

ANATOMY · CANINE SURGICAL · ILLUSTRATED GUIDE

DOG ABDOMINAL ANATOMY

# Dog Abdominal Anatomy: A Surgeon's Guide to the Canine Abdomen (PDF)

The wall you cut through, the cavity you open, the organs you find and the order you explore them — canine abdominal anatomy arranged the way a surgeon meets it. Companion to the article at [vet-ebooks.com](https://vet-ebooks.com).

# Contents

The 14 sections of this guide, in order.

|    |                                                                        |    |                                                    |
|----|------------------------------------------------------------------------|----|----------------------------------------------------|
| 01 | How the abdomen is divided                                             | 02 | The wall: what your blade actually crosses         |
| 03 | The midline approach                                                   | 04 | Nerves and vessels of the wall                     |
| 05 | The inguinal region                                                    | 06 | What you see when you open it                      |
| 07 | Peritoneum, omentum and the omental bursa                              | 08 | Organ topography: where things actually are        |
| 09 | Blood supply: the vessels you must not cut                             | 10 | Lymph nodes and staging                            |
| 11 | The ovary, its ligaments, and the commonest abdominal surgery there is | 12 | The systematic exploration                         |
| 13 | The anatomy behind four routine procedures                             | 14 | The same anatomy on imaging                        |
| 15 | Quiz: test yourself                                                    | 16 | Dog abdominal anatomy — frequently asked questions |

Figures reproduced for educational reference from *Miller and Evans' Anatomy of the Dog*, *King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals* and *Anatomy of the Dog*; copyright remains with the original authors and publishers. Each figure is credited beneath it.

## IN SHORT

Most guides to **dog abdominal anatomy** teach the region the way a dissector meets it. This one teaches it the way a **surgeon** meets it: outside in. It walks the layers your blade actually crosses on the ventral midline, explains why the **rectus sheath changes** between the cranial and caudal abdomen (and what that means for closure), maps the peritoneum, **greater omentum** and **epiploic foramen**, places every organ where you will find it, follows the vessels you must not cut, and finishes with a **systematic exploration sequence** for a coeliotomy. Eighteen labelled atlas plates and a free illustrated PDF.

## KEY POINTS

1. The abdomen runs **diaphragm to pelvic inlet**, and its cranial third hides *inside* the rib cage — which is why a “full” exploratory runs **xiphoid to pubis**.
2. The **external lamina of the rectus sheath** is the holding layer of a midline closure. Skin and fat contribute nothing.
3. Behind the umbilicus the **internal lamina disappears**: only transversalis fascia and peritoneum lie deep to the rectus.
4. In the dog the **falciform ligament** is fat-laden and is routinely resected to see the cranial abdomen.
5. The **epiploic foramen** is bounded ventrally by the portal vein and dorsally by the caudal vena cava — the anatomy behind the **Pringle manoeuvre**.
6. Reflecting the **duodenum left** or the **descending colon right** turns their mesenteries into self-retaining retractors that open the right and left gutters.
7. Explore in the **same order every time**. A lesion missed is almost always a lesion never looked for.

## About the images

The atlas plates are reproduced for educational reference from *Miller and Evans' Anatomy of the Dog* (5th ed., Elsevier), *King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals* (Wiley) and *Anatomy of the Dog* (Budras KD et al., 5th ed.). Every figure is credited beneath it; copyright remains with the original authors and publishers.

Search for **dog abdominal anatomy** and you find two kinds of page, neither of them quite what a clinician needs. There are study guides that list the muscles, the regions and the organs beautifully but never tell you what any of it means with a scalpel in your hand. And there are surgical how-to articles that describe a coeliotomy step by step while assuming you already know the anatomy cold. This guide is the

missing middle: the anatomy of the **canine abdomen**, organised in the order a surgeon actually encounters it — wall first, then cavity, then contents, then the systematic sweep that makes sure nothing is missed.

It is written for veterinary students preparing for anatomy and surgery vivas, and for clinicians who want a refresher before an exploratory. It pairs with our whole-body Dog Anatomy guide and with Dog Muscle Anatomy, which covers the origins and insertions of the abdominal wall muscles in more detail.

## 01 How the abdomen is divided

The abdomen is the part of the trunk between the **diaphragm** and the **pelvis**. It contains the largest cavity in the body, and it is continuous caudally with the pelvic cavity across a plane through the pelvic inlet. Two things surprise students the first time they open one. The first is how much of the abdomen lies *inside* the rib cage: the diaphragm domes so far forward that the liver, most of the stomach and the cranial pole of the right kidney are all under bone. The second is that the cavity is not lined by peritoneum directly — it is lined by the **transversalis fascia**, and the peritoneum covers that.

Formally, three transverse planes divide the abdomen into **cranial**, **middle** and **caudal** segments, and two sagittal planes — running midway between the ventral cranial iliac spine and the median plane — subdivide each into three. That gives the nine named regions.

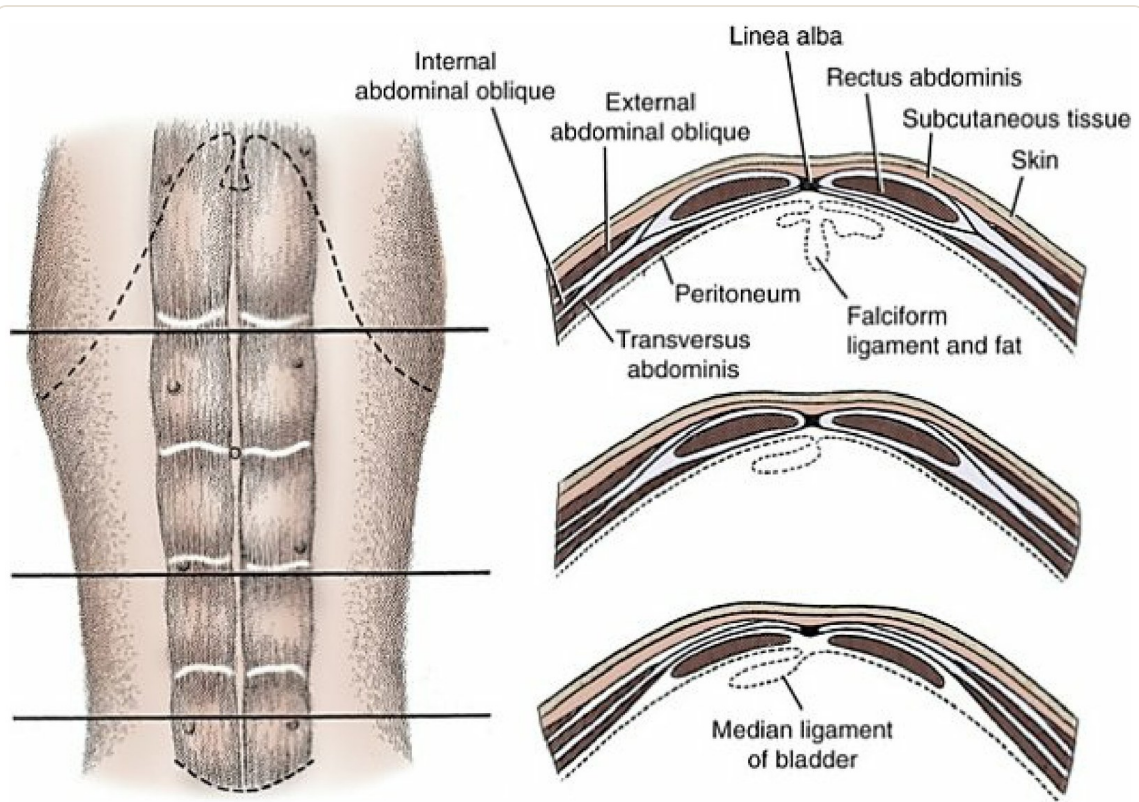
| SEGMENT                                                                                                                      | REGIONS WITHIN IT                                                                                                                          | WHAT LIES THERE                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Cranial abdominal region</b><br>by far the largest — reaches deep inside the rib cage, bounded cranially by the diaphragm | Right and left <b>hypochondriac</b> regions, plus the median <b>xiphoid</b> region                                                         | Liver, gall bladder, stomach, spleen, pancreas, cranial duodenum — almost all of it hidden under the ribs |
| <b>Middle abdominal region</b>                                                                                               | Median <b>umbilical</b> region, plus right and left <b>lateral</b> regions (which contain the flank fold and the <b>paralumbar fossa</b> ) | Jejunum, ileum, caecum (cecum), colon, kidneys, adrenals, ovaries, the root of the mesentery              |
| <b>Caudal abdominal region</b><br>the smallest — ends at the pelvic inlet                                                    | Right and left <b>inguinal</b> regions, plus the median <b>pubic</b> region                                                                | Bladder, ureters, uterine body, prostate, descending colon, sublumbar lymph nodes                         |

These names matter less on the table than in the notes you write and the imaging report you read. What matters surgically is the simpler point buried in that table: the **cranial segment is far the largest and is almost entirely hidden by ribs**. A short mid-abdominal incision cannot explore it. That single fact dictates the length of an exploratory coeliotomy.

## 02 The wall: what your blade actually crosses

Four muscles build the abdominal wall. From the outside in they are the **external abdominal oblique**, the **internal abdominal oblique** (whose fibres cross those of the external at roughly a right angle), and the **transversus abdominis**, the deepest of the three and remarkably thin — only two to four millimetres even in a large dog. Running longitudinally either side of the midline is the fourth, the **rectus abdominis**, from the first costal cartilage to the pecten of the pubis, crossed by three to six — usually five — zigzag **tendinous intersections**.

The three flat muscles do not reach the midline as muscle. They become aponeuroses, and those aponeuroses wrap the rectus in a **sheath** before fusing at the **linea alba**. That sheath is the single most surgically important structure in the wall, and the figure below is the one to fix in memory.



**FIG. 6.39** The sheath of m. rectus abdominis with cross-sections at three levels.

**Fig 1 — The rectus sheath, sectioned at three levels.** The three cross-sections correspond to the three lines drawn on the muscle at left, from cranial (top) to caudal (bottom). Follow the aponeuroses: the **external abdominal oblique** and **internal abdominal oblique** pass superficial to the rectus, the **transversus abdominis** passes deep to it — until the bottom section, where it has swung ventral and the deep layer is gone. Note also the **falciform ligament and fat** hanging from the midline in the upper two sections, replaced by the **median ligament of the bladder** in the lowest.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 6.39, the sheath of m. rectus abdominis. Reproduced for educational reference.

The same arrangement, drawn as a single transverse section through the caudal third, shows how neatly the layers stack and how thin the whole wall really is.



**Fig 2 — Transverse section of the ventral body wall, dog.** The caudal third of the abdomen in section. 1 parietal peritoneum; 2 transversus abdominis; 3 internal abdominal oblique; 4 external abdominal oblique; 6 skin; 7 rectus abdominis; 8 **linea alba**; 9 the ventral sheath of the rectus abdominis. Everything that holds a midline closure is in layer 9 and the tissue converging on 8.

Image — Skerritt G. King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals . Wiley — Fig 1.10(c), transverse section of the ventral body wall of the dog. Reproduced for educational reference.

| # | LAYER                                              | WHAT IT LOOKS AND FEELS LIKE                                                                             | SURGICAL NOTE                                                                                                                                                                  |
|---|----------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <b>Skin</b>                                        | Thin and mobile over the ventral abdomen                                                                 | Incise with the blade, not the electroscalpel, to keep the wound edge clean                                                                                                    |
| 2 | <b>Subcutaneous tissue</b>                         | Loose fat carrying the <b>caudal superficial epigastric</b> vessels and, in the bitch, the mammary chain | The commonest source of a slow post-operative ooze. In the male the incision curves around the prepuce, and the <b>preputial branches</b> crossing the midline must be ligated |
| 3 | <b>External rectus sheath</b><br>(external lamina) | Glistening white aponeurosis                                                                             | <b>This is the holding layer.</b> The external lamina of the sheath, closed with an appropriate suture, is what carries the wound — not the skin, not the fat                  |
| 4 | <b>Linea alba / rectus abdominis</b>               | A midline collagenous strip between two red muscle bellies                                               | Stay <b>on</b> the linea alba. Drift laterally and you are into rectus muscle, which bleeds and holds sutures poorly                                                           |
| 5 | <b>Internal rectus sheath</b><br>(internal lamina) | Thin aponeurosis, present cranially and in the middle third only                                         | Behind the umbilicus it thins to almost nothing — see the sheath table below                                                                                                   |
| 6 | <b>Transversalis fascia</b>                        | A fine areolar sheet lining the whole cavity                                                             | The layer that separates true intra-abdominal from retroperitoneal space                                                                                                       |
| 7 | <b>Parietal peritoneum</b>                         | Transparent, glistening, barely a layer at all                                                           | Often opened together with the fascia. It is <b>not</b> a holding layer and does not need separate closure                                                                     |
| 8 | <b>Falciform ligament and fat</b>                  | A fatty midline curtain in the cranial abdomen                                                           | In the dog it becomes loaded with fat and is <b>routinely resected</b> to see the cranial abdomen; ligate its base                                                             |

### Why the rectus sheath changes along its length

This is the detail that separates an anatomy answer from a surgical one, and it is genuinely species-specific. In the dog the sheath is not the same structure at the xiphoid and at the pubis, because the **transversus abdominis** aponeurosis changes sides.

| THIRD OF THE ABDOMEN                          | TRANSVERSUS ABDOMINIS APONEUROSIS         | INTERNAL OBLIQUE APONEUROSIS                                                           | WHAT IT MEANS AT THE INCISION                                 |
|-----------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>Cranial third</b><br>xiphoid → mid-abdomen | Passes <b>dorsal</b> (deep) to the rectus | Divides into a <b>ventral and a dorsal portion</b> , so it contributes to both laminae | Both laminae present. The sheath is at its most complete here |
|                                               |                                           |                                                                                        |                                                               |

| THIRD OF THE ABDOMEN                        | TRANSVERSUS ABDOMINIS APONEUROSIS                               | INTERNAL OBLIQUE APONEUROSIS                      | WHAT IT MEANS AT THE INCISION                                                                                                                                                   |
|---------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Middle third</b><br>around the umbilicus | Passes <b>dorsal</b> (deep) to the rectus                       | Passes <b>ventral</b> (superficial) to the rectus | Both laminae still present, as in the horse                                                                                                                                     |
| <b>Caudal third</b><br>umbilicus → pubis    | Swings around to lie <b>ventral</b> (superficial) to the rectus | Ventral                                           | <b>No internal lamina.</b> Behind the rectus there is only transversalis fascia and peritoneum — so caudally the <b>external</b> sheath is the only real holding layer you have |

#### The practical consequence.

The **external rectus sheath is the holding layer** of a ventral midline closure everywhere, and caudal to the umbilicus it is essentially the *only* layer with any strength. Sutures placed there hold; sutures placed in fat, peritoneum or muscle belly do not. Every dehiscence you will ever see traces back to that sentence.

## 03 The midline approach

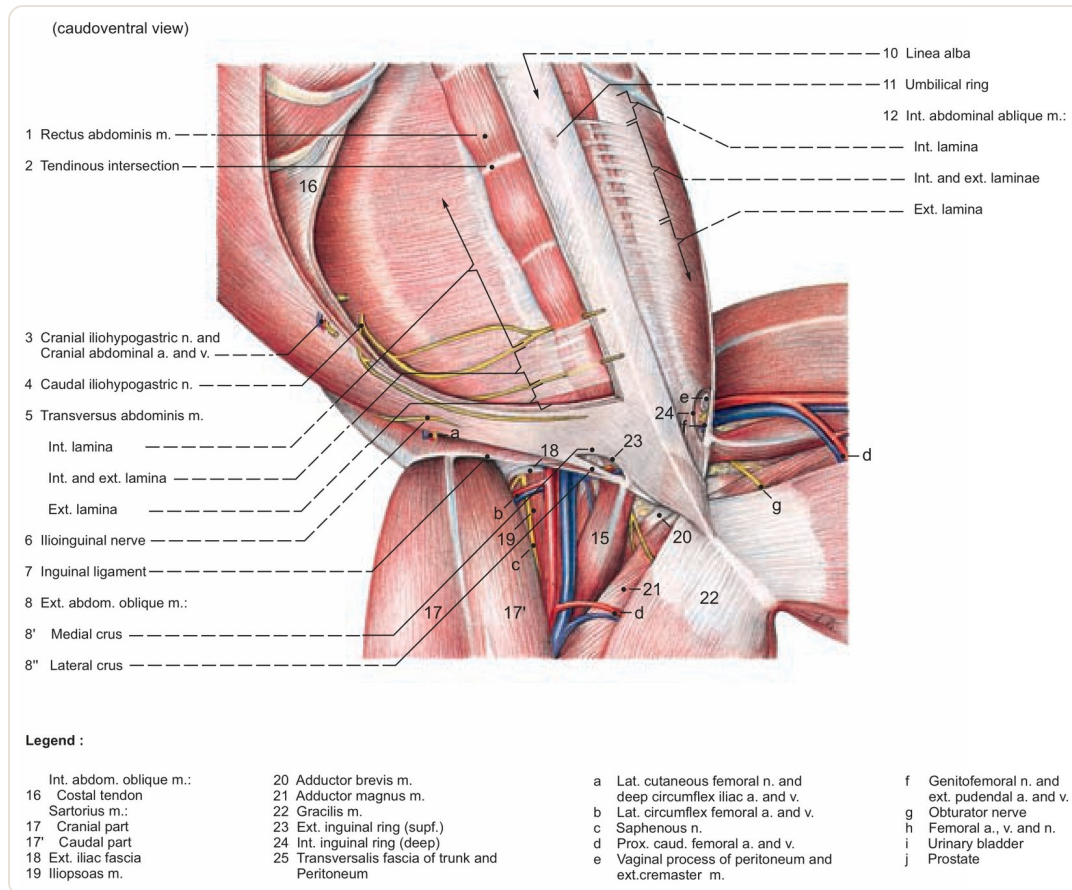
The standard exploratory approach is a **ventral midline coeliotomy** from **xiphoid to pubis**. The length is the point. Because the cranial segment reaches so far under the ribs, an incision that stops short of the xiphoid cannot show you the diaphragm, the liver lobes or the fundus — and an incision that stops short of the pubis cannot show you the bladder neck, the prostate or the sublumbar nodes. Clip and prepare generously: cranially to the xiphoid, caudally past the pubis, and five to ten centimetres either side of midline, so the incision can be extended without breaking sterility.

Three anatomical points shape the approach itself:

- **In the male, curve around the prepuce.** The skin and subcutaneous incision is deviated laterally, and the **preputial branches** of the caudal superficial epigastric vessels that cross the midline are ligated as you go. The deep incision returns to the linea alba.
- **Find the linea alba, then stay on it.** It is a midventral collagenous strip from the xiphoid process to the pelvic symphysis, containing the umbilical scar at about the level of a transverse plane through the last ribs. Tent it with forceps and open it with a stab, then extend on a groove director or between fingers so the viscera stay clear of the blade.
- **Deal with the falciform.** In the dog this fatty midline curtain genuinely blocks the view of the cranial abdomen. Transect it laterally and ligate its base cranially — it carries branches worth respecting, and it will bleed quietly for the whole procedure if you simply tear it.

## 04 Nerves and vessels of the wall

The wall is supplied segmentally. The medial and lateral branches of the **costoabdominal**, **iliohypogastric** and **ilioinguinal** nerves run between the internal oblique and the transversus abdominis, exactly the plane infiltrated in a transversus abdominis plane (TAP) block. They run *craniocaudally in a segmental fashion*, which is the anatomical argument for grid and flank approaches that split rather than cut across them — and the reason a long paramedian incision denervates the strip of rectus medial to it.



**Fig 3 — The deep abdominal wall and inguinal rings, caudoventral view.** The external oblique has been reflected. Note 1 rectus abdominis with its 2 tendinous intersections; 5 transversus abdominis splitting into internal and external laminae; 10 the **linea alba** and 11 the **umbilical ring**; 7 the inguinal ligament; and the two openings of the canal — 23 the external (superficial) inguinal ring and 24 the internal (deep) ring. The segmental nerves and vessels are 3 cranial iliohypogastric with the cranial abdominal artery and vein, 4 caudal iliohypogastric and 6 the ilioinguinal nerve.

Image — Budras KD, McCarthy PH, Fricke W, Richter R. Anatomy of the Dog, 5th ed. Schlütersche — Abdominal wall and inguinal region, caudoventral view. Reproduced for educational reference.

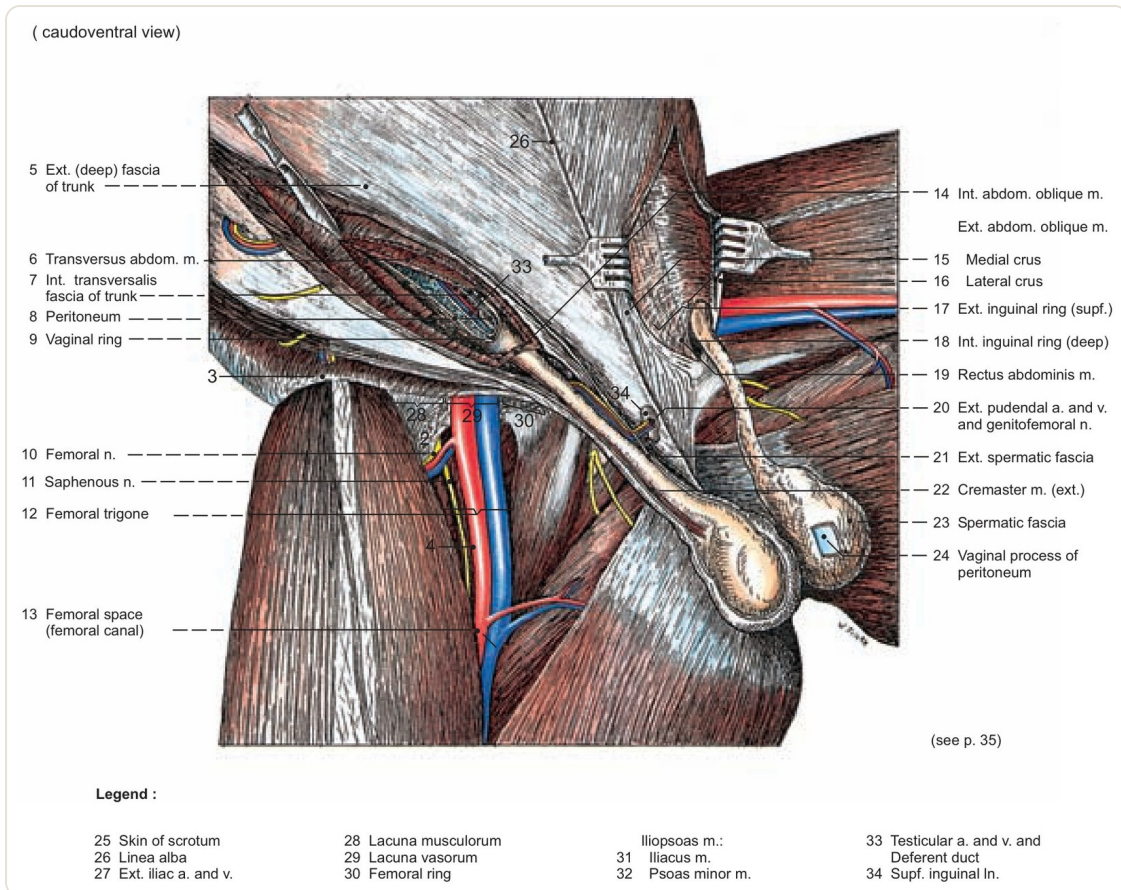
The blood supply of the wall runs longitudinally along the deep surface of the rectus as an anastomosing chain: the **cranial epigastric** artery from the internal thoracic above, meeting the **caudal epigastric** from the pudendoepigastric trunk below. Superficially, the **caudal superficial epigastric** runs in the subcutis supplying the caudal mammary glands — the vessel that matters at a mastectomy and the one that bleeds into a midline incision if you ignore it.

## 05 The inguinal region

The **inguinal canal** is not a tube with walls of its own; it is a connective-tissue-filled fissure between the abdominal muscles and their aponeuroses in the caudoventral wall. It is short, oblique, and defined by its two rings.

- The **deep (internal) inguinal ring** is formed by three things: the ventral end of the **inguinal ligament**, the fleshy caudal border of the **internal abdominal oblique**, and the lateral border of the **rectus abdominis**.
- The **superficial (external) inguinal ring** is a narrow oval slit in the aponeurosis of the **external abdominal oblique**, with a medial and a lateral crus. Its caudal commissure contains the **iliopubic cartilage**.
- Its **lateral wall** is formed solely by the external oblique aponeurosis; its **medial wall** by the superficial surface of the internal oblique, with the transversus and rectus aponeuroses contributing.

Contents differ by sex. In the **male**: spermatic fascia, the vaginal tunic and its spermatic cord, the cremaster muscle, the external pudendal vessels and the genitofemoral nerve. In the **female**: fascia, the vaginal process with the round ligament of the uterus, a good deal of fat, the external pudendal vessels and the genitofemoral nerve.



**Fig 4 — The inguinal region of the male dog, caudoventral view.** 9 the **vaginal ring**, where the peritoneum evaginates into the canal; 17 the external (superficial) inguinal ring and 18 the internal (deep) ring; 22 the external cremaster; 24 the **vaginal process of peritoneum**; 19 the lateral border of rectus abdominis forming the medial edge of the deep ring. Immediately medial lie the 12 femoral trigone and 13 the **femoral space (femoral canal)** with 30 the femoral ring — the neighbouring weak point, and the reason inguinal and femoral hernias are distinguished by which ring the sac emerges from.

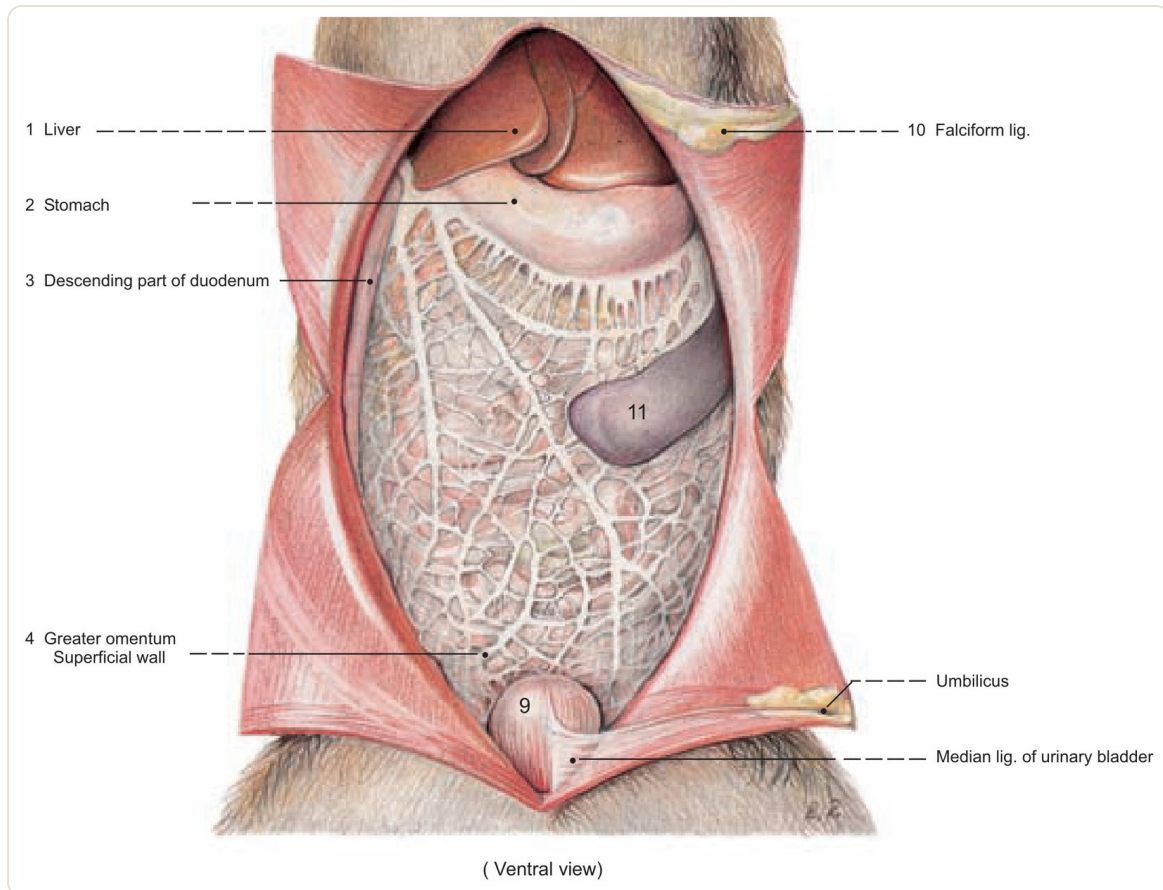
Image — Budras KD, McCarthy PH, Fricke W, Richter R. Anatomy of the Dog, 5th ed. Schlütersche — Inguinal region of the male dog, caudoventral view. Reproduced for educational reference.

#### Where this bites clinically.

The vaginal ring is the landmark for an **abdominal cryptorchid**: if the testis is not in the canal, follow the **deferent duct** from the ring back into the abdomen and it will lead you to it. Inguinal hernias in the bitch typically carry uterus, bladder or omentum through a widened canal; the repair closes the superficial ring while sparing the external pudendal vessels and the genitofemoral nerve.

## 06 What you see when you open it

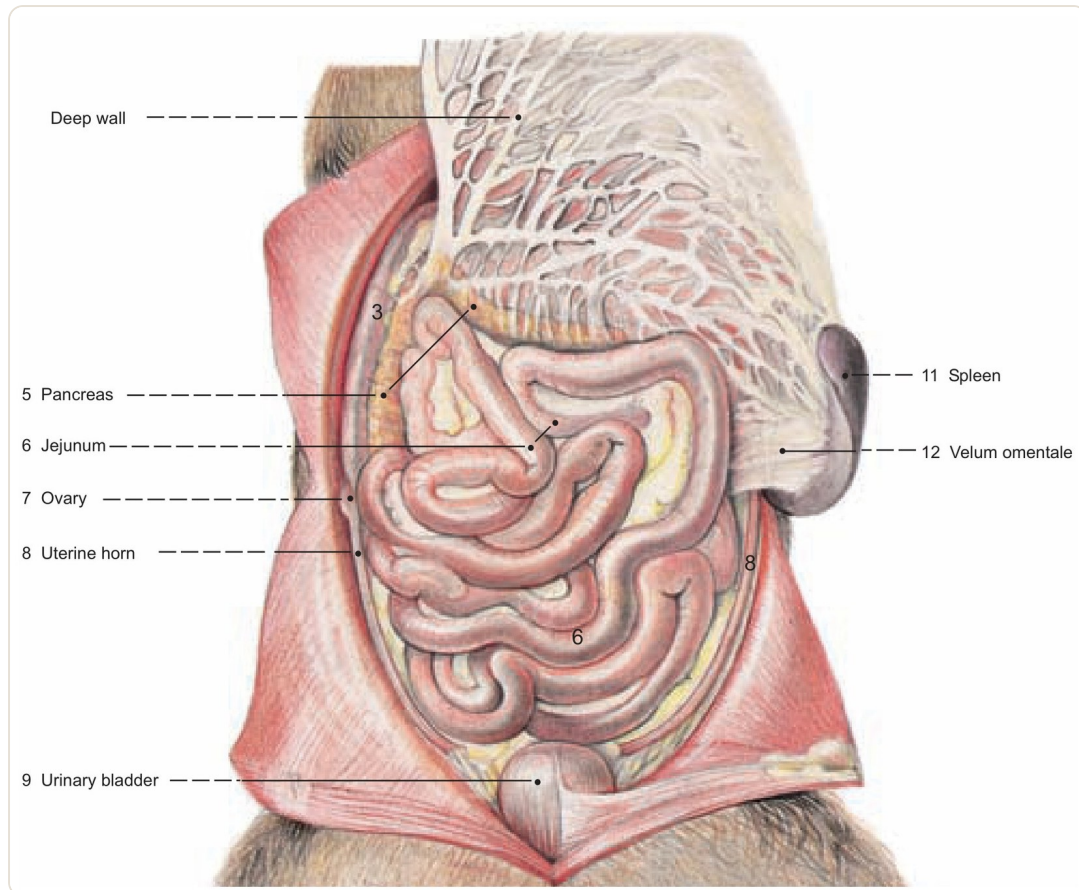
With the dog in dorsal recumbency and the linea alba opened, the first thing that meets you is not an organ at all — it is the **greater omentum**, spread across the viscera like an apron.



**Fig 5 — The opened abdomen, greater omentum in place.** Exactly the view through a ventral midline coeliotomy. The **4** superficial wall of the **greater omentum** covers everything ventrally; behind it you can pick out **1** liver, **2** stomach, **3** descending duodenum and **11** spleen, with **9** the urinary bladder caudally. Note the **10 falciform ligament** and the **umbilicus** on the reflected wall, and the **median ligament of the urinary bladder** running to the floor.

Image — Budras KD, McCarthy PH, Fricke W, Richter R. *Anatomy of the Dog*, 5th ed. Schlütersche — Abdominal cavity and digestive apparatus, ventral view. Reproduced for educational reference.

Lift that apron and the working anatomy appears: coils of jejunum in the centre, the pancreas along the duodenum on the right, the reproductive tract and bladder caudally.



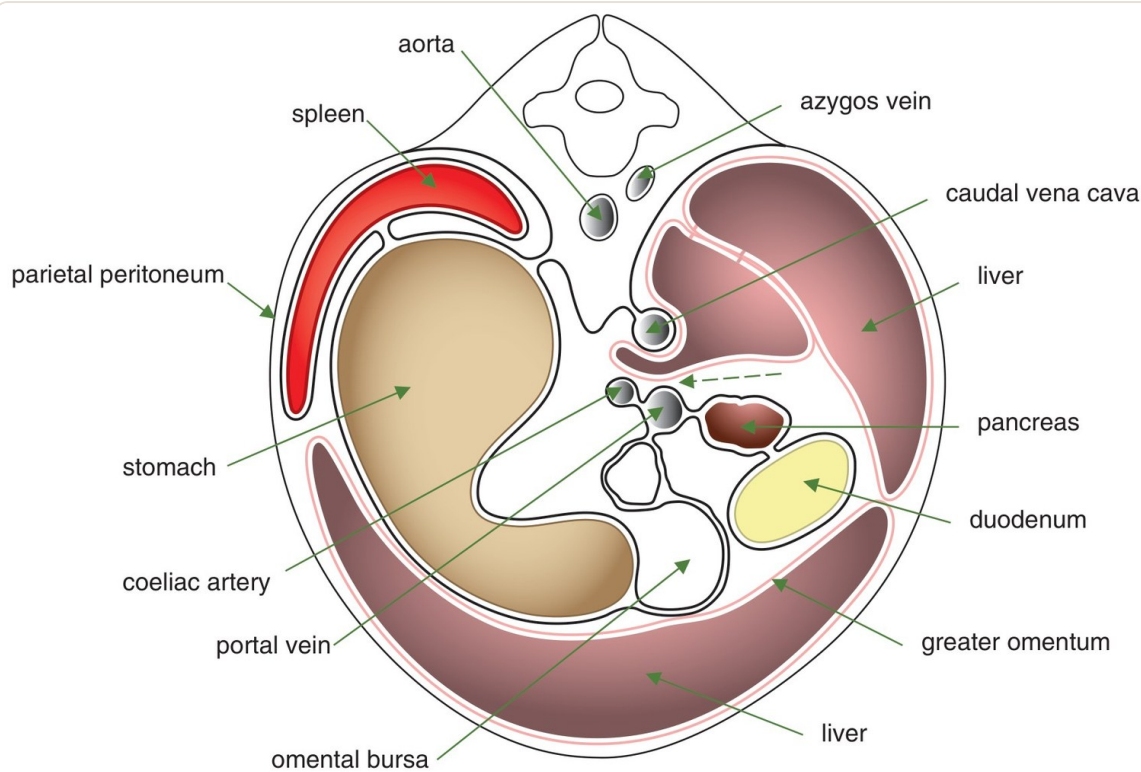
**Fig 6 — The same view, omentum reflected cranially.** The **greater omentum** has been folded forward, exposing its **deep wall** and the **12 velum omentale**. Now visible: **5 pancreas** alongside **3 the descending duodenum**, the mass of **6 jejunum**, **7 ovary** and **8 uterine horn** in this bitch, **9 urinary bladder** and **11 spleen**. This is the field you actually operate in.

Image — Budras KD, McCarthy PH, Fricke W, Richter R. *Anatomy of the Dog*, 5th ed. Schlütersche — Abdominal cavity, ventral view, omentum reflected. Reproduced for educational reference.

## 07 Peritoneum, omentum and the omental bursa

The **peritoneum** is a single continuous serous membrane: **parietal** where it lines the wall, **visceral** where it covers organs, and **connecting** where it bridges the two as mesenteries, omenta and ligaments. Its total surface area approaches that of the skin, which is why it absorbs and secretes so effectively — the basis of peritoneal dialysis, and equally the reason septic peritonitis is so devastating.

The **greater omentum** develops from the dorsal mesogastrium and, in the dog, grows into a double-walled apron folded on itself. The space between its two walls is the **caudal recess of the omental bursa**.



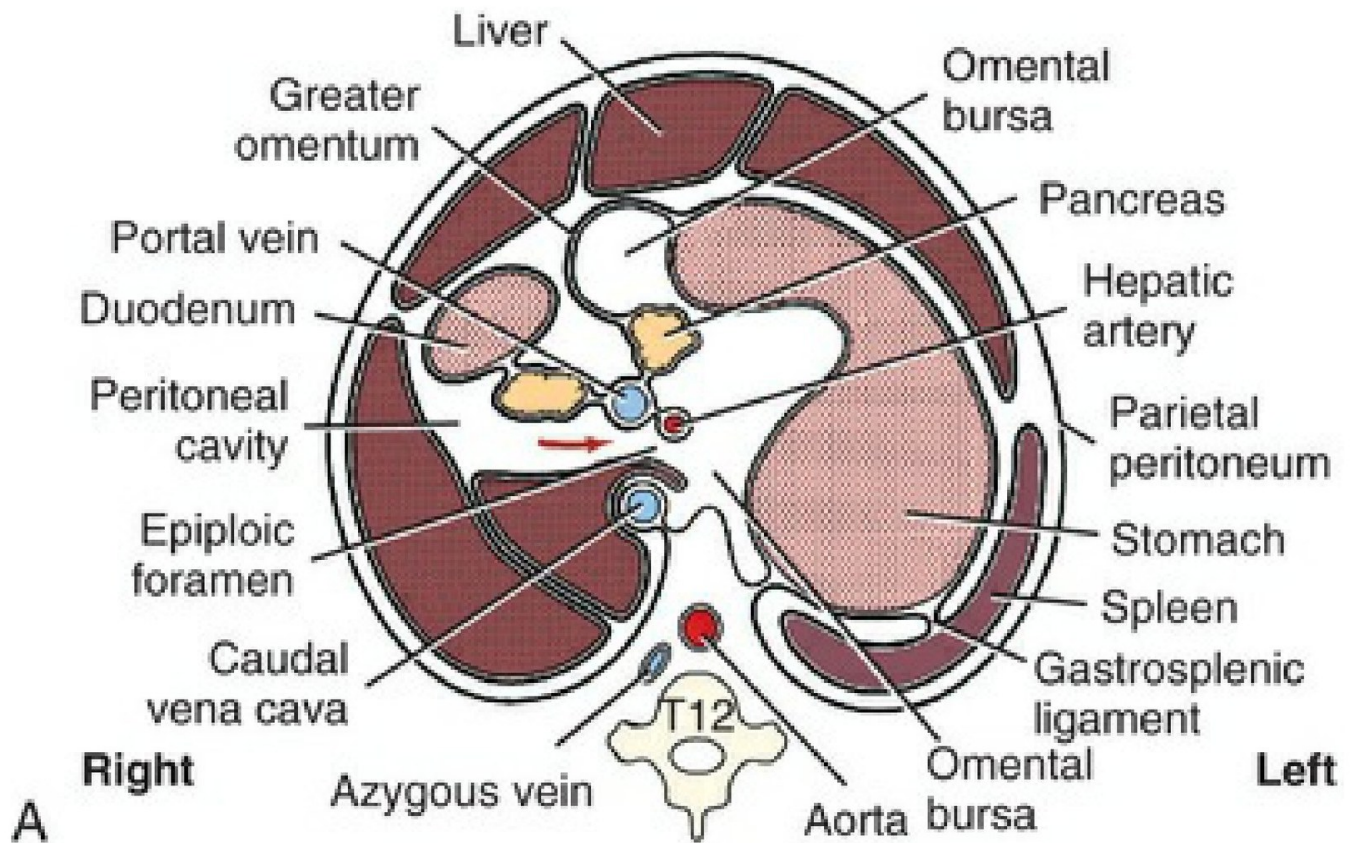
**Figure 3.1** Transverse diagram of the abdomen to show the greater omentum, omental bursa and epiploic foramen (dashed arrow).

**Fig 7 — The greater omentum and omental bursa in transverse section.** A schematic transverse section. Follow the **parietal peritoneum** around the wall, then trace the **greater omentum** as it sweeps ventrally and folds back on itself, enclosing the **omental bursa**. The dashed arrow is the **epiploic foramen**, the bursa's only opening. Note the **portal vein** and **coeliac artery** at the centre, and the **spleen** held out to the left.

Image — Skerrett G. King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals . Wiley — Fig 3.1, transverse diagram of the abdomen. Reproduced for educational reference.

Miller lists four functions worth remembering, but the one that made the omentum famous belongs to the surgeon **Rutherford Morison**, who called it the *policeman of the abdomen*: it carries a dense vascular and lymphatic network, migrates to foci of infection, walls them off and limits their spread. That property is exploited deliberately every time a surgeon **omenta**lises a prostatic abscess or a leaking suture line.

The bursa itself is a closed sac with exactly one door.



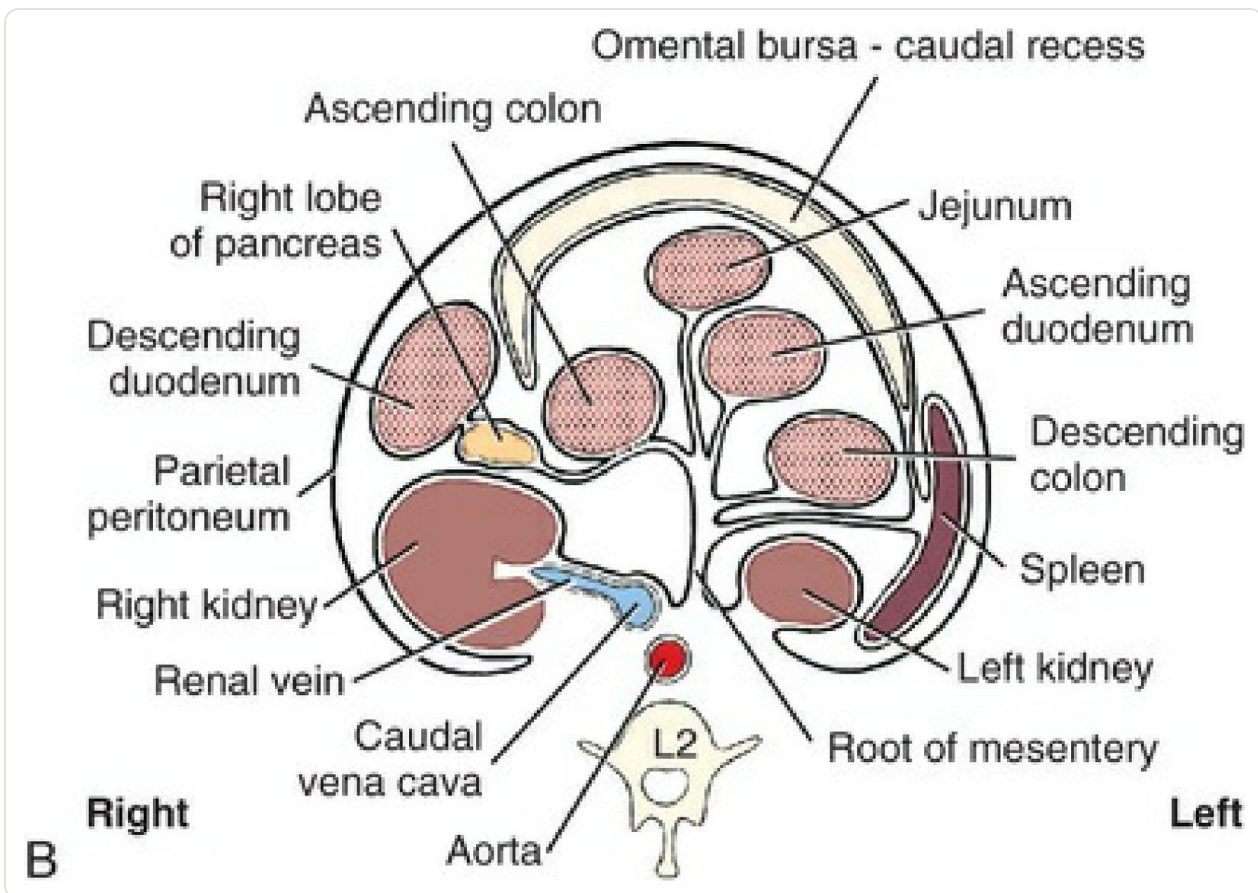
**Fig 8 — Transverse section at the epiploic foramen (dog supine).** Drawn with the dog in the surgical position. The **epiploic foramen** is arrowed, connecting the general peritoneal cavity to the **omental bursa**. Its boundaries are all named on the plate: the **portal vein** ventrally, the **caudal vena cava** dorsally, the **hepatic artery** caudally and the **liver** cranially. The **gastrosplenic ligament** carrying the splenic vessels is on the left.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 7.36A, peritoneal schema, transverse section. Reproduced for educational reference.

#### The Pringle manoeuvre.

Because the **portal vein** forms the ventral boundary of the epiploic foramen and the **hepatic artery** the caudal one, a finger passed into the foramen and pinched against the thumb occludes both vessels in the hepatoduodenal ligament at once. That is how you buy time in uncontrolled hepatic haemorrhage (hemorrhage) — anatomy converted directly into a life-saving manoeuvre.

Further caudally the section changes character. Here the peritoneum defines the **paravertebral gutters** that the duodenum and descending colon lie in, and the **root of the mesentery** around which the entire small intestine is suspended.



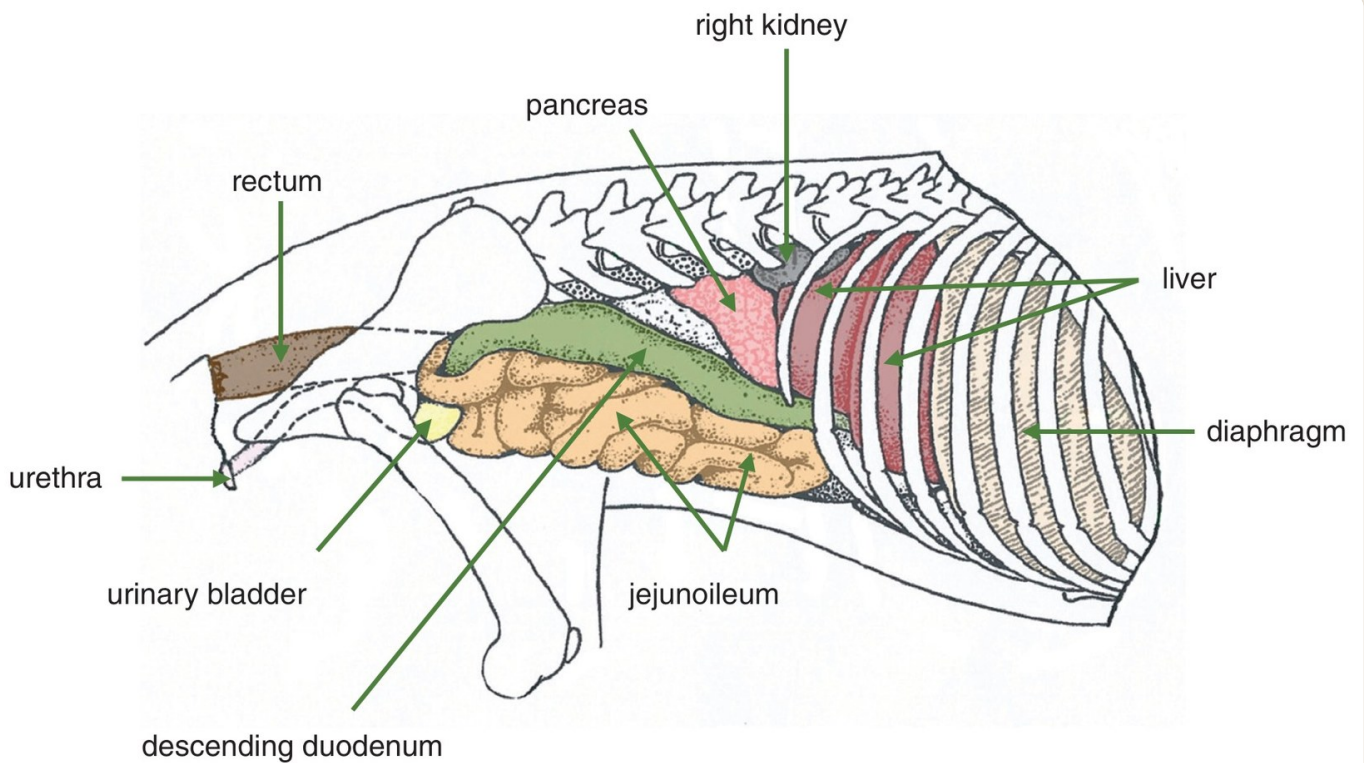
**Fig 9 — Transverse section at the root of the mesentery (L2).** The mid-abdomen in section. The **root of the mesentery** is the narrow stalk carrying the cranial mesenteric vessels to the whole small intestine — the axis about which the bowel rotates in **mesenteric volvulus**. Note the **descending duodenum** and right lobe of pancreas in the right gutter, the **descending colon** and spleen in the left, both **kidneys** lying retroperitoneally against the sublumbar muscles, and the **caudal recess of the omental bursa** arching over the top.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 7.36B, peritoneal schema, transverse section. Reproduced for educational reference.

Two further peritoneal structures earn their place in a surgical account. The **falciform ligament** attaches the parietal surface of the liver, between the right and left medial lobes, to the body wall just cranial to the umbilicus — in the puppy its free edge carries the **round ligament of the liver**, the remnant of the umbilical vein. And on the bladder, the peritoneal fold enclosing the vestigial **urachus** becomes the **median ligament**, while the folds that once supported the umbilical arteries become the **lateral ligaments** — those arteries themselves persisting as the **round ligaments of the bladder**.

## 08 Organ topography: where things actually are

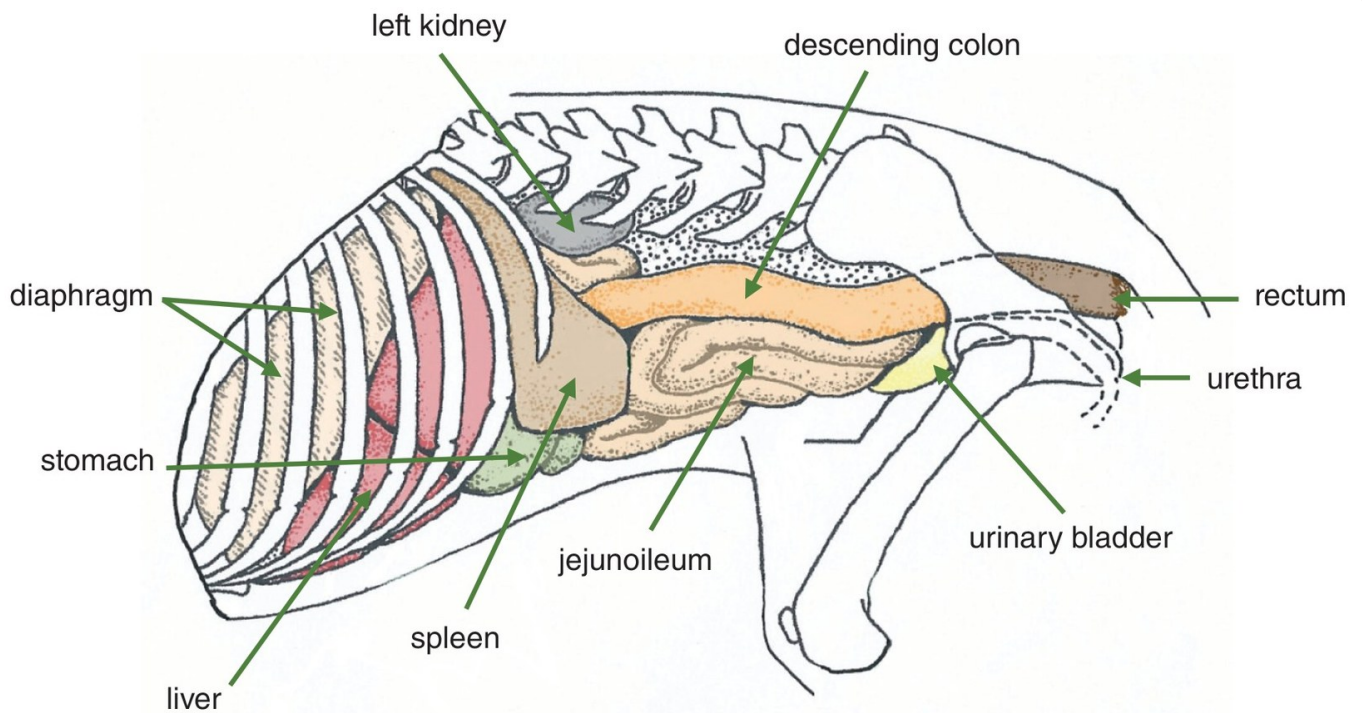
Lateral views are the fastest way to fix organ position, because they show the relationships to the ribs and the lumbar spine that you use when you palpate, image or plan an approach. The right and left sides of the dog show very different things.



**Figure 5.5** The right lateral view of the abdomen of the bitch.

**Fig 10 — Right lateral topography of the abdomen.** From the right you meet the **liver** filling the space behind the **diaphragm**, the **right kidney** tucked high and far forward under the last ribs, the **pancreas** and the **descending duodenum** running caudally along the wall, with **jejunum** ventral and the **urinary bladder** and **rectum** caudally. This is the side of the duodenal manoeuvre.

Image — Skerrett G. King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals . Wiley — Fig 5.5, right lateral view of the abdomen of the bitch. Reproduced for educational reference.



**Figure 5.6** The left lateral view of the abdomen of the dog.

**Fig 11 — Left lateral topography of the abdomen.** From the left the **stomach** and **spleen** dominate the cranial abdomen, the **left kidney** sits further caudal and lower than its fellow, and the **descending colon** runs back along the roof to the **rectum**. Compare the two kidneys across these two figures: the asymmetry is real and it is why the right is the harder one to reach.

Image — Skeritt G. King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals . Wiley — Fig 5.6, left lateral view of the abdomen of the dog. Reproduced for educational reference.

| ORGAN                      | WHERE TO FIND IT                                                                                                                                                                                                                  | WHY THE POSITION MATTERS                                                                                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Liver</b>               | Entirely under the ribs, against the diaphragm, mostly to the <b>right</b> of midline. Six lobes: right lateral, right medial, quadrate, left medial, left lateral, and the caudate lobe with its caudate and papillary processes | You cannot see it without extending the incision to the xiphoid and resecting the falciform. The <b>caudate process</b> reaches back to the right kidney — the usual site for a biopsy |
| <b>Gall bladder</b>        | Between the <b>quadrate</b> and <b>right medial</b> lobes, on the visceral surface                                                                                                                                                | Its fossa is the landmark for cholecystocentesis and cholecystectomy; the cystic duct joins hepatic ducts to form the bile duct                                                        |
| <b>Stomach</b>             | Cranial, mostly left of midline when empty; crosses to the right as it fills                                                                                                                                                      | The pylorus lies to the <b>right</b> . In gastric dilatation and volvulus the pylorus migrates ventrally then to the left — you de-rotate by pulling the pylorus back to the right     |
| <b>Spleen</b>              | Suspended in the <b>gastrosplenic ligament</b> along the greater curvature, lying in the left cranial abdomen but freely mobile                                                                                                   | It is the first organ you meet through a cranial midline incision and the easiest to nick. Its blood supply arrives through the ligament from the splenic artery                       |
| <b>Pancreas</b>            | A V. The <b>right limb</b> runs in the mesoduodenum beside the descending duodenum; the <b>left limb</b> runs in the deep leaf of the greater omentum behind the stomach                                                          | The right limb is reached by reflecting the duodenum; the left limb only by entering the omental bursa. Handle either with fingers, never forceps                                      |
| <b>Descending duodenum</b> | Along the <b>right</b> body wall, from the pylorus back toward the pelvic inlet                                                                                                                                                   | Lift it to the left and its mesentery becomes a natural retractor — the <b>duodenal manoeuvre</b> that exposes the right kidney, adrenal and the whole right gutter                    |
| <b>Descending colon</b>    | Along the <b>left</b> body wall                                                                                                                                                                                                   | The mirror image: the <b>colonic manoeuvre</b> lifts it right and exposes the left kidney, adrenal and ovarian pedicle                                                                 |
| <b>Jejunum and ileum</b>   | Filling the middle and ventral abdomen, slung on a long mesentery from the root at about L2                                                                                                                                       | Free enough to exteriorise onto a moistened lap sponge — which is exactly how you 'run' the bowel                                                                                      |

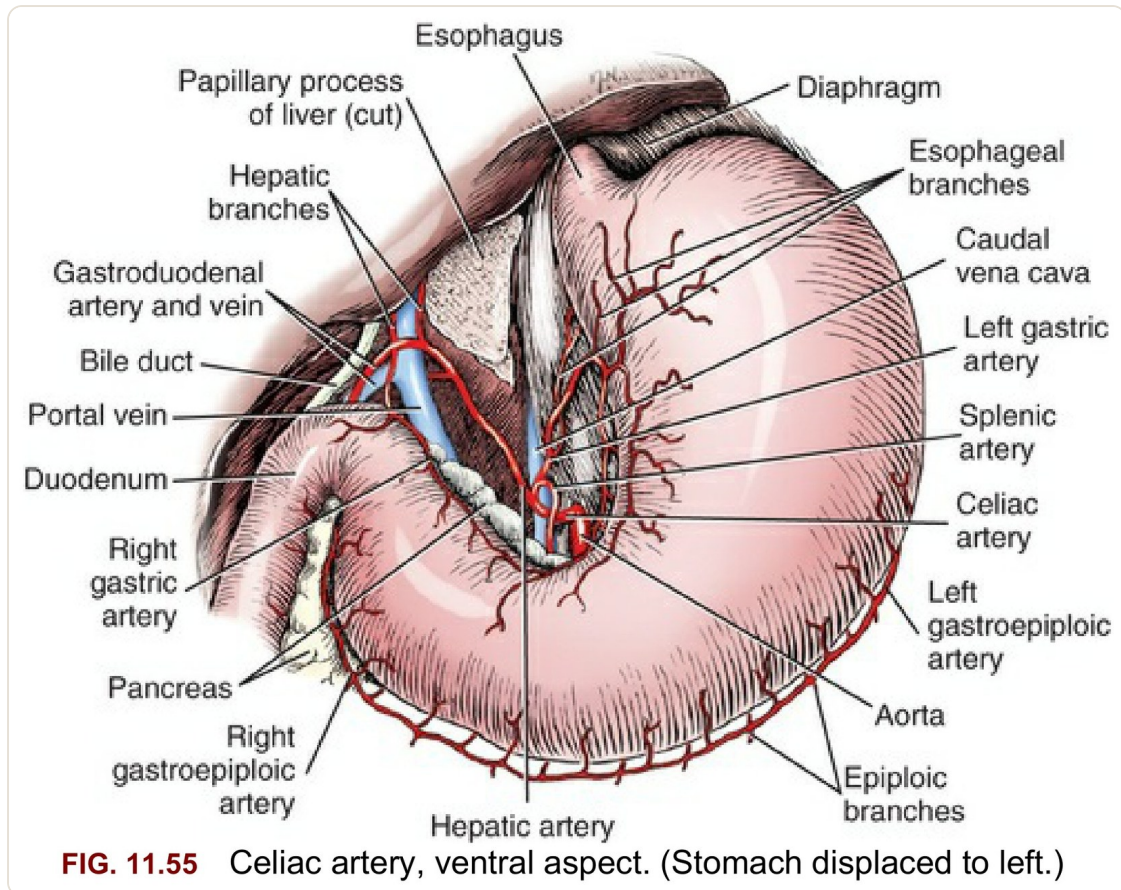
| ORGAN                  | WHERE TO FIND IT                                                                                                                                                                                          | WHY THE POSITION MATTERS                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Kidneys</b>         | <b>Retroperitoneal</b> , against the sublumbar muscles. The <b>right</b> is more cranial, tucked into the renal fossa of the caudate process of the liver; the <b>left</b> is more caudal and more mobile | The right kidney is the harder of the two to reach for exactly this reason, and its cranial pole sits against the caudal vena cava |
| <b>Adrenal glands</b>  | Craniomedial to each kidney, close against the aorta (left) and the caudal vena cava (right)                                                                                                              | The right adrenal is intimately related to the vena cava — the reason right adrenalectomy is the more demanding side               |
| <b>Ovaries</b>         | Just caudal to each kidney, held by the <b>suspensory ligament</b> cranially and the <b>proper ligament</b> caudally                                                                                      | The suspensory ligament is the structure limiting exteriorisation at a spay; it is stretched or broken deliberately                |
| <b>Urinary bladder</b> | On the abdominal floor, extending cranially from the pelvic inlet as it fills. Held by <b>median</b> and paired <b>lateral</b> ligaments                                                                  | Easily exteriorised. The median ligament is the remnant of the urachus and is usually broken down for access                       |

## 09 Blood supply: the vessels you must not cut

The abdominal aorta gives three **unpaired visceral branches** to the gut, plus paired branches to the paired organs. Learn the three unpaired ones in order and most of the abdominal vasculature falls into place.

| UNPAIRED AORTIC BRANCH                                                                                       | PRINCIPAL BRANCHES                                                                                    | WHAT IT FEEDS — AND THE SURGICAL RELEVANCE                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Celiac artery</b><br>arises at the level of <b>L1</b> , flanked by the crura of the diaphragm; ~2 cm long | <b>Hepatic, left gastric, splenic</b>                                                                 | Liver, gall bladder, stomach, spleen, pancreas and the cranial duodenum. The hepatic gives the <b>gastrooduodenal</b> , which gives right gastric and right gastroepiploic. The splenic gives the <b>left gastroepiploic</b> and short gastric vessels — the arcade that has to be ligated in a total splenectomy |
| <b>Cranial mesenteric artery</b><br>about 5 mm caudal to the celiac, opposite <b>L1–L2</b>                   | <b>Caudal pancreaticoduodenal, jejunal arteries, ileocolic, right and middle colic</b>                | Almost the whole small intestine, the caecum and the ascending and transverse colon. It is the axis around which the gut twists in <b>mesenteric volvulus</b> , and the vessel whose arcades you preserve at an enterectomy                                                                                       |
| <b>Caudal mesenteric artery</b>                                                                              | <b>Left colic, cranial rectal</b>                                                                     | Descending colon and cranial rectum. Small, but the reason a descending-colon resection has a narrower margin for error than a jejunal one                                                                                                                                                                        |
| <b>Portal vein</b><br>the drainage side, not an aortic branch                                                | Formed from the <b>cranial</b> and <b>caudal mesenteric, splenic</b> and <b>gastrooduodenal</b> veins | Carries everything absorbed from the gut to the liver. It lies <b>ventral</b> in the epiploic foramen, and it is the vessel at the centre of every portosystemic shunt                                                                                                                                            |

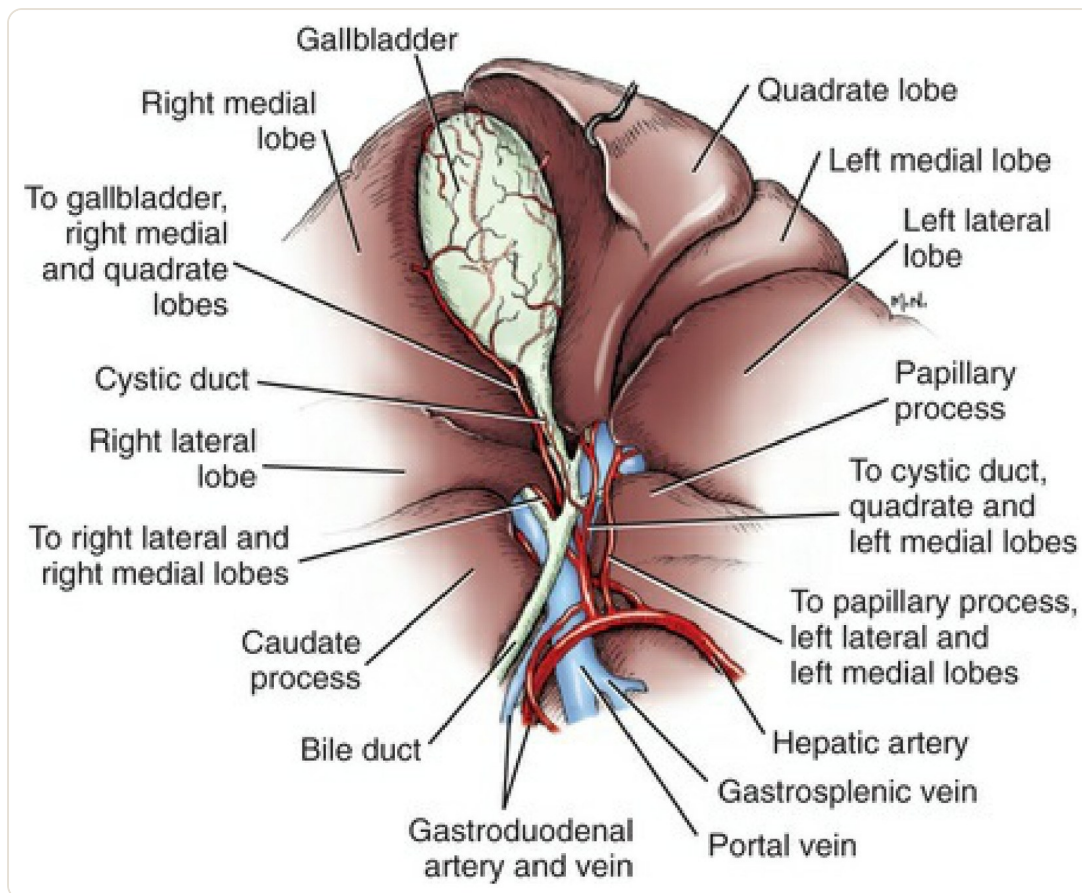
The **coeliac artery** is short — about two centimetres long — arises from the ventral surface of the aorta at the level of the **first lumbar vertebra**, closely flanked at its origin by the crura of the diaphragm, and then trifurcates. Everything in the cranial abdomen hangs off it.



**Fig 12 — The coeliac artery and its branches, ventral aspect.** The stomach displaced left. The **coeliac artery** divides into **hepatic**, **left gastric** and **splenic** arteries. Trace the hepatic to the **gastroduodenal**, and from there the **right gastric** and **right gastroepiploic** along the curvatures; trace the splenic to the **left gastroepiploic** and its **epiploic branches**. That arcade around both curvatures is what you are ligating in a partial gastrectomy or an invagination pylorotomy.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 11.55, celiac artery, ventral aspect. Reproduced for educational reference.

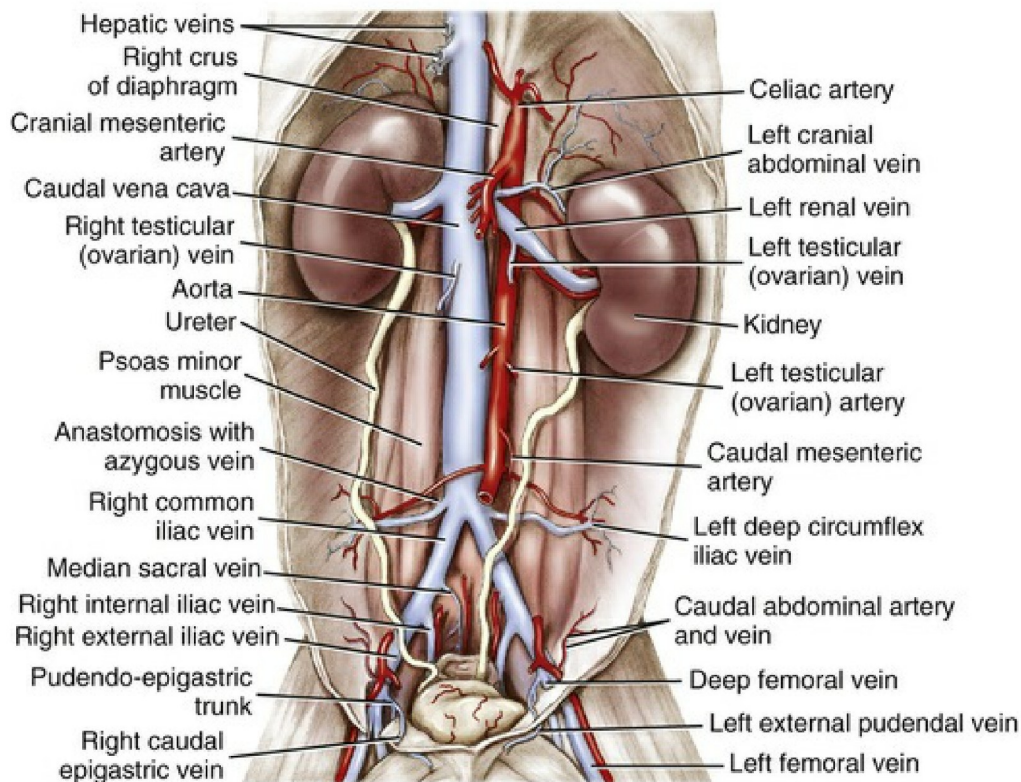
At the liver, the arterial supply, the portal inflow and the biliary drainage all converge at the **hilus** — and that convergence, wrapped in peritoneum as the **hepatoduodenal ligament**, is precisely what your finger occludes in a Pringle manoeuvre.



**Fig 13 — The liver lobes, biliary tree and hepatic vessels.** The visceral surface. All six divisions are named: **right lateral**, **right medial**, **quadrate**, **left medial** and **left lateral** lobes, plus the **caudate process** and **papillary process** of the caudate lobe. The **gall bladder** lies in its fossa between the quadrate and right medial lobes; the **cystic duct** joins the hepatic ducts to form the **bile duct**. Beneath run the **portal vein**, **hepatic artery** and **gastroduodenal artery and vein**.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 11.56, distribution of the hepatic arteries. Reproduced for educational reference.

Turn to the dorsal wall and a different, entirely retroperitoneal anatomy appears — the one you are working in during a nephrectomy, an adrenalectomy or a spay.

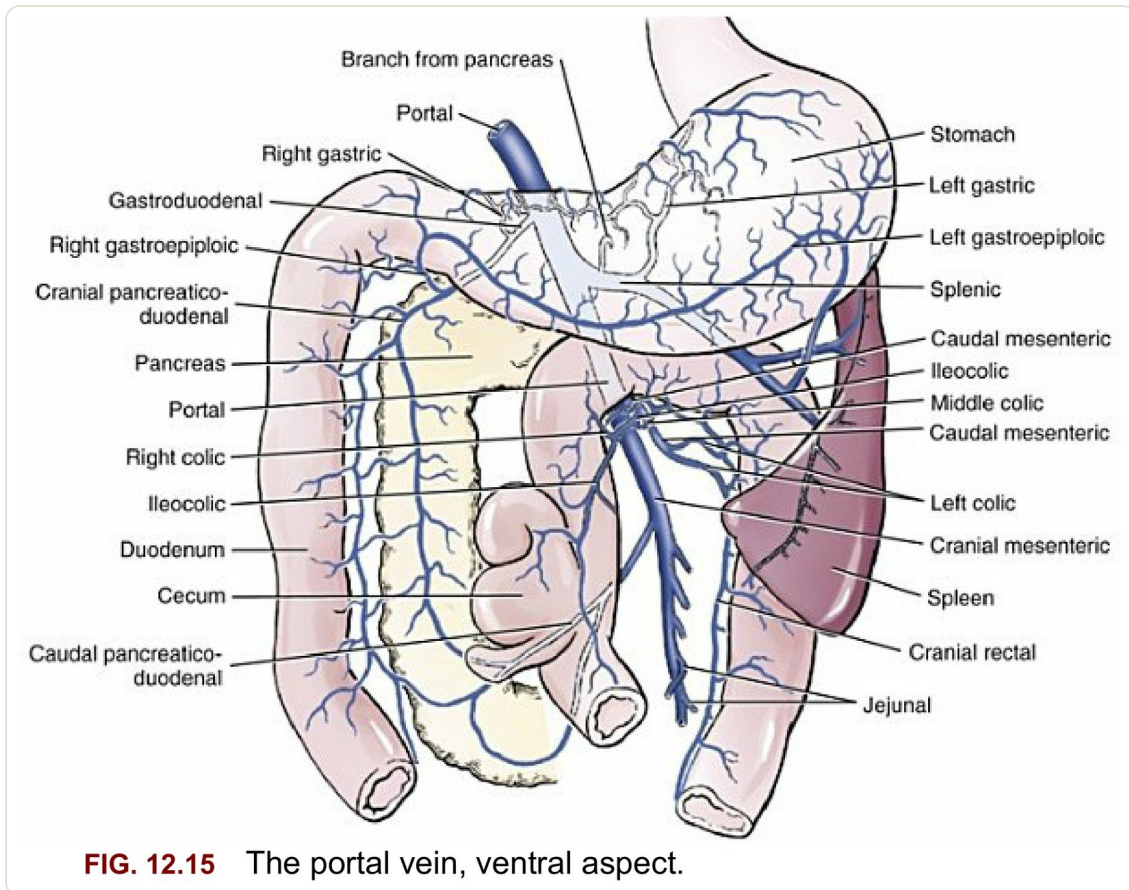


**FIG. 12.14** The caudal vena cava and its main tributaries, ventral aspect.

**Fig 14 — The caudal vena cava and its tributaries, ventral aspect.** The sublumbar region with the viscera removed. The **aorta** lies to the left of the **caudal vena cava**. Follow the **renal veins** and note that the **left testicular (ovarian) vein** drains into the **left renal vein** while the right drains directly into the cava — a genuine asymmetry with surgical consequences. The **ureters** run caudally over the psoas, and the vessels divide into **external and internal iliac** branches at the pelvic inlet.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 12.14, the caudal vena cava and its main tributaries. Reproduced for educational reference.

Finally the portal system, which is a closed circuit of its own: everything absorbed from stomach, intestine, pancreas and spleen is collected and delivered to the liver before it ever reaches the systemic circulation.



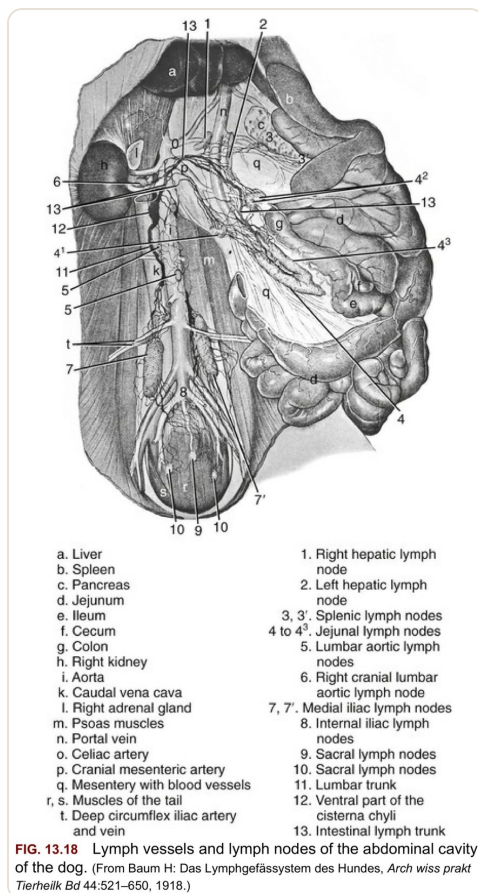
**FIG. 12.15** The portal vein, ventral aspect.

**Fig 15 — The portal vein and its tributaries, ventral aspect.** The **portal vein** is formed by the **cranial** and **caudal mesenteric**, **splenic** and **gastroduodenal** veins. Every named tributary here — jejunal, ileocolic, colic, gastric, gastroepiploic, pancreaticoduodenal — drains into it. A vessel connecting any of them to the systemic circulation instead is a **portosystemic shunt**, and this is the map you use to find one.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 12.15, the portal vein, ventral aspect. Reproduced for educational reference.

## 10 Lymph nodes and staging

Any exploratory done for suspected neoplasia is also a staging procedure, and that means knowing which nodes drain what — and being able to find them. The mesenteric groups sit in the mesentery near the root; the **lumbar aortic** and **medial iliac** nodes lie retroperitoneally along the aorta and the caudal vena cava; the hepatic nodes sit at the porta.

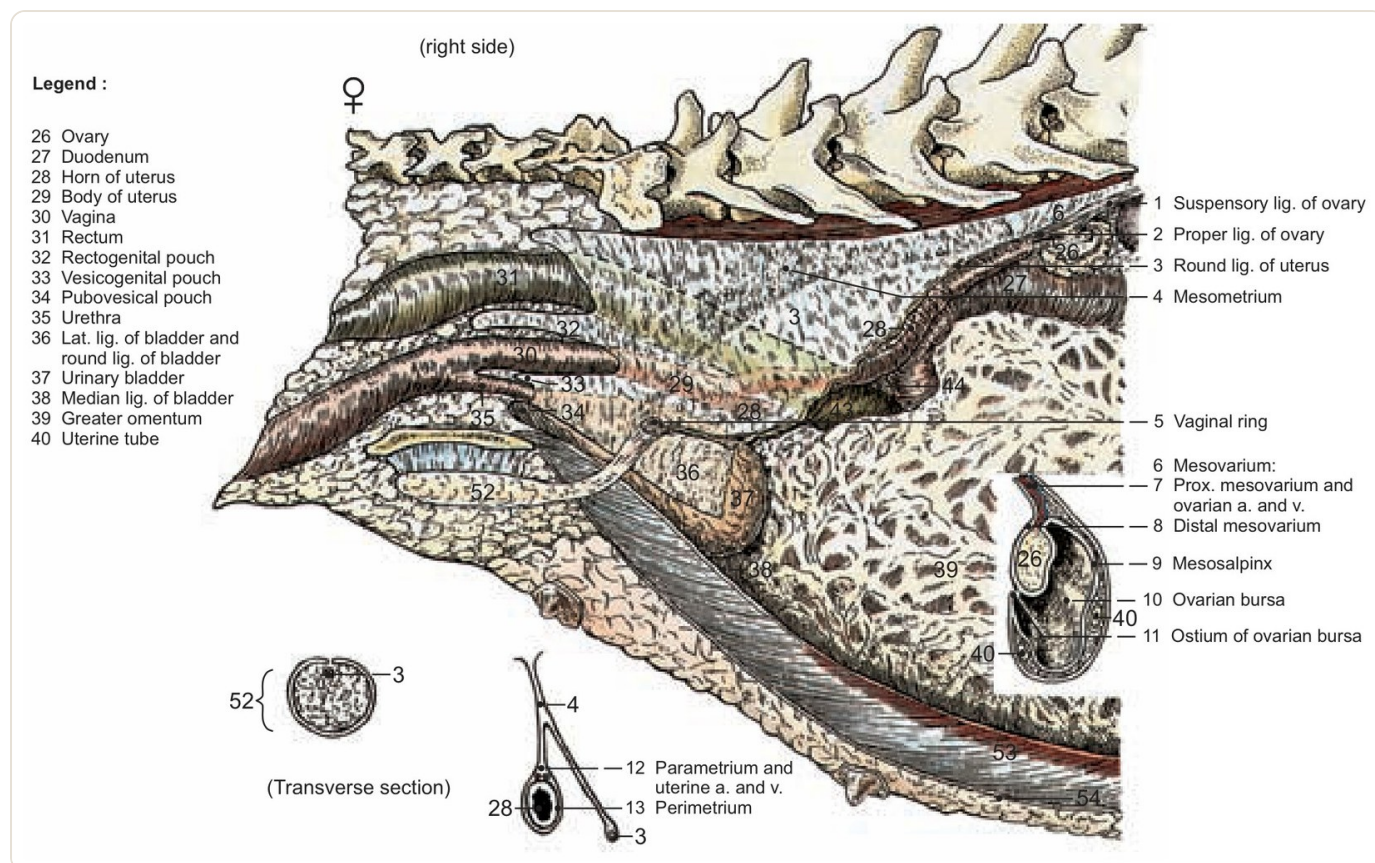


**Fig 16 — Lymph vessels and lymph nodes of the canine abdominal cavity.** The full retroperitoneal lymphatic map with its key. Note **1, 2** the right and left **hepatic** nodes at the porta; **3, 3'** **splenic**; **4–4<sup>3</sup>** the large **jejunal** nodes in the mesentery; **5 lumbar aortic**; **7, 7'** **medial iliac** — the sublumbar nodes you palpate rectally and biopsy for caudal-abdominal tumours; and **12** the **cisterna chyli**, the dilated lymphatic sac that receives the abdominal lymph trunks and gives rise to the thoracic duct — the structure ablated alongside thoracic duct ligation in the surgical management of chylothorax.

Image — Evans HE, de Lahunta A. Miller and Evans' Anatomy of the Dog, 5th ed. Elsevier — Fig 13.18, lymph vessels and lymph nodes of the abdominal cavity. Reproduced for educational reference.

## 11 The ovary, its ligaments, and the commonest abdominal surgery there is

An ovariohysterectomy is the operation most vets perform most often, and almost every difficulty in it is an anatomical one. The ovary sits just caudal to the kidney, wrapped in the **ovarian bursa** and suspended by a set of peritoneal folds that between them decide how easily you can bring it into the wound.



**Fig 17 — The urogenital ligaments of the bitch, right side.** The structures you meet at a spay, named: 1 the **suspensory ligament of the ovary** running cranially to the last ribs; 2 the **proper ligament** tying ovary to uterine horn; 3 the **round ligament of the uterus** continuing to 5 the **vaginal ring**; 4 the **mesometrium**; 6–8 the **mesovarium** carrying the **ovarian artery and vein**; 9 the **mesosalpinx** and 10 the **ovarian bursa** with 11 its **ostium**. Caudally, 32 the rectogenital, 33 vesicogenital and 34 pubovesical pouches, and 38 the median ligament of the bladder.

Image — Budras KD, McCarthy PH, Fricke W, Richter R. *Anatomy of the Dog*, 5th ed. Schlütersche — Urogenital ligaments of the bitch, right side. Reproduced for educational reference.

Three practical points follow directly from that plate. The **suspensory ligament** is the structure that stops the ovary reaching the incision; it is deliberately stretched or broken close to its origin, well away from the ovarian vessels. The **ovarian artery and vein** run in the mesovarium and are the pedicle you ligate — and in an obese bitch they are buried in fat, which is why a torn pedicle is the classic source of intraoperative haemorrhage and why the **ovarian pedicle** is the classic site of an **ovarian remnant**. And the **broad ligament** — mesovarium, mesosalpinx and mesometrium together — carries the uterine vessels caudally, so the uterine body is ligated with those vessels identified, not blind.

## 12 The systematic exploration

Everything above exists to make this section possible. An exploratory coeliotomy fails not because a surgeon cannot recognise a lesion, but because they never looked where it was. The remedy is to explore in the **same order every single time**, whatever the presenting complaint, so that the sequence is automatic and complete. The order below is the one taught in the standard soft-tissue references, and it maps directly onto the anatomy in this article.

| STEP                                         | WHAT YOU EXAMINE                                                                                                                              | DO NOT MISS                                                                                                            |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>1. Cranial abdomen</b>                    | Diaphragm, all six liver lobes, gall bladder, stomach from cardia to pylorus, proximal duodenum, spleen                                       | Run a hand over the whole diaphragm for a tear; turn each liver lobe; the <b>hilus</b> and both surfaces of the spleen |
| <b>2. Right gutter</b><br>duodenal manoeuvre | Descending duodenum reflected left — right limb of pancreas, right kidney, right adrenal, right ovary or testicular vessels, caudal vena cava | The <b>right adrenal</b> against the vena cava, and the epiploic foramen just cranial to it                            |
| <b>3. Left gutter</b><br>colonic manoeuvre   | Descending colon reflected right — left kidney, left adrenal, left ovary, left limb of pancreas via the omental bursa                         | The <b>left ovarian pedicle</b> — the classic site of a retained ovarian remnant                                       |

| STEP                         | WHAT YOU EXAMINE                                                                                                                                     | DO NOT MISS                                                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4. Caudal abdomen</b>     | Urinary bladder, both ureters to their trigone insertion, uterus and uterine horns or prostate, urethra, sublumbar (medial iliac) lymph nodes        | Trace <b>both</b> ureters; a unilateral obstruction is silent                                                                                |
| <b>5. Run the intestines</b> | From duodenum to descending colon, hand over hand, through the whole length — then the caecum, the ileocolic junction and the mesenteric lymph nodes | <b>Linear foreign body:</b> check under the tongue and at the pylorus, and look for a plicated, accorded mesenteric border                   |
| <b>6. Before closing</b>     | Count swabs and instruments, lavage, reassess anything you biopsied for haemostasis (hemostasis)                                                     | Close the <b>external rectus sheath</b> as the holding layer, in a simple continuous or interrupted pattern with an appropriate monofilament |

#### Two habits that make the difference.

First, use **moistened laparotomy sponges** to protect the wound edges and to pack viscera out of the way, and a self-retaining retractor (Balfour or Gossett) so you are not fighting the wall. Second, if you find a lesion early, *finish the exploration anyway*. The intussusception you found does not mean there is not also a second one, and the splenic mass does not rule out hepatic metastases.

## 13 The anatomy behind four routine procedures

Most abdominal surgery in general practice comes down to a handful of operations, and each one is a specific piece of the anatomy above being used or avoided.

**The biliary tract.** The **gallbladder** sits wedged between the quadrate and right medial liver lobes, draining by the cystic duct into the bile duct, which runs in the hepatoduodenal ligament alongside the portal vein and hepatic artery and opens on the major duodenal papilla. The common indication for surgery is a **gallbladder mucocele**, and the reason cholecystectomy demands care is entirely anatomical: the structures you must not damage are millimetres from the one you are removing, and a compromised bile duct means **bile peritonitis**, which is far more lethal than the original disease.

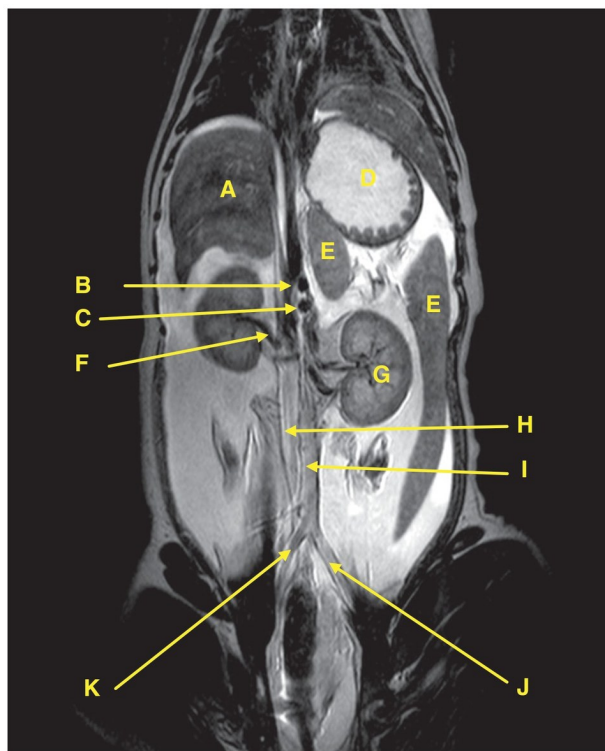
**Enterotomy.** Incise on the **antimesenteric border** — always. The vessels reach the gut along the mesenteric border, so a cut there devascularises the very edges you are about to appose. Judge viability before you close, on colour, arterial pulsation, peristalsis and bleeding from the cut edge, and where the tissue is doubtful an **omental patch** laid over the suture line brings its own blood supply, lymphatic drainage and adhesive tendency to seal the repair.

**Cystotomy.** The bladder apex is mobile and the neck is not, and the ureters enter at the **trigone** close to the urethral opening. A cystotomy is therefore made through the relatively avascular *apex*, conventionally on the ventral surface where it is easy to reach and to close, and kept well away from the trigone so that no suture catches a ureteric orifice. Flush and catheterise the urethra before closing, because a calculus lodged distally will simply obstruct again.

**The root of the mesentery.** Every jejunal vessel converges on a single narrow stalk around the cranial mesenteric artery. That stalk is the axis on which the whole small intestine can rotate in **mesenteric volvulus** — a rare condition, but one that strangles the blood supply of nearly the entire intestine at once, which is why it kills faster than any other abdominal catastrophe.

## 14 The same anatomy on imaging

Most of the time you will meet this anatomy on a screen rather than through an incision, and the cross-sectional relationships are exactly the ones drawn in the peritoneal sections above — aorta and caudal vena cava dorsally, kidneys retroperitoneal against the sublumbar muscles, liver and stomach filling the cranial abdomen inside the ribs.



**Figure 18.7** Dorsal MRI scan (T2W) of the abdomen of a dog. A = liver; B = coeliac artery; C = cranial mesenteric artery; D = stomach; E = spleen; F = renal artery; G = left kidney; H = vena cava; I = aorta; J = left external iliac artery; K = right external iliac artery.

**Fig 18 — Dorsal MRI of the canine abdomen (T2-weighted).** The living version of the same map. **A** liver; **B** coeliac artery; **C** cranial mesenteric artery; **D** stomach; **E** spleen; **F** renal artery; **G** left kidney; **H** caudal vena cava; **I** aorta; **J** left and **K** right external iliac arteries. Compare the position of the coeliac and cranial mesenteric origins here with the diagram of the aortic branches above — the same two vessels, a centimetre apart, at the level of the last ribs.

Image — Skerritt G. King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals. Wiley — Fig 18.7, dorsal MRI scan of the abdomen of a dog. Reproduced for educational reference.

## 15 Quiz: test yourself

Fifteen questions covering the wall, the peritoneum, the vessels and the surgical landmarks. Answers are shown beneath each — cover them and work down the list.

1. What are the boundaries of the canine abdominal cavity?**Answer:** It runs from the **diaphragm** cranially to the **pelvic inlet** caudally, where it becomes continuous with the pelvic cavity. It is lined by the **transversalis fascia**, which is in turn covered in most places by **peritoneum**.
2. Name the four muscles of the abdominal wall, superficial to deep.**Answer:** **External abdominal oblique**, **internal abdominal oblique**, **transversus abdominis** (the deepest, only 2–4 mm thick even in a large dog), and the longitudinal **rectus abdominis** lying either side of the midline.
3. What forms the external lamina of the rectus sheath?**Answer:** The aponeuroses of the **external abdominal oblique**, most of the **internal abdominal oblique**, and near its caudal end a portion of the **transversus abdominis** aponeurosis.
4. Why does the rectus sheath matter caudal to the umbilicus?**Answer:** Because in the caudal third the transversus aponeurosis swings **ventral** to the rectus, so there is effectively **no internal lamina** — only transversalis fascia and peritoneum lie deep to the muscle. The **external** lamina is therefore the only true holding layer there.
5. Where does the linea alba run, and why do you incise it rather than beside it?**Answer:** From the **xiphoid process** to the **pelvic symphysis**. It is a collagenous strip that holds suture well and is relatively avascular; drifting laterally puts you into the vascular belly of the rectus abdominis, which bleeds and holds sutures poorly.
6. What is the falciform ligament and what do you do with it?**Answer:** A fat-laden peritoneal fold attaching the parietal surface of the liver, between the right and left medial lobes, to the body wall just cranial to the umbilicus. In the dog it is so fatty that it is **routinely resected** to expose the cranial abdomen — ligate its base.
7. What bounds the epiploic foramen?**Answer:** **Ventrally** the portal vein in the hepatoduodenal ligament, **dorsally** the caudal vena cava, **caudally** the hepatic artery in the mesoduodenum, and **cranially** the liver. It faces the **right** side.
8. How do you perform a Pringle manoeuvre, and what does it achieve?**Answer:** Pass a finger through the **epiploic foramen** and compress its ventral border against the thumb. That occludes the **portal vein and hepatic artery** together in the hepatoduodenal ligament, temporarily cutting off inflow to the liver — the manoeuvre for uncontrolled hepatic haemorrhage.
9. What is the omental bursa?**Answer:** The potential peritoneal space enclosed by the greater and lesser omenta, the stomach and the liver — a **closed sac** except for the epiploic foramen. Its largest part is the **caudal recess** between the two walls of the greater

omentum.10. Which structure suspends the spleen, and what runs in it?**Answer:** The **gastrosplenic ligament**, running from the hilus of the spleen to the greater curvature of the stomach. It carries the **splenic vessels** and the short gastric and left gastroepiploic branches that arise from them.11. Describe the duodenal manoeuvre.**Answer:** Reflect the **descending duodenum** and its mesentery toward the left. The mesoduodenum acts as a natural retractor holding the intestinal mass aside, exposing the **right kidney, right adrenal, right limb of the pancreas** and the caudal vena cava.12. Which kidney is more cranial, and what is the surgical consequence?**Answer:** The **right**. It sits in the renal fossa of the caudate process of the liver, well under the ribs, which makes it less mobile and harder to reach than the more caudal, more mobile left kidney.13. Name the three unpaired visceral branches of the abdominal aorta.**Answer:** **Celiac, cranial mesenteric and caudal mesenteric** arteries — in that craniocaudal order.14. What forms the deep inguinal ring?**Answer:** Three structures: the **ventral end of the inguinal ligament**, the **fleshy caudal border of the internal abdominal oblique**, and the **lateral border of the rectus abdominis**.15. What does the inguinal canal contain in the bitch?**Answer:** Fascia, the **vaginal process** with the **round ligament of the uterus**, a good deal of fat, the **external pudendal vessels** and the **genitofemoral nerve**.

## 16 Dog abdominal anatomy — frequently asked questions

---

### Where is a dog's abdominal cavity?

Between the **diaphragm** and the **pelvic inlet**. Its cranial part reaches a long way forward *inside* the rib cage — so a large share of the abdominal organs, including the liver, most of the stomach and the cranial pole of the right kidney, sit under ribs rather than under the flank.

### What organs are on the right side of a dog's abdomen?

Most of the **liver**, the **gall bladder**, the **pylorus** and cranial duodenum, the **right limb of the pancreas**, the **descending duodenum** running caudally along the wall, and the **right kidney** and **right adrenal** high and far forward, retroperitoneally.

### What is on the left side?

The body and fundus of the **stomach**, the **spleen** along the greater curvature, the **left limb of the pancreas**, the **left kidney** (more caudal and more mobile than the right), and the **descending colon** running back to the rectum.

### What is the linea alba, and why is it the surgical midline?

A midventral strip of collagenous tissue running from the **xiphoid process to the pelvic symphysis**, formed where the aponeuroses of the three flat abdominal muscles meet and interdigitate. It is relatively avascular, holds suture well, and separates the two rectus muscles — so opening it gives access with minimal bleeding and closing it restores the wall's tension line.

### Which layer holds an abdominal closure?

The **external lamina of the rectus sheath**. Skin, subcutis, peritoneum and muscle belly contribute essentially nothing to wound strength. Caudal to the umbilicus this matters even more, because the internal lamina is absent there.

### What is the greater omentum for?

Four things. It carries a rich vascular and lymphatic network that responds rapidly to infection — hence Rutherford Morison's "**policeman of the abdomen**". It stores fat. It insulates the intestines. And it can be wrapped around a wound or abscess surgically as a living biological dressing — **omentalisation**.

### How many lobes does the dog's liver have?

Six divisions: **right lateral, right medial, quadrate, left medial and left lateral** lobes, plus the **caudate lobe** with its caudate and papillary processes. The gall bladder sits between the quadrate and right medial lobes.

### Is the dog's abdomen laid out like a cat's?

Broadly yes — both are carnivores with a simple stomach, a short intestinal tract and the same peritoneal arrangement. The differences are proportional rather than structural, and the biggest contrast is with the herbivores: see our Cat Anatomy guide for the feline version, and Ruminant Digestive Anatomy or Horse Anatomy for how radically a fermenting gut reorganises the same cavity.

### How long should an exploratory laparotomy incision be?

For a true exploratory, **xiphoid to pubis**. Anything shorter cannot reach the cranial abdomen (which is under the ribs) or the caudal abdomen (which is at the pelvic inlet) — and an incision extended halfway through a procedure is a wound that has been handled twice.

#### When to refer

- **Exploratory coeliotomy** — xiphoid to pubis, then the same six-step sweep every time.
- **Closure** — the external rectus sheath is the holding layer; caudally it is the only one.
- **Hepatic haemorrhage** — the Pringle manoeuvre through the epiploic foramen.
- **Ovariohysterectomy** — suspensory ligament, ovarian pedicle in the mesovarium, uterine vessels in the broad ligament.
- **Cryptorchidism** — follow the deferent duct from the vaginal ring.
- **GDV** — the pylorus belongs on the right; de-rotate by bringing it back there.
- **Nephrectomy and adrenalectomy** — retroperitoneal, and the right side is the harder one because of the vena cava.
- **Tumour (tumor) staging** — jejunal, hepatic, splenic and medial iliac nodes, plus a full exploration.

## Sources

1. Evans HE, de Lahunta A. *Miller and Evans' Anatomy of the Dog*. 5th ed. Elsevier — source of the rectus sheath, peritoneal, vascular and lymphatic plates and of the descriptions of the rectus sheath laminae, inguinal canal and epiploic foramen.
2. Skerrett G. *King's Applied Anatomy of the Abdomen and Pelvis of Domestic Mammals*. Wiley — source of the body-wall section, omental bursa diagram, lateral topography and MRI, and of the craniocaudal variation in the canine rectus sheath.
3. Budras KD, McCarthy PH, Fricke W, Richter R. *Anatomy of the Dog*. 5th ed. Schlütersche — source of the abdominal wall, inguinal region, opened abdomen and urogenital ligament plates.
4. Johnston SA, Tobias KM (eds). *Veterinary Surgery: Small Animal* — operative approaches to the abdomen and the systematic exploration.
5. Monnet E (ed). *Small Animal Soft Tissue Surgery* — abdominal wall closure and coeliotomy technique.
6. Today's Veterinary Practice — A Guide to Exploratory Laparotomy — open-access account of the systematic exploration sequence.

---

Vet-eBooks.com · free veterinary study guides · the full illustrated article, with every figure at full size, is at [vet-ebooks.com/articles/dog-abdominal-anatomy-for-surgery/](http://vet-ebooks.com/articles/dog-abdominal-anatomy-for-surgery/)

MORE FREE STUDY GUIDES • RESOURCES

## More free veterinary study guides

This is one of a growing library of free veterinary study guides on vet-ebooks.com — written for practising vets and students, sourced from the standard veterinary texts, and every one free with a downloadable PDF and no sign-up.

---

**3,400+**

veterinary books

---

**400+**

drug profiles

---

**Study guides**

a free PDF with each

---

**All free**

no sign-up needed

**[www.vet-ebooks.com](http://www.vet-ebooks.com)**

For educational use. Always confirm doses and clinical decisions against current authoritative texts and your own clinical judgment. © vet-ebooks.com — share freely, do not modify.