

Presenting Symptoms	Differential Diagnosis
Bad breath (halitosis)	gingival, dental or pharyngeal infection
dry mouth (xerostomia)	Sjögren's syndrome (SS), anticholinergic drug use
foul taste in the mouth (cacogeusia)	Dental caries, gingivitis, GERD, PUD..
altered taste sensation (dysgeusia)	metal toxicity, seafood toxins, nutritional disorders (especially zinc deficiency)
Anorexia (loss of appetite and/or a lack of interest in food)	Eating habits, Cancers, psychological and mental health problems, systemic illnesses....
Weight loss	malignancy and liver disease dieting, loss of appetite, malabsorption or malnutrition hyperthyroidism, fever, energetic lifestyle vomiting, diarrhoea or diuretics Systemic illnesses
Painful sores in lips, tongue or buccal mucosa	deficiencies, including iron, folate, vitamin B12 or C dermatological disorders, including lichen planus Chemotherapy aphthous ulcers infective stomatitis inflammatory bowel disease and coeliac disease

Presenting Symptoms	Differential Diagnosis
Heartburn (hot, burning retrosternal discomfort)	GORD/GERD
Dyspepsia (pain or discomfort centred in the upper abdomen)	Functional peptic ulceration 'Fat intolerance/ gallbladder disease
Odynophagia (pain on swallowing)	oesophageal ulceration or oesophagitis from gastro-oesophageal reflux or oesophageal infections(candidiasis/HSV/CMV)
Abdominal pain (Visceral abdominal pain vs. Somatic pain) (Primary vs. Referred)	GI Causes Renal/ Urogenital Causes Gynecological/Obstetric Causes

6.2 Diagnosing abdominal pain

Disorder				
	Peptic ulcer	Biliary colic	Acute pancreatitis	Renal colic
Site	Epigastrium	Epigastrium/right hypochondrium	Epigastrium/left hypochondrium	Loin
Onset	Gradual	Rapidly increasing	Sudden	Rapidly increasing
Character	Gnawing	Constant	Constant	Constant
Radiation	Into back	Below right scapula	Into back	Into genitalia and inner thigh
Associated symptoms	Non-specific	Non-specific	Non-specific	Non-specific
Timing				
Frequency/periodicity	Remission for weeks/months	Attacks can be enumerated	Attacks can be enumerated	Usually a discrete episode
Special times	Nocturnal and especially when hungry	Unpredictable	After heavy drinking	Following periods of dehydration
Duration	½–2 hours	4–24 hours	>24 hours	4–24 hours
Exacerbating factors	Stress, spicy foods, alcohol, non-steroidal anti-inflammatory drugs	Eating – unable to eat during bouts	Alcohol Eating – unable to eat during bouts	–
Relieving factors	Food, antacids, vomiting	–	Sitting upright	–
Severity	Mild to moderate	Severe	Severe	Severe

6.3 Non-alimentary causes of abdominal pain

Disorder	Clinical features
Myocardial infarction	Epigastric pain without tenderness <i>Angor animi</i> (feeling of impending death) Hypotension Cardiac arrhythmias
Dissecting aortic aneurysm	Tearing interscapular pain <i>Angor animi</i> Hypotension Asymmetry of femoral pulses
Acute vertebral collapse	Lateralised pain restricting movement Tenderness overlying involved vertebra
Cord compression	Pain on percussion of thoracic spine Hyperaesthesia at affected dermatome with sensory loss below Spinal cord signs
Pleurisy	Lateralised pain on coughing Chest signs, e.g. pleural rub
Herpes zoster	Hyperaesthesia in dermatomal distribution Vesicular eruption
Diabetic ketoacidosis	Cramp-like pain Vomiting Air hunger Tachycardia Ketotic breath
Salpingitis or tubal pregnancy	Suprapubic and iliac fossa pain, localised tenderness Nausea, vomiting Fever
Torsion of testis/ovary	Lower abdominal pain Nausea, vomiting Localised tenderness

6.4 Typical clinical features in patients with an 'acute abdomen'

Condition	History	Examination
Acute appendicitis	Nausea, vomiting, central abdominal pain that later shifts to right iliac fossa	Fever, tenderness, guarding or palpable mass in right iliac fossa, pelvic peritonitis on rectal examination
Perforated peptic ulcer with acute peritonitis	Vomiting at onset associated with severe acute-onset abdominal pain, previous history of dyspepsia, ulcer disease, non-steroidal anti-inflammatory drugs or glucocorticoid therapy	Shallow breathing with minimal abdominal wall movement, abdominal tenderness and guarding, board-like rigidity, abdominal distension and absent bowel sounds
Acute pancreatitis	Anorexia, nausea, vomiting, constant severe epigastric pain, previous alcohol abuse/cholelithiasis	Fever, periumbilical or loin bruising, epigastric tenderness, variable guarding, reduced or absent bowel sounds
Ruptured aortic aneurysm	Sudden onset of severe, tearing back/loin/abdominal pain, hypotension and past history of vascular disease and/or high blood pressure	Shock and hypotension, pulsatile, tender, abdominal mass, asymmetrical femoral pulses
Acute mesenteric ischaemia	Anorexia, nausea, vomiting, bloody diarrhoea, constant abdominal pain, previous history of vascular disease and/or high blood pressure	Atrial fibrillation, heart failure, asymmetrical peripheral pulses, absent bowel sounds, variable tenderness and guarding
Intestinal obstruction	Colicky central abdominal pain, nausea, vomiting and constipation	Surgical scars, hernias, mass, distension, visible peristalsis, increased bowel sounds
Ruptured ectopic pregnancy	Premenopausal female, delayed or missed menstrual period, hypotension, unilateral iliac fossa pain, pleuritic shoulder-tip pain, 'prune juice'-like vaginal discharge	Suprapubic tenderness, periumbilical bruising, pain and tenderness on vaginal examination (cervical excitation), swelling/fullness in fornix on vaginal examination
Pelvic inflammatory disease	Sexually active young female, previous history of sexually transmitted infection, recent gynaecological procedure, pregnancy or use of intrauterine contraceptive device, irregular menstruation, dyspareunia, lower or central abdominal pain, backache, pleuritic right upper quadrant pain (Fitz-Hugh–Curtis syndrome)	Fever, vaginal discharge, pelvic peritonitis causing tenderness on rectal examination, right upper quadrant tenderness (perihepatitis), pain/tenderness on vaginal examination (cervical excitation), swelling/fullness in fornix on vaginal examination

Presenting Symptoms	Differential Diagnosis
Dysphagia (Difficulty of Swallowing)	Neurological Neuromuskular Mechanical
Nausea (the sensation of feeling sick)	GI Causes Non-GI Causes
Vomiting (the expulsion of gastric contents via the mouth)	GI Causes Non-GI Causes
Wind and flatulence (Belching, excessive or offensive flatus, abdominal distension and borborygmi (audible bowel sounds))	lactase deficiency intestinal malabsorption small bowel obstruction or dysmotility air swallowing (aerophagy)
Abdominal distension	6 F's (Fat, Flatus, Faeces, Fluid, Fetus, Functional bloating)
Diarrhoea	Infectious Inflammatory Secretory osmotic Functional
Constipation	Neurological Neuromuskular Mechanical Functional

Presenting Symptoms)	Differential Diagnosis
Bleeding	<ul style="list-style-type: none"> Haematemesis (the vomiting of blood) Melaena (the passage of tarry, shiny black stools with a characteristic odour) Rectal bleeding (blood is mixed with stool, coats the surface of otherwise normal stool or is seen on the toilet paper or in the pan) (Hematochezia) Fecal occult blood
Jaundice (yellowish discoloration of the skin, sclerae and mucous membranes)	<ul style="list-style-type: none"> Conjugated Hyperbilirubinemia Un-Conjugated Hyperbilirubinemia Mixed Hyperbilirubinemia
Groin swellings and lumps	<ul style="list-style-type: none"> Hernias lymph nodes skin and subcutaneous lumps Saphena varix (a varicosity of the long saphenous vein) Hydrocoele of the spermatic cord Undescended testis Femoral aneurysm psoas abscess

6.5 Prediction of the risk of mortality in patients with upper gastrointestinal bleeding: Rockall score

Criterion	Score
Age	
< 60 years	0
60–79 years	1
> 80 years	2
Shock	
None	0
Pulse > 100 beats per minute and systolic blood pressure > 100 mmHg	1
Systolic blood pressure < 100 mmHg	2
Comorbidity	
None	0
Heart failure, ischaemic heart disease or other major illness	2
Renal failure or disseminated malignancy	3
Endoscopic findings	
Mallory–Weiss tear and no visible bleeding	0
All other diagnoses	1
Upper gastrointestinal malignancy	2
Major stigmata of recent haemorrhage	
None	0
Visible bleeding vessel/adherent clot	2
Total score	
Pre-endoscopy (maximum score = 7)	Score 4 = 14% mortality pre-endoscopy
Post-endoscopy (maximum score = 11)	Score 8+ = 25% mortality post-endoscopy
<p><i>Reproduced from Rockall TA, Logan RF, Devlin HB, et al. Risk assessment after acute upper gastrointestinal haemorrhage. Journal of the British Society of Gastroenterology 1996; 38(3):316, with permission from BMJ Publishing Group Ltd.</i></p>	

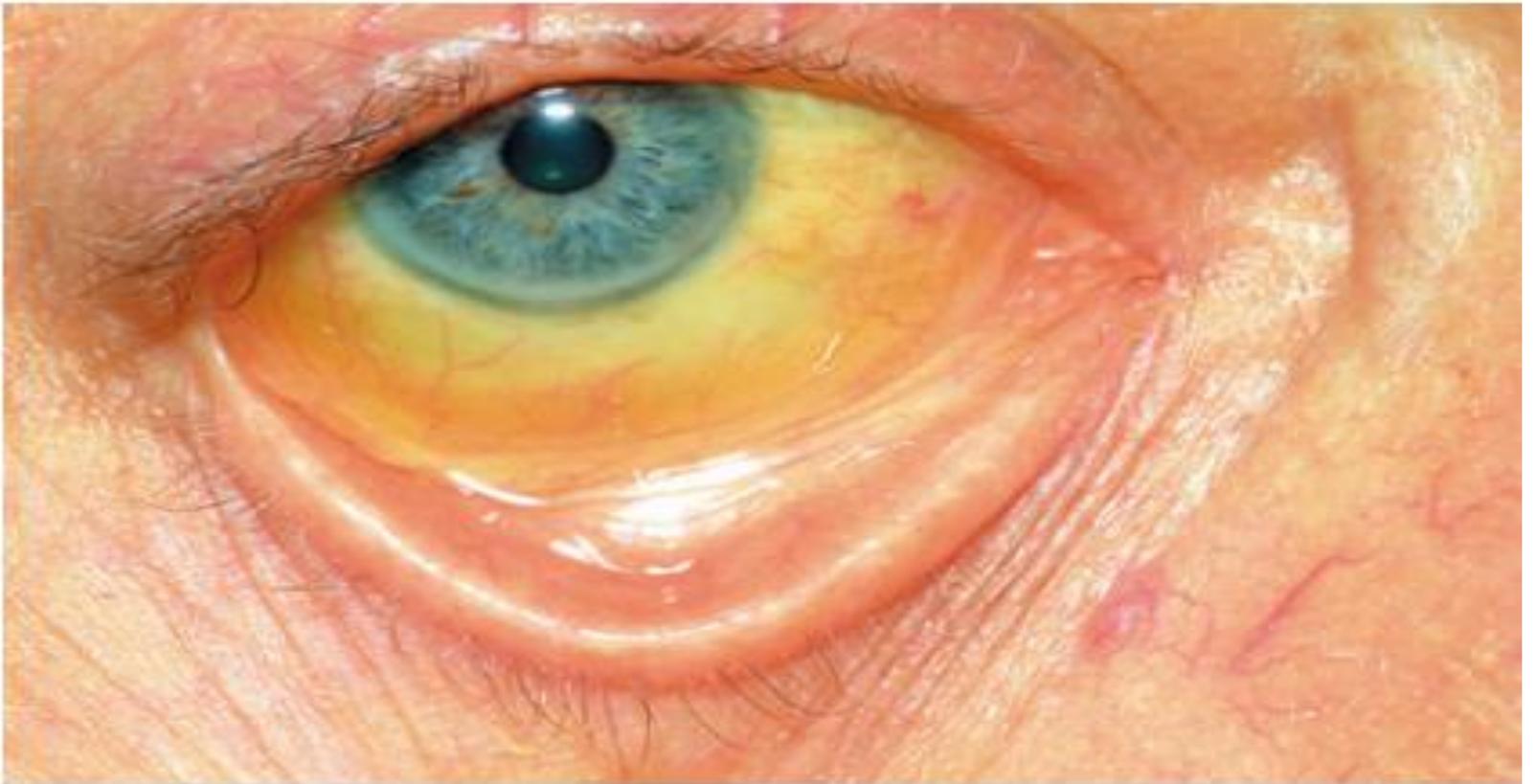


Fig. 6.8 Yellow sclera of jaundice.

6.6 Common causes of jaundice

Increased bilirubin production

- Haemolysis (unconjugated hyperbilirubinaemia)

Impaired bilirubin excretion

- Congenital:
 - Gilbert's syndrome (unconjugated)
- Hepatocellular:
 - Viral hepatitis
 - Cirrhosis
 - Drugs
 - Autoimmune hepatitis
- Intrahepatic cholestasis:
 - Drugs
 - Primary biliary cirrhosis
- Extrahepatic cholestasis:
 - Gallstones
 - Cancer: pancreas, cholangiocarcinoma

6.7 Urine and stool analysis in jaundice

	Urine			Stools
	Colour	Bilirubin	Urobilinogen	Colour
Unconjugated	Normal	–	++++	Normal
Hepatocellular	Dark	++	++	Normal
Obstructive	Dark	++++	–	Pale

Past medical history

- History of a similar problem may suggest the diagnosis.
- Medical history can be associated with or the cause of/ the risk factor /the precipitating factor of the presenting symptoms and illness.
- Ask about previous abdominal surgery.

Drug history:

- Ask about all prescribed medications, over-the-counter medicines and herbal preparations.
- Many drugs affect the gastrointestinal tract and are hepatotoxic

6.8 Examples of drug-induced gastrointestinal conditions

Symptom	Drug
Weight gain	Oral glucocorticoids
Dyspepsia and gastrointestinal bleeding	Aspirin Non-steroidal anti-inflammatory drugs
Nausea	Many drugs, including selective serotonin reuptake inhibitor antidepressants
Diarrhoea (pseudomembranous colitis)	Antibiotics Proton pump inhibitors
Constipation	Opioids
Jaundice: hepatitis	Paracetamol (overdose) Pyrazinamide Rifampicin Isoniazid
Jaundice: cholestatic	Flucloxacillin Chlorpromazine Co-amoxiclav
Liver fibrosis	Methotrexate

Family History:

- Inherited vs. familial disorders
- Autoimmune disorders
- Risk factors

Social History:

Dietary history

Food intolerances

Alcohol consumption

Smoking

Stress

Foreign travel

Intravenous drug use, Tattoos

Blood transfusions

Sex between men or with prostitutes and multiple sexual partners

The physical examination

General examination

Examination sequence

- Note the patient's demeanour and general appearance. Are they in pain, cachectic, thin, well nourished or obese? Record height, weight, waist circumference and body mass index . Note whether obesity is truncal or generalised. Look for abdominal striae or loose skin folds.
- Inspect the patient's hands for clubbing, koilonychia (spoon-shaped nails) and signs of chronic liver disease (including leuconychia (white nails) and palmar erythema.
- Inspect the mouth, throat and tongue.
- Ask the patient to look down and retract the upper eyelid to expose the sclera; look to see if it is yellow in natural light.
- Examine the cervical, axillary and inguinal lymph nodes.

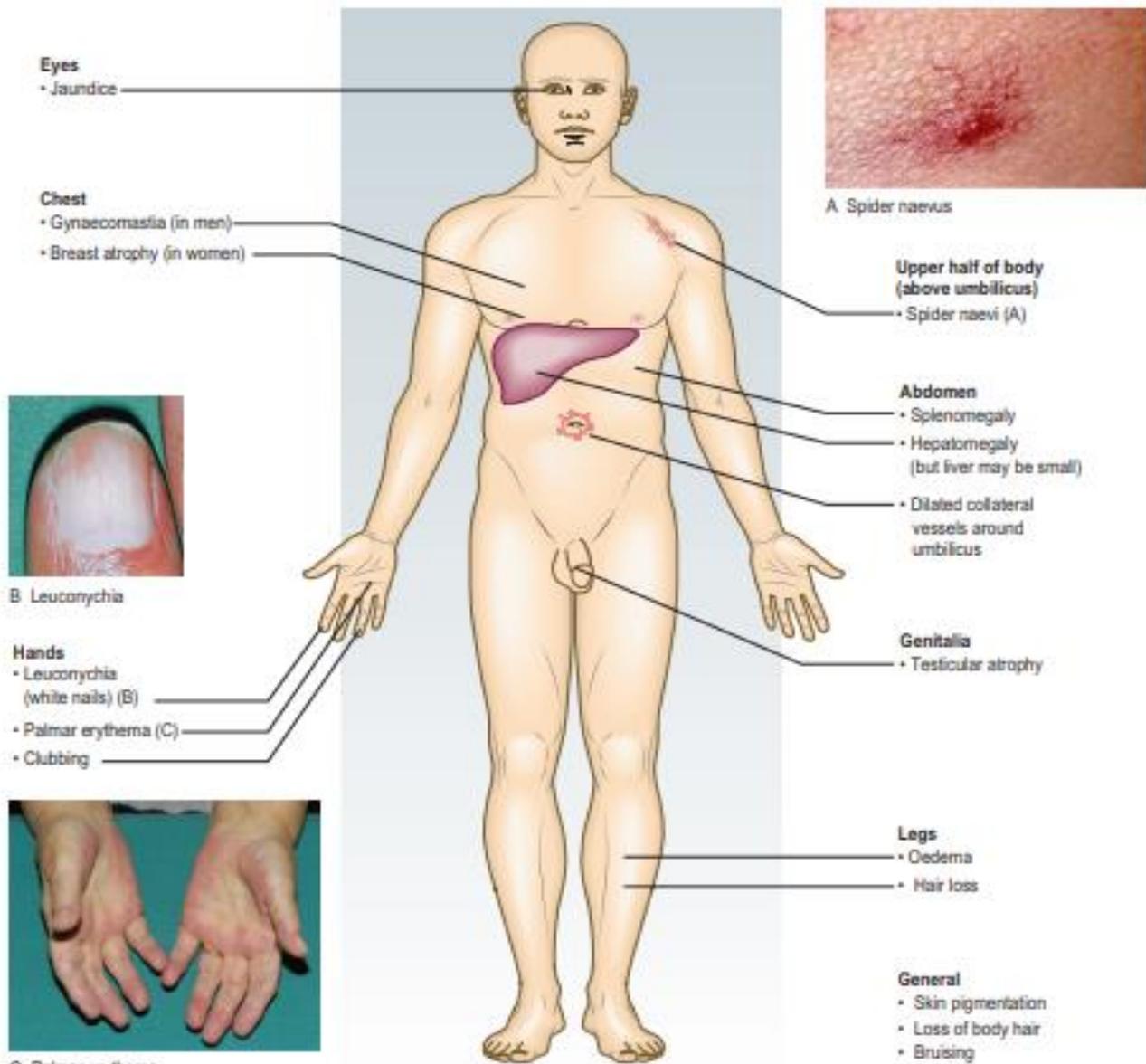


Fig. 6.9 Features of chronic liver disease.

Abdominal examination

- Examine the patient in **good light** and **warm surroundings, positioned comfortably** supine with the head resting on only one or two pillows to relax the abdominal wall muscles. Use extra pillows to support a patient with kyphosis or breathlessness.

Inspection

Examination sequence:

- Look at the teeth, tongue and buccal mucosa; check for mouth ulcers.
- Note any smell, including alcohol, fetor hepaticus, uraemia, melaena or ketones.
- Expose the abdomen from the xiphisternum to the symphysis pubis, leaving the chest and legs covered.

- The normal abdomen is flat or slightly scaphoid and symmetrical. At rest, respiration is principally diaphragmatic; the abdominal wall moves out and the liver, spleen and kidneys move downwards during inspiration. The umbilicus is usually inverted.

- **Skin:** seborrhoeic warts, haemangiomas (Campbell de Morgan spots), striae, bruising or scratch marks.
- **Visible veins:** caput medusae, collateral veins.
- **Abdominal swelling:** ascites, r intestinal obstruction, urinary retention, mass, an enlarged organ such as the liver.
- **Abdominal scars and stomas**

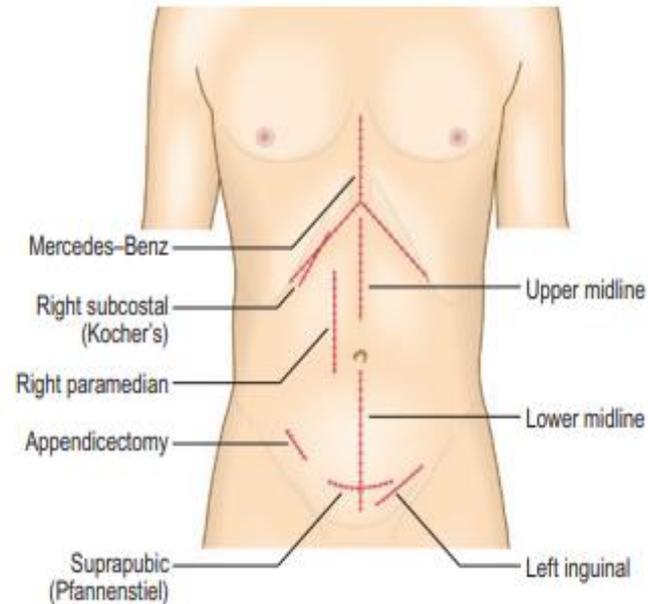


Fig. 6.10 Some abdominal incisions. The midline and oblique incisions avoid damage to innervation of the abdominal musculature and later development of incisional hernias. These incisions have been widely superseded by laparoscopic surgery, however.

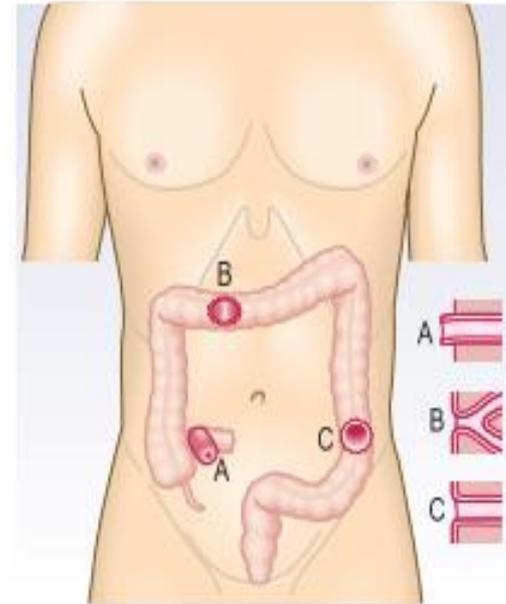


Fig. 6.11 Surgical stomas. **A** An ileostomy is usually in the right iliac fossa and is formed as a spout. **B** A loop colostomy is created to defunction the distal bowel temporarily. It is usually in the transverse colon and has afferent and efferent limbs. **C** A colostomy may be terminal: that is, resected distal bowel. It is usually flush and in the left iliac fossa.

Palpation

Superficial Palpation

Deep Palpation

Palpation for Masses and Organo-megaly (Hepatomegaly, Splenomegaly, Enlarged Kidneys)

Examination sequence:

- Ensure your hands are warm and clean.
- If the bed is low, kneel beside it but avoid touching the floor to prevent infection.
- Ask the patient to show you where any pain is and to report any tenderness during palpation.
- Ask the patient to place their arms by their sides to help relax the abdominal wall.
- Use your right hand, keeping it flat and in contact with the abdominal wall.
- Observe the patient's face throughout for any sign of discomfort.

- Begin with light superficial palpation away from any site of pain.
- Palpate each region in turn, and then repeat with deeper palpation.
 - Test abdominal muscle tone using light, dipping finger movements.
 - Describe any mass. Describe its site, size, surface, shape and consistency, and note whether it moves on respiration. Is the mass fixed or mobile?
 - To determine if a mass is superficial and in the abdominal wall rather than within the abdominal cavity, ask the patient to tense their abdominal muscles by lifting their head. An abdominal wall mass will still be palpable, whereas an intra-abdominal mass will not.
 - Decide whether the mass is an enlarged abdominal organ or separate from the solid organs.

Tenderness

6.9 Specific signs in the 'acute abdomen'

Sign	Disease associations	Examination
Murphy's	Acute cholecystitis: Sensitivity 50–97% Specificity 50–80%	As the patient takes a deep breath in, gently palpate in the right upper quadrant of the abdomen; the acutely inflamed gallbladder contacts the examining fingers, evoking pain with the arrest of inspiration
Rovsing's	Acute appendicitis: Sensitivity 20–70% Specificity 40–96%	Palpation in the left iliac fossa produces pain in the right iliac fossa
Iliopsoas	Retroileal appendicitis, iliopsoas abscess, perinephric abscess	Ask the patient to flex their thigh against the resistance of your hand; a painful response indicates an inflammatory process involving the right psoas muscle
Grey Turner's and Cullen's	Haemorrhagic pancreatitis, aortic rupture and ruptured ectopic pregnancy (see Fig. 6.25)	Bleeding into the falciform ligament; bruising develops around the umbilicus (Cullen) or in the loins (Grey Turner)

Palpable mass

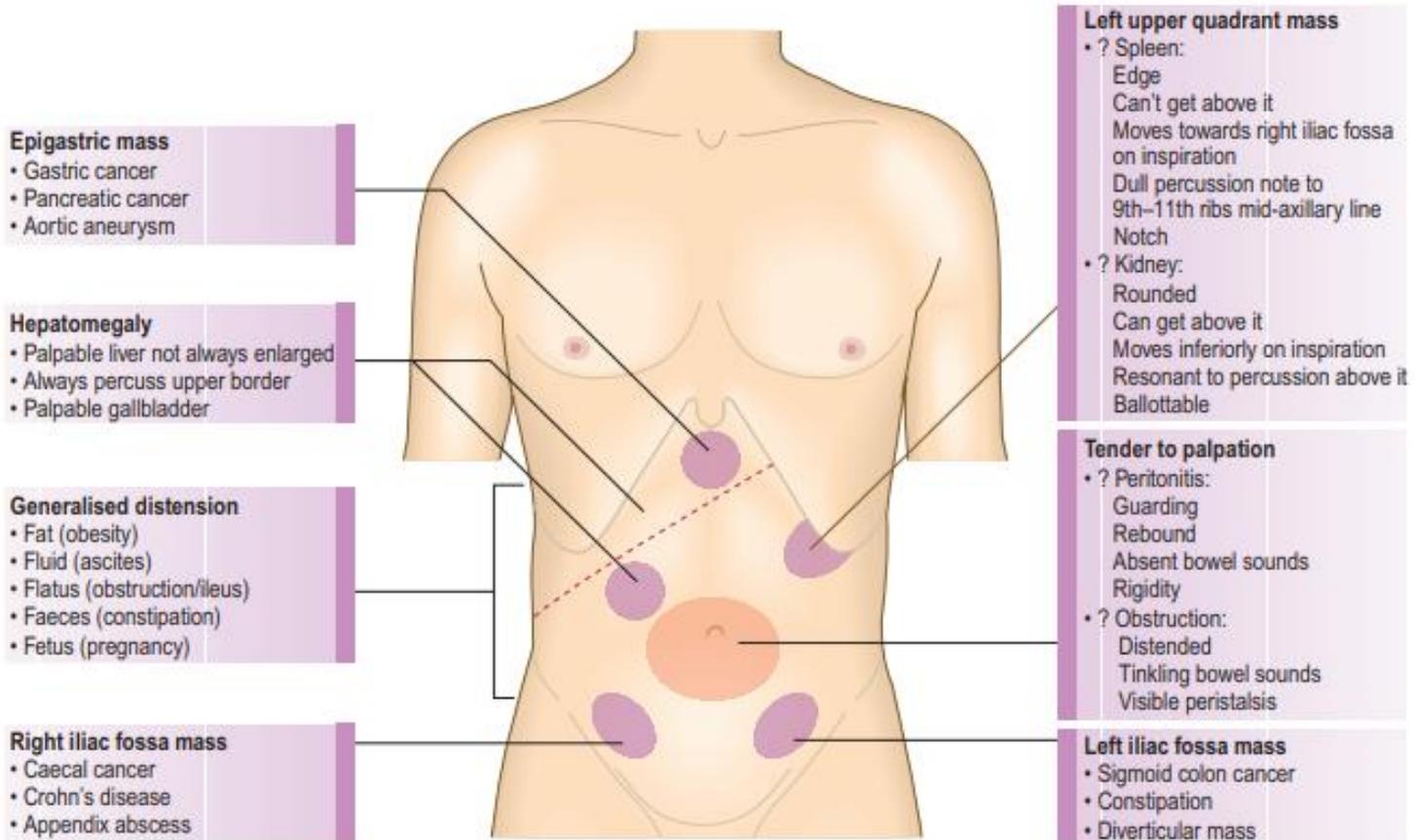


Fig. 6.12 Palpable abnormalities in the abdomen.

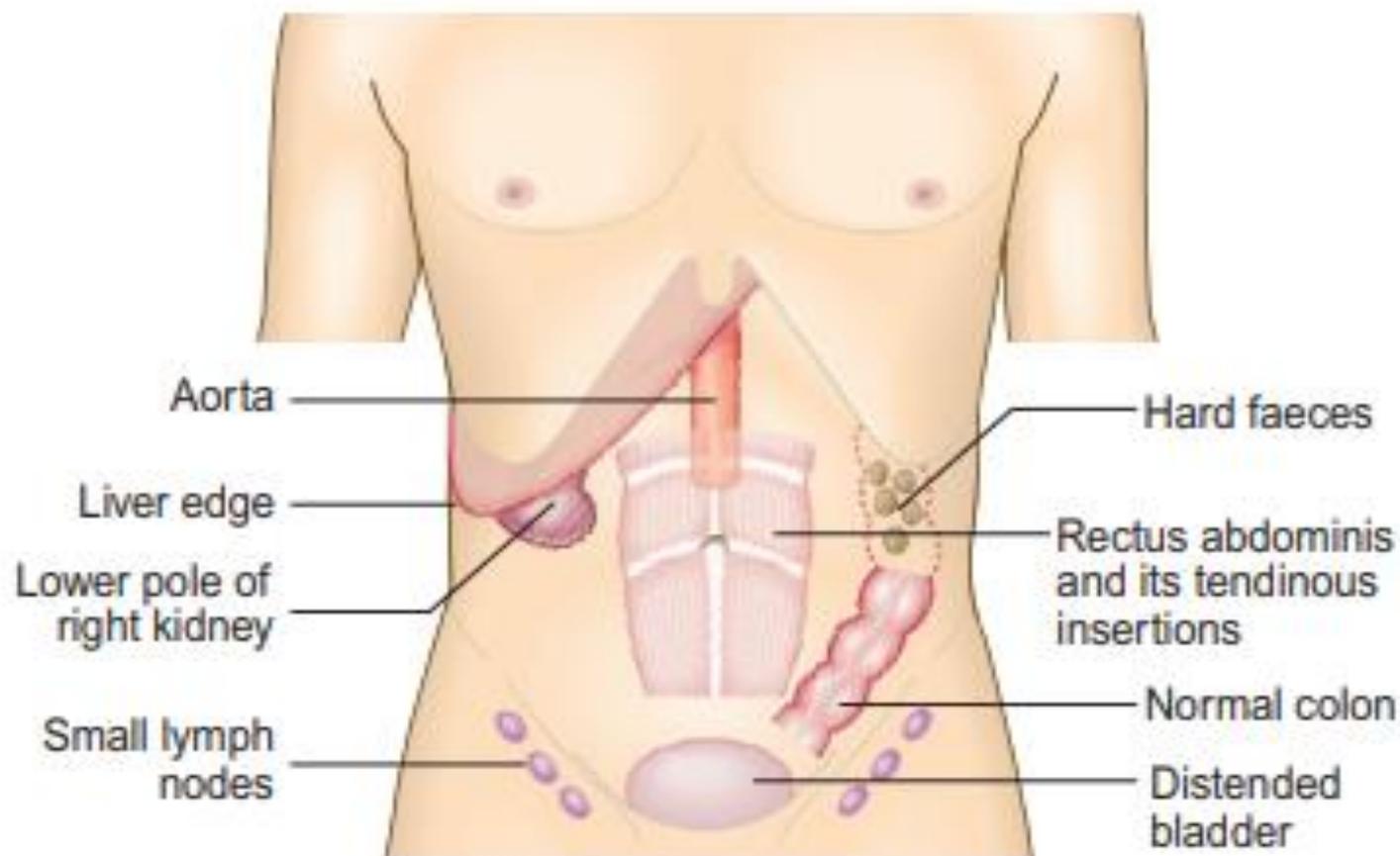


Fig. 6.13 Palpable masses that may be physiological rather than pathological.

Enlarged organs

Hepatomegaly

Liver palpation

Examination sequence:

- Place your hand flat on the skin of the right iliac fossa.
- Point your fingers upwards and your index and middle fingers lateral to the rectus muscle, so that your fingertips lie parallel to the rectus sheath. Keep your hand stationary.
- Ask the patient to breathe in deeply through the mouth.
- Feel for the liver edge as it descends on inspiration.
- Move your hand progressively up the abdomen, 1 cm at a time, between each breath the patient takes, until you reach the costal margin or detect the liver edge.
- If you feel a liver edge, describe:
 - ✓ • size
 - ✓ • surface: smooth or irregular
 - ✓ • edge: smooth or irregular; define the medial border
 - ✓ • consistency: soft or hard
 - ✓ • tenderness
 - ✓ • pulsatility.
- To examine for gallbladder tenderness, ask the patient to breathe in deeply, then gently palpate the right upper quadrant in the mid-clavicular line.



Fig. 6.14 Palpation of the liver.

6.10 Causes of hepatomegaly

Chronic parenchymal liver disease

- Alcoholic liver disease
- Hepatic steatosis
- Autoimmune hepatitis
- Viral hepatitis
- Primary biliary cirrhosis

Malignancy

- Primary hepatocellular cancer
- Secondary metastatic cancer

Right heart failure

Haematological disorders

- Lymphoma
- Leukaemia
- Myelofibrosis
- Polycythaemia

Rarities

- Amyloidosis
- Budd–Chiari syndrome
- Sarcoidosis
- Glycogen storage disorders

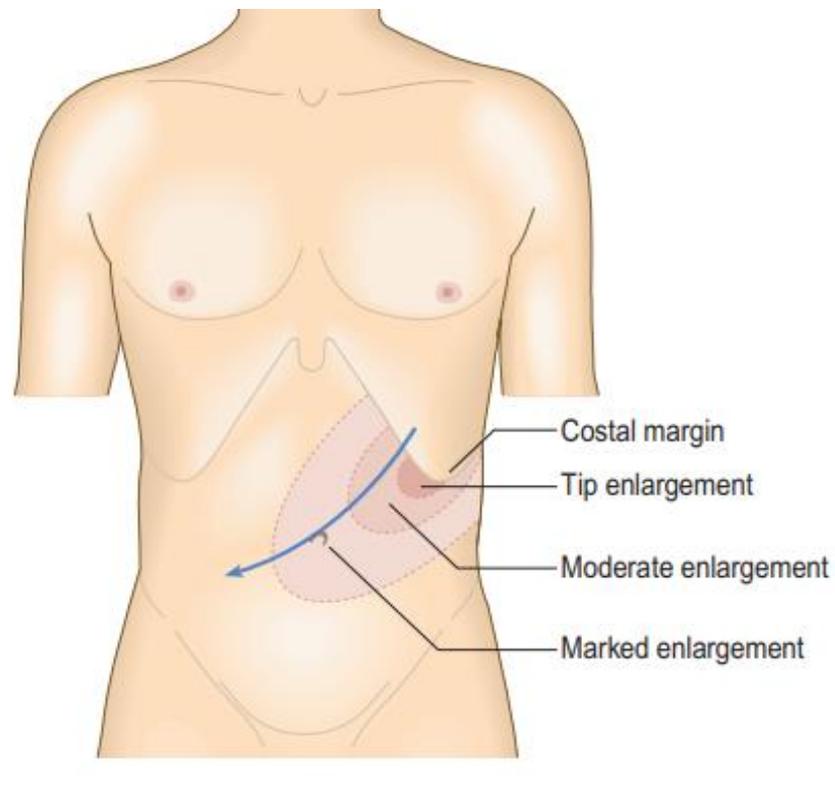
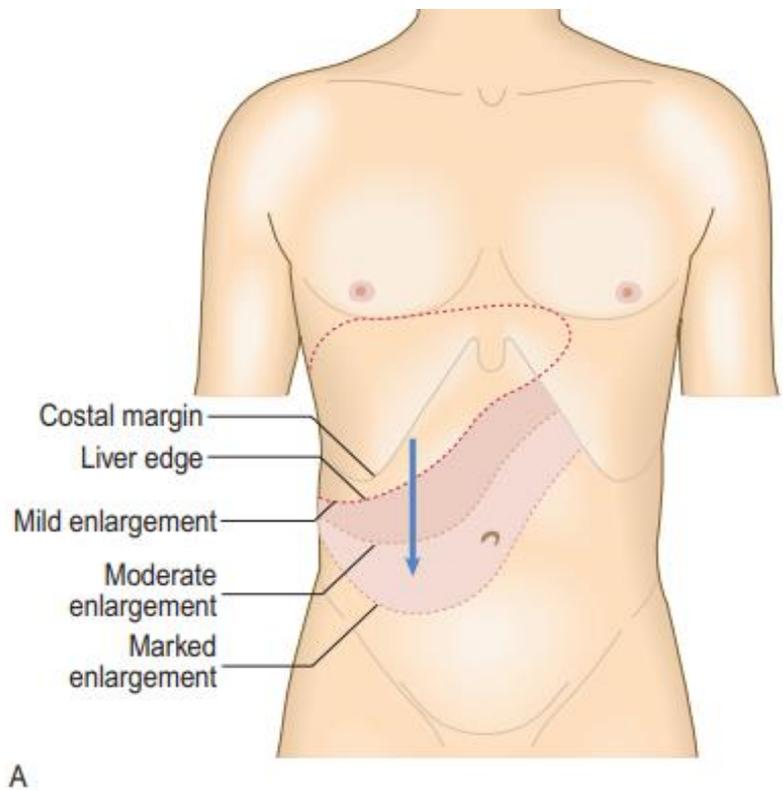


Fig. 6.15 Patterns of progressive enlargement of liver and of spleen. **A** Direction of enlargement of the liver. **B** Direction of enlargement of the spleen. The spleen moves downwards and medially during inspiration.

6.11 Grading of hepatic encephalopathy (West Haven)

Stage	State of consciousness
0	No change in personality or behaviour No asterixis (flapping tremor)
1	Impaired concentration and attention span Sleep disturbance, slurred speech Euphoria or depression Asterixis present
2	Lethargy, drowsiness, apathy or aggression Disorientation, inappropriate behaviour, slurred speech
3	Confusion and disorientation, bizarre behaviour Drowsiness or stupor Asterixis usually absent
4	Comatose with no response to voice commands Minimal or absent response to painful stimuli

Reproduced from Conn HO, Leevy CM, Vlahcevic ZR, et al. Comparison of lactulose and neomycin in the treatment of chronic portal-systemic encephalopathy. A double blind controlled trial. Gastroenterology 1977; 72(4):573, with permission from Elsevier Inc.

Splenomegaly Examination sequence

- Place your hand over the patient's umbilicus. With your hand stationary, ask the patient to inhale deeply through the mouth.

- Feel for the splenic edge as it descends on inspiration.

- Move your hand diagonally upwards towards the left hypochondrium , 1 cm at a time between each

breath the patient takes.

- Feel the costal margin along its length, as the position of the spleen tip is variable.

- If you cannot feel the splenic edge, palpate with your right

hand, placing your left hand behind the patient's left lower ribs and pulling the ribcage forward , or ask the patient to roll towards you and on to their right side and repeat the above.

- Feel along the left costal margin and percuss over the lateral chest wall. The normal spleen causes dullness to percussion posterior to the left mid-axillary line beneath the 9th–11th ribs.

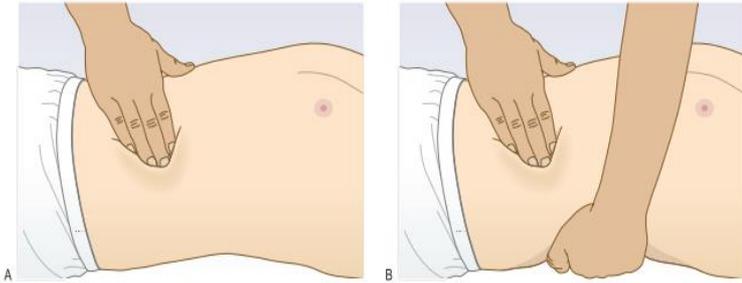


Fig. 6.16 Palpation of the spleen. **A** Initial palpation for the splenic edge moving diagonally from the umbilicus to the left hypochondrium. **B** If the spleen is impalpable by the method shown in A, use your left hand to pull the ribcage forward and elevate the spleen, making it more likely to be palpated by your right hand.

6.13 Causes of splenomegaly

Haematological disorders

- Lymphoma and lymphatic leukaemias
- Myeloproliferative diseases, polycythaemia rubra vera and myelofibrosis
- Haemolytic anaemia, congenital spherocytosis

Portal hypertension

Infections

- Glandular fever
- Malaria, kala-azar (leishmaniasis)
- Bacterial endocarditis
- Brucellosis, tuberculosis, salmonellosis

Rheumatological conditions

- Rheumatoid arthritis (Felty's syndrome)
- Systemic lupus erythematosus

Rarities

- Sarcoidosis
- Amyloidosis
- Glycogen storage disorders

6.12 Differentiating a palpable spleen from the left kidney

Distinguishing feature	Spleen	Kidney
Mass is smooth and regular in shape	More likely	Polycystic kidneys are bilateral irregular masses
Mass descends in inspiration	Yes, travels superficially and diagonally	Yes, moves deeply and vertically
Ability to feel deep to the mass	Yes	No
Palpable notch on the medial surface	Yes	No
Bilateral masses palpable	No	Sometimes, e.g. polycystic kidneys
Percussion resonant over the mass	No	Sometimes
Mass extends beyond the midline	Sometimes	No (except with horseshoe kidney)

percussion

- **General percussion**
- **Liver percussion**
- **Ascites percussion**

General percussion

- Tympanic vs. dull

Liver Percussion

Examination sequence:

- Ask the patient to hold their breath in full expiration.
- Percuss downwards from the right fifth intercostal space in the mid-clavicular line, listening for dullness indicating the upper border of the liver.
- Measure the distance in centimeters below the costal margin in the mid-clavicular line or from the upper border of dullness to the palpable liver edge.

Ascites

Examination sequence

Shifting dullness

- With the patient supine, percuss from the midline out to the flanks. Note any change from resonant to dull, along with areas of dullness and resonance.
- Keep your finger on the site of dullness in the flank and ask the patient to turn on to their opposite side.
- Pause for 10 seconds to allow any ascites to gravitate, then percuss again. If the area of dullness is now resonant, shifting dullness is present, indicating ascites.

Fluid thrill

- If the abdomen is tensely distended and you are uncertain whether ascites is present, feel for a fluid thrill.
- Place the palm of your left hand flat against the left side of the patient's abdomen and flick a finger of your right hand against the right side of the abdomen.
- If you feel a ripple against your left hand, ask an assistant or the patient to place the edge of their hand on the midline of the abdomen. This prevents transmission of the impulse via the skin rather than through the ascites. If you still feel a ripple against your left hand, a fluid thrill is present (detected only in gross ascites).



Fig. 6.17 Percussing for ascites. **A** and **B** Percuss towards the flank from resonant to dull. **C** Then ask the patient to roll on to their other side. In ascites the note then becomes resonant.



Fig. 6.18 Eliciting a fluid thrill.

6.14 Causes of ascites

Diagnosis

Comment

Common

Hepatic cirrhosis with portal hypertension

Transudate

Intra-abdominal malignancy with peritoneal spread

Exudate, cytology may be positive

Uncommon

Hepatic vein occlusion (Budd–Chiari syndrome)

Transudate in acute phase

Constrictive pericarditis and right heart failure

Check jugular venous pressure and listen for pericardial rub

Hypoproteinaemia (nephrotic syndrome, protein-losing enteropathy)

Transudate

Tuberculous peritonitis

Low glucose content

Pancreatitis, pancreatic duct disruption

Very high amylase content

Auscultation Examination sequence

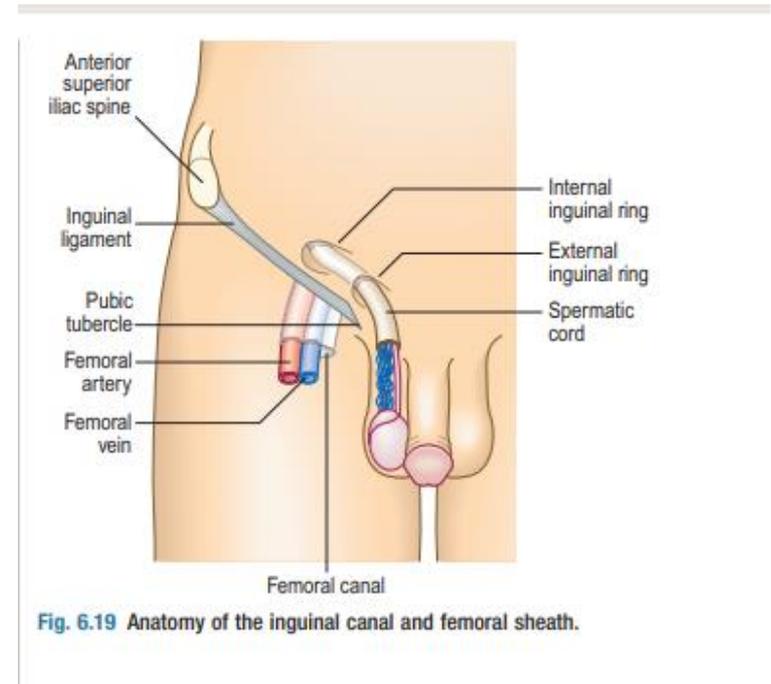
- With the patient supine, place your stethoscope diaphragm to the right of the umbilicus and do not move it.
 - Listen for up to 2 minutes before concluding that bowel sounds are absent.
- Listen above the umbilicus over the aorta for arterial bruits.
- Now listen 2–3 cm above and lateral to the umbilicus for bruits from renal artery stenosis.
- Listen over the liver for bruits.
- Test for a succussion splash; this sounds like a half-filled water bottle being shaken. Explain the procedure to the patient, then shake their abdomen by rocking their pelvis using both hands.

Important examination parts

- Hernias examination
- Rectal examination
- Proctoscopy

Hernias examination

- The inguinal canal extends from the pubic tubercle to the anterior superior iliac spine. It has an internal ring at the mid-inguinal point (midway between the pubic symphysis and the anterior superior iliac spine) and an external ring at the pubic tubercle.



- The femoral canal lies below the inguinal ligament and lateral to the pubic tubercle

Examination sequence

- Examine the groin with the patient standing upright.
- Inspect the inguinal and femoral canals and the scrotum for any lumps or bulges.
- Ask the patient to cough; look for an impulse over the femoral or inguinal canal and scrotum.
- Identify the anatomical relationships between the bulge, the pubic tubercle and the inguinal ligament to distinguish a femoral from an inguinal hernia.
- Palpate the external inguinal ring and along the inguinal canal for possible muscle defects. Ask the patient to cough and feel for a cough impulse.
- Now ask the patient to lie down and establish whether the hernia reduces spontaneously.
- If so, press two fingers over the internal inguinal ring at the mid-inguinal point and ask the patient to cough or stand up while you maintain pressure over the internal inguinal ring. If the hernia reappears, it is a direct hernia. If it can be prevented from reappearing, it is an indirect inguinal hernia.
- Examine the opposite side to exclude the possibility of asymptomatic hernias.



Fig. 6.20 Right inguinal hernia.

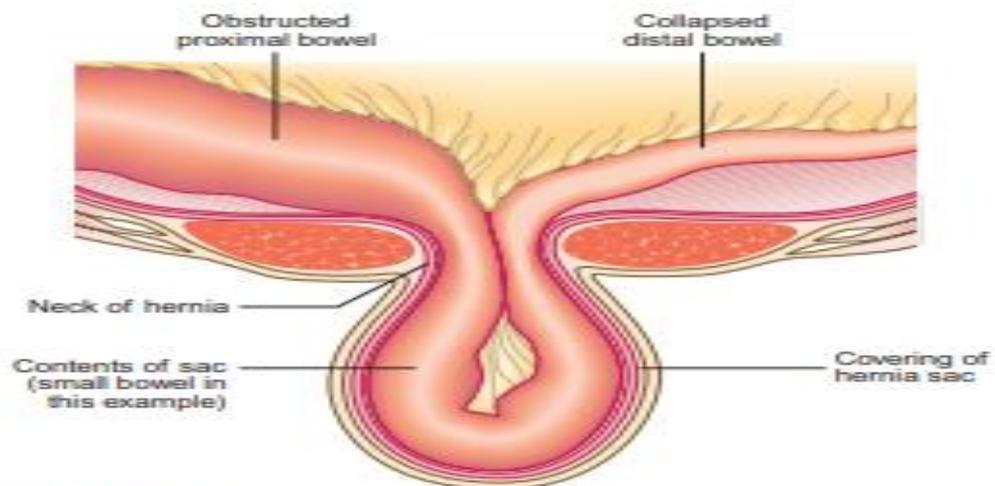


Fig. 6.21 Hernia: anatomical structure.

Rectal examination

- Digital examination of the rectum is important.
- Do not avoid it because you or the patient finds it disagreeable.
- The patient's verbal consent is needed, however, and the examination should be carried out in the presence of a chaperone.

6.15 Indications for rectal examination

Alimentary

- Suspected appendicitis, pelvic abscess, peritonitis, lower abdominal pain
- Diarrhoea, constipation, tenesmus or anorectal pain
- Rectal bleeding or iron deficiency anaemia
- Unexplained weight loss
- Bimanual examination of lower abdominal mass for diagnosis or staging
- Malignancies of unknown origin

Genitourinary

- Assessment of prostate in prostatism or suspected prostatic cancer
- Dysuria, frequency, haematuria, epididymo-orchitis
- Replacement for vaginal examination when this would be inappropriate

Miscellaneous

- Unexplained bone pain, backache or lumbosacral nerve root pain
- Pyrexia of unknown origin
- Abdominal, pelvic or spinal trauma

Examination sequence

- Explain what you are going to do and why it is necessary, and ask for permission to proceed. Tell the patient that the examination may be uncomfortable but should not be painful.
- Offer a chaperone; record a refusal. Make a note of the name of the chaperone.
- Position the patient in the left lateral position with their buttocks at the edge of the couch, their knees drawn up to their chest and their heels clear of the perineum.
- Put on gloves and examine the perianal skin, using an effective light source.
- Look for skin lesions, external haemorrhoids, fissures and fistulae.
- Lubricate your index finger with water-based gel.
- Place the pulp of your forefinger on the anal margin and apply steady pressure on the sphincter to push your finger gently through the anal canal into the rectum

- If anal spasm occurs, ask the patient to breathe in deeply and relax. If necessary, use a local anaesthetic suppository or gel before trying again. If pain persists, examination under general anaesthesia may be necessary.
- Ask the patient to squeeze your finger with their anal muscles and note any weakness of sphincter contraction.
- Palpate systematically around the entire rectum; note any abnormality and examine any mass . Record the percentage of the rectal circumference involved by disease and its distance from the anus.
- Identify the uterine cervix in women and the prostate in men; assess the size, shape and consistency of the prostate and note any tenderness.
- If the rectum contains faeces and you are in doubt about palpable masses, repeat the examination after the patient has defecated.
- Slowly withdraw your finger. Examine it for stool colour and the presence of blood or mucus.

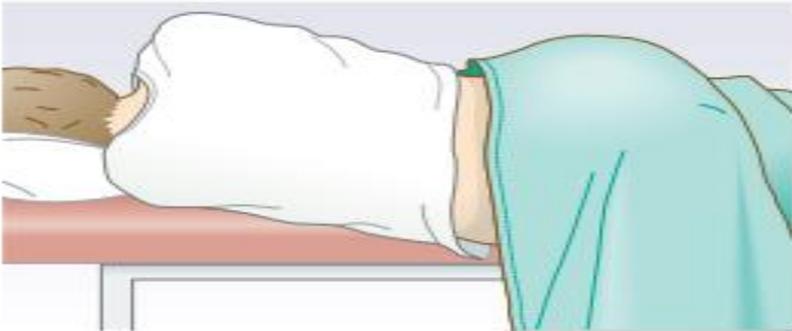


Fig. 6.22 The correct position of the patient before a rectal examination.



Fig. 6.23 Rectal examination. The correct method for inserting your index finger in rectal examination.

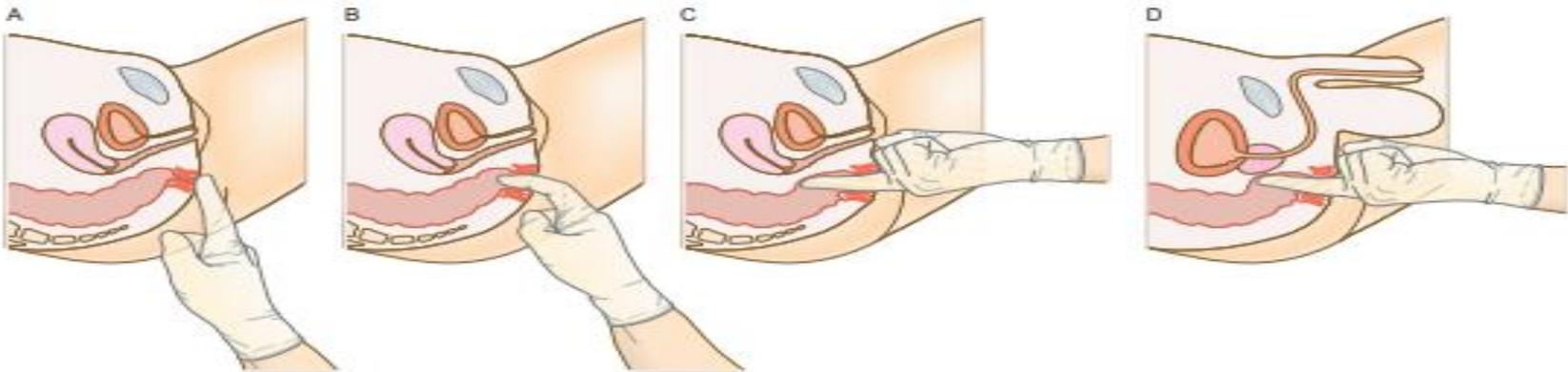


Fig. 6.24 Examination of the rectum. **A** and **B** Insert your finger, then rotate your hand. **C** The most prominent feature in the female is the cervix. **D** The most prominent feature in the male is the prostate.

6.16 Causes of abnormal stool appearance

Stool appearance	Cause
Abnormally pale	Biliary obstruction
Pale and greasy	Steatorrhoea
Black and tarry (melaena)	Bleeding from the upper gastrointestinal tract
Grey/black	Oral iron or bismuth therapy
Silvery	Steatorrhoea plus upper gastrointestinal bleeding, e.g. pancreatic cancer
Fresh blood in or on stool	Large bowel, rectal or anal bleeding
Stool mixed with pus	Infective colitis or inflammatory bowel disease
Rice-water stool (watery with mucus and cell debris)	Cholera

Proctoscopy

- **Proctoscopy is visual examination of the anal canal; it is an invasive procedure and should only be practised after appropriate training. Always undertake digital rectal examination first. If examination of the rectal mucosa is required, perform flexible sigmoidoscopy rather than proctoscopy.**
- **Examination sequence**
- Place the patient in the left lateral position, as for digital rectal examination.
- With gloved hands, separate the buttocks with the forefinger and thumb of one hand. With your other hand, gently insert a lubricated proctoscope with its obturator in place into the anal canal and rectum in the direction of the umbilicus.
- Remove the obturator and carefully examine the anal canal under good illumination, noting any abnormality. Check for fissures, particularly if the patient reports pain during the procedure.
- Ask the patient to strain down as you slowly withdraw the instrument to detect any degree of rectal prolapse and the presence and severity of any haemorrhoids.

Investigations

- Selecting the relevant investigation depends on the clinical problem revealed on history and examination. Investigations are costly and many carry risks, so choose tests capable of distinguishing the likely diagnoses and prioritise the most decisive ones.

6.17 Investigations in gastrointestinal and hepatobiliary disease

Investigation	Indication/comment
Clinical samples	
Stool:	
Faecal occult blood	Gastrointestinal haemorrhage; sensitive but not specific; used as population screening tool for colorectal cancer
Faecal calprotectin	Inflammatory bowel disease – raised
Urine: dipstick or biochemistry	Jaundice (see Box 6.7) Acute abdominal pain
Ascitic fluid: diagnostic tap	Clear/straw-coloured – normal Uniformly blood-stained – malignancy Turbid – infection Chylous – lymphatic obstruction High protein (exudate) – inflammation or malignancy Low protein (transudate) – cirrhosis and portal hypertension

Continued

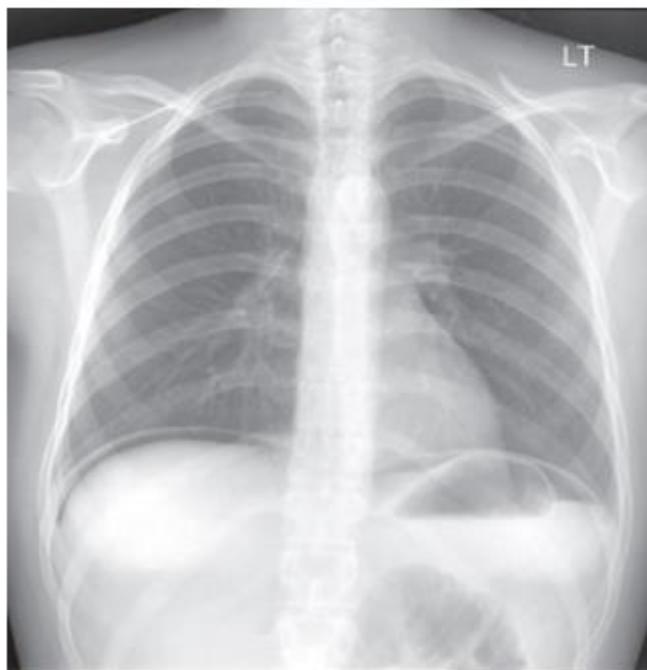
6.17 Investigations in gastrointestinal and hepatobiliary disease—cont'd

Investigation	Indication/comment
Radiology	
Chest X-ray	Suspected acute abdomen, suspected perforated viscus or subphrenic abscess Pneumonia, free air beneath diaphragm, pleural effusion, elevated diaphragm
Abdominal X-ray	Intestinal obstruction, perforation, renal colic Fluid levels, air above liver, urinary tract stones
Barium meal	Rarely indicated unless gastroscopy not possible and there is suspicion of pharyngeal or gastric outlet obstruction on clinical symptoms (dysphagia or vomiting) Oesophageal obstruction (endoscopy preferable, especially if previous gastric surgery)
Small bowel follow-through	Subacute small bowel obstruction, duodenal diverticulosis
Small bowel magnetic resonance imaging or magnetic resonance enteroclysis (real-time imaging of liquid moving through the small bowel)	Crohn's disease, lymphoma, obscure gastrointestinal bleeding
CT colonography	Altered bowel habit, iron deficiency anaemia, rectal bleeding: alternative to colonoscopy in the frail, sick patient, if colonoscopy is unsuccessful or if not acceptable to patient to diagnose colon cancer, inflammatory bowel disease or diverticular disease; useful in colon cancer screening
Abdominal ultrasound scan	Biliary colic, jaundice, pancreatitis, malignancy Gallstones, liver metastases, cholestasis, pancreatic calcification, subphrenic abscess
Abdominal CT	Acute abdomen, suspected pancreatic or renal mass, tumour staging, abdominal aortic aneurysm Confirms or excludes metastatic disease and leaking from aortic aneurysm
MR cholangiopancreatography (MRCP)	Obstructive jaundice, acute and chronic pancreatitis
Pelvic ultrasound scan	Pelvic masses, inflammatory diseases, ectopic pregnancy, polycystic ovary syndrome Pelvic structures and abnormalities Ascitic fluid

6.17 Investigations in gastrointestinal and hepatobiliary disease—cont'd

Investigation	Indication/comment
Invasive procedures	
Upper gastrointestinal endoscopy	Dysphagia, dyspepsia, gastrointestinal bleeding, gastric ulcer, malabsorption Gastric and/or duodenal biopsies are useful
Lower gastrointestinal endoscopy (colonoscopy)	Rectal bleeding, obscure gastrointestinal bleeding, altered bowel habit, iron deficiency anaemia Able to biopsy lesions and remove polyps
Video capsule endoscopy	Obscure gastrointestinal bleeding with bidirectional negative endoscopies, suspected small bowel disease (vascular malformations, inflammatory bowel disease)
Endoscopic retrograde cholangiopancreatography (ERCP)	Obstructive jaundice, acute and chronic pancreatitis Mainly therapeutic role Stenting strictures and removing stones
Endoscopic ultrasound ± fine-needle aspiration (FNA) or Tru-Cut needle biopsy	Staging of upper gastrointestinal or pancreatobiliary cancer Drainage of pancreatic pseudocysts
Laparoscopy	Suspected appendicitis or perforated viscus, suspected ectopic pregnancy, chronic pelvic pain (e.g. due to endometriosis or pelvic inflammatory disease), suspected ovarian disease (e.g. ruptured ovarian cyst), peritoneal and liver disease
Ultrasound- or CT-guided aspiration cytology and biopsy	Liver metastases, intra-abdominal or retroperitoneal tumours
Liver biopsy	Parenchymal disease of liver Tissue biopsy by percutaneous, transjugular or laparoscopic route
Others	
Pancreatic function tests	Stool elastase, pancreolauryl test

CT, computed tomography.



A

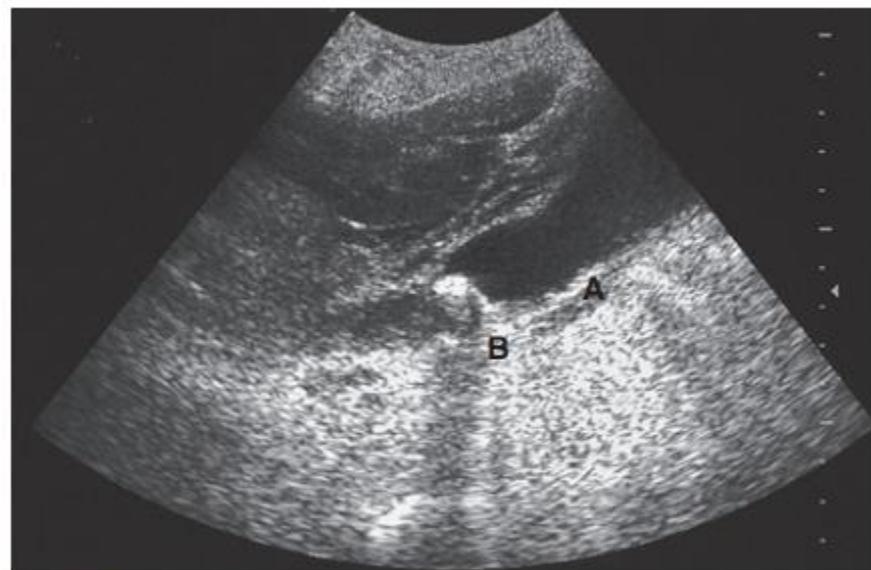


Fig. 6.27 Ultrasound scan of the gallbladder. *A*, Thick-walled gallbladder containing gallstones. *B*, Posterior acoustic shadowing.



B



C

Fig. 6.26 Radiography in gastrointestinal disease. **A** Air under the diaphragm on chest X-ray due to a perforated duodenal ulcer. **B** Dilated small bowel due to acute intestinal obstruction. **C** Dilated loop of large bowel due to sigmoid volvulus.



A



B

Fig. 6.28 Gastrointestinal endoscopy. **A** Gastric ulcer. **B** Gastric varices.



Fig. 6.29 Colonoscopy. Colon cancer.

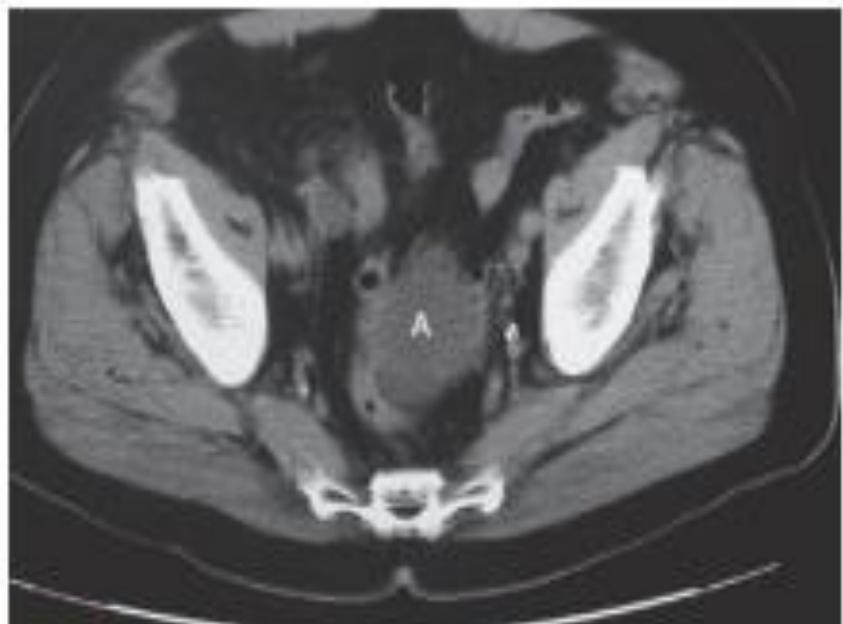


Fig. 6.30 Computed tomogram of the pelvis. A, Diverticular abscess.



A



B

Fig. 6.25 Acute pancreatitis. **A** Bruising over the flanks (Grey Turner's sign). **B** Bruising round the umbilicus (Cullen's sign).

Integrated examination sequence for the gastrointestinal system

- Position the patient: supine and comfortable on the examination couch. Expose the abdomen from the xiphisternum to the pubic symphysis.
- Inspection: start with general observation, then inspect the skin, face, neck and chest, and finally the abdomen.
- Palpation:
 - Begin with light, superficial palpation away from any site of pain, then repeat with deeper palpation.
 - Describe any mass and decide whether there is an enlarged abdominal organ.
- Palpation for hepatomegaly:
 - Ask the patient to breathe in deeply through the mouth and feel for descent of the liver edge on inspiration.
 - Move your hand progressively up the abdomen, between each breath, until you reach the costal margin or detect the liver edge.
- Percussion to confirm hepatomegaly:
 - Ask the patient to hold their breath in full expiration.
 - Percuss for liver dullness and measure the distance in centimetres below the costal margin.
- Palpation and percussion for splenomegaly:
 - Start with your hand over the umbilicus, moving diagonally up and left to feel for the splenic edge as it descends and moves towards the midline on inspiration.
- Check for ascites (shifting dullness):
 - Percuss from the midline out to the flanks for dullness.
 - Keep your finger on the site of dullness in the flank; ask the patient to turn on to their opposite side and then percuss again. If the area of dullness is now resonant, shifting dullness is present.
- Check for a fluid thrill:
 - Place the palm of your left hand flat against the left side of the patient's abdomen and flick a finger of your right hand against the right side of the abdomen. If you still feel a ripple against your left hand, a fluid thrill is present.
- Auscultation:
 - Listen to the right of the umbilicus for bowel sounds, above the umbilicus over the aorta for arterial bruits, lateral to the umbilicus for bruits from renal artery stenosis, and over the liver for hepatic bruits.
- Check for peripheral oedema.
- Consider a rectal examination (always with a chaperone).

Thank you