Investigation of the abdomen

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The abdomen is divided by two imaginary lines:

- Right upper quadrant
- Right lower quadrant
- Left upper quadrant
- Left lower quadrant
The abdomen is divided by four imaginary lines

1. Right hypochondrium
2. **Epigastric region**
3. Left hypochondrium
4. Right lumbar region
5. **Umbilical region**
6. Left lumbar region
7. Right iliacal (cecum) region
8. **Hypogastric**
9. Left iliacal (sigma) region
General rules of abdominal examination

• The physician has to ask the patient to empty his or her urinary bladder
• Make the patient comfortable in a supine position with a pillow for the head and perhaps another under the knee
• The patient should keep arms at the sides or folded across the chest
• Before palpation, ask the patient to point to any areas of pain, and examine painful or tender areas last.
• Have warm hands, a warm stethoscope, and short fingernails.
• Approach slowly and avoid quick, unexpected motions.
• Monitor your examination by watching the patient’s face for signs of discomfort.
Palpable normal structures in the abdomen

- The *sigmoid colon* as a firm, narrow tube in the left lower quadrant,
- The *cecum* forms a softer, wider tube in the right lower quadrant,
- The *lower margin of the liver* is often palpable,
- The *lower pole of the right kidney* is occasionally palpable, especially in thin individuals with relaxed abdominal muscles,
- Pulsation of the *abdominal aorta* usually palpable in upper abdomen,
- A distended *bladder* may be palpable above the symphysis pubis
Inspection of the abdomen

- **Skin of the abdomen**
  - Scars
  - Striae
    - Silver striae are normal. Pink-purple striae can be sign of Cushing’s syndrome
    - Dilated veins (hepatic cirrhosis or inferior vena cava obstruction)
- **The umbilicus**
  - Umbilical hernias protrude through a defective umbilical ring
- **The contour of the abdomen**
  - Is it flat, protuberant or scaphoid
  - Is the abdomen symmetric? (asymmetry due to an enlarged organ or mass)
  - Any local bulge (ascites produces bulging flanks, suprapubic bulge can be distended bladder or pregnant uterus. Hernias.
- **Peristalsis**
  - May be visible normally in very thin people, otherwise is a sign of intestinal obstruction.
- **Pulsation**
  - Increased pulsation of an aortic aneurysm.
Rectus diastases

Separation of rectus abdominus muscles which occasionally occurs in older patients and or those with weakening of the abdominal musculature. The midline hernia can be made more apparent by any manoeuvre that increases intra-abdominal pressure as demonstrated above.
Dilated, tortuous, superficial veins radiating upwards from the umbilicus. Portal hypertension has caused recanalization of the umbilical vein, allowing the formation of this collateral pathway for venous return. This patient also has obvious ascites.
Auscultation of the abdomen

• Useful
  – in assessing bowel motility
    • Normal sounds consist of clicks and gurgles, the frequency from 5 to 34 per minute.
    • Increased sounds – diarrhoea or early intestinal obstruction
    • Decreased sounds or absent – adynamic ileus and peritonitis
    • Rushes of high-pitched with abdominal cramp – mechanic ileus
  – In searching for renal artery stenosis
    • Bruits - vascular sounds resembling heart murmurs. Listen in the epigastrium and each upper quadrant
  – In case of suspicion of arterial insufficiency in the legs
    • Bruits over the aorta (above the umbilicus, in the midline), the iliac arteries (each lower quadrant)
Listening points for bruits

- Aorta
- Renal artery
- Iliac artery
- Umbilicus
Percussion of the abdomen

• Percussion of abdomen lightly in all four quadrants to assess the distribution of tympany and dullness.
  – Tympany usually predominates, but faeces and normal fluid may also produce a duller sound
  – Dullness in both flanks indicates further assessment for ascites

• Percussion of liver span
  – Starting at the level of umbilicus lightly percuss upward toward the liver (from tympany to dullness)
  – In the right midclavicular line percuss from lung resonance down toward liver dullness.
  – The normal liver spans in the midclavicular line is 6-12 cm.
Percussion of the spleen

- **Castell’s method:**
  - With the patient supine position, percussion of the last intercostal space in the anterior axillary line (8th or 9th) produces a resonant note if the spleen is normal in size.
  - A dull percussion sound on full inspiration suggest splenomegaly.
Percussion of the free abdominal fluid

Patient in supine position

Patient in lateral position

Ascites fluid sinks with gravidity while gas filled loops of bowel float to the top

Palpation of the abdomen

- **Light palpation** (palpate the abdomen with light, gentle, dipping motion, moving your hand from place to place, raise it just off the skin)
  - Helpful in identifying abdominal tenderness, muscular resistance, and some superficial organs and masses
    - If muscular resistance is present, try to distinguish voluntary guarding from involuntary muscular spasm (relaxing methods). Persisting muscular rigidity indicates peritoneal inflammation.
    - Abdominal pain on coughing also suggest peritoneal inflammation.
- **Deep palpation**
  - This usually required to delineate abdominal masses (use the palmar surface of your fingers).
    - Describing the location, size, shape, consistency, tenderness, pulsation and mobility of palpated mass
Assessment of peritoneal irritation

• Press your fingers in firmly and slowly, and then quickly withdraw them.

• Ask the patient:
  – Which hurt more, the pressing or the letting go, and
  – Where it hurt (if tenderness is felt elsewhere than were trying to elicit rebound, that area may be the real source of the problem).

Pain induced or increased by quick withdrawal means rebound tenderness. It results from the rapid movement of inflamed peritoneum.
Palpation of the liver

- Because most of the liver is sheltered by the rib cage, assessing it is difficult.
- The palpating hand may enable you to evaluate its surface, consistency, and tenderness.
- The method of the palpation:
  - Place your left hand behind the patient. By pressing your left hand forward, the patient’s liver may be felt more easily by your other hand
  - Place your right hand on the patient’s right abdomen lateral to the rectus muscle, with your fingertips well below the lower border of liver dullness. Press gently in and up.
  - Ask the patient to take a deep breath. Try to feel the liver edge as it comes down. If you feel it, lighten the pressure of your palpating hand slightly so that the liver can slip under your finger pads and you can feel the anterior surface of the liver.
Palpation of the liver

**Normal liver**: The edge is soft, sharp, and regular, the surface is smooth. The normal liver may be slightly tender.

**Cirrhosis**: enlarged liver with a firm, nontender edge.

**Inflammation, right-sided heart failure**: enlarged liver with a smooth tender edge.

**Malignancy**: enlarged liver that is firm or hard and has an irregular edge or surface.
Palpation of the spleen

The left hand is placed on the lower rib cage and pulls the skin toward the costal margin, allowing the fingertips of the right hand to feel the tip of the spleen as it descends while the patient inspires slowly and deeply.

The palpation is begun with the right hand in the lower quadrant with gradual movement toward the left costal margin, thereby identifying the lower edge of a massive enlarged spleen.

Not all left upper quadrant masses are enlarged spleens, gastric or colon tumors and pancreatic or renal cysts or tumors can mimic splenomegaly.