



PIPADOR REVISION

MRCOG Part 1 Revision Notes

Surface Anatomy of the Abdomen

ANATOMY • LECTURE 22

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG Part 1 Revision Notes

Lecture 22: Surface Anatomy of the Abdomen

Anatomy • Visual revision edition

COLOUR CODE USED THROUGHOUT THESE NOTES

TRANSPYLORIC L1

SUBCOSTAL L3

SUPRACRESTAL L4

TRANSTUBERCULAR L5

LANDMARKS

LEARNING OBJECTIVES — tick off as you go

- ☐ Identify the bony and cartilaginous landmarks of the abdomen.
- ☐ State the vertebral levels of the transverse planes and what lies on them.
- ☐ Use the four-quadrant and nine-region schemes.
- ☐ Mark the surface projections of the liver, gallbladder, stomach, spleen, kidneys and great vessels.
- ☐ Locate the inguinal landmarks.
- ☐ Apply surface anatomy to pregnancy, incisions and safe laparoscopic entry.

1 Why Surface Anatomy Matters

IN ONE LINE: *The bridge from the page to the patient: examination, pain localisation, incision planning, port placement and image interpretation all rely on it.*

The abdomen runs from the diaphragm to the pelvic inlet. On the surface it lies between the costal margins and xiphisternum above and the pubic symphysis and iliac crests below; behind, it spans T12–L5.

Bony and cartilaginous landmarks

Landmark	Level / significance
Xiphisternal joint	T9 — inferior border of the heart; top of the epigastrium
Costal margin	Cartilages of ribs 7–10; the lowest point of the 10th costal cartilage = L3 (subcostal plane)
Iliac crests	Highest points at L4 — supracrestal plane; lumbar puncture landmark
ASIS	Origin of the inguinal ligament and sartorius; McBurney's point = $\frac{1}{3}$ of the way from the right ASIS to the umbilicus
Pubic symphysis + tubercle	Lower limit of the anterior wall; tubercle = medial attachment of the inguinal ligament
Umbilicus	Usually L3/4 disc in slim adults — lower in obesity and pregnancy; an unreliable landmark

2 Transverse Planes and Vertebral Levels

Vertebral levels to know

T8	IVC through the diaphragm (highest hiatus)
T9	Xiphisternal joint
T10	Oesophageal hiatus
T11	Gastric cardia
T12	Aortic hiatus • coeliac trunk
L1	TRANSPYLORIC: pylorus, GB fundus, pancreatic neck, SMA, renal hila, conus
L2	Gonadal arteries leave the aorta
L3	SUBCOSTAL plane • IMA origin • umbilicus ≈ L3/4
L4	SUPRACRESTAL: iliac crests • AORTIC BIFURCATION • lumbar puncture
L5	TRANSTUBERCULAR • IVC formed

Mnemonic for the hiatuses: 'I 8 10 Eggs At 12' — IVC T8, oEsophagus T10, Aorta T12.

Figure 1. The vertebral levels you will be asked about.

Plane	Level	What lies on it
Transpyloric (Addison)	L1	Pylorus, gallbladder fundus, neck of pancreas, SMA origin, renal hila, conus medullaris
Subcostal	L3	Lowest point of the 10th costal cartilage; IMA origin
Supracrestal (intercristal)	L4	Aortic bifurcation; lumbar puncture
Transtubercular	L5	Iliac tubercles; IVC formed
Interspinous	—	Between the ASISs — alternative lower line of the nine-region scheme

MNEMONIC / MEMORY HOOK

'I 8 10 Eggs At 12' — IVC through the diaphragm at T8, oEsophagus T10, Aorta T12.

L1 = 'Level 1 organs': pylorus, pancreas neck, gallbladder fundus, SMA, renal hila, end of the cord.

3 Quadrants and Regions

Nine regions: vertical MID-CLAVICULAR lines + SUBCOSTAL (L3) and TRANSTUBERCULAR (L5) planes

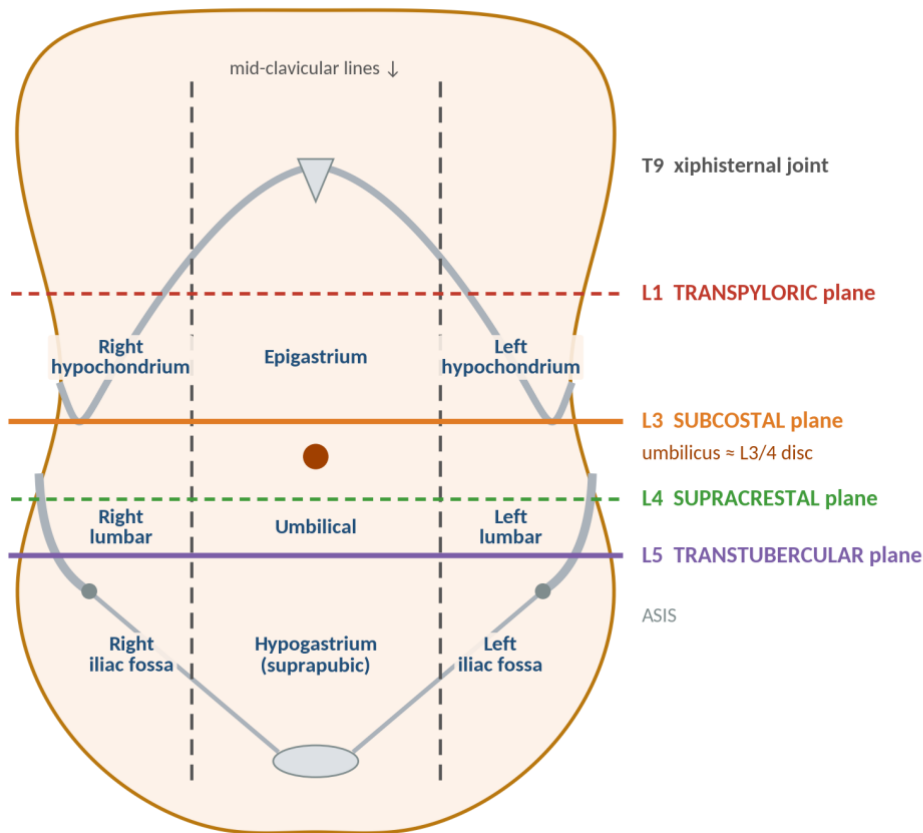


Figure 2. The nine-region scheme and its planes.

RIGHT UPPER QUADRANT

- Liver, gallbladder, duodenum, hepatic flexure, right kidney

LEFT UPPER QUADRANT

- Stomach, spleen, body + tail of pancreas, splenic flexure, left kidney

RIGHT LOWER QUADRANT

- Caecum, appendix, terminal ileum, **right ovary + tube**, right ureter

LEFT LOWER QUADRANT

- Sigmoid + descending colon, **left ovary + tube**, left ureter

Region (nine-region)	Principal contents
Right hypochondrium	Right lobe of liver, gallbladder, upper right kidney, hepatic flexure
Epigastrum	Pyloric stomach, left lobe of liver, pancreas, 1st part of duodenum, aorta, coeliac trunk
Left hypochondrium	Spleen, gastric fundus, tail of pancreas, splenic flexure, upper left kidney
Right / left lumbar	Ascending / descending colon, kidneys
Umbilical	Transverse colon, small bowel, lower duodenum, root of mesentery, aortic bifurcation
Right / left iliac fossa	Caecum, appendix, terminal ileum / sigmoid — plus the ovaries and tubes
Hypogastrum	Full bladder, uterus, sigmoid, rectum, pelvic small bowel

4 Surface Projections of the Viscera

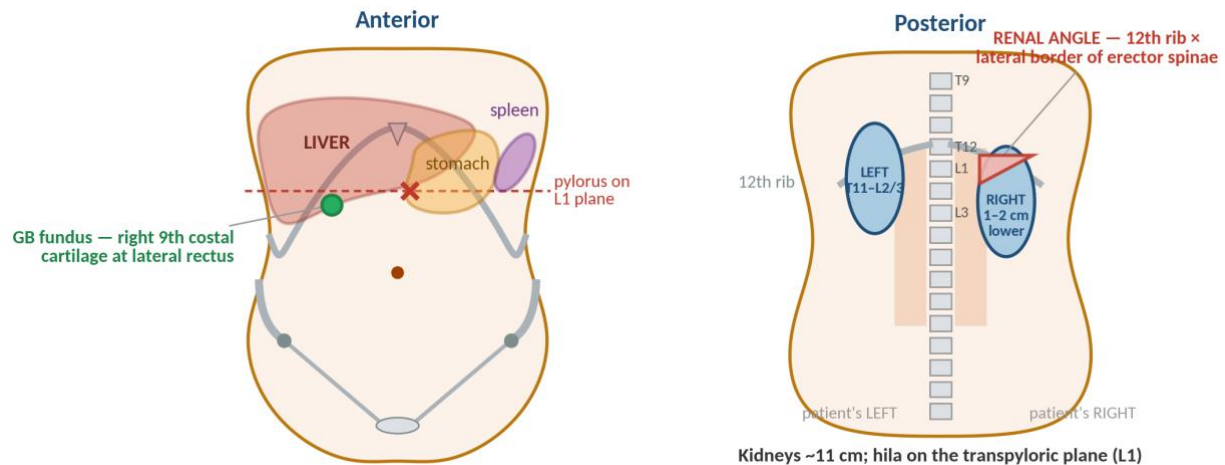


Figure 3. Front and back projections.

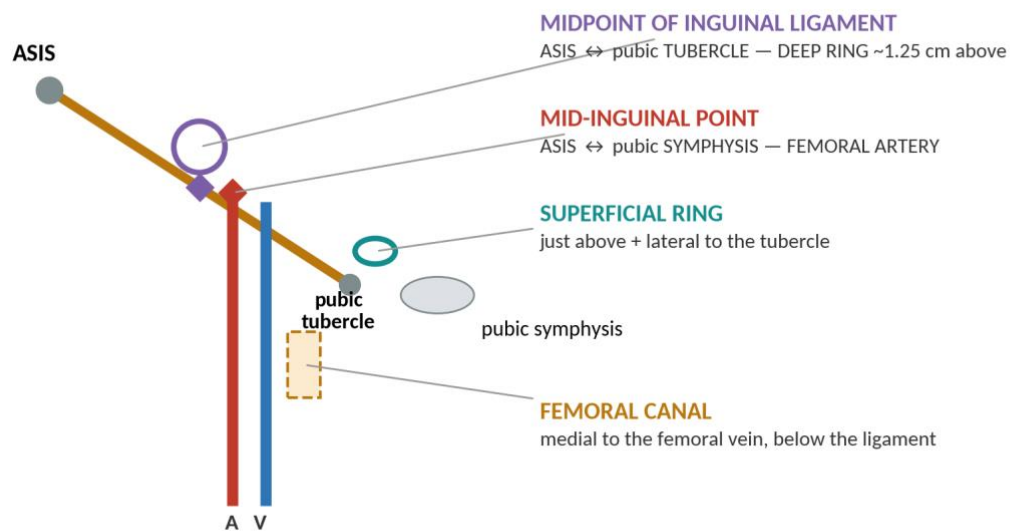
Organ	Surface marking
Liver	Upper border ~5th rib (right mid-clavicular line); lower border follows the right costal margin to ~rib 10 in the mid-axillary line, crossing the epigastrium to the left 8th costal cartilage
Gallbladder	Fundus at the tip of the right 9th costal cartilage, where the lateral edge of rectus meets the costal margin — Murphy's sign
Stomach	Cardia behind the left 7th costal cartilage (T11); pylorus on the transpyloric plane (L1), just right of the midline
Spleen	Under ribs 9–11 on the left, along the 10th rib; palpable only when markedly enlarged
Kidneys	~11 cm; hila at L1; left ~T11–L2/3, right ~1–2 cm lower (liver) • renal angle = 12th rib × lateral border of erector spinae
Aorta + IVC	Aorta enters at T12, bifurcates at L4; IVC forms at L5, leaves through the diaphragm at T8

MNEMONIC / MEMORY HOOK

Spleen '1-3-5-7-9-11': 1 inch thick, 3 wide, 5 long, 7 oz, lying under ribs 9–11.

5 Inguinal Landmarks

Right groin — inguinal landmarks (schematic)



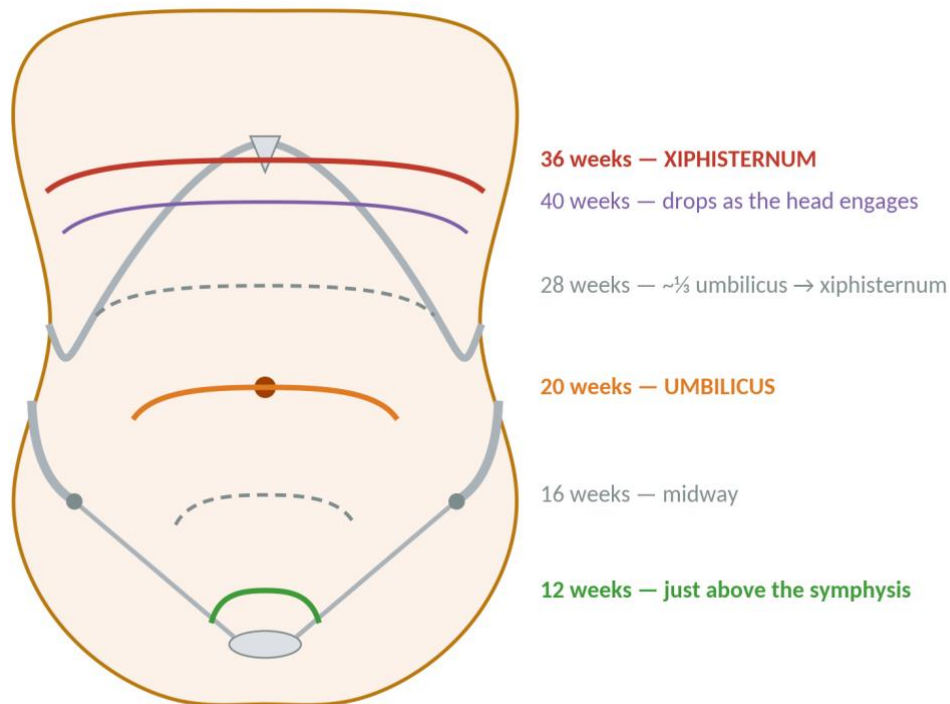
Mnemonic: 'mid-inguinal POINT = artery (pulse); MID-point of LIGament = deep ring' — symphysis vs tubercle.

Figure 4. Two midpoints that are easy to confuse.

Landmark	Where / what
Inguinal ligament	Lower rolled edge of the external oblique aponeurosis, ASIS → pubic tubercle
Mid-inguinal point	ASIS ↔ pubic SYMPHYSIS — femoral artery (pulse)
Midpoint of the inguinal ligament	ASIS ↔ pubic TUBERCLE — deep inguinal ring ~1.25 cm above
Superficial ring	Just above and lateral to the pubic tubercle
Femoral canal	Medial to the femoral vein, below the medial inguinal ligament — femoral hernia site

6 Obstetric Surface Anatomy

Fundal height through pregnancy



SFH (cm) $\approx$ gestation (weeks) $\pm$ 2 cm — NICE: measure from 24 weeks.

Figure 5. Fundal height through pregnancy.

FUNDAL HEIGHT

- Palpable above the symphysis from **~ 12 weeks**
- At the **umbilicus ~ 20 weeks**
- At the **xiphisternum ~ 36 weeks**; drops a little as the head engages
- **SFH (cm) $\approx$ gestation (weeks) $\pm$ 2 cm** — NICE: measure from 24 weeks

SKIN + INCISIONS

- **Linea nigra**: pigmented linea alba, usually pubis $\rightarrow$ umbilicus (may extend higher)
- **Striae gravidarum** over the flanks and lower abdomen
- **Pfannenstiel**: transverse, $\sim 2\text{--}3$ cm above the symphysis
- Postpartum mini-laparotomy for tubal ligation: sub-umbilical

7 Surface Anatomy for Laparoscopic Entry

Safe laparoscopic entry — surface map

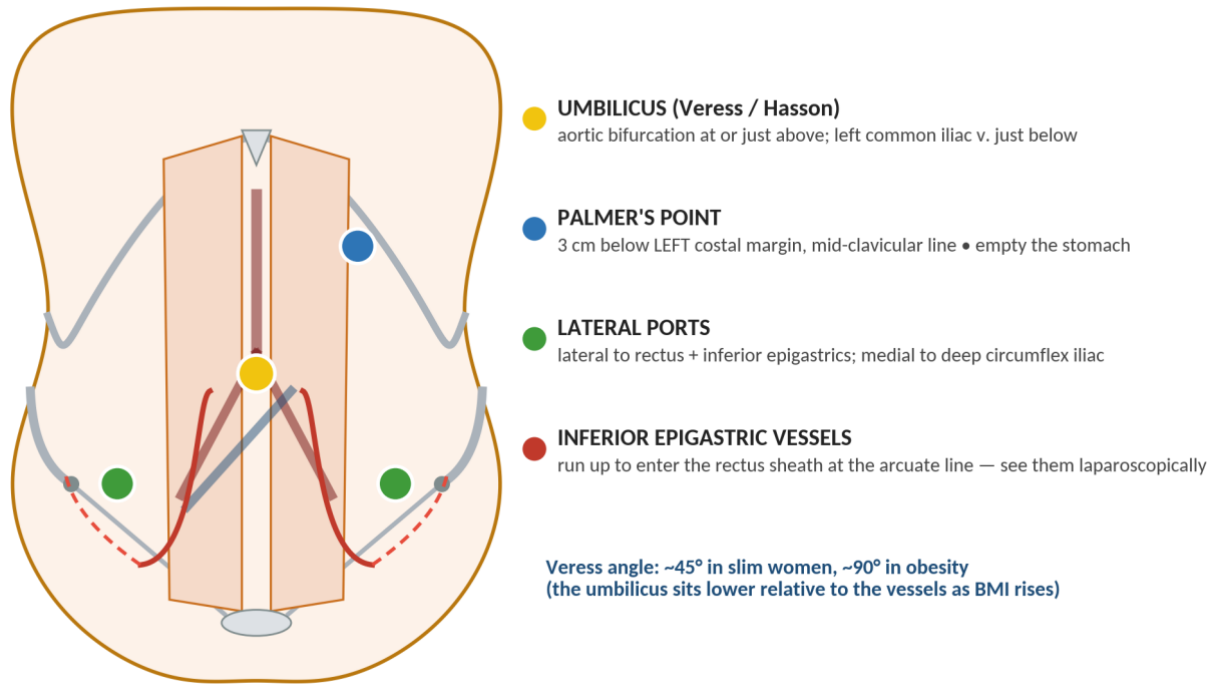


Figure 6. Where to enter — and what lies beneath.

UMBILICAL ENTRY (Veress / Hasson)

- In slim women the **aortic bifurcation** lies at or **just above the umbilicus**; the **left common iliac vein** crosses just below
- The umbilicus moves caudally relative to the vessels as BMI rises
- Veress: ~45° towards the pelvis in slim women, closer to 90° in obesity

PALMER'S POINT + LATERAL PORTS

- **Palmer's point**: 3 cm below the **left** costal margin in the mid-clavicular line — suspected umbilical adhesions; decompress the stomach
- **Lateral ports**: lateral to rectus and the **inferior epigastric vessels**, medial to the deep circumflex iliac vessels
- Inferior epigastrics run up to the **arcuate line** — seen laparoscopically lateral to the medial umbilical fold; transillumination shows the superficial vessels

8 MRCOG Exam Pearls — Last-Minute Page

Numbers to know

L1 Transpyloric plane	L3 Subcostal • IMA	L4 Iliac crests • aortic bifurcation	L5 IVC formed
T8 / T10 / T12 IVC / oesophagus / aorta	$\frac{1}{3}$ McBurney: ASIS → umbilicus	20 wk Fundus at umbilicus	3 cm Palmer's point below costal margin

HIGH-YIELD CHECKLIST

- ☐ Transpyloric plane L1: pylorus, GB fundus, pancreatic neck, SMA, renal hila, conus.
- ☐ Subcostal L3 (IMA); supracrestal L4 (aortic bifurcation, LP); transtubercular L5 (IVC formed).
- ☐ Xiphisternal joint T9; umbilicus ~L3/4 disc in slim adults.
- ☐ Nine regions: mid-clavicular lines + subcostal and transtubercular planes.
- ☐ GB fundus: tip of right 9th costal cartilage at lateral rectus.
- ☐ Spleen under ribs 9–11; kidneys ~11 cm with hila at L1, right lower than left.
- ☐ Mid-inguinal point (symphysis) = femoral artery; midpoint of ligament (tubercle) = deep ring.
- ☐ Fundus: 12 wk symphysis, 20 wk umbilicus, 36 wk xiphisternum.
- ☐ Aortic bifurcation at or just above the umbilicus in slim women.
- ☐ Palmer's point: 3 cm below left costal margin, mid-clavicular line.
- ☐ Lateral ports lateral to the inferior epigastric vessels.

Quick-fire self-test — cover the right-hand column

Question	Answer
Vertebral level of the transpyloric plane?	L1
Three structures on the transpyloric plane?	Pylorus, pancreatic neck, SMA origin (also GB fundus, renal hila)
Where does the aorta bifurcate?	L4 — supracrestal plane
Surface marking of the gallbladder fundus?	Tip of right 9th costal cartilage, lateral edge of rectus
Where is McBurney's point?	⅓ of the way from right ASIS to umbilicus
Mid-inguinal point overlies...?	Femoral artery
Midpoint of the inguinal ligament overlies...?	Deep inguinal ring (just above)
Fundus at the umbilicus at...?	~20 weeks
Where is Palmer's point?	3 cm below the left costal margin, mid-clavicular line
Which vessels are at risk with lateral ports?	Inferior epigastric vessels
Where does the IVC pass through the diaphragm?	T8

9 References

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- Moore KL et al. Clinically Oriented Anatomy. 8th ed. 2017.
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- NICE NG201. Antenatal care. 2021.