Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

2.1

A **right hypochondrium**

B **epigastric**

C **right iliac fossa**

2.2

stomach: **coeliac trunk**

jejunum: **superior mesenteric** artery

sigmoid colon: **inferior mesenteric** artery

2.3

one third of the way along the line from the front of the iliac crest (ASIS) to the umbilicus

it lies over the base of the appendix

2.4

indirect: through the deep ring, lateral to the inferior epigastric vessels

direct: pushes through the wall medial to these vessels

3.1

(a) the appendix is midgut, so its pain goes to T10, felt round the navel

(b) the inflamed appendix now touches the parietal peritoneum, which has skin-type nerves that show exactly where the pain is

(c) the appendix is behind the caecum, away from the front wall; the pain may show instead when the hip is stretched backwards (psoas test)

(d) **ultrasound**, with no radiation

3.2

(a) epigastric, because the gallbladder is foregut

(b) the inflamed gallbladder irritates the diaphragm, supplied by the phrenic nerve, C3–C5; the brain reads it as pain from skin of the same segment, C4, over the shoulder

(c) press under the right ribs and ask the patient to breathe in: they stop breathing in with pain, because the diaphragm pushes the inflamed gallbladder down onto the hand

3.3

(a) the **superior mesenteric** artery

(b) from the 2nd part of the duodenum through the jejunum, ileum and appendix to two-thirds along the transverse colon

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(c) it lies at the edge between the superior and inferior mesenteric territories, fed only by thin end branches, so it gets least blood when pressure falls

(d) the pain comes from gut with too little blood, but the parietal peritoneum is not yet inflamed

(e) above the line the nerves are gut nerves that do not sense cuts; below it the skin nerves (pudendal) sense pain sharply