

Fig. 7-81. Transverse section of a feline abdomen (caudal aspect); König, 1992.

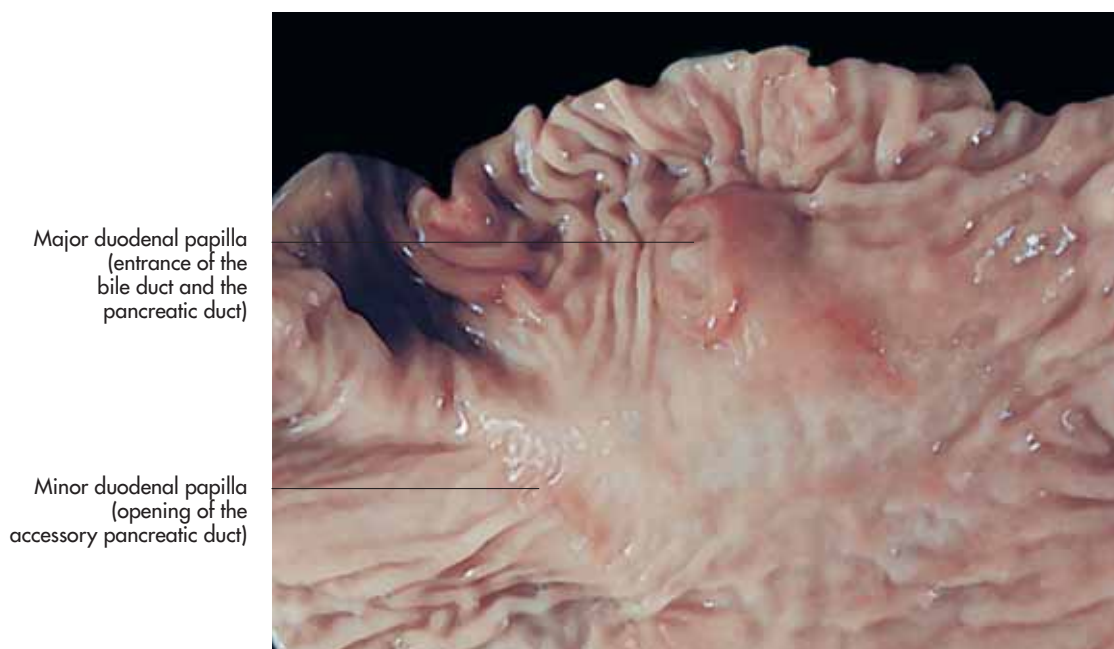


Fig. 7-82. Luminal surface of the duodenal mucosa of a horse.

Small intestine (intestinum tenue)

The main functions of the small intestine are digestion and absorption. Digestion is defined as the enzymatic destruction of ingested material into particles ready for absorption. Both the pancreatic and the bile ducts open into the small intestine: pancreas secretion is the major source of the enzymes, and the bile is responsible for the emulsification of fat essential for digestion.

The **mucosal epithelium** consists mainly of columnar cells, which function in absorption, mucus production and endocrine function, and control pancreatic secretion and muscular function of the gall bladder and the intestinal walls (Fig. 7-79 and 80). The mucosa is rich in lymphoid follicles,

which aggregate to form **Peyer patches** (Fig. 7-84). The small intestine begins at the pylorus and ends at the caecocolic junction. It consists of three main parts (Fig. 7-85ff.):

- duodenum,
- jejunum,
- ileum.

The **small intestine** is connected to the dorsal abdominal wall by the **dorsal mesentery** over its whole length. The mesentery is **relatively long** for the most part and allows a great degree of mobility to the small intestine. However in the horse and in ruminants the duodenum is fixed in its position by a **short mesoduodenum**.

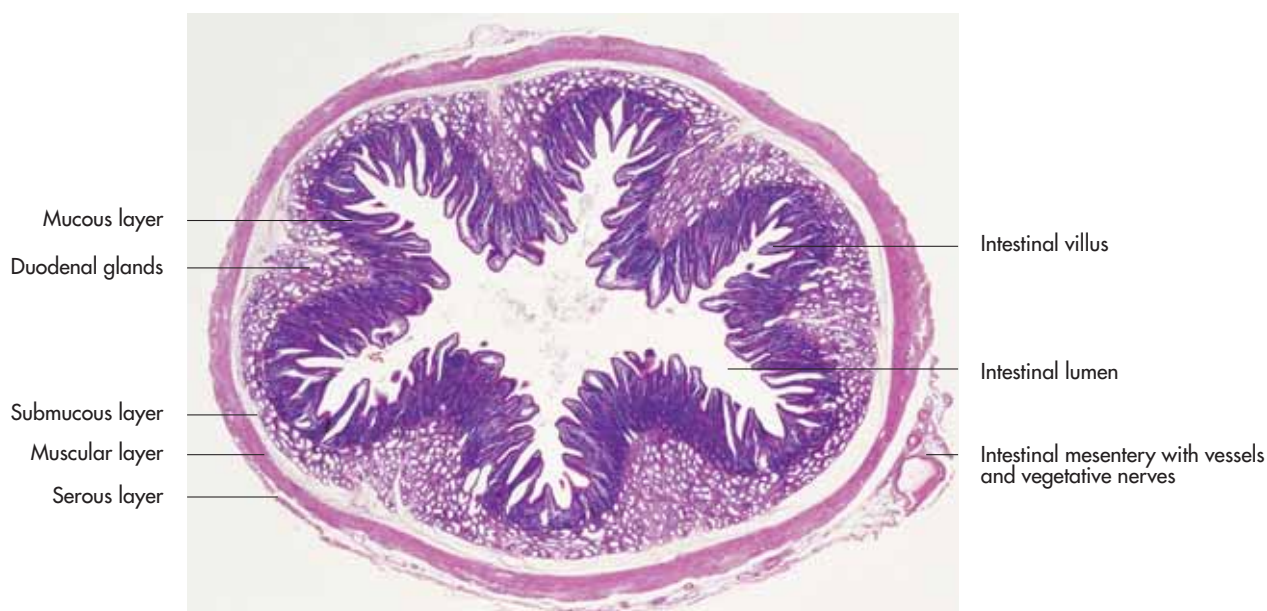


Fig. 7-83. Histological section of the duodenum of a cat; Liebich, 2004.

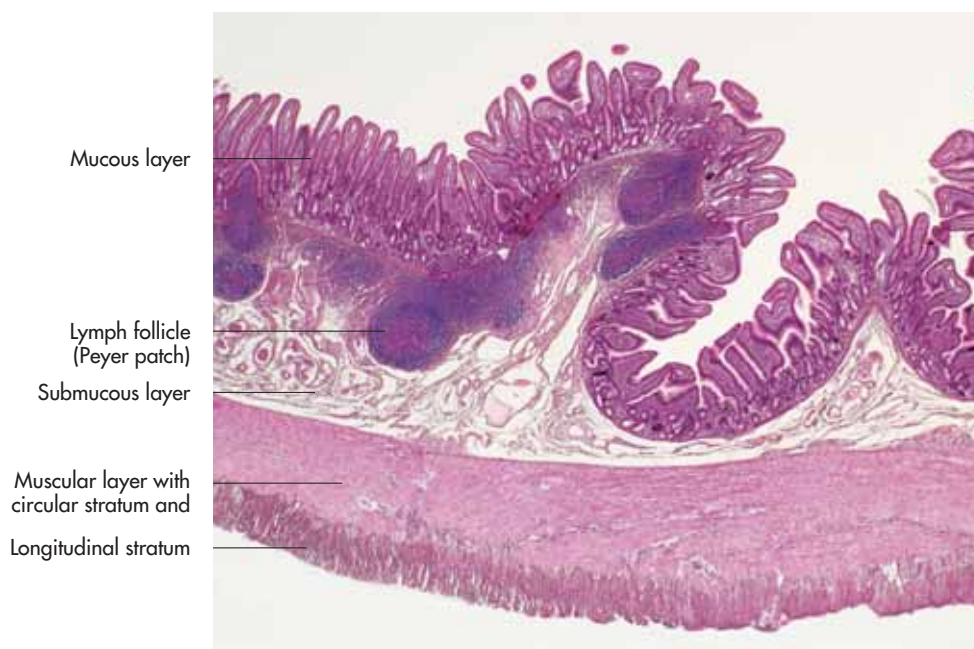


Fig. 7-84. Histological section of the ileum of a dog.

Duodenum

The duodenum is the proximal part of the small intestine, extending from the pyloric part of the stomach to the jejunum (Fig. 7-85ff.). The duodenum can be subdivided into:

- cranial portion (pars cranialis duodeni),
- cranial duodenal flexure (flexura duodeni cranialis),
- descending portion (pars descendens duodeni),
- caudal duodenal flexure (flexura duodeni caudalis), also known as transverse portion (pars transversa),
- ascending portion (pars ascendens) and
- duodenal jejunal flexure (flexura duodenojejunalis).

The initial portion continues from the pylorus of the stomach and passes towards the right abdominal wall before deflecting caudally to descend to the pelvic inlet. It then passes medially around the cranial root of the mesentery before ascending cranially for a short distance. It ends by bending ventrally, where it is continued as the jejunum.

Unlike in humans where the extent of the duodenum is defined over the presence of the duodenal glands, the caudal end of the duodenum is marked by the cranial border of the **duodenocolic fold** (plica duodenocolica) (Fig. 7-85ff.). The duodenum is attached to the abdominal roof by the mesoduodenum, the cranial part of the mesentery, which is relatively short in the horse and in ruminants, but longer in carnivores and the pig (Fig. 7-85ff.). The long mesoduodenum together

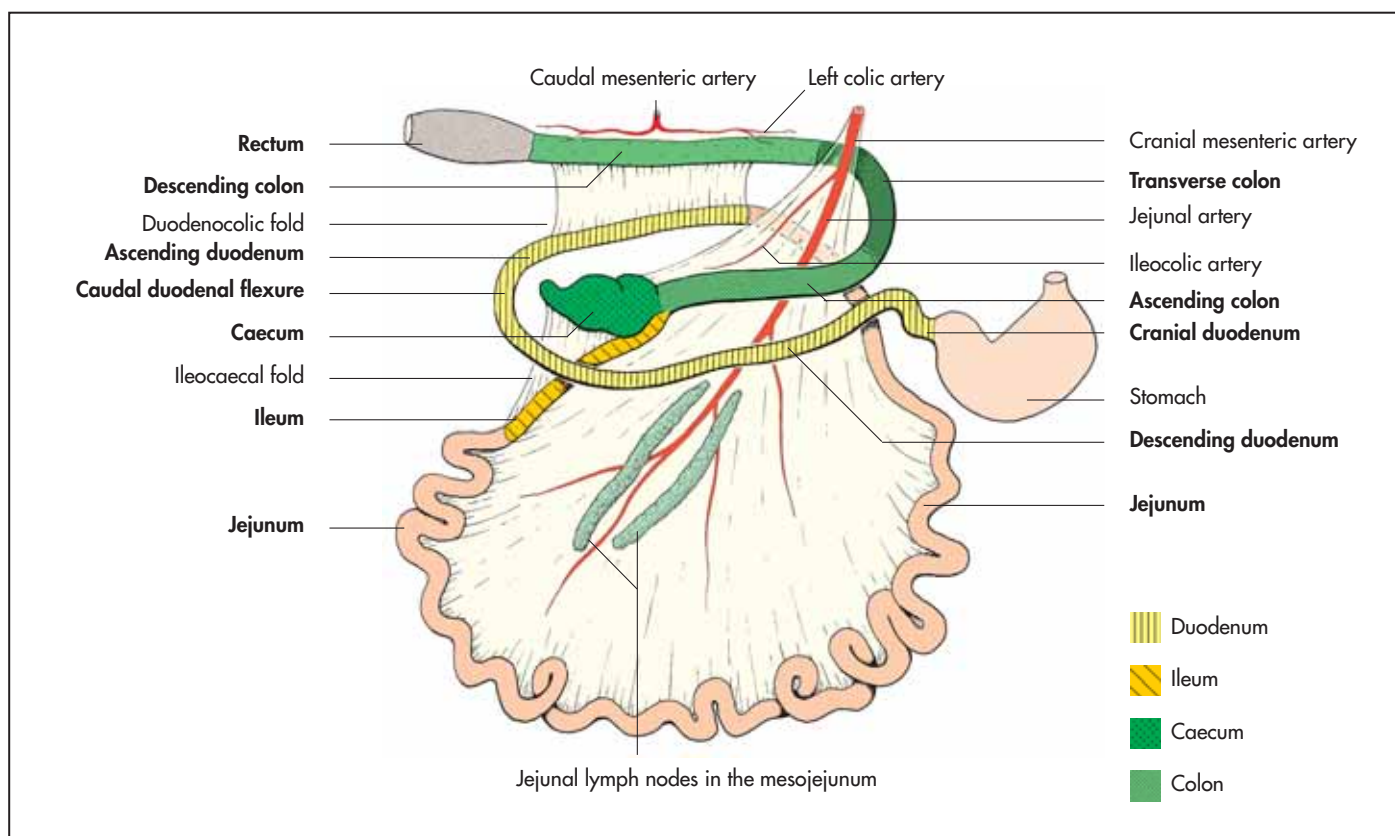


Fig. 7-85. Intestinal tract of the dog (schematic); after Ghetie, 1958.

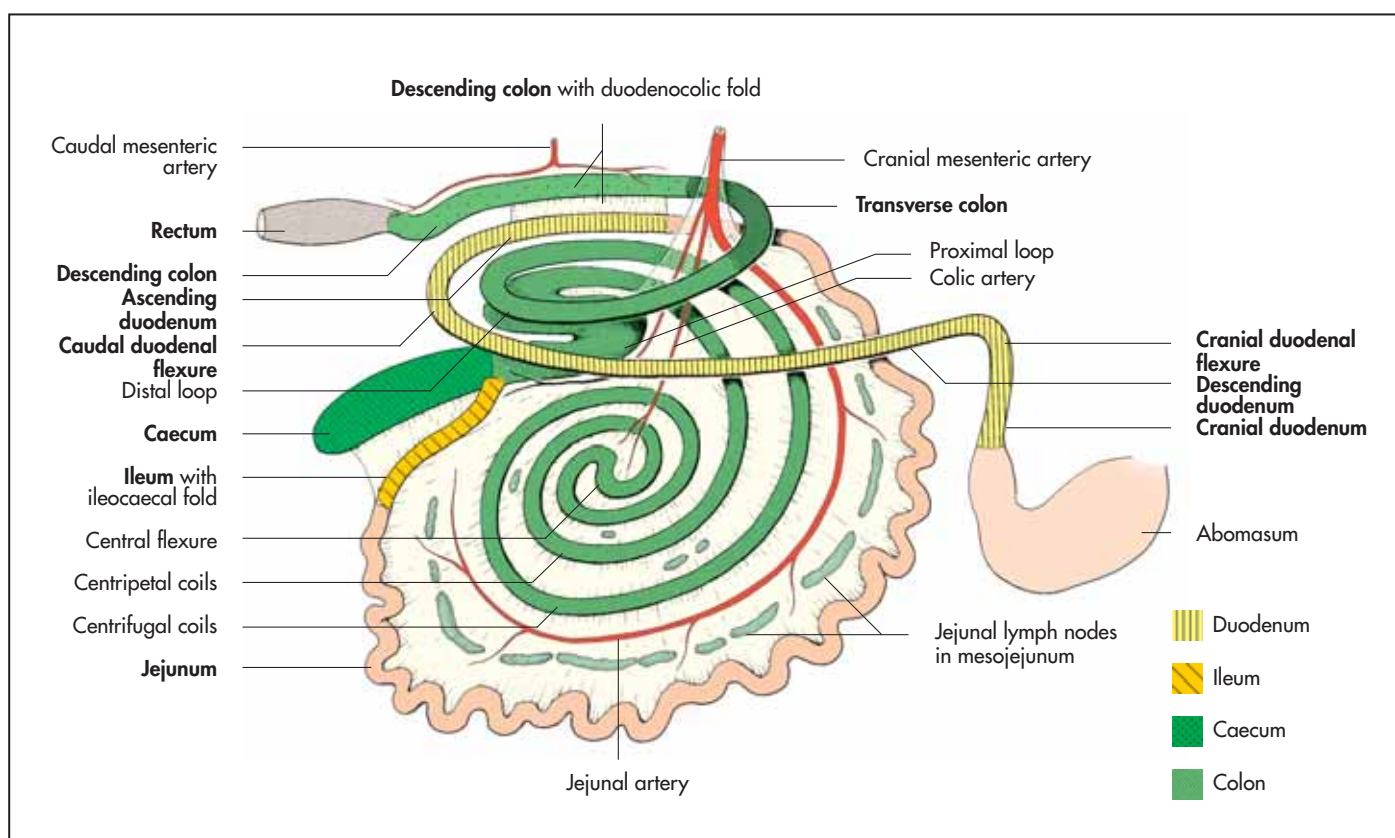


Fig. 7-86. Intestinal tract of the ox (schematic); after Ghetie, 1958.

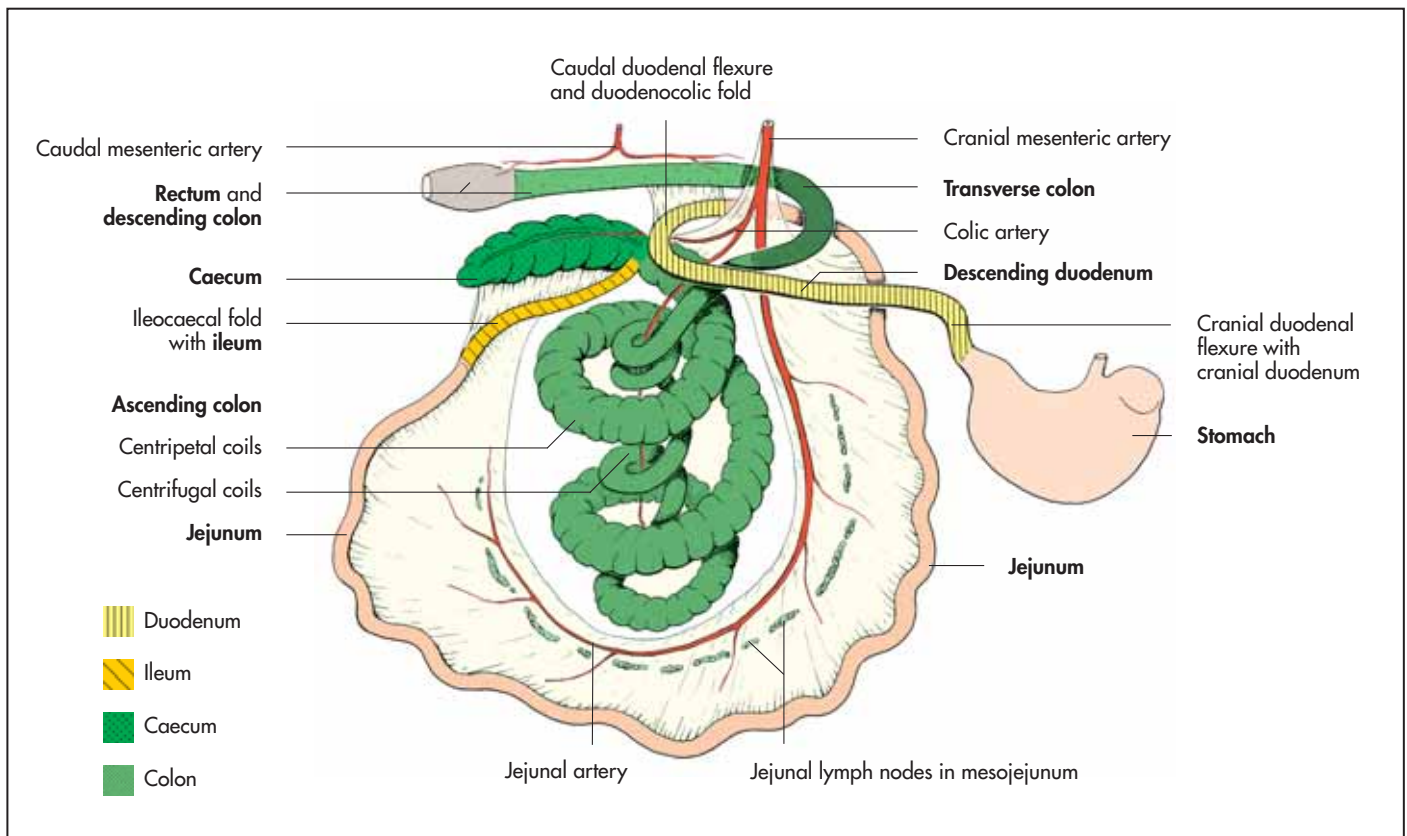


Fig. 7-87. Intestinal tract of the pig (schematic); after Ghetie, 1958.

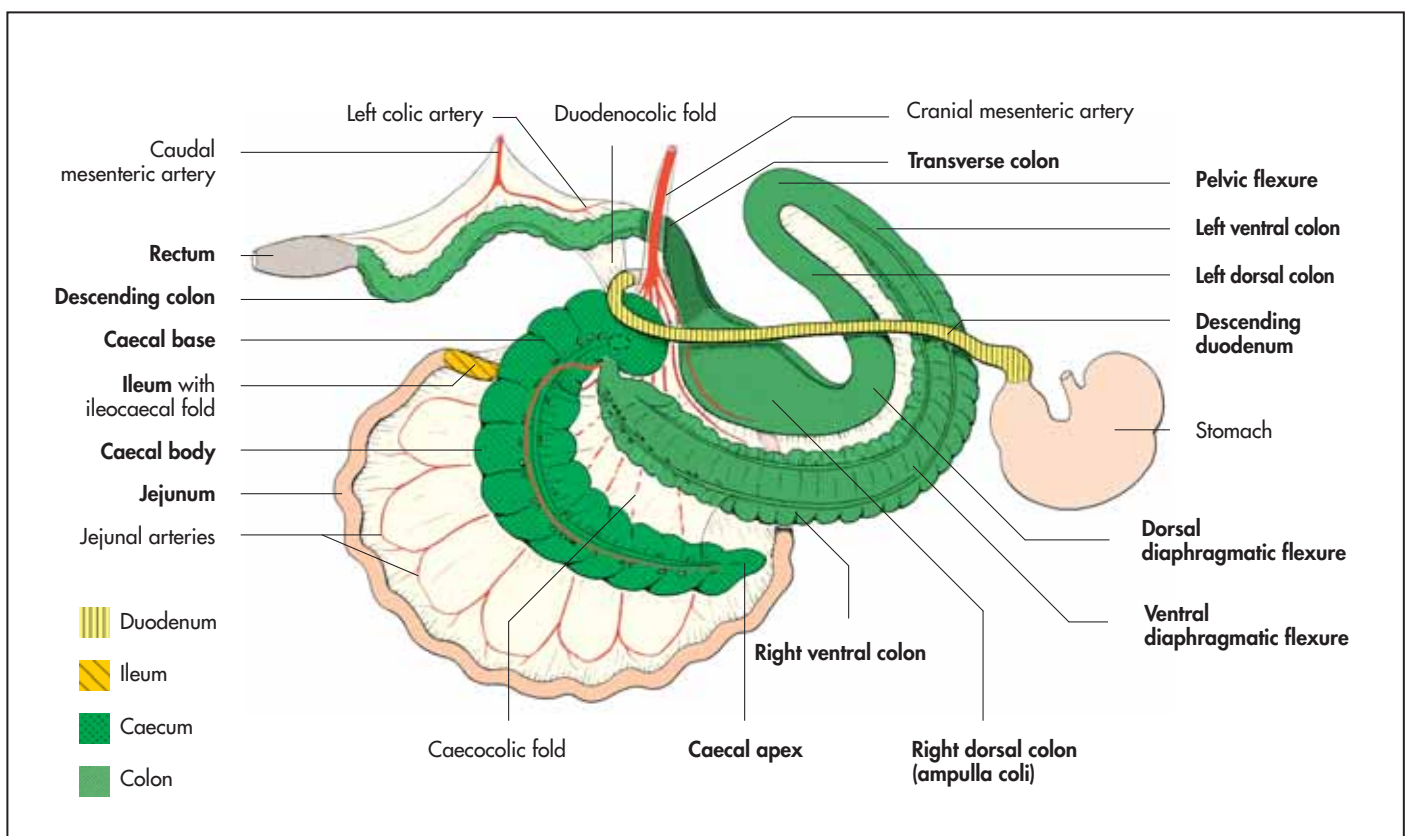


Fig. 7-88. Intestinal tract of the horse (schematic); after Ghetie, 1958.

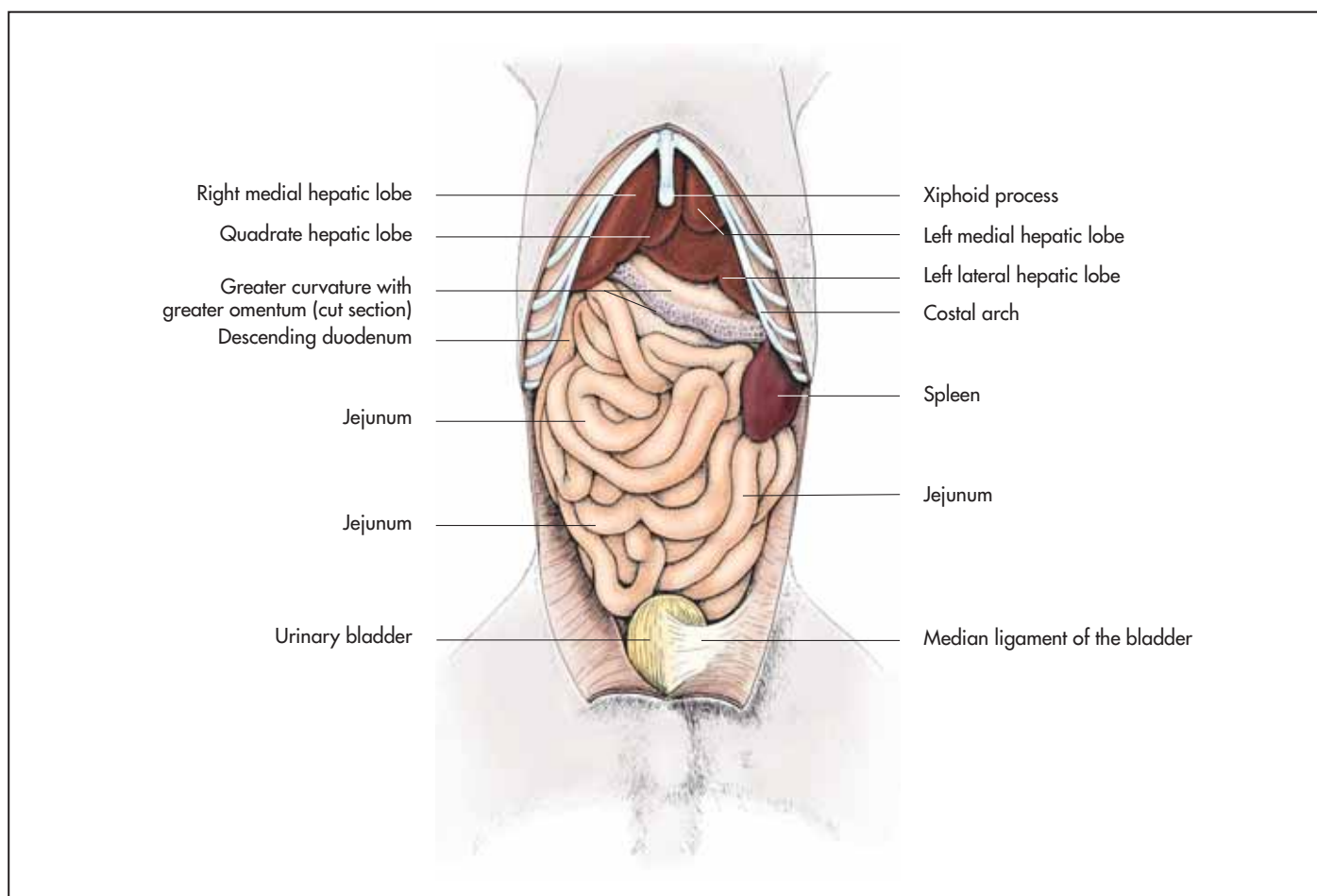


Fig. 7-89. Abdominal organs of the dog in situ (schematic, ventral aspect, greater omentum removed).

with the rather extensive lesser omentum allows a great range of movement to the stomach. This is held responsible for the high prevalence of gastric torsions (*torsio ventriculi*) in the dog, a life-threatening condition occurring in middle-sized and large breeds.

The **cranial part of the duodenum** is connected with the liver by the **hepatoduodenal ligament**, a remnant of the ventral mesentery present in the embryo. Within the hepatoduodenal ligament passes the **common bile duct** (ductus choledochus) from the liver to the duodenum. The mesentery of the descending duodenum includes the right lobe of the pancreas.

Both the pancreatic and the bile ducts open into the duodenum (Fig. 7-82). (A more detailed description is given within this chapter in the section about the accessory glands of the intestinal tract.)

Jejunum

The jejunum is the longest part of the small intestine between the duodenum and the ileum. It is also the **most mobile** and free part of the entire alimentary canal, due to the **long mesojejunum** which suspends the jejunum and ileum from the abdominal roof (Fig. 7-85ff.).

The **mesojejunum** is continuous with the mesoileum and has the form of a large fan hanging from the abdominal roof

with the convoluted jejunum and ileum located in its free distal border. The very short, bunched portion with which it attaches to the aorta is known as the **root of the mesentery** (*radix mesenterii*). It includes the **cranial mesenteric artery**, the **large mesenteric plexus of nerves** that surround the artery and **intestinal lymphatics**. The free border is much longer and folded or ruffled since it follows the turns of the intestine.

The distinction between the jejunum and ileum is rather arbitrarily chosen and the ileum is defined at the terminal part of the small intestine to which the **ileocaecal fold** (*plica ileocaecalis*) attaches. In carnivores the jejunal coils occupy the ventral part of the abdomen between the stomach and the bladder, lying on the deep layer of the greater omentum. The long mesojejunum imposes little restraint, which allows the gut to move freely in response to respiratory, and other movements.

In the pig the jejunum is also suspended by a long mesentery and its coils share the caudoventral part of the abdomen with the mass of the ascending colon. Since the latter lies largely in the left half of the abdominal cavity the jejunum lies more to the right (Fig. 7-87).

In ruminants the large rumen occupies the left half of the abdomen, thus pushing the intestines to the right (Fig. 7-76 and 77). The position of the jejunal coils depends on the fullness of