1.1 Examination Technique

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1.1.1 CHAPTER AT A GLANCE

Box 1.1.1 Chapter at a Glance
• The abdominal examination is complex and requires practice to master
• Significant features suggestive of chronic abdominal disease are available in the peripheries
• Systematic examination of the abdomen is important to not miss findings

1.1.2 COMMON CONDITIONS
• Chronic liver disease (CLD)
• Alcohol withdrawal
• Viral hepatitis
• Inflammatory bowel disease (IBD)
• Malignancy

1.1.3 CLINICAL EXAMINATION – PERIPHERIES

Table 1.1.1 Elements to be undertaken prior to examining the patient

<table>
<thead>
<tr>
<th>Item</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Appropriate hand hygiene</td>
<td>Wash hands with soap and water or alcohol hand rub</td>
</tr>
<tr>
<td>2. Introduce yourself</td>
<td>Full name and job title</td>
</tr>
<tr>
<td>3. Confirm patient’s identity</td>
<td>Confirm name and date of birth, verify against wristband</td>
</tr>
<tr>
<td>4. Gain consent</td>
<td>Explain your role, the examination, and why you are performing it</td>
</tr>
<tr>
<td>5. Maintain dignity and comfort</td>
<td>Ensure that you are in a well-lit and private area where you will not be disturbed</td>
</tr>
<tr>
<td>6. Ensure a chaperone when needed</td>
<td>Explain reasoning and ensure the patient is happy with this</td>
</tr>
<tr>
<td>7. Be mindful of personal and cultural boundaries</td>
<td>Be respectful and considerate during the examination</td>
</tr>
<tr>
<td>8. Position the patient</td>
<td>Initially conducted with the patient at 45°</td>
</tr>
<tr>
<td></td>
<td>On moving to the abdomen, patient should be supine</td>
</tr>
<tr>
<td>9. Expose the patient appropriately</td>
<td>Ideally, from the xiphoid process to the symphysis pubis. Can be done after peripheral examination</td>
</tr>
</tbody>
</table>

1. Chronic liver disease (CLD)  ; 2. Alcohol withdrawal  ; 3. Viral hepatitis  ; 4. Inflammatory bowel disease (IBD)  ; 5. Malignancy

Box 1.1.2 The Use of Examination to Aid History

- Patients will often give additional history while you are examining them
- Often the silences during examination give patients time to think about things they may have forgotten to tell you previously
- Although you may be concentrating on examination, be interested in what they are saying and listen carefully

Table 1.1.2 Examination features from the end of the bed

<table>
<thead>
<tr>
<th>Item</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the patient look well?</td>
<td>• Aggressive/agitated</td>
</tr>
<tr>
<td></td>
<td>• Lethargic/drowsy</td>
</tr>
<tr>
<td>2. Are they alert and orientated?</td>
<td>• Reduced Glasgow coma score (GCS) is present in shock</td>
</tr>
<tr>
<td></td>
<td>• Confusion (■/■)</td>
</tr>
<tr>
<td></td>
<td>• Agitation (■)</td>
</tr>
<tr>
<td>3. Body mass index (BMI)</td>
<td>• Obesity</td>
</tr>
<tr>
<td></td>
<td>• Underweight, e.g. malabsorption (■), cachexia (■)</td>
</tr>
<tr>
<td>4. Presentation</td>
<td>• Unkempt – social or mental health issues</td>
</tr>
<tr>
<td>5. Lines in and out of patient</td>
<td>• IV infusions</td>
</tr>
<tr>
<td></td>
<td>• Catheters</td>
</tr>
<tr>
<td></td>
<td>• Oxygen</td>
</tr>
<tr>
<td></td>
<td>• Nasogastric (NG) tube</td>
</tr>
<tr>
<td>6. Patient monitoring</td>
<td>• Observation chart</td>
</tr>
<tr>
<td></td>
<td>• Continuous ECG monitoring</td>
</tr>
<tr>
<td></td>
<td>• Haemodynamic monitoring</td>
</tr>
<tr>
<td>7. Look around the patient</td>
<td>• Eating and drinking</td>
</tr>
<tr>
<td></td>
<td>• Vomit bowl</td>
</tr>
<tr>
<td></td>
<td>• Medications</td>
</tr>
</tbody>
</table>

Table 1.1.3 Examination findings in the hands and limbs

<table>
<thead>
<tr>
<th>Item</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tremor</td>
<td>■</td>
</tr>
<tr>
<td>2. Hepatic flap</td>
<td>■</td>
</tr>
<tr>
<td>3. Sweating</td>
<td>Sepsis / ■ / Illicit substance / ■</td>
</tr>
<tr>
<td>4. Clubbing</td>
<td>■ / ■ / ■</td>
</tr>
<tr>
<td>5. Palmar erythema</td>
<td>■</td>
</tr>
<tr>
<td>6. Dupuytren's contracture</td>
<td>■</td>
</tr>
<tr>
<td>7. Discoloured skin</td>
<td>Haemochromatosis/Addison's disease</td>
</tr>
<tr>
<td>8. Signs of intravenous drug use</td>
<td>■</td>
</tr>
<tr>
<td>9. Signs of arthritis</td>
<td>■</td>
</tr>
<tr>
<td>10. Ankle oedema</td>
<td>Hypoalbuminaemia / ■</td>
</tr>
</tbody>
</table>

### Figure 1.1.1 Nail changes in GI disease.

<table>
<thead>
<tr>
<th>Nail Change</th>
<th>Associated disorders</th>
<th>Koilonychia</th>
<th>Leukonychia</th>
<th>Beau’s lines</th>
<th>Clubbing</th>
</tr>
</thead>
</table>

- Koilonychia: Iron deficiency anaemia
- Leukonychia: Hypoalbuminaemia
- Beau’s lines: Flare of IBD, GI malignancy, Acute GI infection
- Clubbing: Cirrhosis, GI malignancy, IBD, Chronic infection

### Figure 1.1.2 Skin changes in GI disease.

<table>
<thead>
<tr>
<th>Image</th>
<th>Condition</th>
<th>Related disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td>Palmar erythema</td>
<td>Liver disease</td>
</tr>
<tr>
<td><img src="image2.png" alt="Image" /></td>
<td>Psoriatic patches – note typical silver scaling</td>
<td>Extra-intestinal IBD association</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td>Spider naevus</td>
<td>Chronic liver disease, especially alcohol (&gt;5 spider naevi is pathological)</td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td>Erythema nodosum (multiple lesions on legs)</td>
<td>IBD</td>
</tr>
<tr>
<td><img src="image5.png" alt="Image" /></td>
<td>Bruising/thin skin</td>
<td>Steroid treatment</td>
</tr>
</tbody>
</table>

1. Chronic liver disease (CLD)  
2. Alcohol withdrawal  
3. Viral hepatitis  
4. Inflammatory bowel disease (IBD)  
5. Malignancy
1.1.4 CLINICAL EXAMINATION – ABDOMEN

- Anatomically the abdomen can be divided into nine regions (Figure 1.1.3)

<table>
<thead>
<tr>
<th>Table 1.1.4</th>
<th>General inspection – face and neck</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item</strong></td>
<td><strong>Conditions</strong></td>
</tr>
<tr>
<td>1. Scleral icterus</td>
<td>■ / ■</td>
</tr>
<tr>
<td>2. Xanthelasma</td>
<td>Associated with primary biliary cholangitis</td>
</tr>
<tr>
<td>4. Anterior uveitis/scleritis</td>
<td>■</td>
</tr>
<tr>
<td>5. Mouth ulcers</td>
<td>■</td>
</tr>
<tr>
<td>6. Raw, erythematous tongue</td>
<td>Vitamin B12 deficiency</td>
</tr>
<tr>
<td>7. Atrophic glossitis/angular stomatitis</td>
<td>Iron deficiency</td>
</tr>
<tr>
<td>8. Lymphadenopathy (supraclavicular/axillary/Virchow’s)</td>
<td>■</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 1.1.5</th>
<th>General inspection – chest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item</strong></td>
<td><strong>Conditions</strong></td>
</tr>
<tr>
<td>1. Spider naevi</td>
<td>■</td>
</tr>
<tr>
<td>2. Muscle wasting of thorax</td>
<td>Type 1 diabetes / ■ / ■</td>
</tr>
<tr>
<td>3. Gynaecomastia</td>
<td>■</td>
</tr>
<tr>
<td>4. Loss of body hair</td>
<td>■ / Hypogonadism or haemochromatosis</td>
</tr>
</tbody>
</table>

**Figure 1.1.3** Division of the abdomen.
Examination Technique

**Palpation and Percussion**

- If there is pain, begin by palpating furthest away from the area that is tender
- Monitor the patient’s facial expression at all times for signs of discomfort
- Palpate each area lightly and then repeat with deeper palpation
- Rigidity suggests peritonitis and the abdominal wall will cease to move with respiration
- Feel for masses and hernias, and characterise

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**Box 1.1.3  The 6 Fs of Distension**

- Fat (obesity)
- Faeces (constipation, obstruction)
- Fluid (tumours, ascites, palpable bladder)
- Foetus (pregnancy)
- Flatus (obstruction or pseudo-obstruction)
- Function (irritable bowel syndrome, IBS)

**Table 1.1.6  Inspection features on the abdomen**

<table>
<thead>
<tr>
<th>Item</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scars</td>
<td>See Figure 1.1.4</td>
</tr>
<tr>
<td>2. Visible masses</td>
<td>Hernia /</td>
</tr>
<tr>
<td>3. Stoma sites</td>
<td>ileostomy/colostomy (see Figure 1.1.5)</td>
</tr>
<tr>
<td>4. Hernias</td>
<td>Inguinal/femoral/umbilical/para-umbilical/epigastric</td>
</tr>
<tr>
<td></td>
<td>(see Boxes 1.1.10 and 1.1.11)</td>
</tr>
<tr>
<td>5. Striae/bruising</td>
<td></td>
</tr>
<tr>
<td>6. Scratch marks</td>
<td></td>
</tr>
<tr>
<td>7. Caput medusa</td>
<td></td>
</tr>
<tr>
<td>8. Ask patient to lift head</td>
<td>Sensitive sign for peritonism</td>
</tr>
</tbody>
</table>

**Figure 1.1.4  Common abdominal surgical scars.**

**Scar**

1. Kocher’s incision
   - Biliary surgery
   - Hepatic surgery

2. Midline laparotomy
   - Any major abdominal surgery

3. Transverse upper abdominal incision
   - Splenic surgery

4. Grid-iron incision
   - Appendicectomy

5. Umbilical/subumbilical
   - Hernia repairs

6. Point incision marks
   - Laparoscopy port sites
   - Drain sites

7. Inguinal incisions
   - Inguinal hernia repairs
   - Vascular access scars

8. Lateral thoracolumbar
   - Nephrectomy

9. Rutherford Morrison
   - Renal transplant

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1. Chronic liver disease (CLD)
2. Alcohol withdrawal
3. Viral hepatitis
4. Inflammatory bowel disease (IBD)
5. Malignancy
Loop colostomy from the transverse colon

Terminal colostomy in the left iliac fossa
 Contents of bag usually formed and sit flush to skin

Ileostomy in the right iliac fossa
 Contents of bag less formed, and sits spouted to skin

Figure 1.1.5 Common sites of stomas.

Peritonism can be present in all of abdomen (rigidity) or localised [involuntary guarding and rebound tenderness]

- Murphy's sign positive in cholecystitis
- Grey-Turner's sign: bruising in the loins
- Reduced bowel sounds in acute pancreatitis
- Absent bowel sounds in mesenteric ischaemia/perforation
- Increased bowel sounds and visible peristalsis in intestinal obstruction
- Perforated peptic ulcer with peritonitis: board-like rigidity, shallow breathing, distension and absent bowel sounds
- Cullen's sign: bruising around umbilicus in haemorrhagic pancreatitis/aortic rupture/ruptured ectopic pregnancy
- Palpable strangulated hernias may be present in intestinal obstruction
- Surgical scars/hernias and masses may be aetiological factors in obstruction
- Suprapubic tenderness in ruptured ectopic pregnancy or pelvic inflammatory disease
- Tenderness at McBurney's point in appendicitis

Figure 1.1.6 Possible findings in acute abdominal pain.

Specific Organomegaly

- Palpate for enlarged organs during deep inspiration by the patient
- This can be difficult in patients with limited communication or who are in severe pain
- Start at the right iliac fossa (RIF) and move towards the right (liver) and left (spleen) hypochondria

Liver

- A palpable liver is not always a sign of liver disease
- Normal variant, especially in children and thin adults, e.g. Riedel's lobe
- A pulsatile liver may be found in tricuspid regurgitation

Figure 1.1.7 Location of palpable abnormalities.

Box 1.1.4 Characterising a Lump

- Site
- Size
- Shape
- Solitary
- Skin
- Tenderness
- Temperature
- Tethered/mobility
- Consistency
- Firmness
- Associated lymphadenopathy

Box 1.1.5 Guarding

- Throughout palpation, feel for voluntary or involuntary guarding (tensing) of the abdominal wall muscles
- In voluntary guarding the patient flexes due to pain
- In involuntary guarding, the abdominal muscles contract as a reflex due to inflammation of the peritoneum

1. Chronic liver disease (CLD) ■; 2. Alcohol withdrawal ■; 3. Viral hepatitis ■; 4. Inflammatory bowel disease (IBD) ■; 5. Malignancy ■
Box 1.1.6 Palpating the Liver

- Located in the right upper quadrant (RUQ) of the abdomen
- Normally sits between the fifth rib and costal margin
- Place your right palm firmly on the abdomen at the RIF (Figure 1.1.4)
- With each expiration, move your hand towards the RUQ; as the patient inspires, keep your hand still and feel for the liver edge against your hand
- If palpable, note the number of finger-breaths below the costal margin, whether the surface is smooth or nodular, whether it is soft or hard, and whether tender

Box 1.1.7 Causes of Hepatomegaly

1. Hepatitis:
   - Infections (e.g. viral hepatitis A-E, EMV, CMV, HIV)
   - Autoimmune
2. Alcoholic liver disease (ALD)
3. Non-alcoholic fatty liver disease (NAFLD)
4. Neoplastic
   - Metastases
   - Hepatocellular carcinoma (HCC)
5. Infiltrative
   - Amyloidosis
   - Sarcoidosis
6. Metabolic
   - Glycogen storage disorders
   - Haemochromatosis
7. Haematological
   - Leukaemia
   - Lymphoma
   - Haemolytic anaemia
8. Other
   - Congestive cardiac failure (CCF)
   - Cysts or abscesses
   - Primary biliary cholangitis (PBC)
   - Budd–Chiari syndrome

Spleen

Box 1.1.8 Palpating the Spleen

- In contrast to a palpable liver, a palpable spleen is always pathological
- Located superior to the left upper quadrant (LUQ) of the abdomen, beneath the 9th to the 11th ribs
- Place your right hand in RIF (Figure 1.1.5)
- With each expiration, move your hand towards the LUQ; as the patient inspires, keep your hand still and feel for an edge against your hand
- You can place your other hand beneath the patient's left flank and ask the patient to roll slightly towards you to accentuate any mass
- If palpable, note the number of finger-breaths below the costal margin, whether the surface is smooth or nodular, whether it is soft or hard, and whether any tenderness
- The mass should move with the respiratory cycle
- The mass may have a notch to it

Box 1.1.9 Causes of Splenomegaly

1. Haematological
   - Lymphoma
   - Leukaemia
   - Myeloproliferative
2. Infection:
   - TB
   - Malaria
   - Leishmaniasis
   - Schistosomiasis
3. Portal hypertension
4. Autoimmune
   - Systemic lupus erythematosus (SLE)
   - Felty's syndrome
5. Infiltrative disorders
   - Sarcoidosis
   - Gaucher's disease

1. Chronic liver disease (CLD); 2. Alcohol withdrawal; 3. Viral hepatitis; 4. Inflammatory bowel disease (IBD); 5. Malignancy
**Shifting Dullness**
- Identifies the presence of ascites (fluid in the peritoneal cavity)

**Box 1.1.10 Examination Technique for Shifting Dullness**
- Percuss laterally from the umbilicus away from you, noting any change in resonance
- When you reach an area of dullness towards the flanks, keep your finger on the site and ask the patient to turn towards you and lie on their side
- Allow up to 30 s before percussing again
- If the area of dullness has become resonant then shifting dullness is present

**Auscultation**
- Continue to listen for at least 2 minutes before concluding bowel sounds are absent
- Consider paralytic ileus or peritonitis in the case of absent bowel sounds

**Table 1.1.8 Additional sounds heard on auscultation**

<table>
<thead>
<tr>
<th>Location</th>
<th>Extra sounds</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Tinkling or high pitched bowel sounds</td>
<td>Intestinal obstruction</td>
</tr>
<tr>
<td>Above the umbilicus</td>
<td>Aortic bruits</td>
<td>AAA/superior mesenteric artery stenosis</td>
</tr>
<tr>
<td>2–3 cm laterally above the umbilicus</td>
<td>Renal artery bruits</td>
<td>Renal artery stenosis</td>
</tr>
<tr>
<td>Over the liver</td>
<td>Hepatic bruits</td>
<td></td>
</tr>
</tbody>
</table>

**To Complete the Examination**

**Examination of Hernia Orifices**

**Box 1.1.11 Hernias**
- A hernia is the protrusion of tissue through the wall of a cavity
- Common finding in abdominal examination but it is important to exclude serious complication of obstruction or strangulation
- Abdominal hernias are often caused by a weakness in the abdominal wall or area of previous surgical excision
- When a patient contracts the abdominal wall muscles, coughs, sneezes or strains, the hernias become more visible

---

1. Chronic liver disease (CLD)
2. Alcohol withdrawal
3. Viral hepatitis
4. Inflammatory bowel disease (IBD)
5. Malignancy
Box 1.1.12 Hernia Examination

- Examine the groin while the patient stands upright
- Look for any visible masses within the scrotum, inguinal and femoral canals
- Look again while you ask the patient to cough (making the hernia more visible)
- Ask the patient to lie down and inspect for abdominal hernias
- In the groin, if a bulge is identified, palpate it and identify whether the hernia is femoral or inguinal
- Ask the patient to try and reduce the hernia themselves; if they are unable to do this, press two fingers over the hernia and gently try to reduce it
- Examine for other hernias, especially bilaterally in the groin

Box 1.1.13 Maintaining Dignity During Rectal Examination

- Ensure to consent the patient for this very personal examination and communicate exactly what the examination will involve
- A chaperone will be required who should ideally be the same sex as the patient; make sure that this is also explained and consented. Familiarise yourself with up-to-date GMC guidance

Rectal Examination

- Position the patient on their side facing away from you
- Ask them, as much as possible, to pull their knees up towards their chest, and relax
- Inspect the anus externally (skin tags/fistulae/external haemorrhoids)
- Insert index finger
- Feel for sphincter tone and ask the patient to squeeze down on your finger
- Rotate finger anteriorly and palpate prostate or cervix
- Assess for stool (soft/impacted) or masses
- On removing your finger, examine the glove for stool (consistency, colour) and evidence of blood or mucus

Figure 1.1.8 Palpable anatomy during a female rectal examination.
1.1.5 HOW TO PRESENT YOUR FINDINGS

Safety First Approach

Details
- Give initial overview of how patient looks, e.g. well vs unwell
- Comment on positive and relevant negative findings that can eliminate serious conditions
- Give a potential diagnosis after presenting findings and always offer a differential

Example
I examined a 52-year-old gentleman. He was alert and comfortable at rest and from the end of the bed I noted no relevant medications or therapies such as oxygen. On inspection of the hands, there was palmar erythema but no evidence of track marks or excoriations. There was no lymphadenopathy in the neck or scleral icterus.

On examination of the abdomen, it was soft and non-tender throughout. A fullness was present in his RUQ and on further characterisation there was a liver edge palpable 2 cm below the costal margin. This was smooth and non-tender. There were no other masses and no shifting dullness.

In conclusion, this patient presents with a palpable liver edge – likely hepatomegaly – and peripheral stigmata suggestive of CLD. However, my differential diagnosis would include other causes of an enlarged liver, including malignancy through spread of a gastrointestinal (GI) cancer or cardiac failure.

Ward-Based Presenting
- Often involves other elements to consider – concise and thorough history, investigations that have been sanctioned (and their results), response to therapy and discharge planning
- Present your findings using SBAR to be efficient
- Especially useful in communicating time-critical information, e.g. patients with an ‘acute abdomen’ or those who have deteriorated
- Trajectory (response to therapy) becomes much easier to observe

Figure 1.1.9 Palpable anatomy during a male rectal examination.
1.1.6 EPONYMOUS SIGNS AND SYMPTOMS

Table 1.1.9 Eponymous signs and symptoms

<table>
<thead>
<tr>
<th>Eponym</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cullen's sign</td>
<td>Bruising around the umbilicus, suggest retroperitoneal haemorrhage&lt;br&gt;Typically secondary to acute pancreatitis</td>
</tr>
<tr>
<td>Grey Turner's sign</td>
<td>Bruising around the flanks, suggests retroperitoneal haemorrhage</td>
</tr>
<tr>
<td>Murphy's sign</td>
<td>Ask patient to take deep breaths as you palpate the RUQ&lt;br&gt;As the liver and gallbladder move down with inspiration, pain will be elicited if there is inflammation&lt;br&gt;A positive sign occurs when the discomfort causes termination of the inspiration&lt;br&gt;Only positive if the corresponding sequence on the LUQ is negative&lt;br&gt;Suggests cholecystitis (sensitive but not specific)</td>
</tr>
<tr>
<td>McBurney's point</td>
<td>One third of the distance from the right anterior superior iliac spine to the umbilicus&lt;br&gt;Tenderness at this point may indicate appendicitis (see Box 1.1.12)</td>
</tr>
<tr>
<td>Rovsing's sign</td>
<td>Palpation of the LIF causes pain in the RIF (may indicate appendicitis)</td>
</tr>
<tr>
<td>Troisier's sign</td>
<td>Enlarged/hardening of Virchow's node strongly associated with intra-abdominal malignancy</td>
</tr>
<tr>
<td>Virchow's node</td>
<td>Lymph node in the left supraclavicular fossa, common point of lymphatic drainage from the abdomen</td>
</tr>
</tbody>
</table>

Box 1.1.14 The Role of McBurneys Point in Appendicitis

- Tenderness in the area of McBurney's point is not caused by direct irritation of the appendix
- Indicates that the peritoneum, which is in contact with the appendix, has become inflamed
- This is a late stage in appendicitis and can give warning that the appendix is at risk of rupture