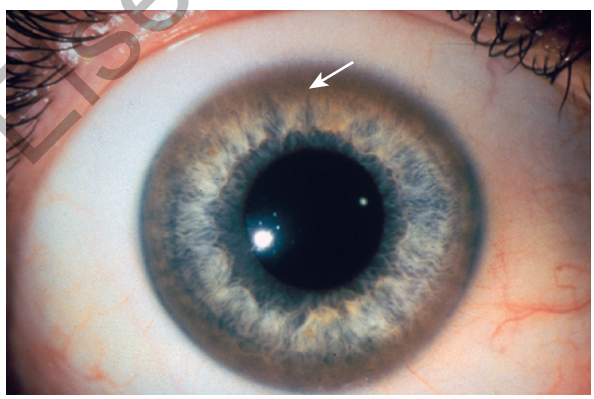
FIGURE 14.15

FACE

Eyes

Look first at the sclerae for signs of *jaundice* (see Fig. 14.14) or *anaemia* (pale conjunctiva).

Bitot's[i] *spots* are yellow keratinised areas on the sclera (see Fig. 14.15). They are the result of severe vitamin A deficiency due to malabsorption or malnutrition. Retinal damage and blindness may occur as a later development. *Kayser–Fleischer rings*[j] (see Fig. 14.16) are brownish-green rings occurring at the periphery of the cornea, affecting the upper pole more than the lower. They are due to deposits of excess copper in Descemet's membrane[k] of the cornea. Slit-lamp examination is often necessary to show them. They are typically found in Wilson's disease,[l] a copper storage disease that causes cirrhosis and neurological disturbances. Kayser–Fleischer rings are usually present by the time neurological signs have appeared. Patients with other cholestatic liver diseases, however, can also have these rings. *Iritis* may be seen in inflammatory bowel disease (p 301).



Kayser–Fleischer rings in Wilson's disease

(From McDonald FS, ed. *Mayo Clinic images in internal medicine*, with permission. © Mayo Clinic Scientific Press and CRC Press. Reproduced by permission of Taylor and Francis Group, LLC, a division of Informa plc.)

FIGURE 14.16

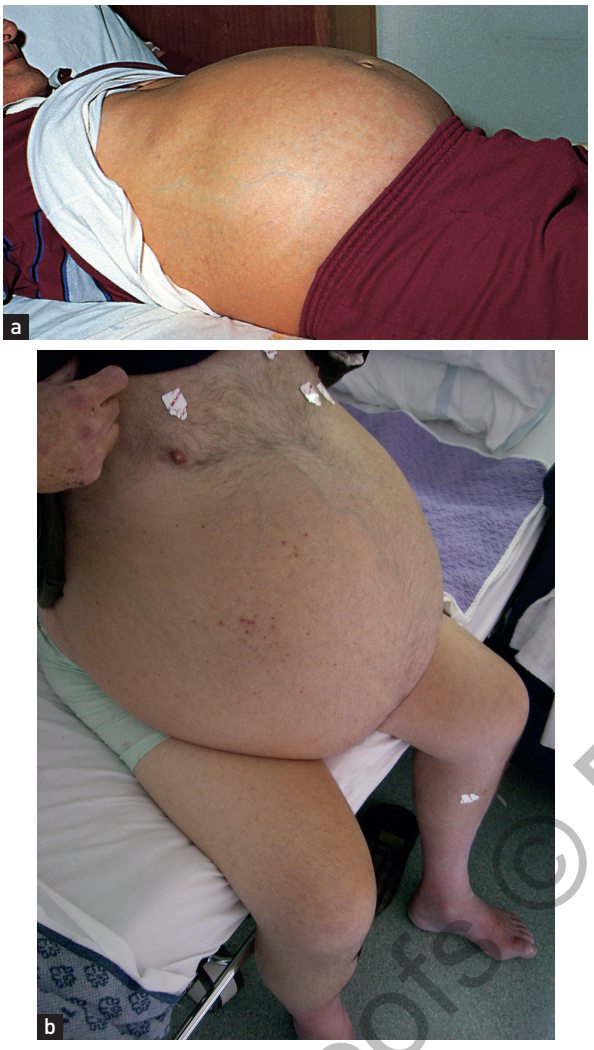
Xanthelasmata are yellowish plaques in the subcutaneous tissues in the periorbital region and are due to deposits of lipids (see Fig. 5.21, p 93). They may indicate protracted elevation of the serum cholesterol. In patients with cholestasis, an abnormal lipoprotein (lipoprotein X) is found in the plasma and is associated with elevation of the serum cholesterol. Xanthelasmata are common in patients with primary biliary cirrhosis.

[i] Pierre Bitot (1822–88) described this in 1863.

[j] Bernhard Kayser (1869–1954), a German ophthalmologist, described these rings in 1902. Bruno Fleischer (1848–1904), a German ophthalmologist, described them in 1903.

[k] Jean Desçemet (1732–1810), a professor of surgery and anatomy in Paris. He described the membrane in 1785.

[l] Samuel Alexander Wilson (1878–1937), a London neurologist at Queen Square. His colleagues there included Gowers and Hughlings Jackson. He described his disease in 1912 in his MD thesis. He also described the glabellar tap sign in Parkinson's disease, which is sometimes called Wilson's sign. He did not, however, describe the Kayser–Fleischer rings.



(a) Abdomen distended with ascites (patient supine): umbilicus points downwards, unlike cases of distension due to a pelvic mass; (b) gross ascites (patient sitting)

(Courtesy of Dr A Watson, Infectious Diseases Department, The Canberra Hospital.)

FIGURE 14.27

Remove the second finger; if the vein refills, flow is occurring towards the occluding finger (see Fig. 14.28). Flow should be tested separately in veins above and below the umbilicus.

In patients with severe portal hypertension, portal-to-systemic flow occurs through the umbilical veins, which may become engorged and distended (see Fig. 14.29). The direction of flow then is away from the umbilicus. Because of their engorged appearance they have been likened to the mythical Medusa's hair after Minerva (Athena) had turned it into snakes; this sign is called a *caput Medusae* (head of Medusa[q]) but is very rare (see Fig. 14.30). Usually only one or two veins (often epigastric) are visible. Engorgement can also occur because of inferior vena caval obstruction, usually due to a tumour or thrombosis but sometimes because of tense ascites. In this case the abdominal veins enlarge to provide collateral blood flow from the legs, avoiding the blocked inferior vena cava. The direction of flow is then upwards towards the heart. Therefore, to distinguish caput Medusae from inferior vena caval obstruction, determine the direction of flow *below* the umbilicus; it will be towards the legs in the former and towards the head in the latter. Prominent superficial veins can occasionally be congenital.

Pulsations may be visible. An expanding central pulsation in the epigastrium suggests an abdominal aortic aneurysm. However, the abdominal aorta can often be seen to pulsate in normal thin people.

Visible peristalsis may occur occasionally in very thin normal people; however, it usually suggests intestinal obstruction. Pyloric obstruction due to peptic ulceration or tumour may cause visible peristalsis, seen as a slow wave of movement passing across the upper abdomen from left to right. Obstruction of the distal small bowel can cause similar movements in a ladder pattern in the centre of the abdomen.

Skin lesions should also be noted on the abdominal wall. These include the vesicles of herpes zoster, which occur in a radicular pattern (they are localised to only one side of the abdomen in the distribution of a single dermatome). Herpes zoster may be responsible for severe abdominal pain that is of mysterious origin until the rash appears. The Sister Joseph[r] nodule is a metastatic tumour deposit in the umbilicus, the anatomical region where the peritoneum is closest to the skin. Discoloration of the umbilicus where a faintly bluish hue is present is found rarely, in cases of extensive haemoperitoneum and acute pancreatitis (Cullen's signs—the umbilical

[q] In Greek mythology Medusa was the only mortal among the three Gorgons. She had live snakes for hair and people who met her gaze were turned to stone (unless they looked at her in a mirror or polished shield).

[r] Sister Joseph of St Mary's Hospital, Rochester, Minnesota, described this sign to Dr William Mayo (1861–1939) of the Mayo Clinic.

For descriptive purposes the abdomen has been divided into nine areas or regions (see Fig. 14.33). Palpation in each region is performed with the palmar surface of the fingers acting together. For palpation of the edges of organs or masses, the lateral surface of the forefinger is the most sensitive part of the hand.

Palpation should begin with *light pressure* in each region. All the movements of the hand should occur at the metacarpophalangeal joints and the hand should be moulded to the shape of the abdominal wall. Note the presence of any tenderness or lumps in each region. As you move your hand over each region, consider the anatomical structures that underlie it. *Deep palpation* of the abdomen is performed next, though care should be taken to avoid the tender areas until the end of the examination. Deep palpation is used to detect deeper masses and to define those already discovered. Any mass must be carefully characterised and described (see Text box 14.2).

Guarding of the abdomen (when resistance to palpation occurs due to contraction of the abdominal muscles) may result from tenderness or anxiety, and is voluntary. It may be overcome by reassurance and gentleness. *Rigidity* is a constant involuntary reflex contraction of the abdominal muscles always associated with tenderness and indicates peritoneal irritation or inflammation (peritonitis).

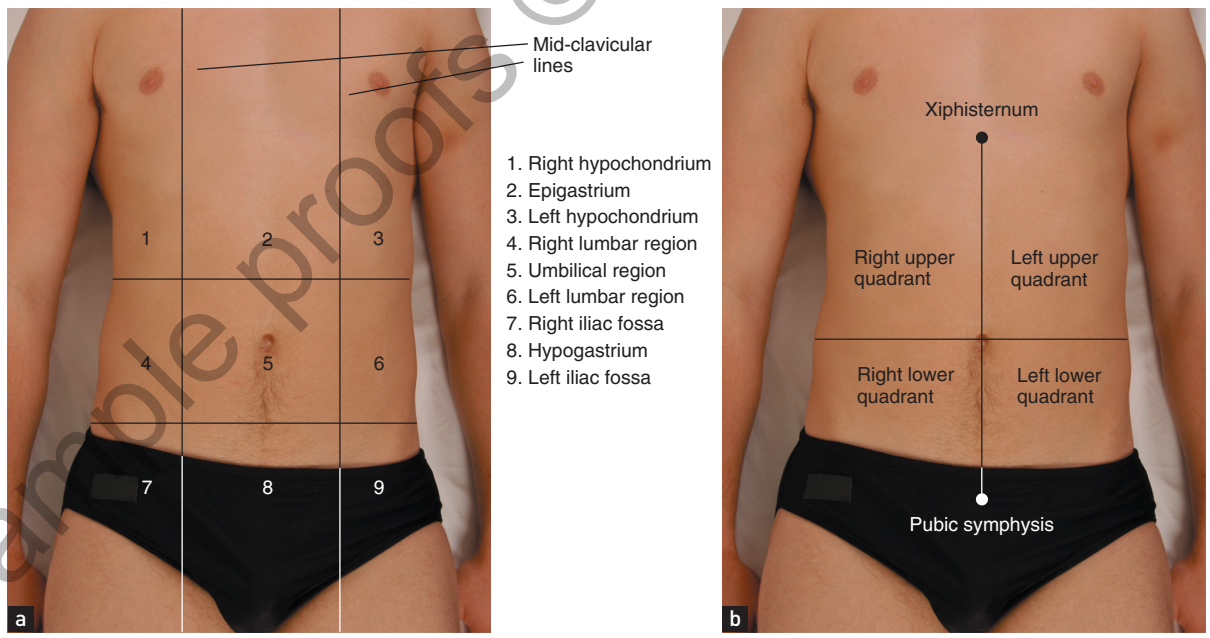
Rebound tenderness is said to be present when the abdominal wall, having been compressed slowly, is released rapidly and a sudden stab of pain results. This may make the patient wince, so watch their face while this manoeuvre is performed. It suggests the

Descriptive features of intra-abdominal masses

For any abdominal mass all the following should be determined:

- Site: the region involved
- Tenderness
- Size (which must be measured) and shape
- Surface, which may be regular or irregular
- Edge, which may be regular or irregular
- Consistency, which may be hard or soft
- Mobility and movement with inspiration
- Whether it is pulsatile or not
- Whether one can get above the mass

TEXT BOX 14.2



(a) Regions of the abdomen; (b) quadrants of the abdomen

FIGURE 14.33

Palpation of the spleen. (a) Palpation begins in the lower mid-abdomen and finishes up under the left costal margin. (b) The examiner's hand supports the patient's side ... (c) ... and then rests over the lower costal margin to reduce skin resistance. (d) If the spleen is not palpable when the patient is flat, they should be rolled towards the examiner

FIGURE 14.37

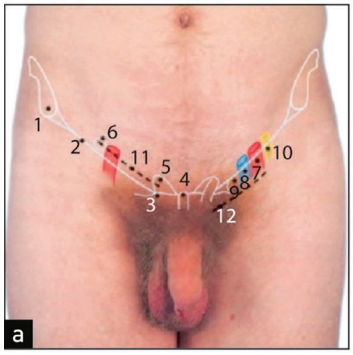
CAUSES OF HEPATOSPLENOMEGALY

- Chronic liver disease with portal hypertension
- Haematological disease (e.g. myeloproliferative disease, lymphoma, leukaemia, pernicious anaemia, sickle cell anaemia)
- Infection (e.g. acute viral hepatitis, infectious mononucleosis, cytomegalovirus, tropical e.g. malaria, leishmaniasis)
- Infiltration (e.g. amyloid, sarcoid)
- Connective tissue disease (e.g. systemic lupus erythematosus)
- Acromegaly
- Thyrotoxicosis

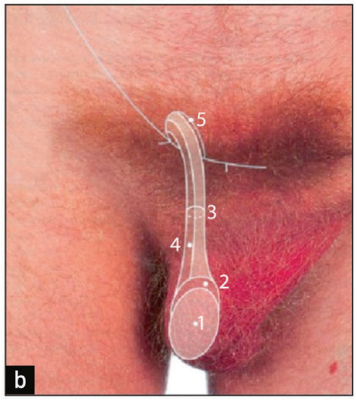
LIST 14.7

of the abdomen anteriorly. Place your right hand over the right upper quadrant.

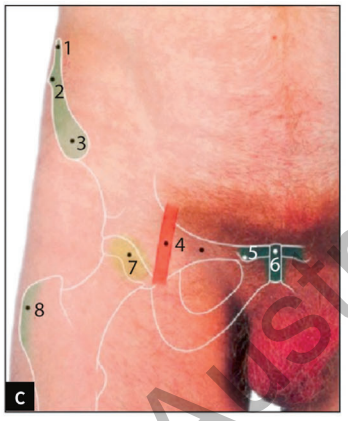
First an attempt should be made to capture the kidney between both hands. It is more often possible to feel a kidney by bimanual palpation (this is traditionally called balloting, although this term should probably be reserved for palpation of an organ or a mass in a fluid medium). In this case the renal angle is pressed sharply by the flexing fingers of the posterior hand (Fig. 14.38). It is important that the posterior hand is placed almost as far posterior as the spine and not just in the flank. The kidney can be felt to float upwards and strike the anterior hand. The opposite hands are used to palpate the left kidney If a kidney is ballotable, describe its size and consistency. In healthy individuals, the kidneys are not ballotable,



Inguinal region: bones and soft tissues
1 Anterior superior iliac spine
2 Inguinal ligament
3 Pubic tubercle
4 Symphysis pubis
5 Superficial inguinal ring
6 Deep inguinal ring
7 Femoral artery
8 Femoral vein
9 Femoral canal
10 Femoral nerve
11 Inguinal hernia incision
12 Femoral hernia incision



Testis and spermatic cord
1 Testis
2 Superior pole of epididymis
3 Spermatic cord
4 Vas deferens
5 Superficial inguinal ring

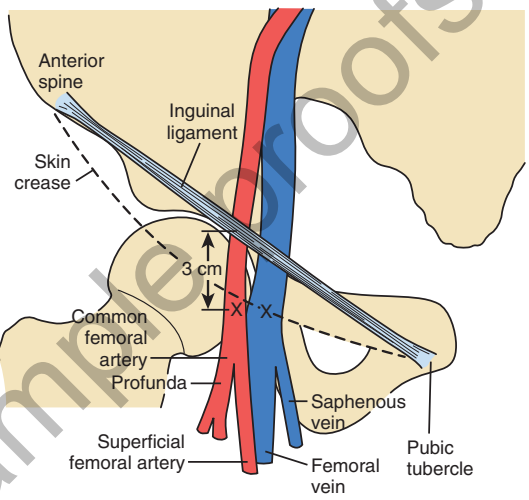


Pelvis and anterior thigh: palpable structures
1 Iliac crest
2 Tubercle of ilium
3 Anterior superior iliac spine
4 Femoral artery
5 Pubic tubercle
6 Symphysis pubis
7 Head of femur
8 Greater trochanter

Surface anatomy of the groin and key structures

(From Talley NJ, O'Connor S. Talley & O'Connor's *Clinical examination essentials: an introduction to clinical skills (and how to pass your clinical exams*). Elsevier Australia, 2019.)

FIGURE 14.47



Anatomy of the pubic tubercle and inguinal ligament

(From Kaplan J et al. *Kaplan's cardiac anesthesia*, 6th edn. Philadelphia: Saunders 2011.)

FIGURE 14.48

identify the tubercle. The pubic tubercle can usually easily be felt lateral to the symphysis pubis (2–3 centimetres from the midline). In the obese individual, it may be difficult to locate the pubic tubercle; in such situations, if the thigh is flexed and abducted, the adductor longus muscle can be traced proximally, leading you to the pubic tubercle.

From the pubic tubercle to the anterior superior iliac spine lies the inguinal canal. At the mid-inguinal point (midway between the pubic symphysis and the anterior superior iliac spine) is an internal ring. At the pubic tubercle lies an external ring, in men the gateway to the scrotum. Remember that the femoral canal is situated lateral to the pubic tubercle, below the inguinal ligament.

Hernias in the groin

The principal sign of a hernia is a lump in the groin. Naturally, not all lumps in the region are hernias (see List 14.12).

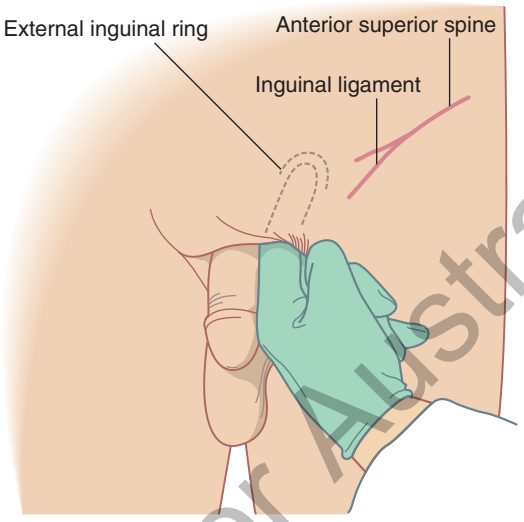
what sort of hernia. Identify the pubic tubercle. Remember, one cannot get above a hernia, but one can get above a hydrocele in the inguinal canal. Try to determine whether the hernia is inguinal (see Fig. 14.49) or femoral based on the position in relation to the pubic tubercle and inguinal ligament (see above).

Remember, femoral hernias are more dangerous: they are usually smaller and firmer than inguinal hernias and commonly do not exhibit a cough impulse. Because they are frequently irreducible, they are commonly mistaken for an enlarged inguinal lymph node. A cough impulse is rare from a femoral hernia and needs to be distinguished from the thrill produced by a saphena varix when a patient coughs.

9. In a male, examine the testes and scrotum. A large inguinal hernia may descend through the external ring immediately above the pubic tubercle into the scrotum. Gentle invagination of the scrotum with the tip of the gloved finger in the external ring may be performed to confirm an indirect hernia in men, but this can be difficult to interpret without substantial experience (see Fig. 14.50). A maldescended testis can be confused with an inguinal hernia; always confirm that there is a testis in each scrotum. A large inguinal hernia may present as a lump in the scrotum. It is important to ascertain whether one can get above the lump. If you can get above the lump, the lump is of primary intrascrotal pathology and is not a hernia.

Left indirect inguinal hernia with elliptical swelling extending into the scrotum

FIGURE 14.49



To examine the inguinal canal in a male, the scrotum can be invaginated as shown (always wear gloves)

FIGURE 14.50

Epigastric hernia

A hernia in the epigastric region is common in older patients (see Fig. 14.51). This can be identified by asking the patient to do half a sit-up from the supine position and looking for an obvious bulge. Identify scars that may explain the abdominal wall weakness. Ask the patient whether the lump is painful and palpate it. Feel for a cough impulse. Asymptomatic epigastric hernias are usually best left alone.

Incisional hernias

Any abdominal scar may be the site of a hernia because of abdominal wall weakness. Assess this by asking the patient to cough while you look for abnormal bulges. Next have the patient lift the head and shoulders off the bed while you rest your hand on the patient's forehead and resist this movement. If a bulge is seen, use your other hand to palpate for a fascial layer defect in the muscle, and test the cough impulse.

RECTAL EXAMINATION

The examining physician often hesitates to make the necessary examination because it involves soiling the finger.

William Mayo (1861–1939)

Changes in urine and faeces with jaundice

	Causes of jaundice		
Substance and site	**Haemolysis**	**Obstruction or cholestasis**	**Hepatocellular liver disease**
Urine			
Bilirubin (conjugated)	Normal*	Raised	Normal or raised
Urobilinogen	Raised	Absent or decreased	Normal or raised
Faeces			
Stercobilinogen	Raised	Absent or decreased	Normal
Causes	Haemolytic anaemia	Extrahepatic biliary obstruction (e.g. gallstones, carcinoma of pancreas or bile duct, strictures of the bile duct), intrahepatic cholestasis (e.g. drugs, recurrent jaundice of pregnancy)	Hepatitis, cirrhosis, drugs, venous obstruction

**Unconjugated bilirubin levels are elevated in the serum.*

TABLE 14.4

T&O'C ESSENTIALS

1. *When examining the abdomen, it is important to position the patient flat. While palpating, consider the underlying organs that are present when abnormalities are detected.*
2. *If an abdominal mass is found, characterise it, then pay special attention to the liver, rectal examination and supraclavicular nodes.*
3. *A left upper quadrant mass may be a spleen or a kidney. Remember that one cannot get above the spleen and that the spleen is not ballotable.*
4. *If the liver and spleen are enlarged, examine for other signs of chronic liver disease.*
5. *If you feel the liver, it may not be enlarged (check the upper border). You may feel an enlarged left lobe only in the epigastrium.*
6. *An inguinal hernia bulges above the crease of the groin, whereas a femoral hernia bulges into the medial end of the groin crease.*
7. *Draining lymph node groups must be examined carefully.*
8. *A gastrointestinal system examination is incomplete without a rectal examination.*
9. *Examination of the urine is an important extension of the physical examination.*

OSCE REVISION TOPICS (SEE THE OSCE VIDEO THE GI EXAMINATION [NO. 4] AT eBooks+) – THE GASTROINTESTINAL EXAMINATION

Use these topics, which commonly occur in the OSCE, to help with revision.

1. Please examine this 43-year-old man who is a heavy drinker for signs of chronic liver disease. (p 254)
2. This 50-year-old woman has abdominal distension. Please examine her for ascites. (p 265)
3. Please examine this 47-year-old man with chronic liver disease and decide whether there are signs of portal hypertension. (p 267)
4. This 23-year-old man has found a lump in his groin. Please examine him. (p 282)
5. Explain the steps you would need to take to perform a rectal examination. (p 285)

i Cullen and Grey Turner signs in abdominal pain. Yoen Young Chuah Yeong Yeh Lee MJA 214 (4) ▪ 1 March 2021

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2. Walton S, Bennett JR. Skin and gullet. *Gut* 1991; 32:694–697. An excellent review of skin signs in gastroenterology.
3. Beitman RG, Rost SS, Roth JL. Oral manifestations of gastrointestinal disease. *Dig Dis Sci* 1981; 26:741–747. A detailed review.