

LIVER, PANCREAS, SPLEEN

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DEPARTMENT OF ANATOMY AND HISTOLOGY

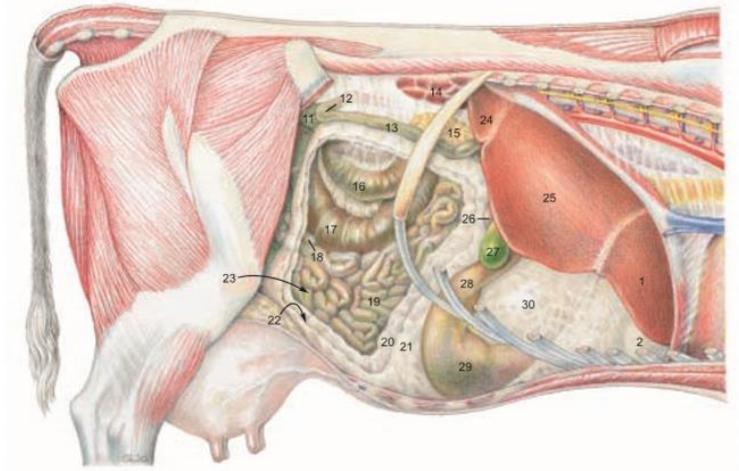
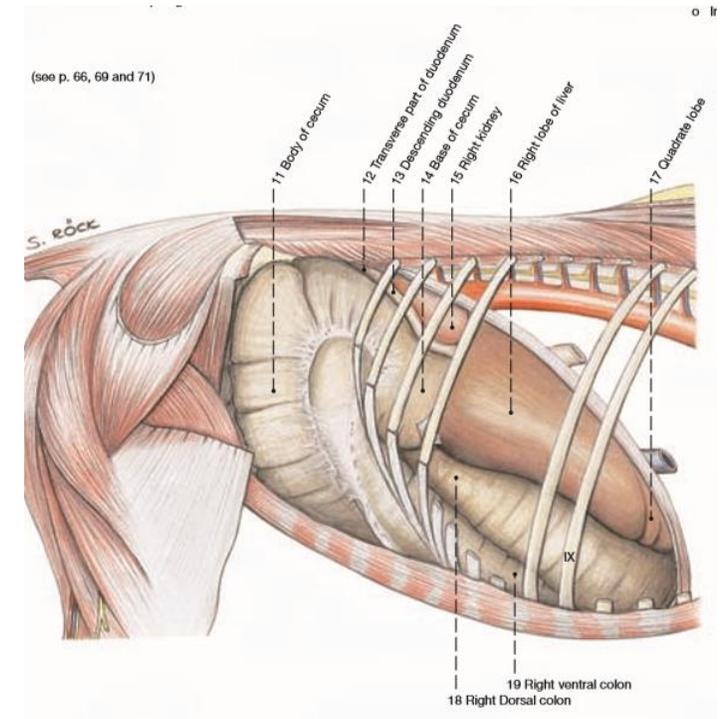
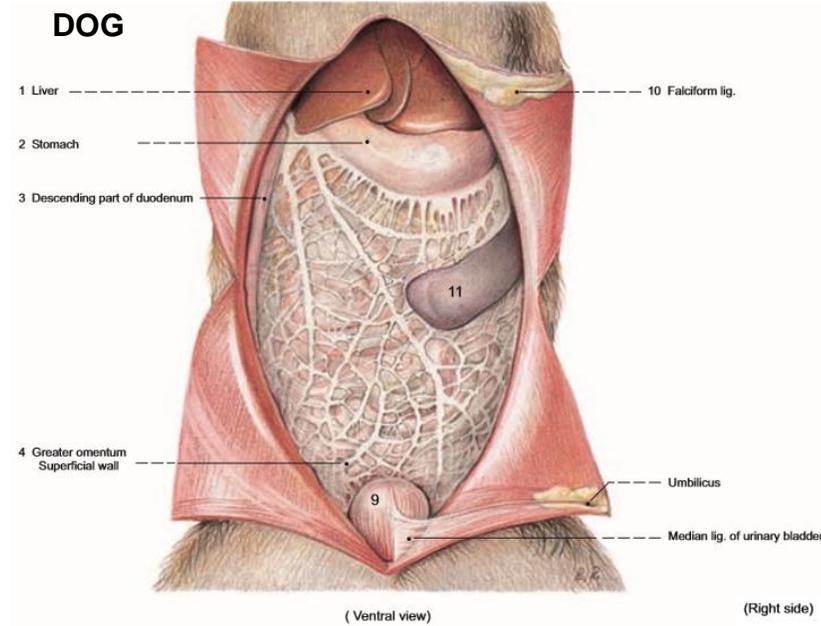
8TH APRIL 2019

LIVER (HEPAR)

- the largest gland of the body
- intraperitoneal organ

FUNCTIONS:

1. secretion of bile
2. in embryonic live – hemopoetic center
3. storage of glycogen
4. converts end products of protein catabolism to urea and uric acid
5. end products of hemoglobin catabolism discharged in the bile as bile pigments
6. disintoxication



Legend:

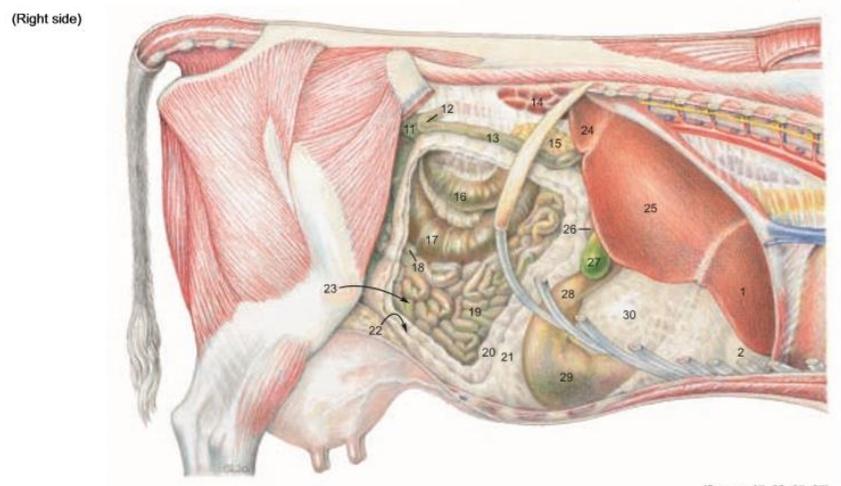
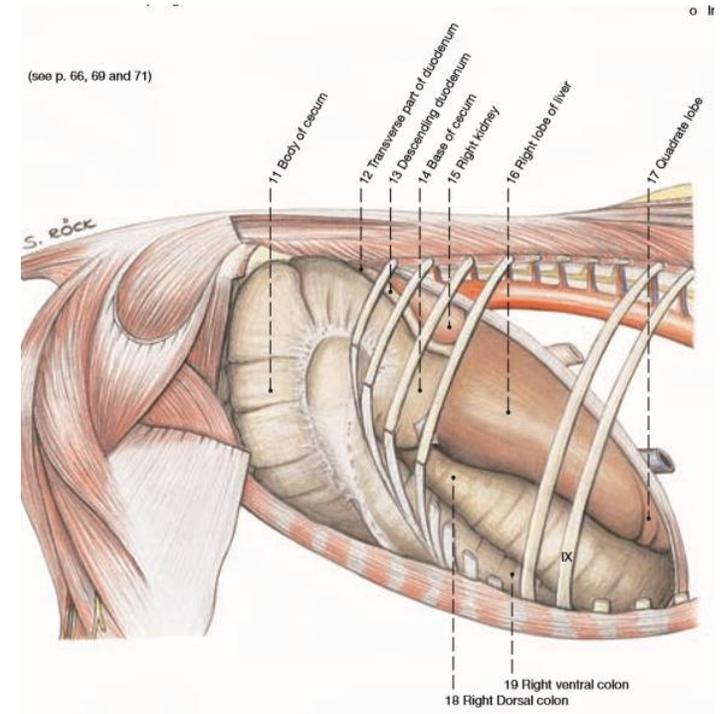
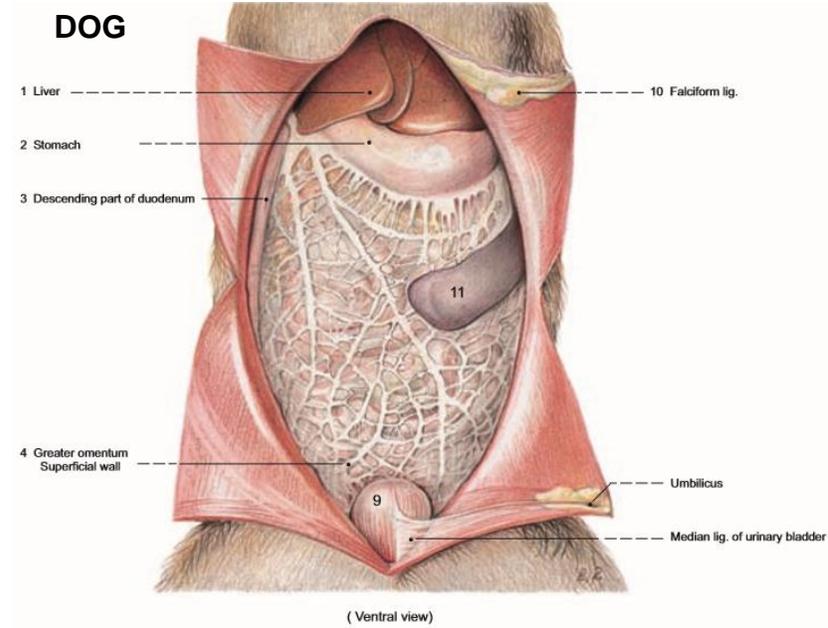
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|----------------------------------|------------------|-----------------------------|-------------------------------------|
| 16 Prox. loop of ascending colon | Greater omentum: | 23 Supraomental recess | 27 Gall bladder |
| 17 Cecum | 20 Deep wall | 24 Caudate process of liver | 28 Pyloric part of abomasum |
| 18 Ileum | 21 Supr. wall | 25 Right lobe of liver | 29 Body of abomasum |
| 19 Jejunum | 22 Caudal recess | 26 Cranial part of duodenum | 30 Omasum covered by lesser omentum |

LIVER (HEPAR)

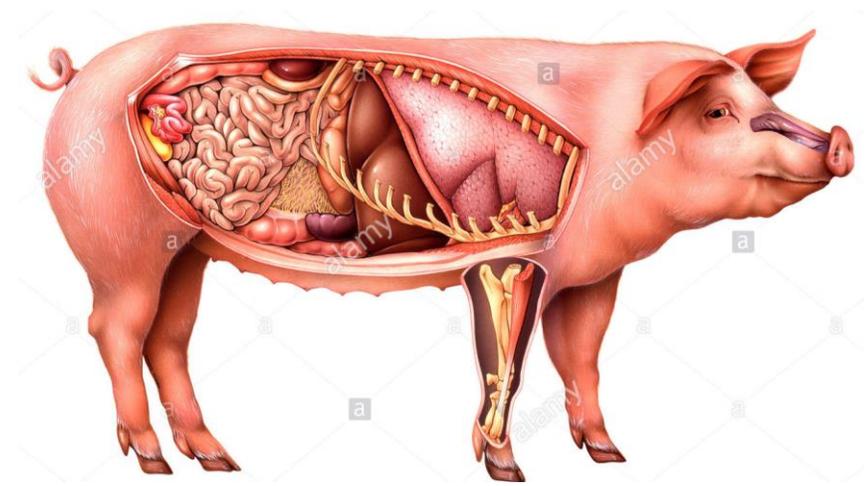
SIZE AND WEIGHT:

- depend on body weight and age

1. in the cat: 2% of body weight
2. in the dog 3 – 4% of body weight
3. in the pig 2 – 3 % of the body weight
4. in the herbivores 1 – 1,5% of the body weight



- Legend:**
- | | | | |
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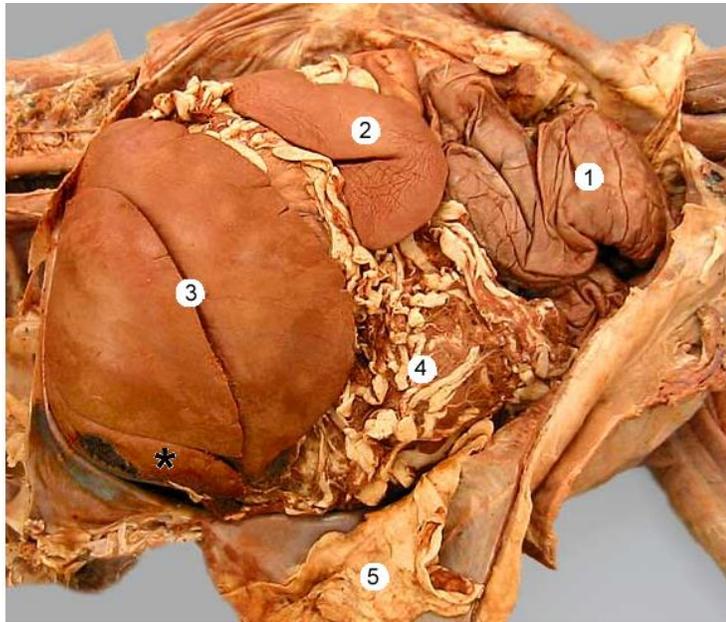
http://18.hyt.capecoral-bootsvermietung.de/pork_liver_diagram.php

LIVER (HEPAR)

FORM, POSITION:

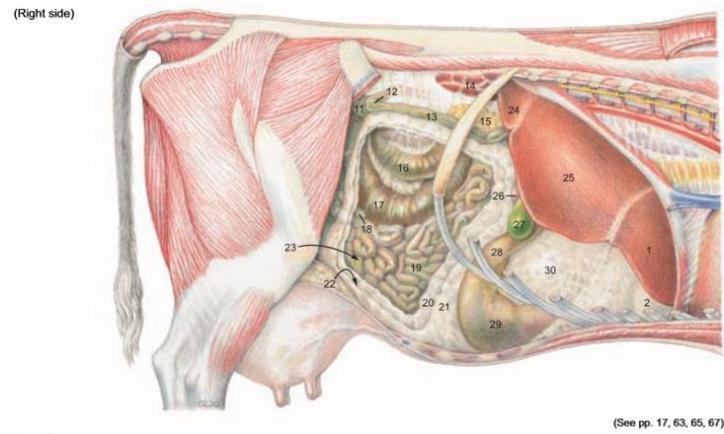
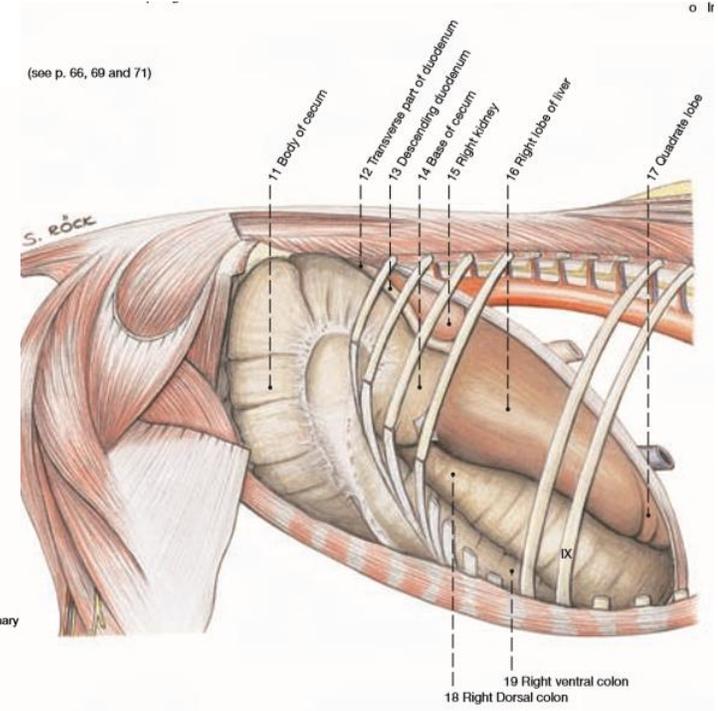
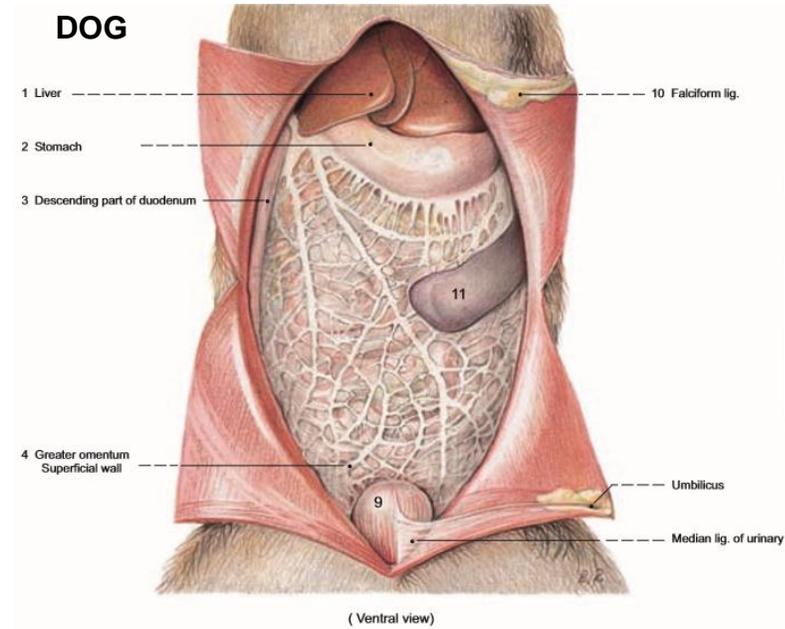
located:

- in the thoracic part of the abdomen
- behind the diaphragm
- the bulk of the liver lies to the right of the median plane



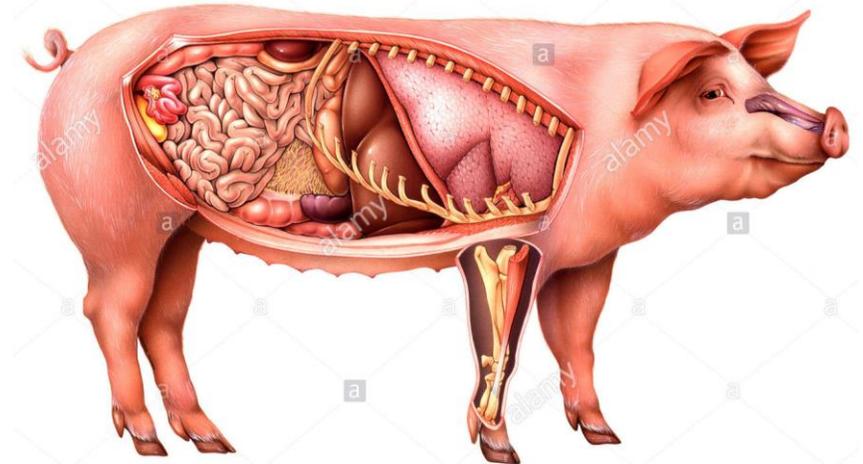
The left side of the abdominal wall is reflected in a female dog with a pregnant uterus (1). The **spleen** (2) and **liver** (3) are visible, but most other viscera are hidden by the **greater omentum** (4). Identify the fat-filled **falciform ligament** (5), which runs between the umbilicus and the liver. When intact, the ligament passes to the left of the quadrate lobe of the liver (asterisk).

<http://vanat.cvm.umn.edu/carnLabs/Lab16/lmg16-1.html>



Legend:

- | | | | |
|----------------------------------|------------------|-----------------------------|-------------------------------------|
| 16 Prox. loop of ascending colon | Greater omentum: | 23 Supraomental recess | 27 Gall bladder |
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http://18.hyt.capecoral-bootsvermietung.de/pork_liver_diagram.php

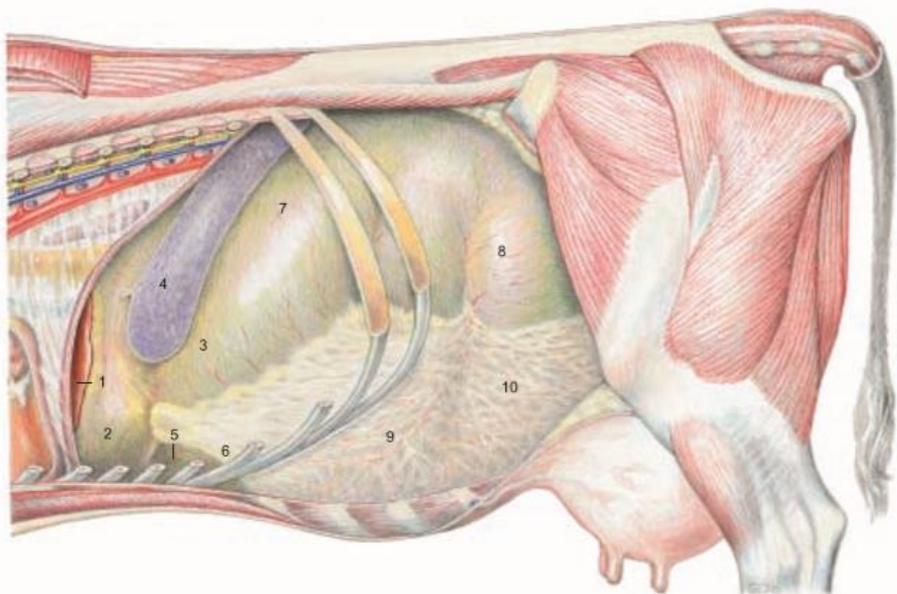
LIVER (HEPAR)

FORM, POSITION:

IN RUMINANTS located:

- the development of rumen pushes the liver entirely into the right half of the abdomen

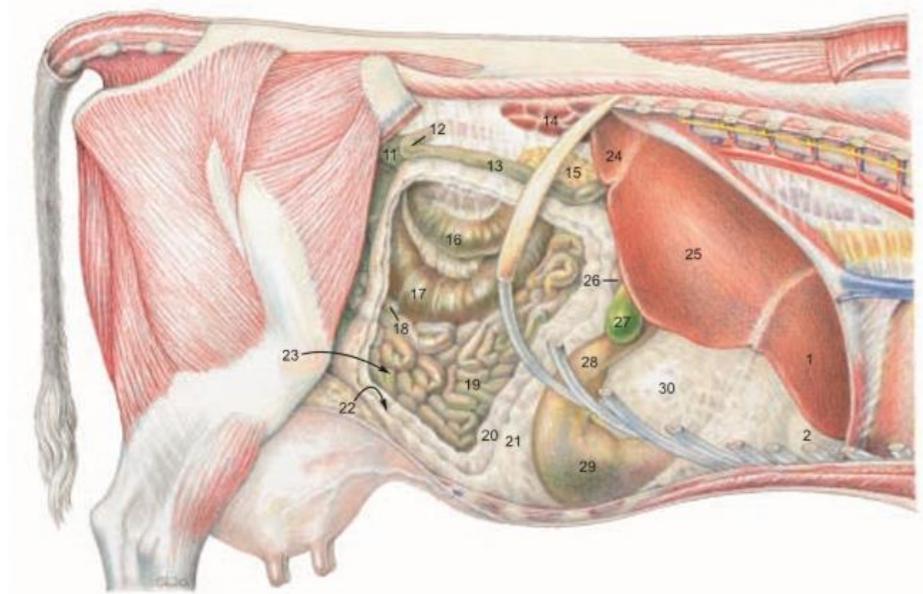
(Left side)



Legend:

- | | | | |
|----------------------|---|---|-------------------------------------|
| 1 Left lobe of liver | 5 Fundus of abomasum | 8 Caudodorsal blind sac of rumen | 11 Sigmoid part of descending colon |
| 2 Reticulum | 6 Recess of ventral sac of rumen covered by omentum | 9 Ventral sac of rumen covered by omentum | 12 Caudal flexure of duodenum |
| 3 Atrium of rumen | 7 Dorsal sac of rumen | 10 Caudovertral blind sac of rumen covered by omentum | 13 Descending duodenum |
| 4 Spleen | | | 14 Right kidney |
| | | | 15 Right lobe of pancreas |

(Right side)



Legend:

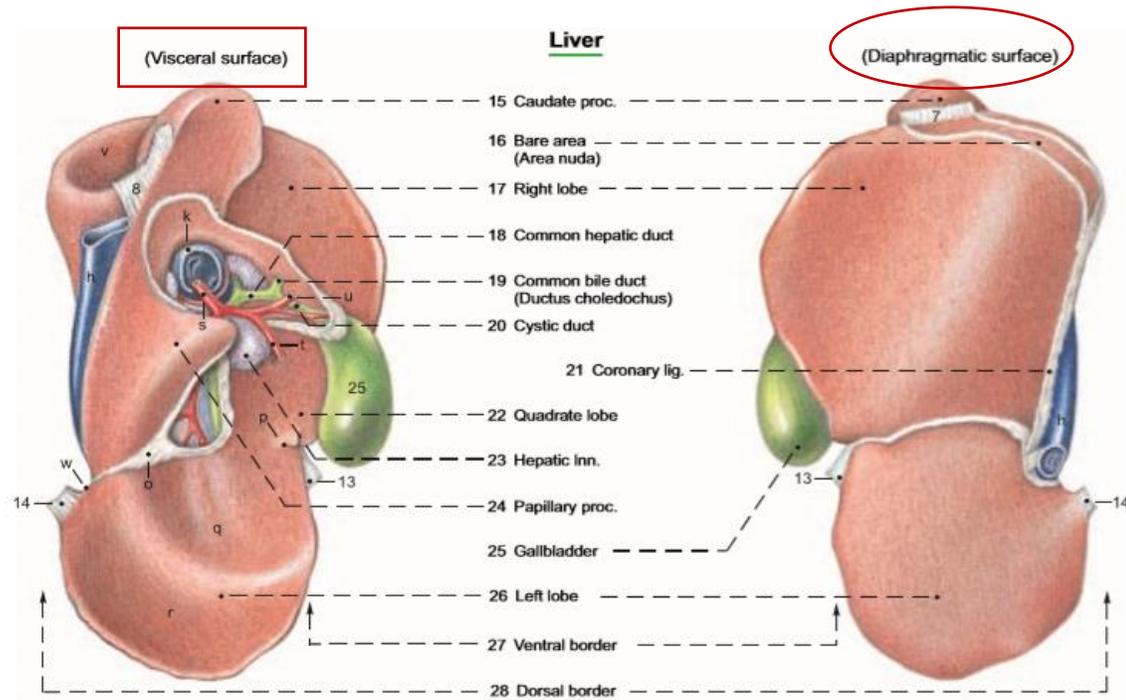
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(See pp. 17, 63, 65, 67)

LIVER (HEPAR)

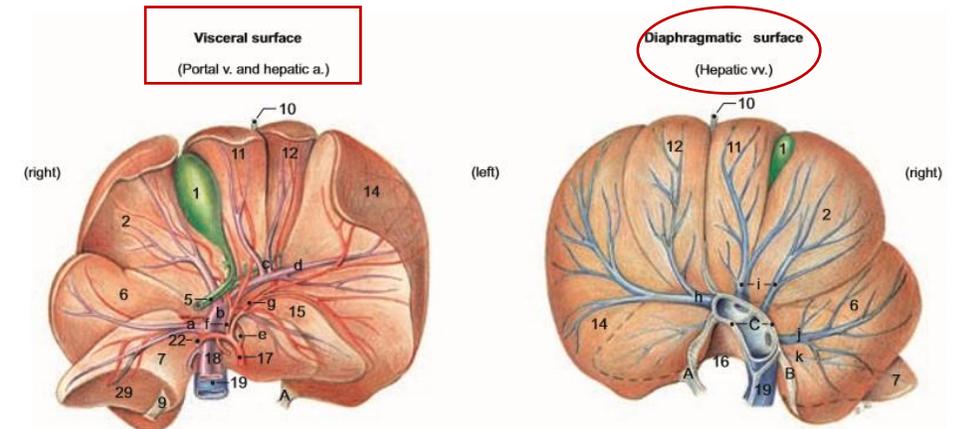
1. FACIES DIAPHRAGMATICA

2. FACIES VISCERALIS



Bo

Ca



Legend :

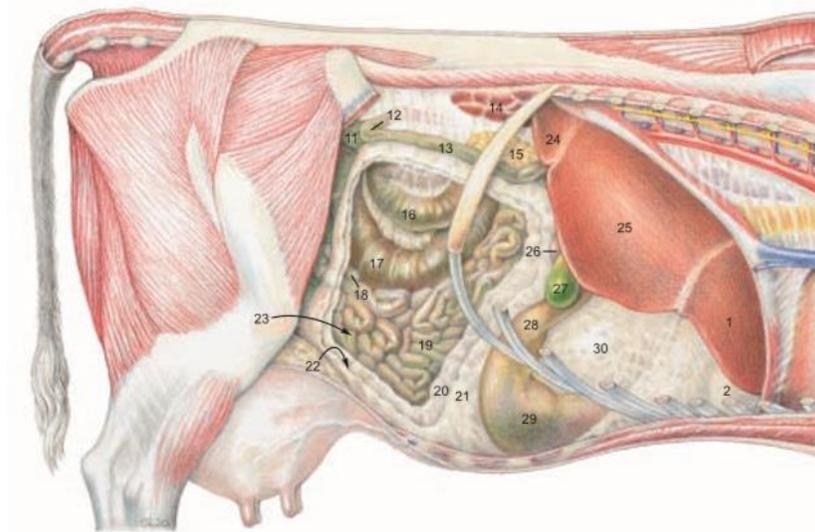
- A Left triangular lig.
- B Right triangular lig.
- C Coronary lig. of liver

- a Right br.
- b Left br.
- c Umbilical part
- d Transverse part

- e Hepatic a.:
- f Right lat. br.
- g Right med. br.
- Left br.

- Hepatic vv.:
- h Left hepatic v.
- i Middle hepatic v.
- j Right hepatic v.
- k Right acc. hepatic v.

(Right side)



(See pp. 17, 63, 65, 67)

Legend:

- 16 Prox. loop of ascending colon
- 17 Cecum
- 18 Ileum
- 19 Jejunum

- Greater omentum:
- 20 Deep wall
- 21 Supf. wall
- 22 Caudal recess

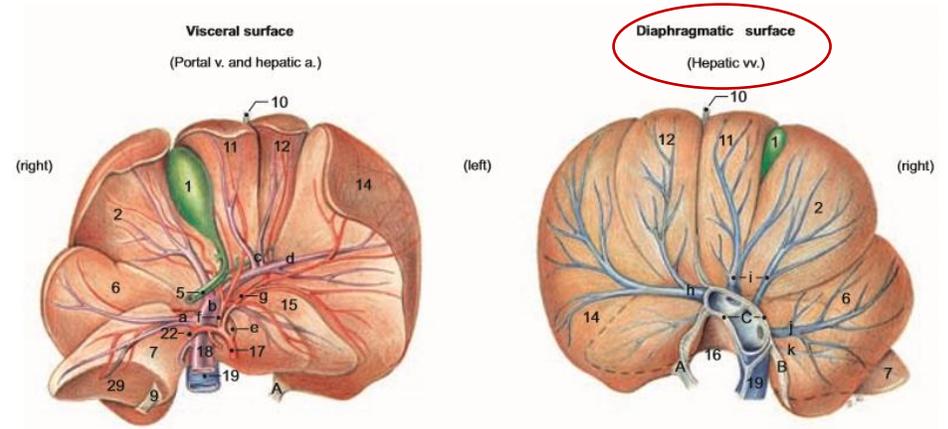
- 23 Supraomental recess
- 24 Caudate process of liver
- 25 Right lobe of liver
- 26 Cranial part of duodenum

- 27 Gall bladder
- 28 Pyloric part of abomasum
- 29 Body of abomasum
- 30 Omasum covered by lesser omentum

LIVER (HEPAR)

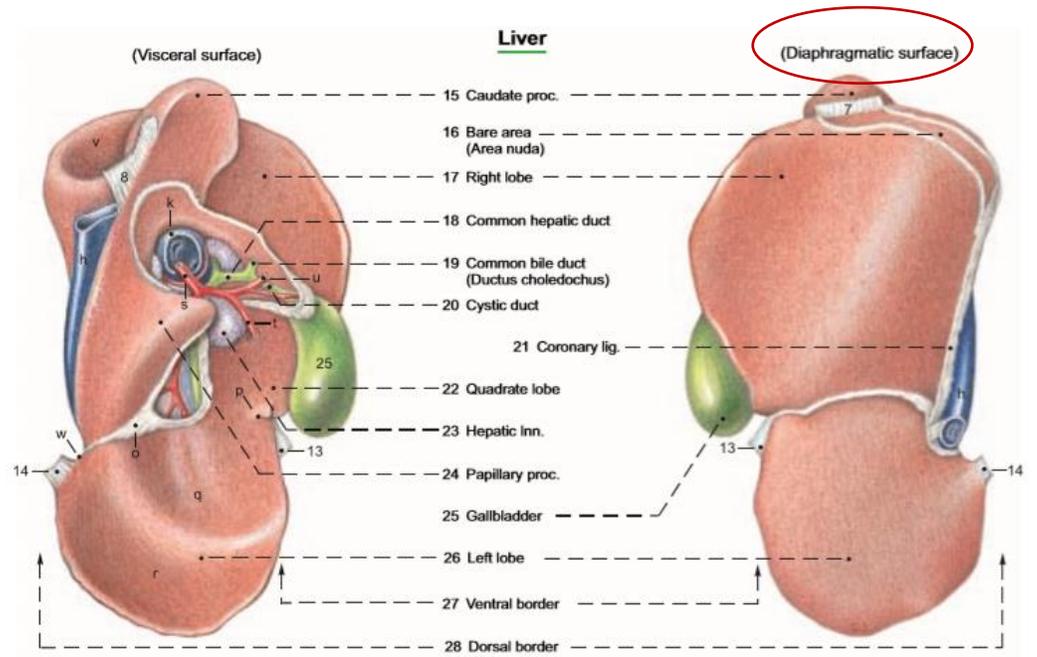
FACIES DIAPHRAGMATICA:

- convex
- lies against the concavity of the diaphragm



Legend :

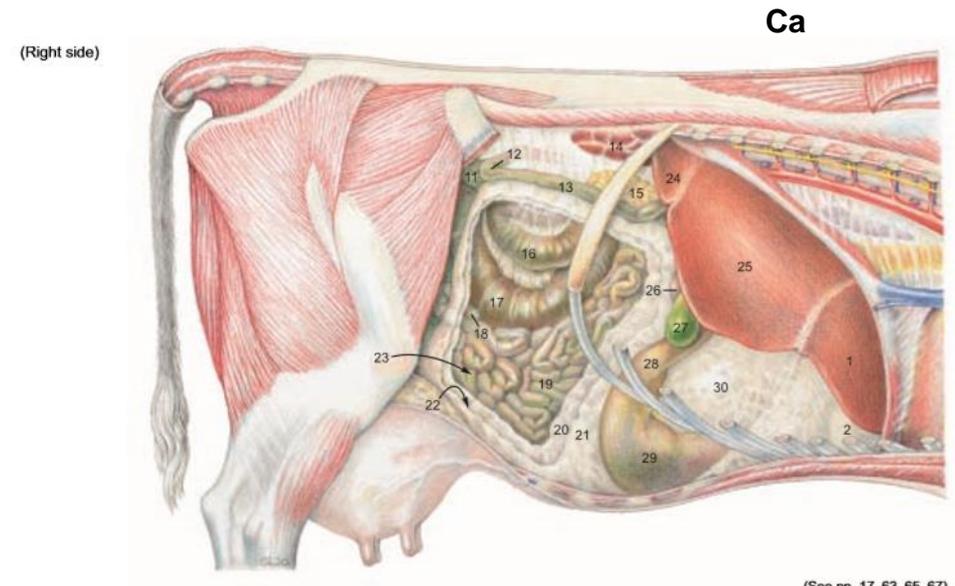
- | | | | |
|--------------------------|-------------------|------------------|-------------------------|
| A Left triangular lig. | Portal vein: | Hepatic a.: | Hepatic vv.: |
| B Right triangular lig. | a Right br. | e Right lat. br. | h Left hepatic v. |
| C Coronary lig. of liver | b Left br. | f Right med. br. | i Middle hepatic v. |
| | c Umbilical part | g Left br. | j Right hepatic v. |
| | d Transverse part | | k Right acc. hepatic v. |



Liver

- 15 Caudate proc.
- 16 Bare area (Area nuda)
- 17 Right lobe
- 18 Common hepatic duct
- 19 Common bile duct (Ductus choledochus)
- 20 Cystic duct
- 21 Coronary lig.
- 22 Quadrate lobe
- 23 Hepatic Inn.
- 24 Papillary proc.
- 25 Gallbladder
- 26 Left lobe
- 27 Ventral border
- 28 Dorsal border

Bo



Legend:

- | | | | |
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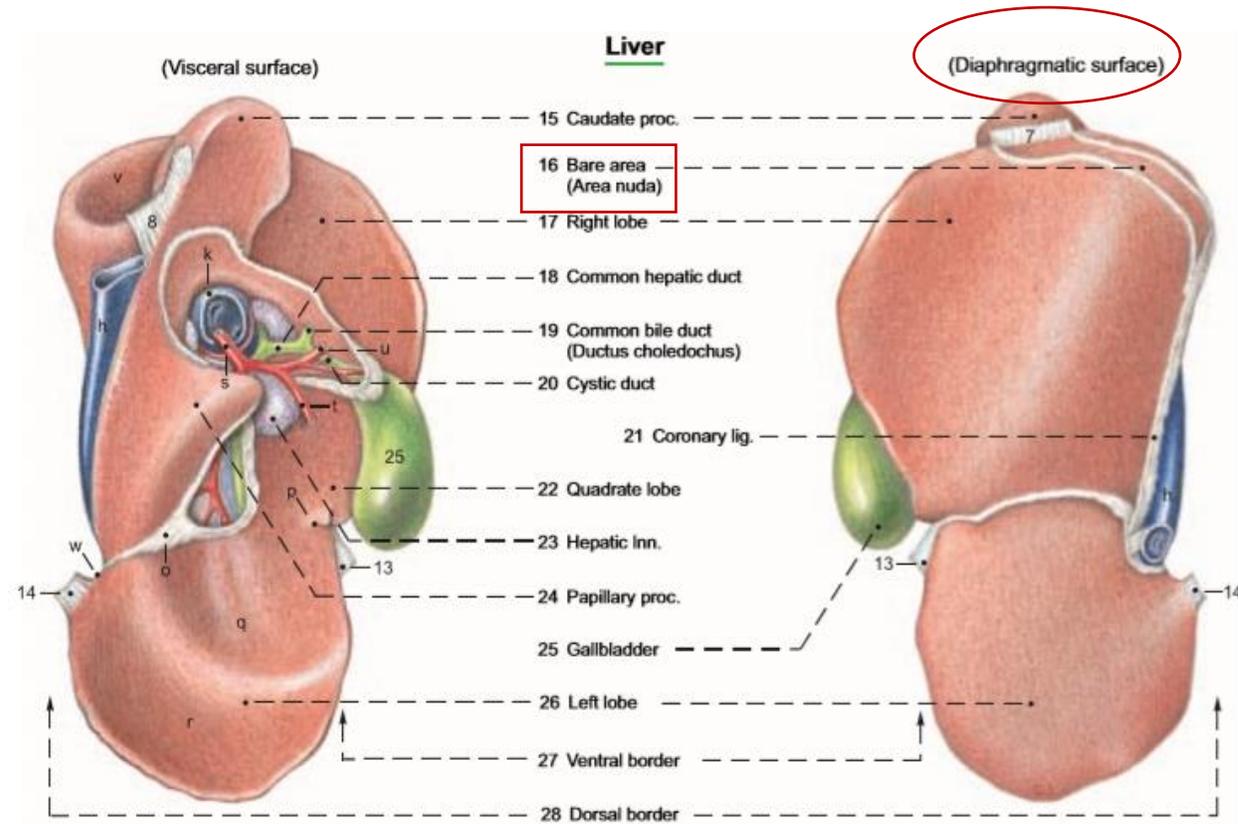
(See pp. 17, 63, 65, 67)

LIVER (HEPAR)

FACIES DIAPHRAGMATICA:

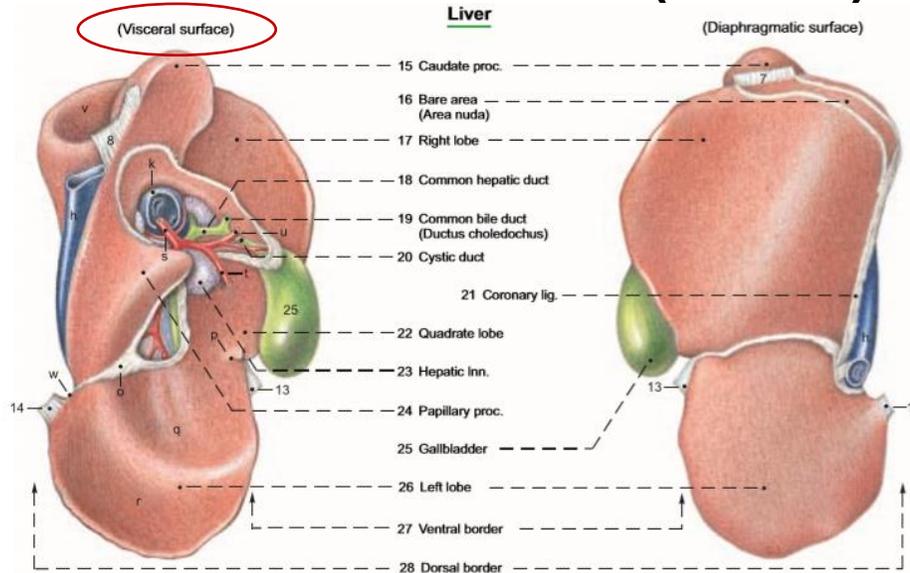
AREA NUDA:

- bare spot
- not covered by peritoneum

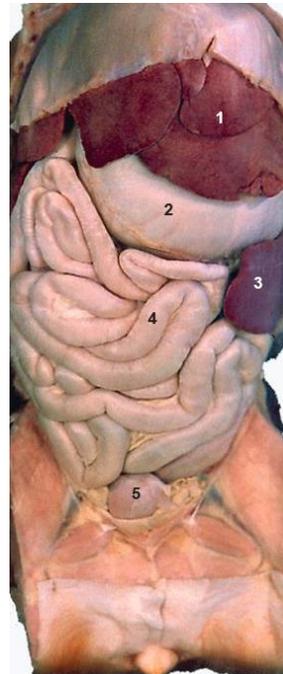


Bo

LIVER (HEPAR)



Bo



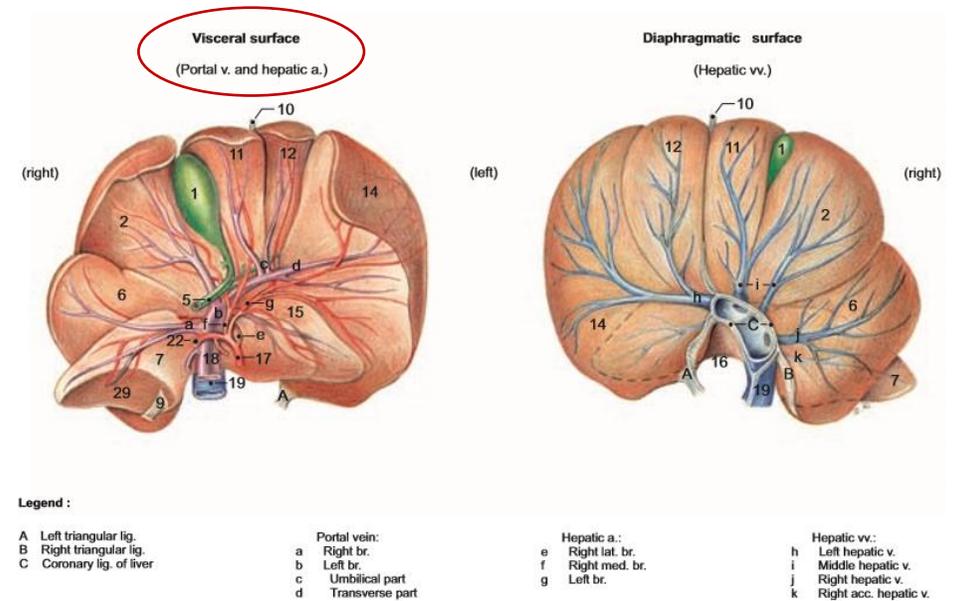
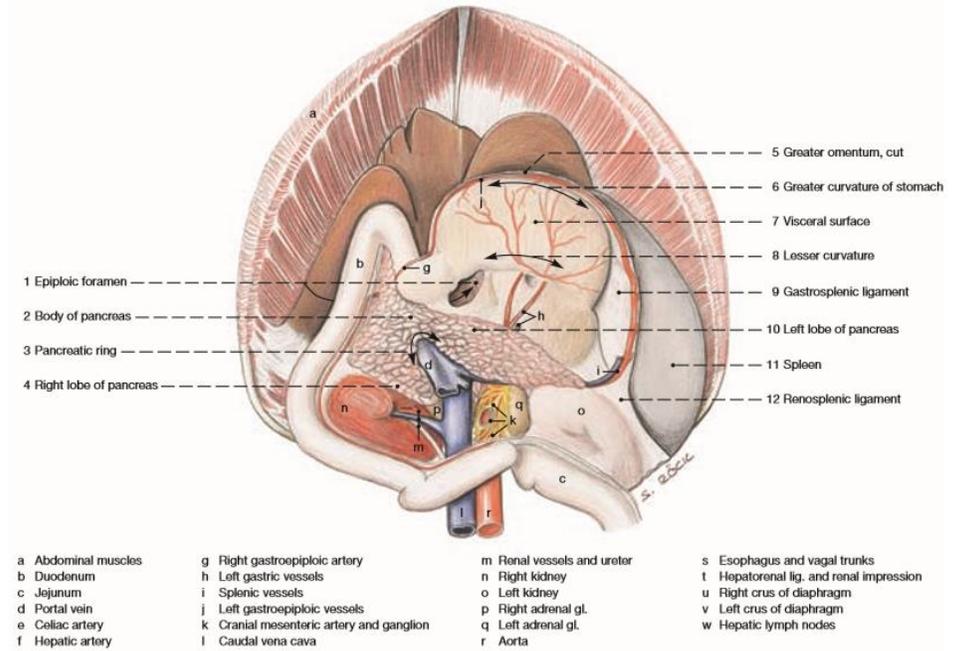
1. Liver
2. Stomach
3. Spleen
4. Small intestine
5. Bladder

FACIES VISCERALIS:

- faces mostly caudally

related to the:

- a) stomach
- b) duodenum
- c) jejunum
- d) colon
- e) right kidney



Ca

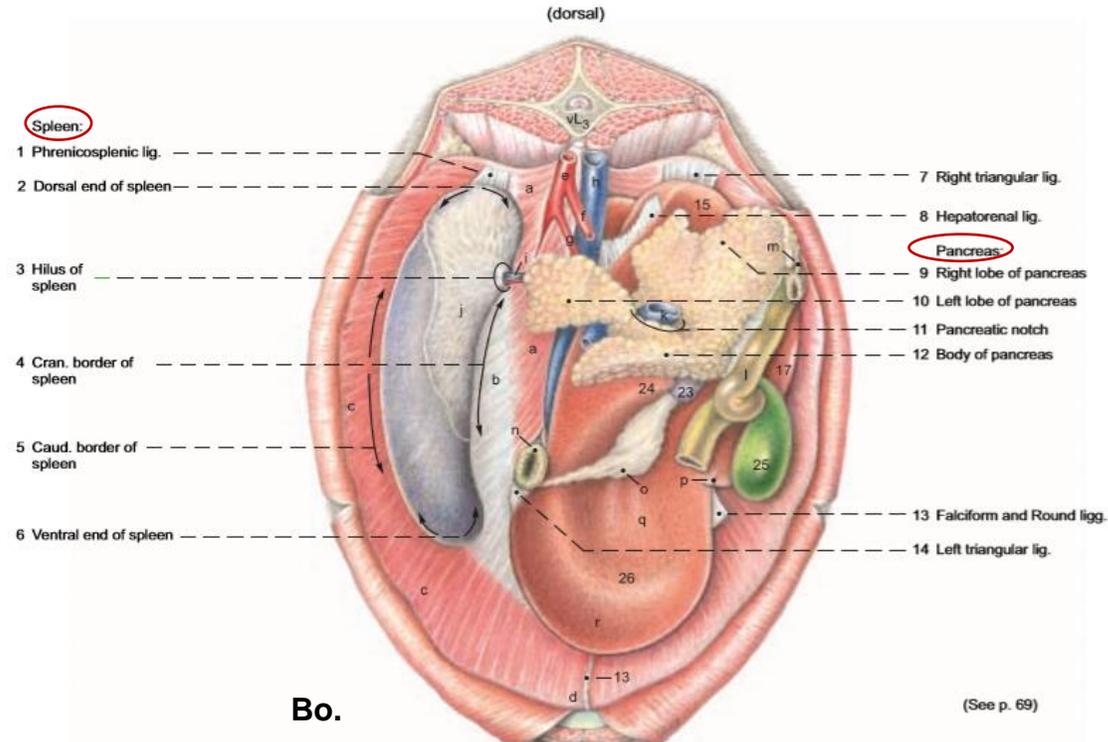
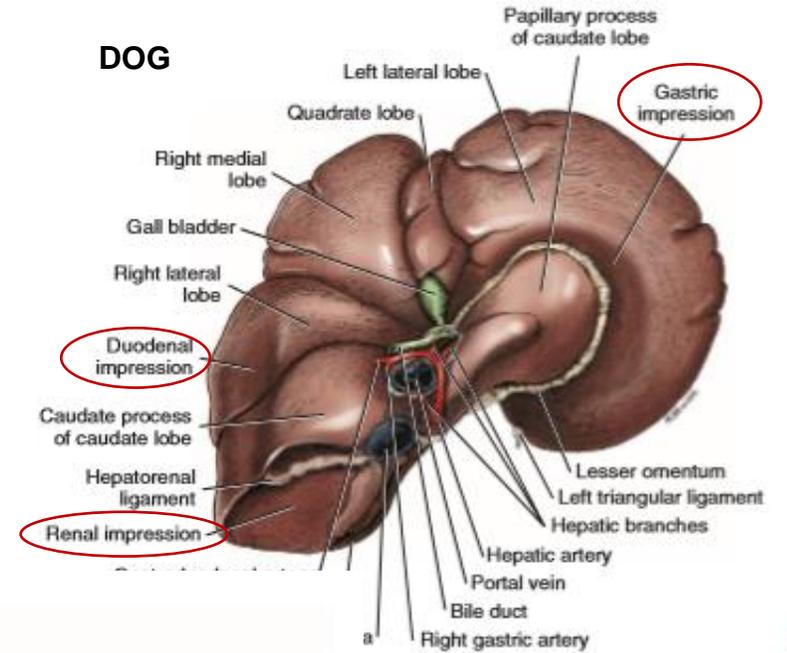
LIVER (HEPAR)

FACIES VISCERALIS:

- according to the organs – impressions are produced

1. esophageal notch (impressio esophagea) – on margo dorsalis
2. gastric impression (impressio gastrica) – on the left lobe
3. duodenal impression (impressio duodenalis) – ventral, right to the porta hepatis
4. colic impression (impressio colica) – on the right ventral part of the visceral surface
5. pancreatic impression (impressio pancreatica)

DOG



(See p. 69)

LIVER (HEPAR)

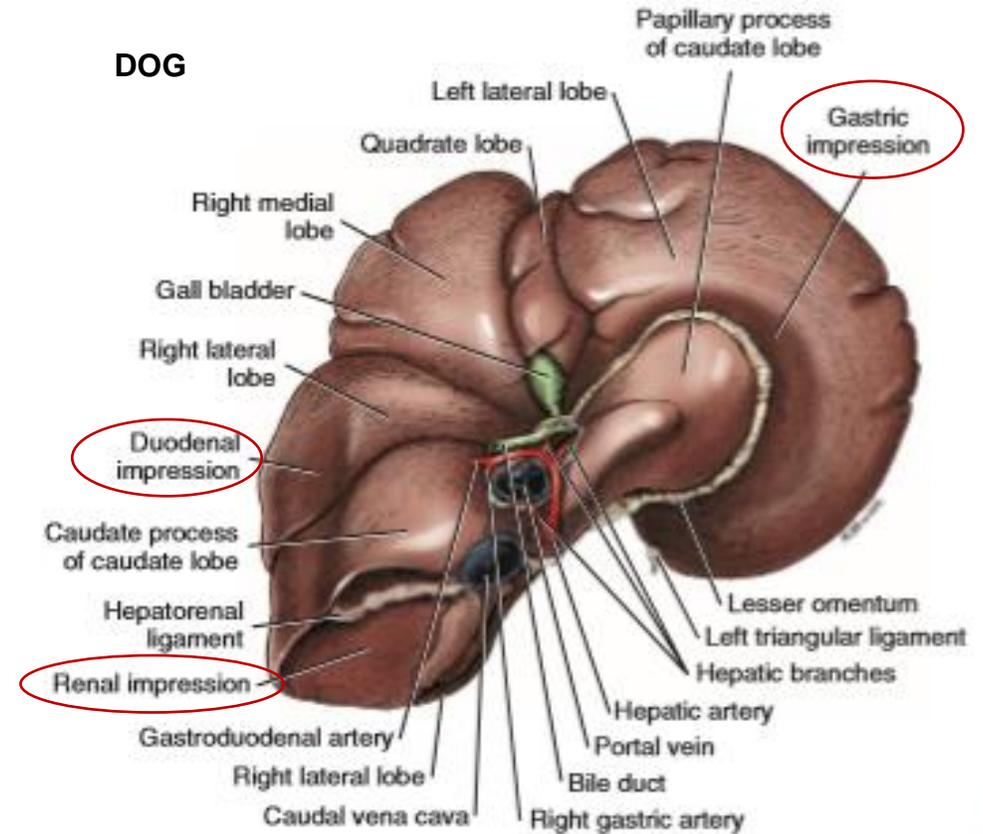
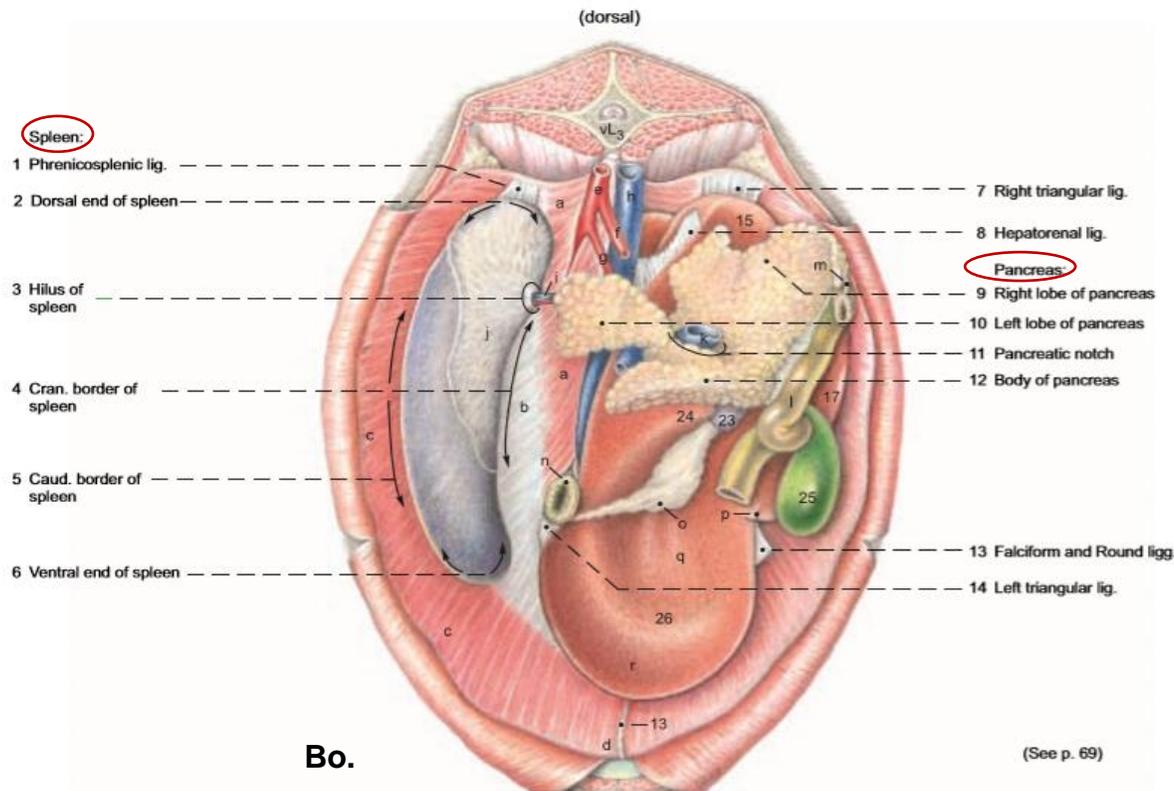
FACIES VISCERALIS:

6. renal impression (impressio renalis):

- by the right kidney, on the right lobe, caudate process

7. suprarenal impression (impressio suprarenalis):

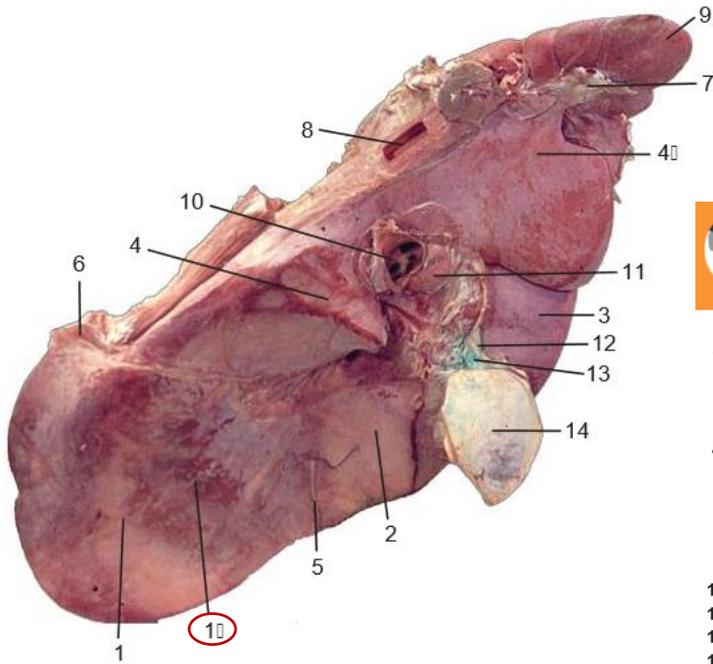
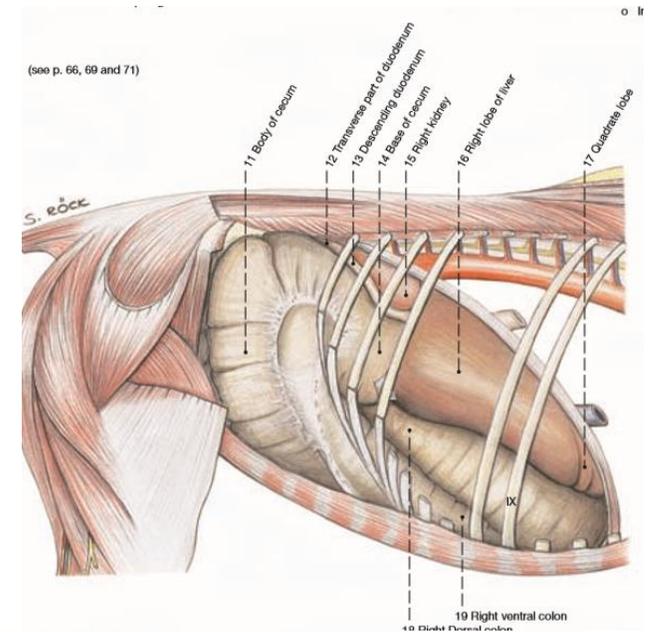
- by the right suprarenal gland, on the lobus caudalis



LIVER (HEPAR)

FACIES VISCERALIS:

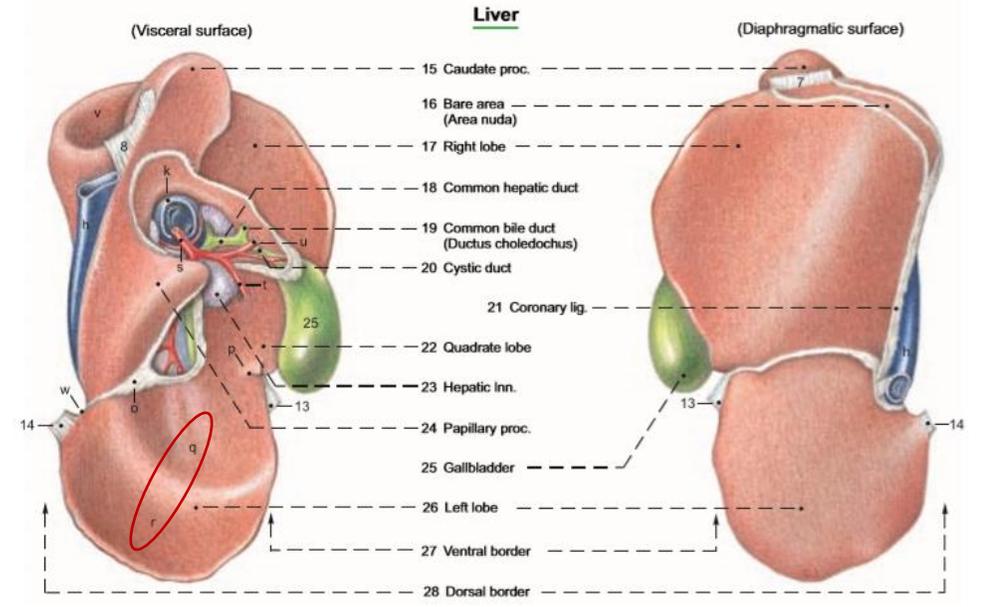
- reticular impression (impressio reticularis) – on the left lobe – in Bo.
- omasal impression (impressio omasica) – occupies a large part of the visceral surface – in Bo.
- cecal impression (impressio cecalis) – in Eq – on the right lobe



Bovine: Visceral Surface of the Liver

- Left lobe
- Omasal impression
- Quadrate lobe
- Right lobe
- Papillary process of the caudate lobe
- Caudate process of the caudate lobe
- Round ligament
- Left triangular ligament
- Right triangular ligament
- Caudal vena cava
- Right kidney
- Portal vein
- Hepatic lymph node
- Bile duct
- Cystic duct
- Gallbladder

- Legend:**
- | | | | |
|-----------------------|-----------------------------|--------------------------|------------------------------------|
| e Aorta | j Splenico-ruminal adhesion | o Lesser omentum | t Right gastric a. |
| f Cran. mesenteric a. | k Portal v. | p Fissure for round lig. | u Gastroduodenal a. |
| g Celiac a. | l Duodenum | q Omasal impression | v Renal impression |
| h Caud. vena cava | m Accessory pancreatic duct | r Reticular impression | w Esophageal impression (cut edge) |
| i Splenic a. and v. | n Esophagus | s Hepatic a. | |

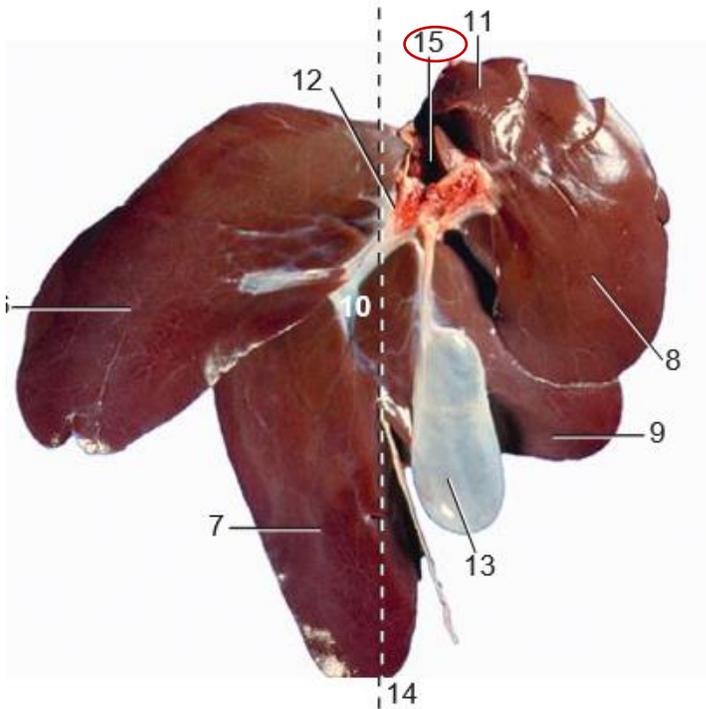


LIVER (HEPAR)

FACIES VISCERALIS

SULCUS VENAE CAVAE:

- groove for the vena cava caudalis



Porcine: Liver (Top) and Visceral Surface of the Liver (Bottom)

1. Central vein
2. Interlobular artery
3. Hepatic lobule
4. Interlobular connective tissue
5. Centrolobular venule
6. Left lateral lobe
7. Left medial lobe
8. Right lateral lobe
9. Right medial lobe
10. Quadrate lobe
11. Caudate process
12. Porta
13. Gallbladder
14. Approximate position of median plane
15. Caudal vena cava

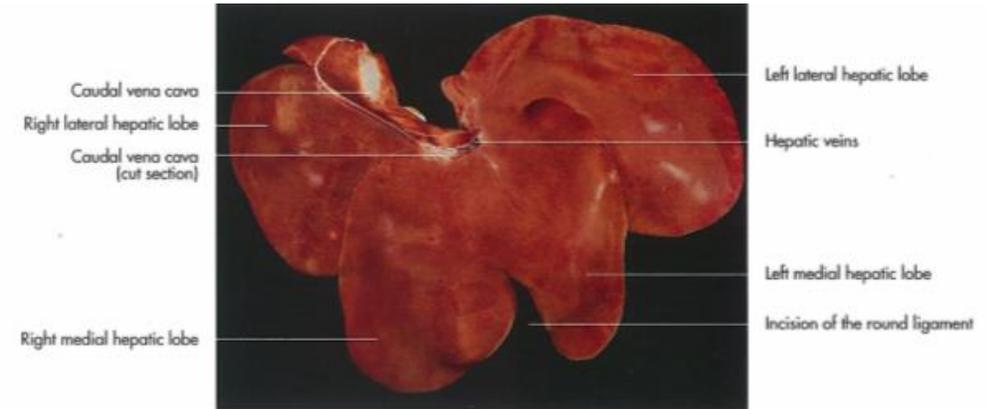


Fig 7-103. Liver of a pig, diaphragmatic surface.



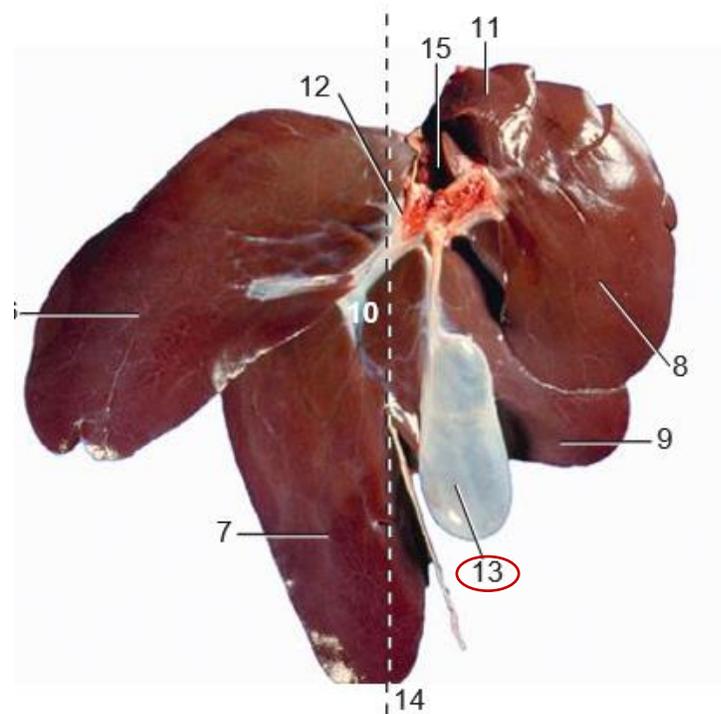
Fig 7-104. Liver of a pig, visceral surface.

LIVER (HEPAR)

FACIES VISCERALIS

FOSSA VESICAE FELLEA:

- fossa for the gall bladder



Porcine: Liver (Top) and Visceral Surface of the Liver (Bottom)

1. Central vein
2. Interlobular artery
3. Hepatic lobule
4. Interlobular connective tissue
5. Centrolobular venule
6. Left lateral lobe
7. Left medial lobe
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12. Porta
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14. Approximate position of median plane
15. Caudal vena cava

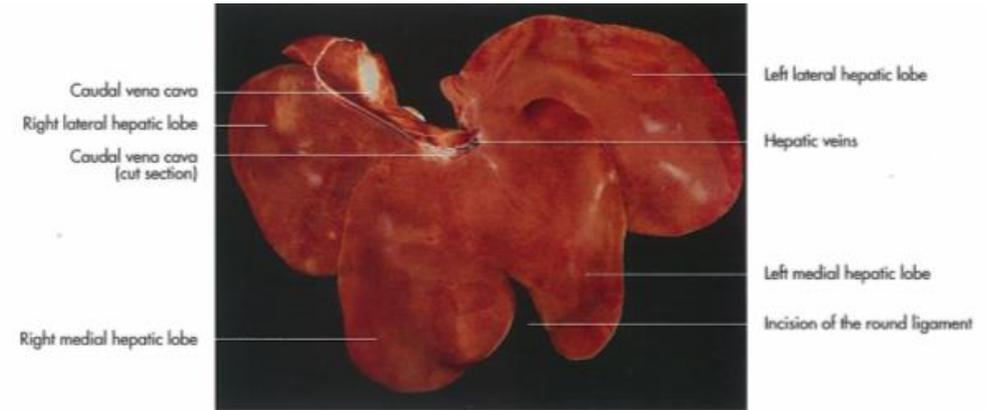


Fig 7-103. Liver of a pig, diaphragmatic surface.



Fig 7-104. Liver of a pig, visceral surface.

LIVER (HEPAR)

FACIES VISCERALIS

FISSURA LIGAMENTI TERETEIS:

- fissure for the round ligament (lig. teres hepatis)

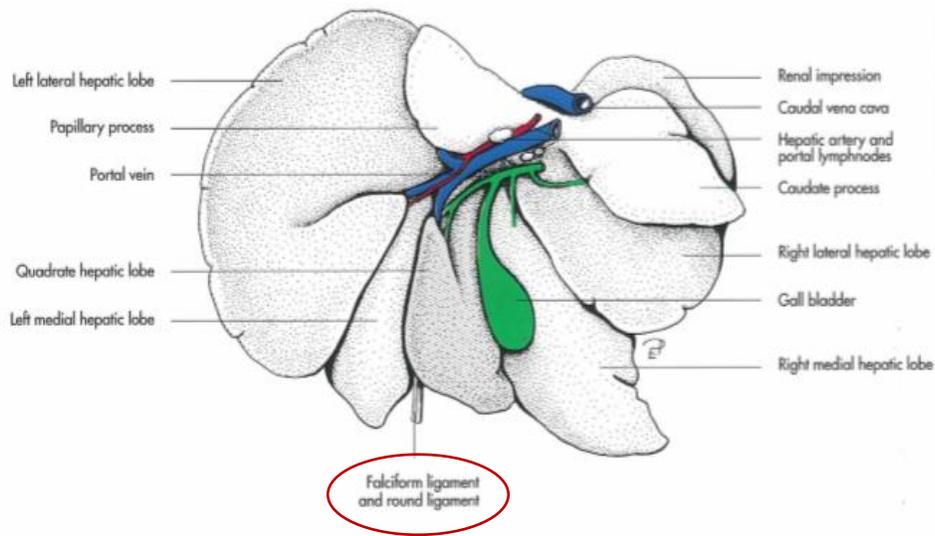


Fig 7-97. Liver of the dog, schematic, visceral surface.



Fig 7-101. Liver of a cat, diaphragmatic surface [König, 1992].

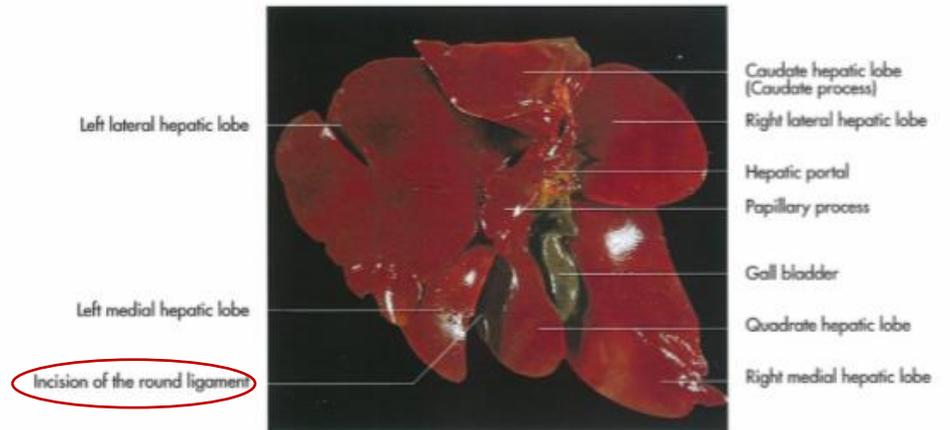


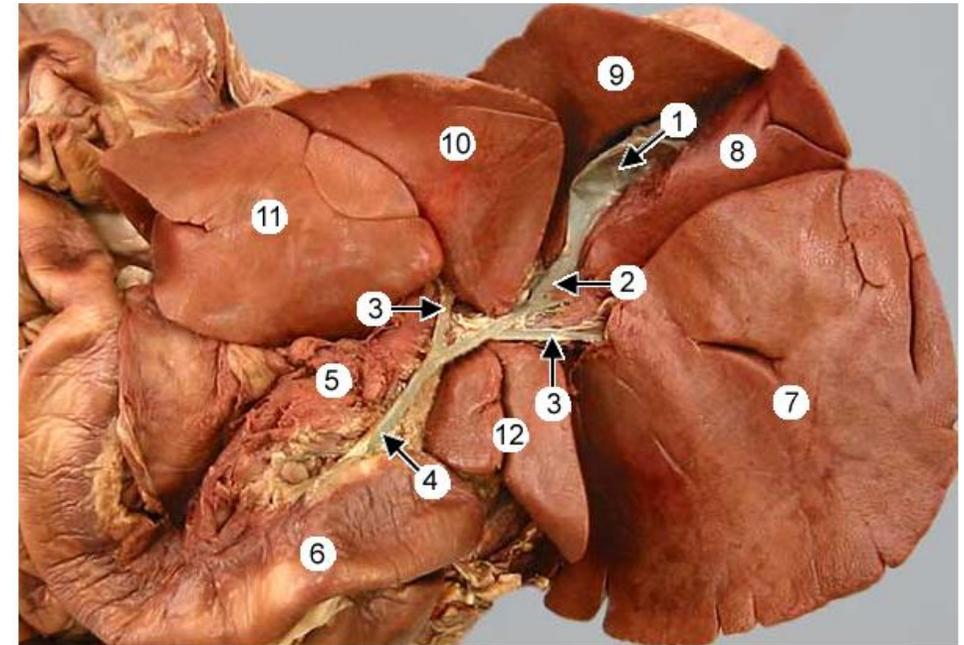
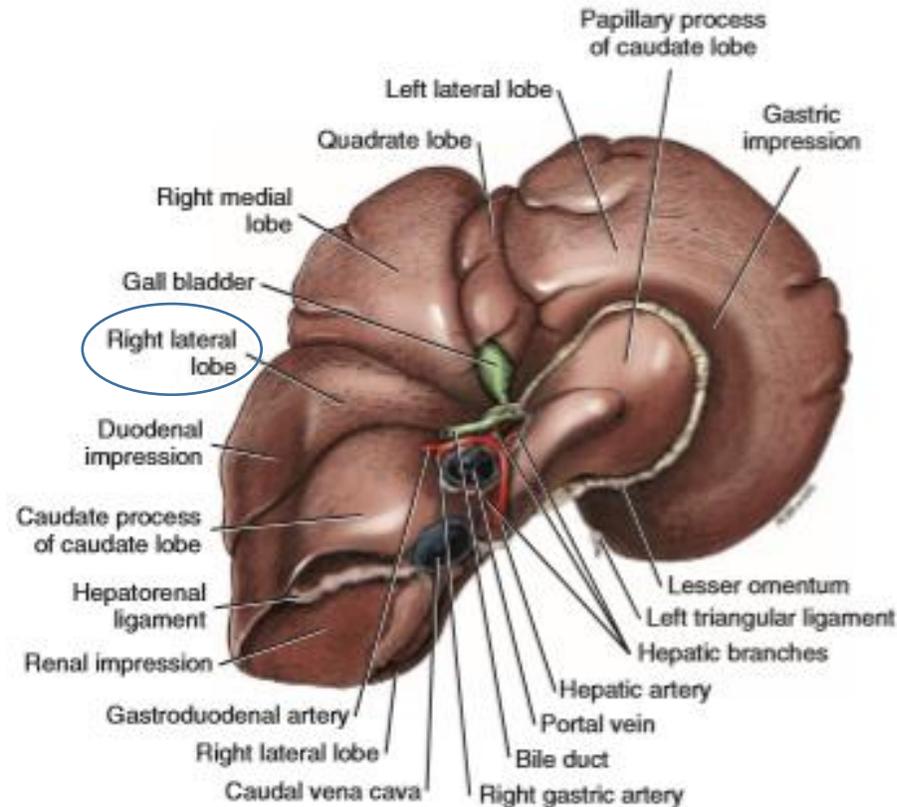
Fig 7-102. Liver of a cat, visceral surface [König, 1992].

LIVER (HEPAR)

FACIES VISCERALIS

TUBER OMENTALE:

- in Car
- prominence of the right lateral lobe



Right lateral view of abdominal viscera with the liver reflected cranially and rotated (right toward the top). Observe the **gallbladder** (1), cystic duct (2), hepatic ducts (3), and the **bile duct** (4). The pancreas (5) has been reflected to expose the bile duct which opens into the duodenum (6). Identify **lobes of the liver**: left lateral (7), quadrate (8), right medial (9), right lateral (10), and the caudate (11) and papillary (12) processes of the caudate lobe.

LIVER (HEPAR)

FACIES VISCERALIS

PORTA HEPATIS:

- hilus of the liver

through which:

1. the vena portae
2. the bile duct (ductus hepaticus comm.)
3. a. hepatica enter or leave the organ

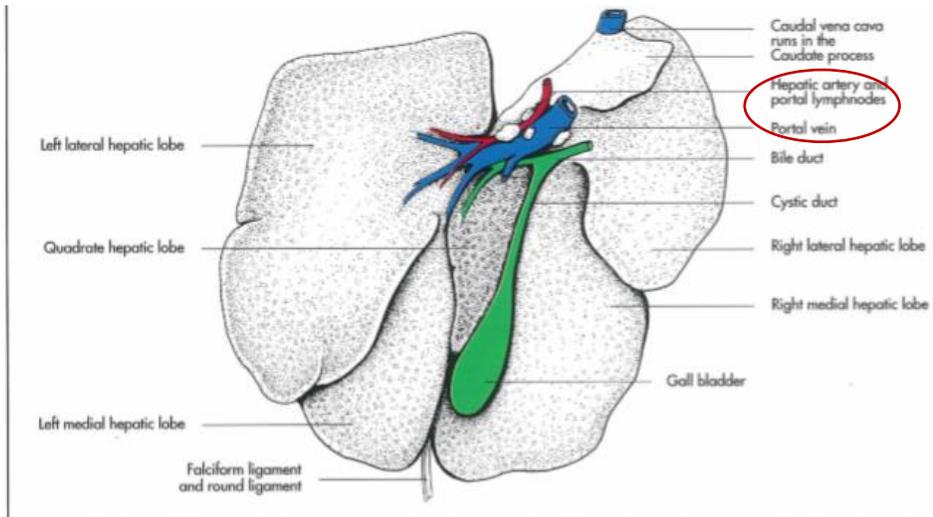
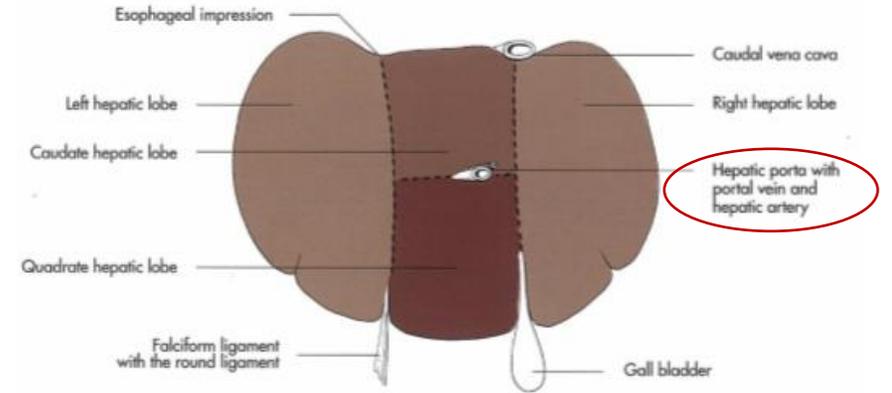


Fig 7-98. Liver of the pig, schematic, visceral surface.



7-104. Liver of a pig, visceral surface.

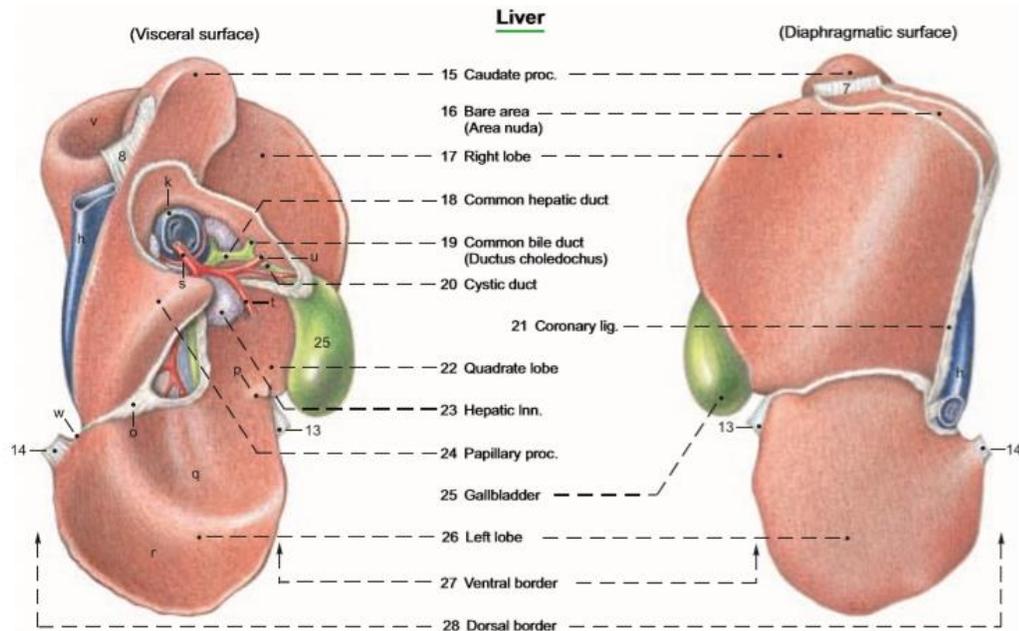
LIVER (HEPAR)

MARGO ACUTUS:

- facies diaphragmatica et visceralis meet ventrolaterally in this sharp – edged border

MARGO OBTUSUS:

- facies diaphragmatica et visceralis meet dorsally in the blunt border



Bo



Fig 7-101. Liver of a cat, diaphragmatic surface (König, 1992).

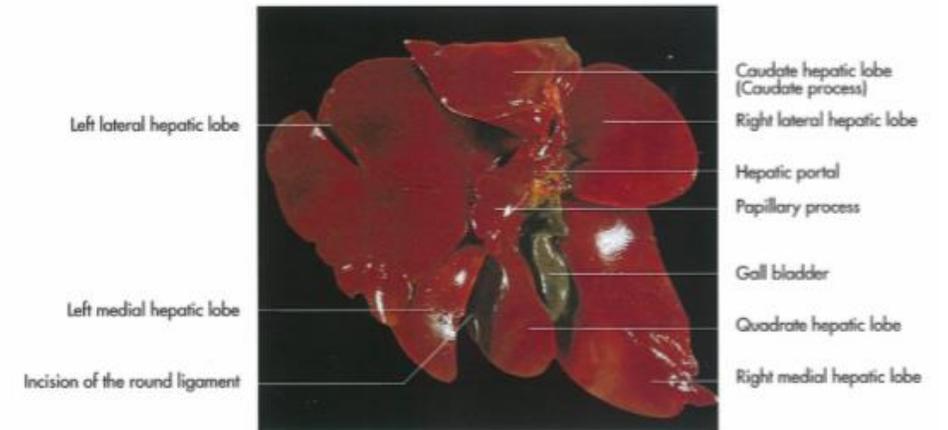
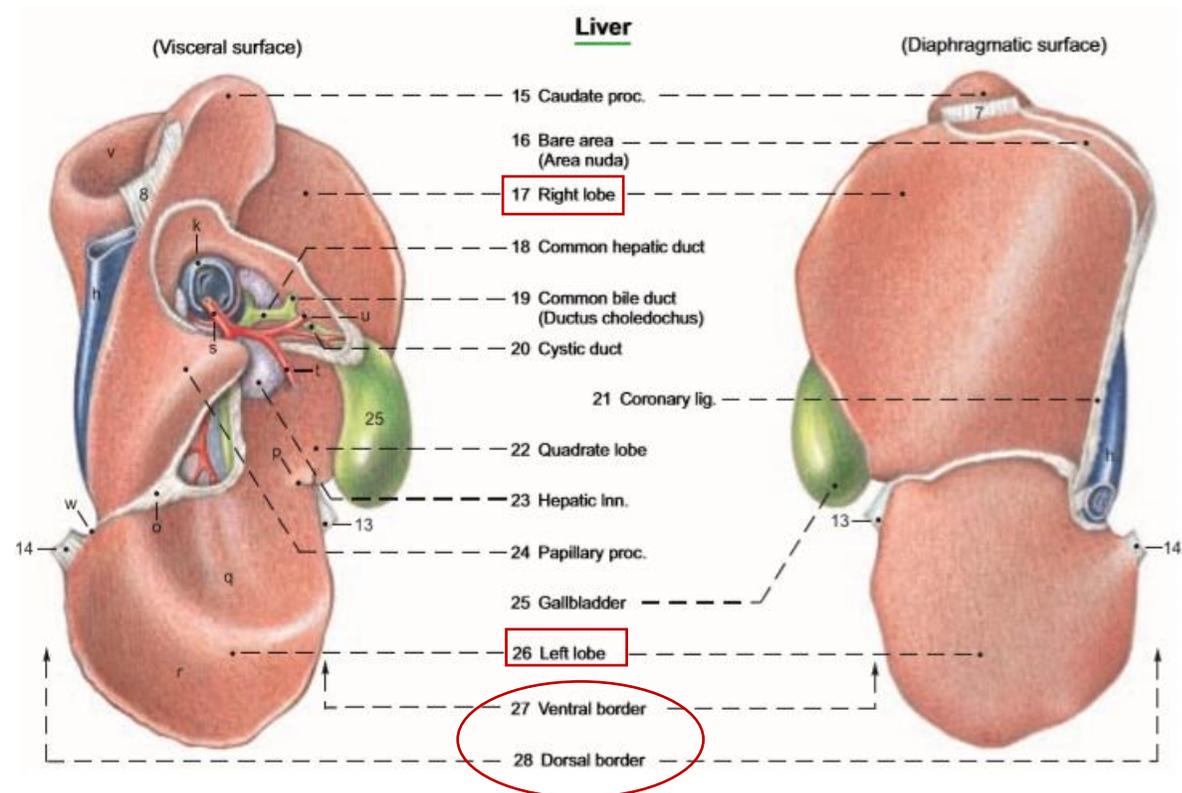


Fig 7-102. Liver of a cat, visceral surface (König, 1992).

LIVER (HEPAR)

1. MARGO DORSALIS
2. MARGO VENTRALIS
3. MARGO DEXTER
4. MARGO SINISTER



LIGAMENTS OF THE LIVER (HEPAR)

- the liver is related to the ventral mesentery during embryonic development

VENTRAL MESENTERY:

- conveys blood vessels, nerves, lymphatics

PART OF THE VENTRAL MESENTERY:

I. OMENTUM MINUS (LESSER OMENTUM)

1. LIGAMENTUM HEPATODUODENALE

2. LIGAMENTUM HEPATOGASTRICUM

II. LIGAMENTUM FALCIFORME HEPATIS

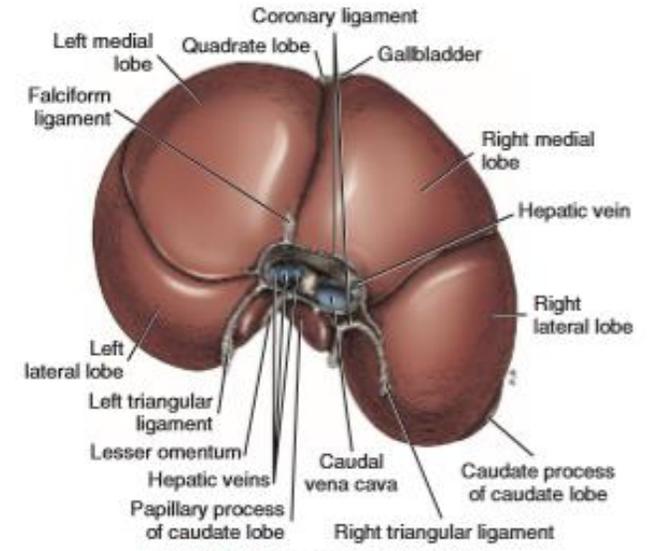
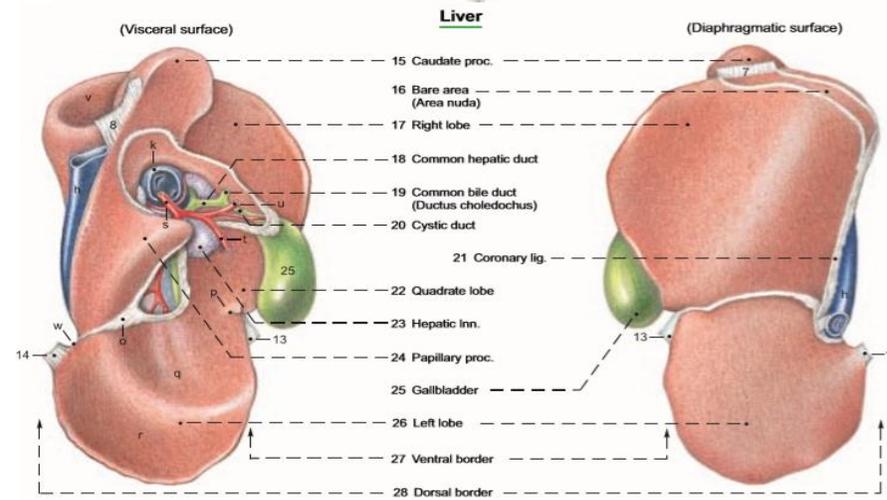
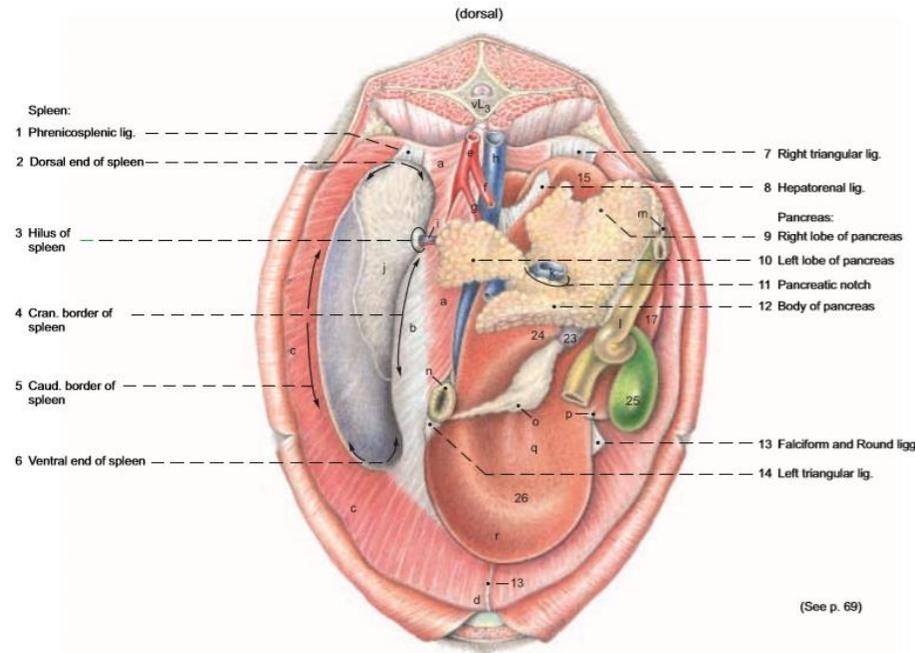
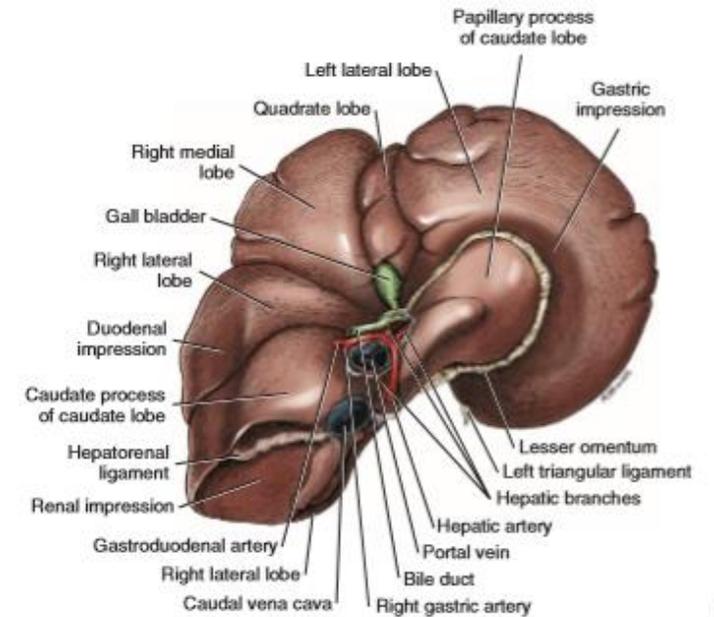


FIGURE 7-49 Liver, diaphragmatic aspect.



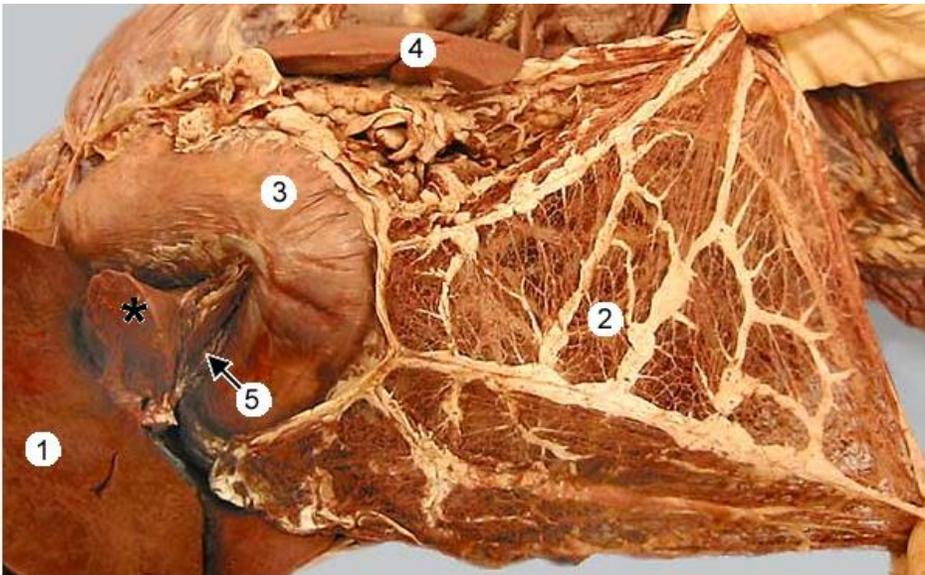
LIGAMENTS OF THE LIVER (HEPAR)

OMENTUM MINUS (LESSER OMENTUM)

- the liver connected to the stomach by the lesser omentum

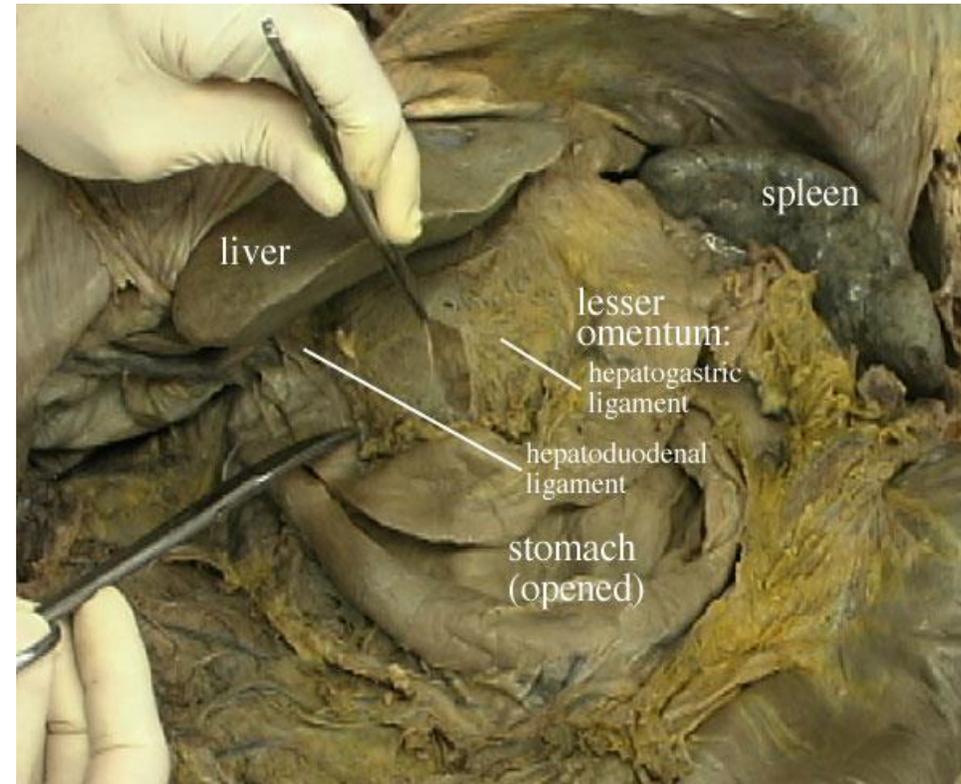
consists of:

1. LIGAMENTUM HEPATODUODENALE
2. LIGAMENTUM HEPATOGASTRICUM



Cranial view of abdominal viscera, the liver (1) is reflected cranially and the **greater omentum** (2) pulled out. The greater omentum attaches to the greater curvature of the **stomach** (3) and to the **spleen** (4). The **lesser omentum** (5) runs from the lesser curvature of the stomach to the liver (covering the papillary process (asterisk) of the liver).

<http://vanat.cvm.umn.edu/carnLabs/Lab16/lmg16-3.html>



LIGAMENTS OF THE LIVER (HEPAR)

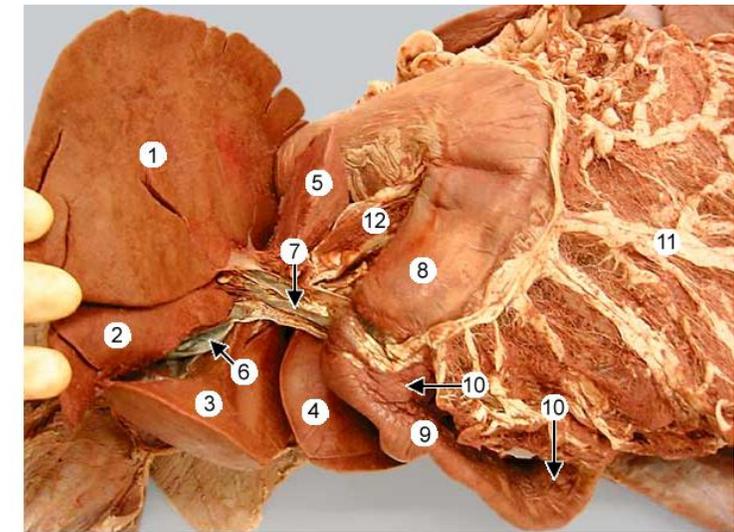
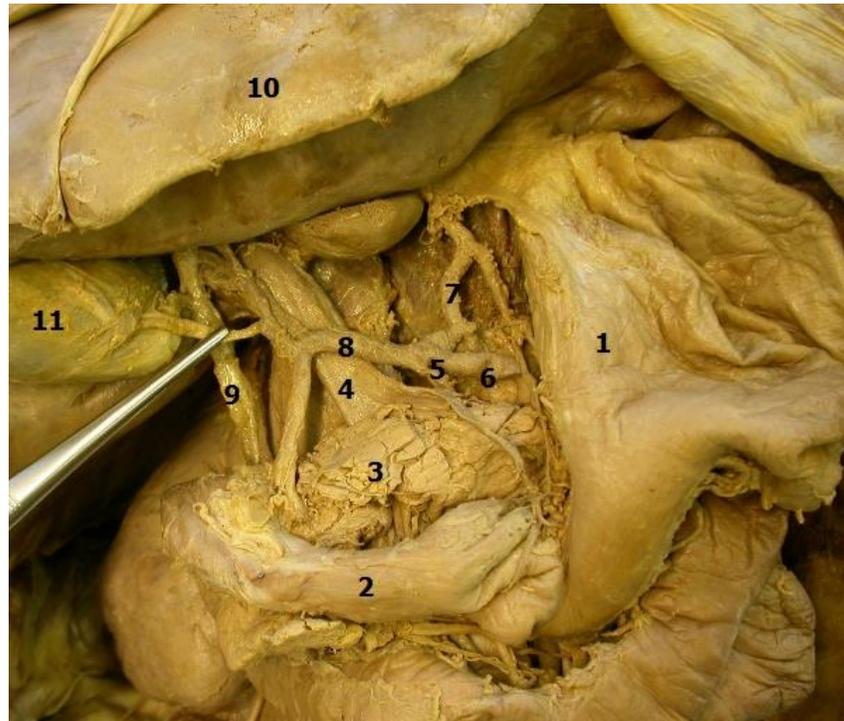
OMENTUM MINUS (LESSER OMENTUM)

1. LIGAMENTUM HEPATODUODENALE

- extends from the porta hepatis to the proximal portion of the duodenum

conveys the:

1. ductus choledochus
2. vena portae
3. a. hepatica – a. gastrica dext.



Right side view of abdominal viscera with the liver reflected cranially (left side toward the top). In addition to the left lateral (1), quadrate (2), right medial (3), and right lateral (4) lobes of the liver, the papillary (5) process of the caudate lobe of the liver is visible. The gallbladder (6) and cystic duct drain into the bile duct (7). The pyloric region (8) of the stomach opens into the duodenum (9). The pancreas (10) is beside the duodenum. Identify the greater omentum (11) and lesser omentum (12).

<http://vanat.cvm.umn.edu/carnLabs/Lab16/lmg16-6.html>

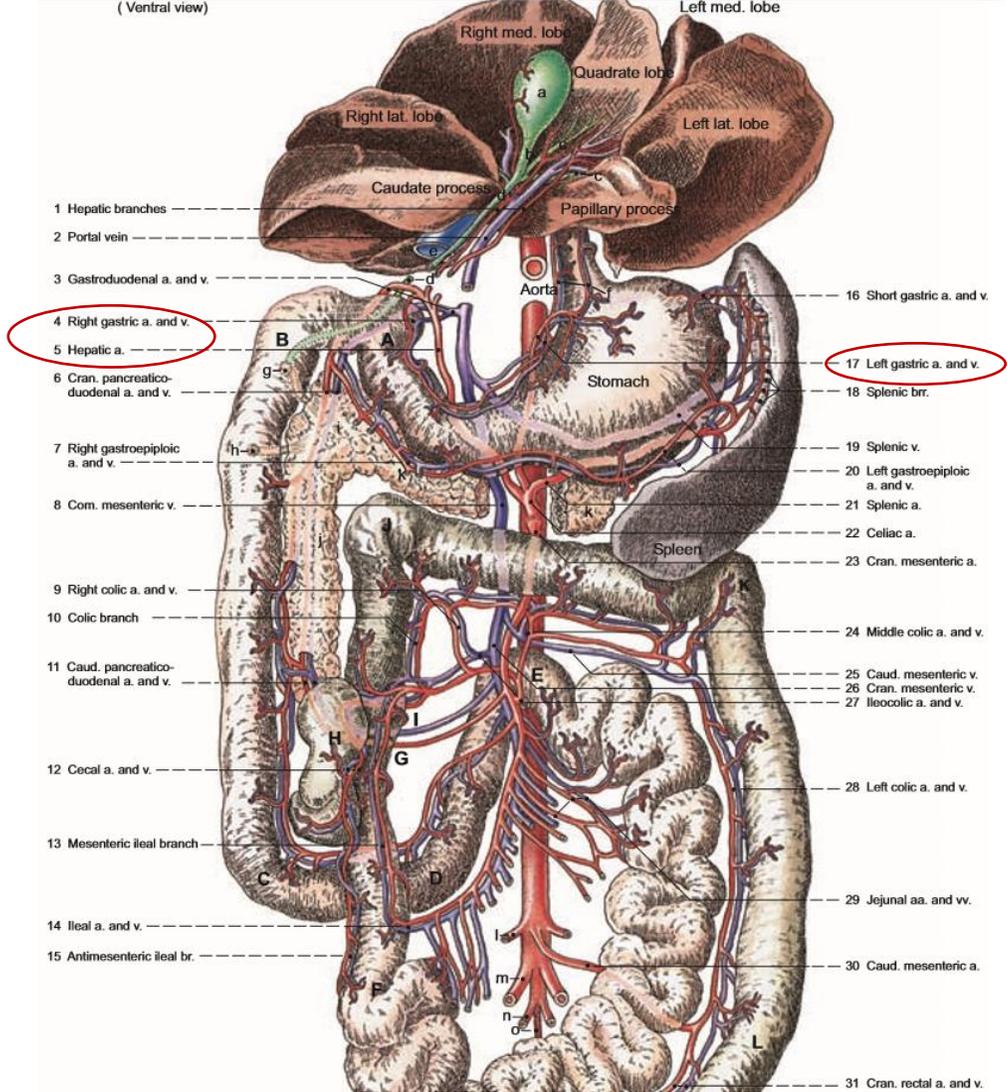
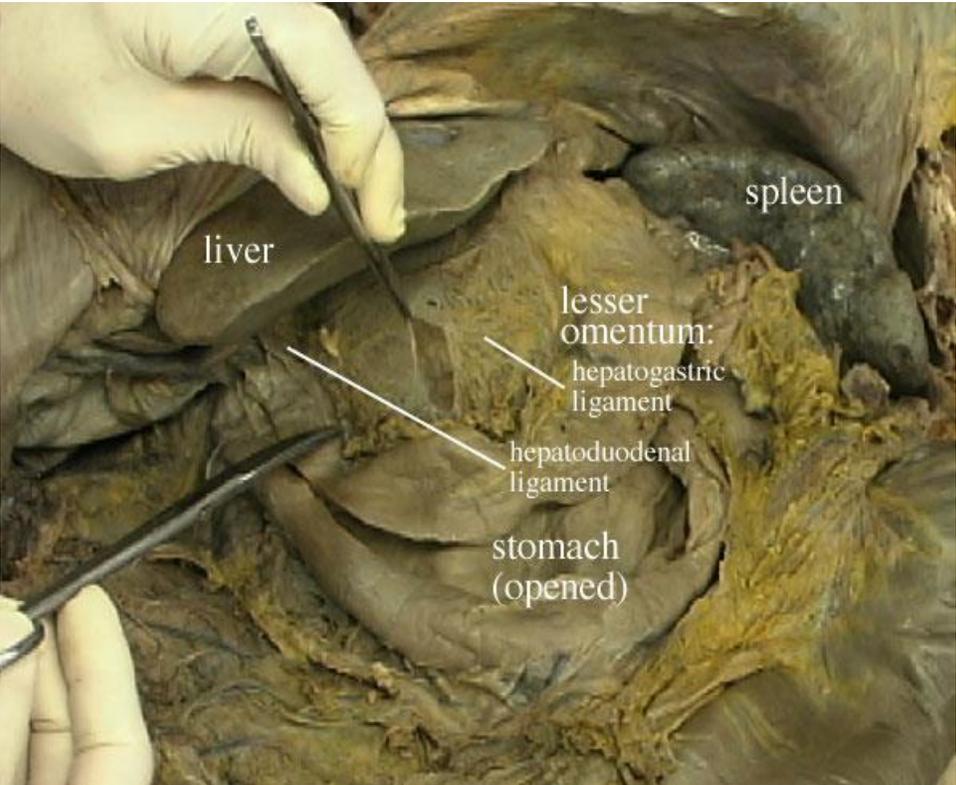
- 1 – Gaster
- 2 – Pars superior duodeni,
- 3 – Pancreas corpus,
- 4 - V. portae
- 5 - Truncus coeliacus
- 6 - A. lienalis
- 7 - A. gastrica sin.
- 8 - A. hepatica comm.
- 9 - Ductus choledochus
- 10 – Hepar
- 11 – Vesica fellea

LIGAMENTS OF THE LIVER (HEPAR)

OMENTUM MINUS (LESSER OMENTUM)

2. LIGAMENTUM HEPATOGASTRICUM

- extends from the porta hepatis to the lesser curvature
- conveys the a. gastrica sin.



BURSA OMENTALIS (OMENTAL BURSA, LESSER SAC)

- the cavity in the abdomen
- formed by the lesser and greater omentum
- connected with the greater sac via the omental foramen (*Foramen of Winslow*)

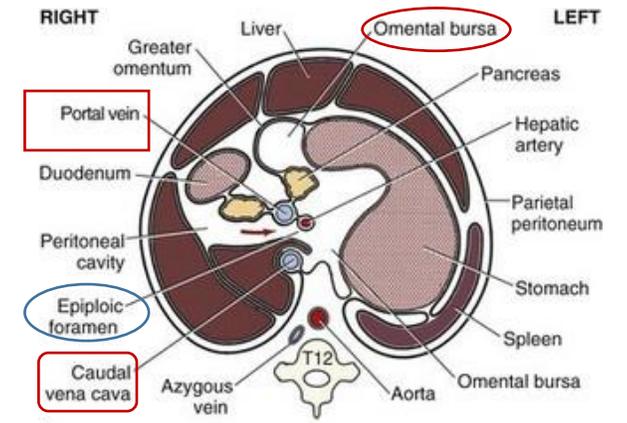
1. entrance: foramen omentale seu epiploicum – ventral from V. cava caudalis

- dorsal from V. portae

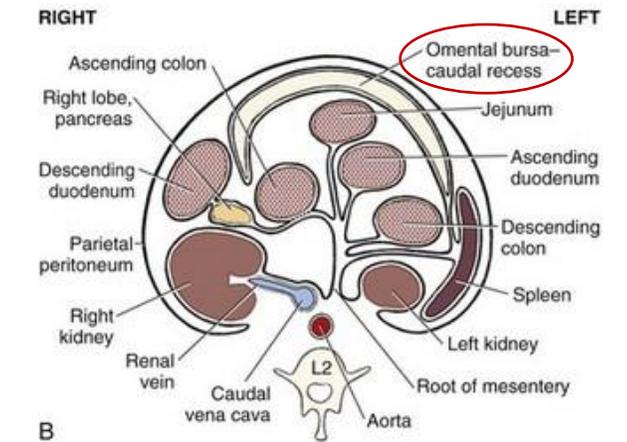
2. Vestibulum bursae omentalis – bordered ventrally by lesser omentum

3. Aditus ad recessus caudalem – above the lesser curvature, entrance of recessus caudalis

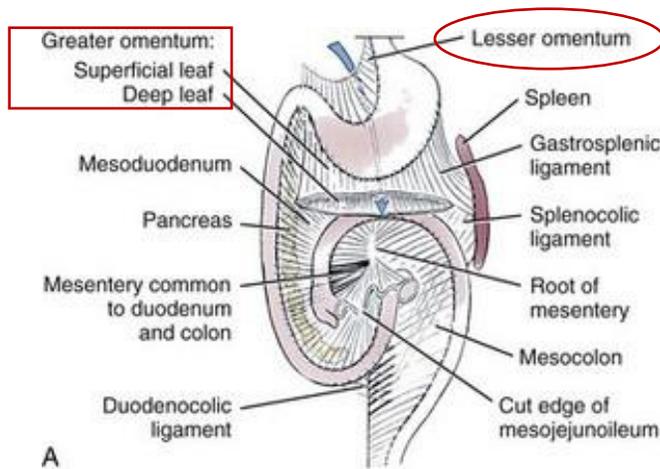
4. Recessus caudalis - space between the paries superfic. and prof. of greater omentum



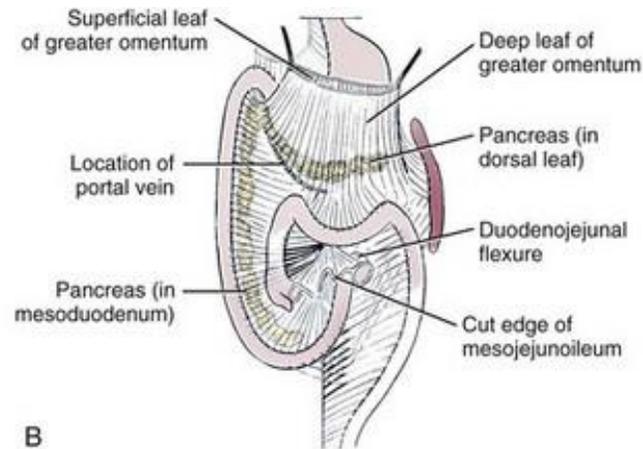
A



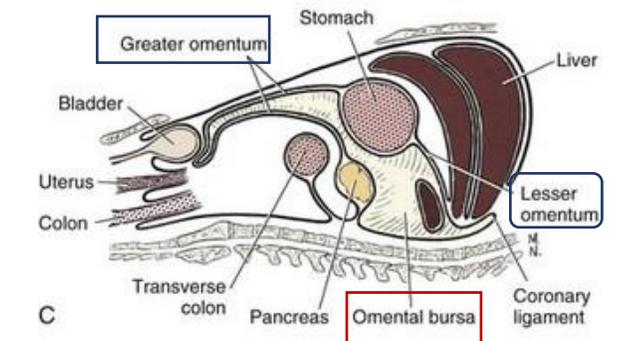
B



A



B



C

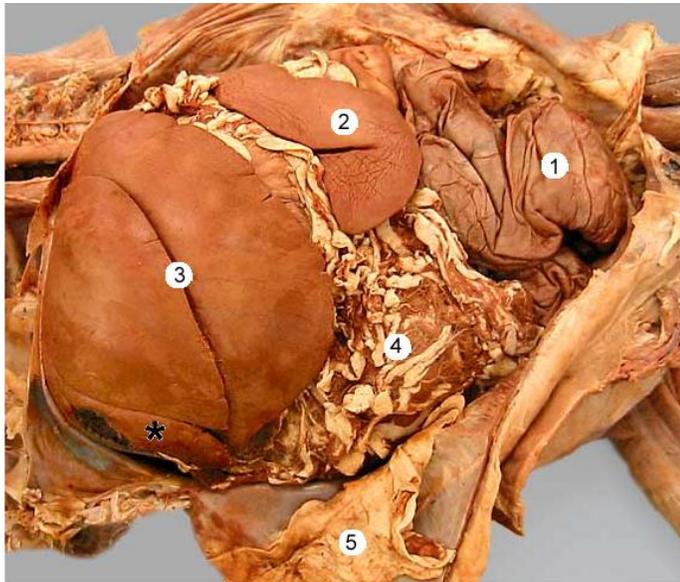
LIGAMENTS OF THE LIVER (HEPAR)

II. LIGAMENTUM FALCIFORME HEPATIS (FALCIFORM LIGAMENT):

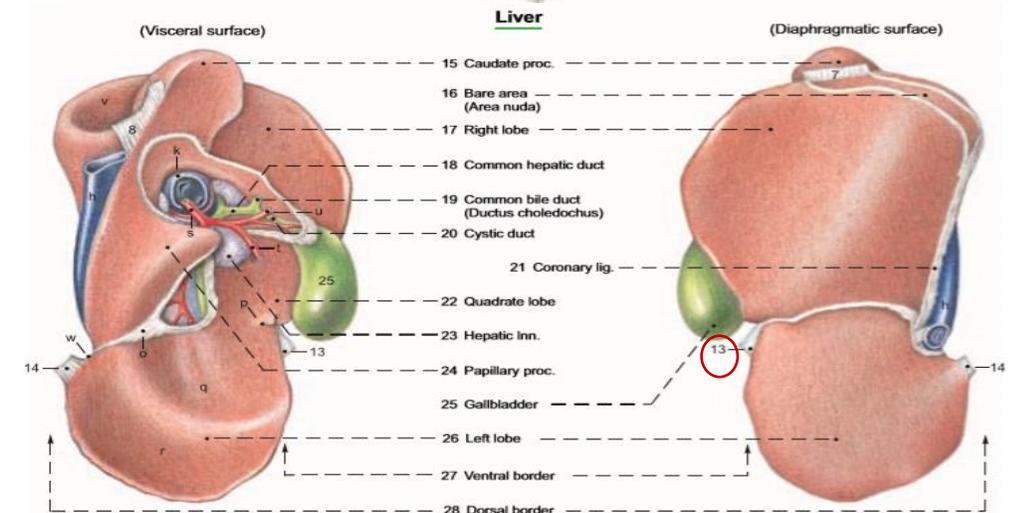
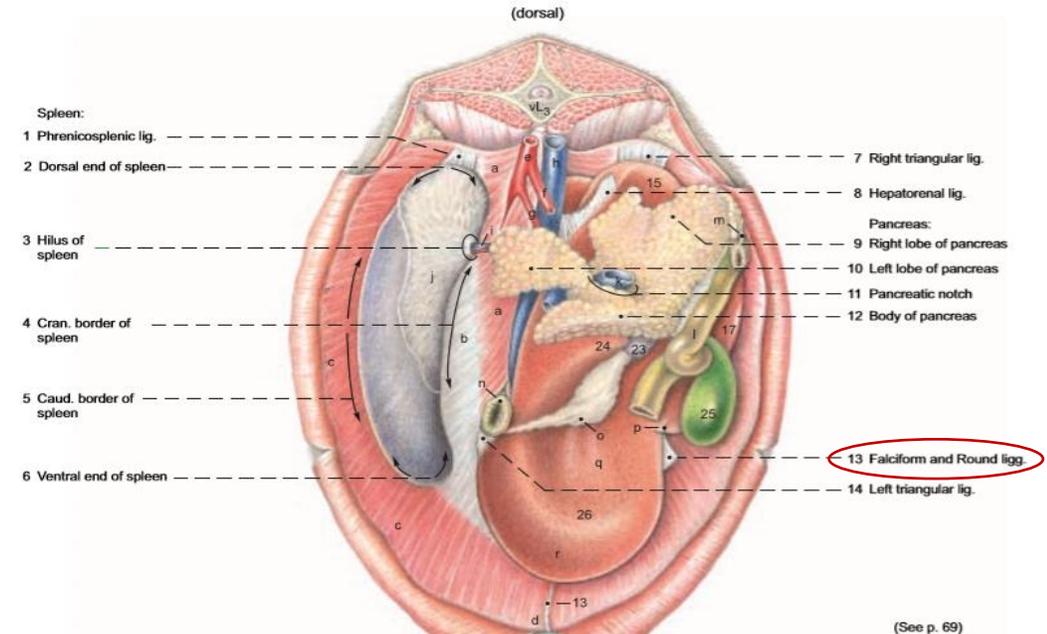
- remnant of the ventral mesentery

extends:

- between the liver and the diaphragm
 - between liver and the ventral abdominal wall
- includes the v. umbilicalis in fetal life
 - v. umbilicalis obliterates after the birth froming the round ligament (lig. teres hepatis)



The left side of the abdominal wall is reflected in a female dog with a pregnant uterus (1). The spleen (2) and liver (3) are visible, but most other viscera are hidden by the greater omentum (4). Identify the fat-filled falciform ligament (5), which runs between the umbilicus and the liver. When intact, the ligament passes to the left of the quadrate lobe of the liver (asterisk). <http://vanat.cvm.umn.edu/carnLabs/Lab16/lmg16-1.html>



LIGAMENTS OF THE LIVER (HEPAR)

II. LIGAMENTUM TERES HEPATIS (ROUND LIGAMENT):

- v. umbilicalis obliterates after the birth froming the round ligament (lig. teres hepatis)

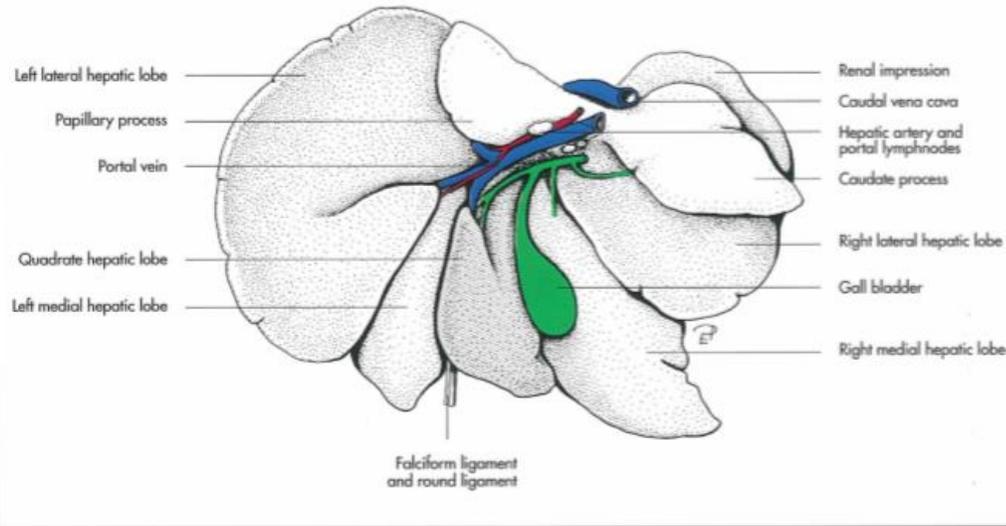
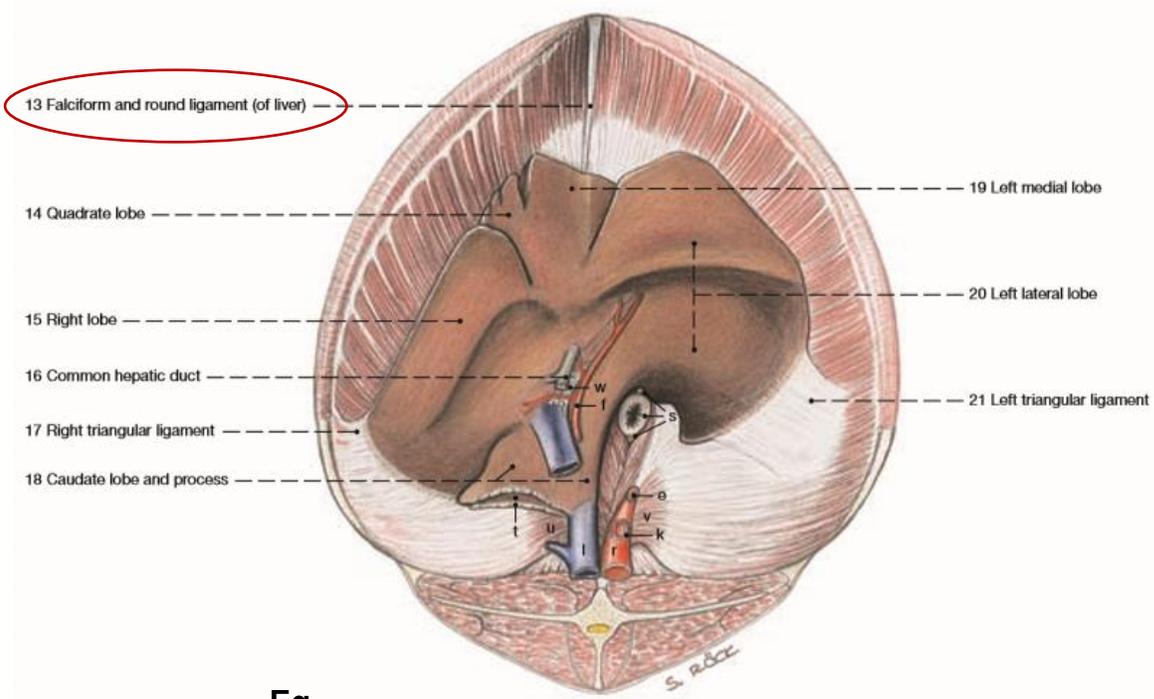


Fig 7-97. Liver of the dog, schematic, visceral surface.



Eq

LIGAMENTS OF THE LIVER (HEPAR)

LIGAMENTUM CORONARIUM (CORONARY LIGAMENT):

- surrounds the caudal vena cava
- between the liver and the diaphragm
- gives rise to the triangular ligament (ligamentum triangulare)

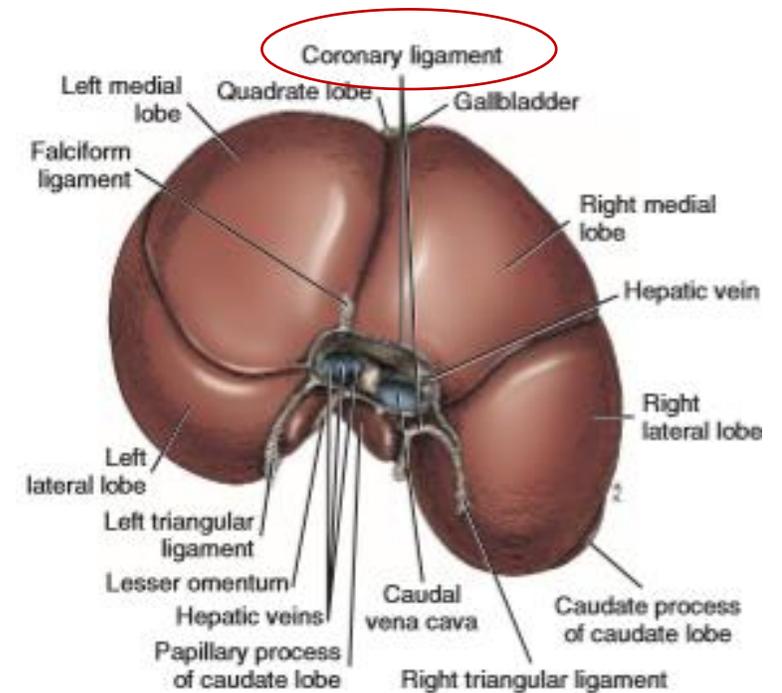
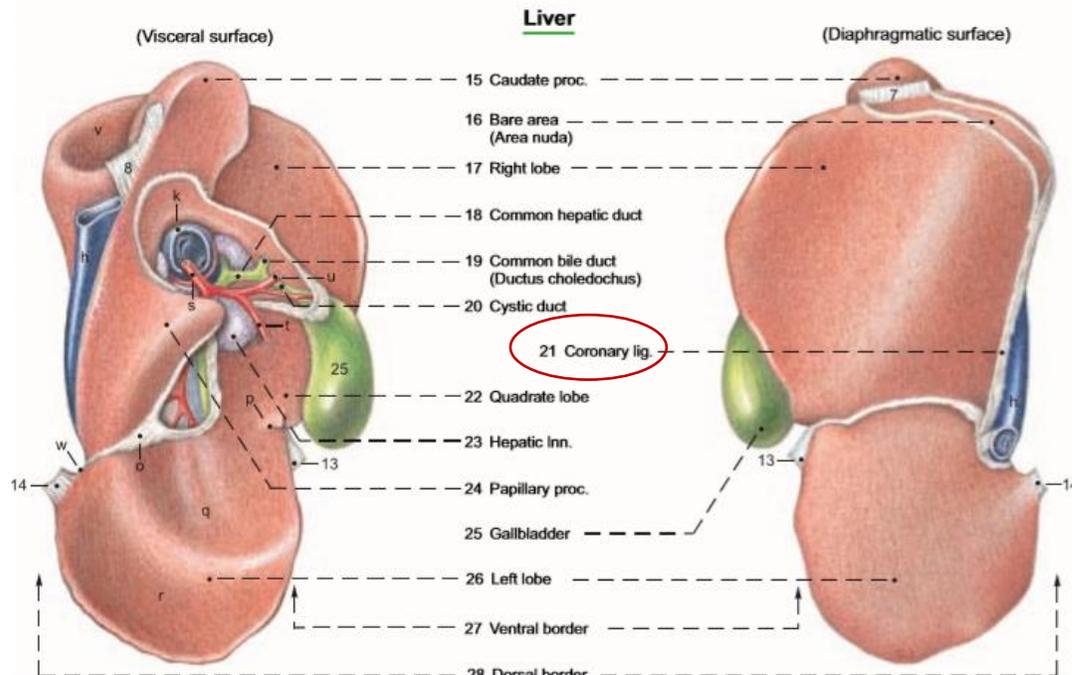


FIGURE 7-49 Liver, diaphragmatic aspect.

LIGAMENTS OF THE LIVER (HEPAR)

LIGAMENTUM TRIANGULARE DEXTRUM et SINISTRUM (TRIANGULAR LIGAMENT):

- the right and the left lobe attached to the diaphragm by these ligaments
- continue medially with the coronary ligament

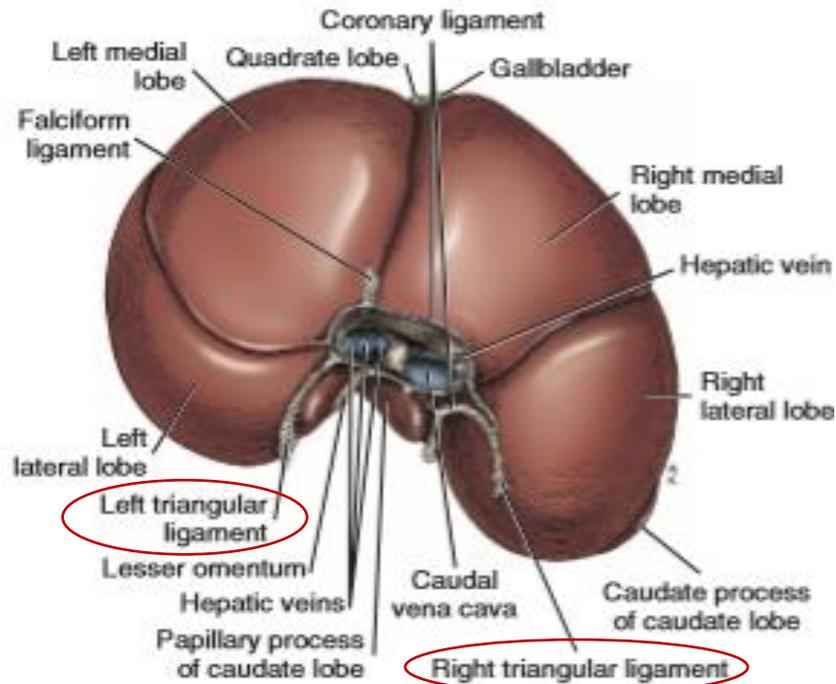
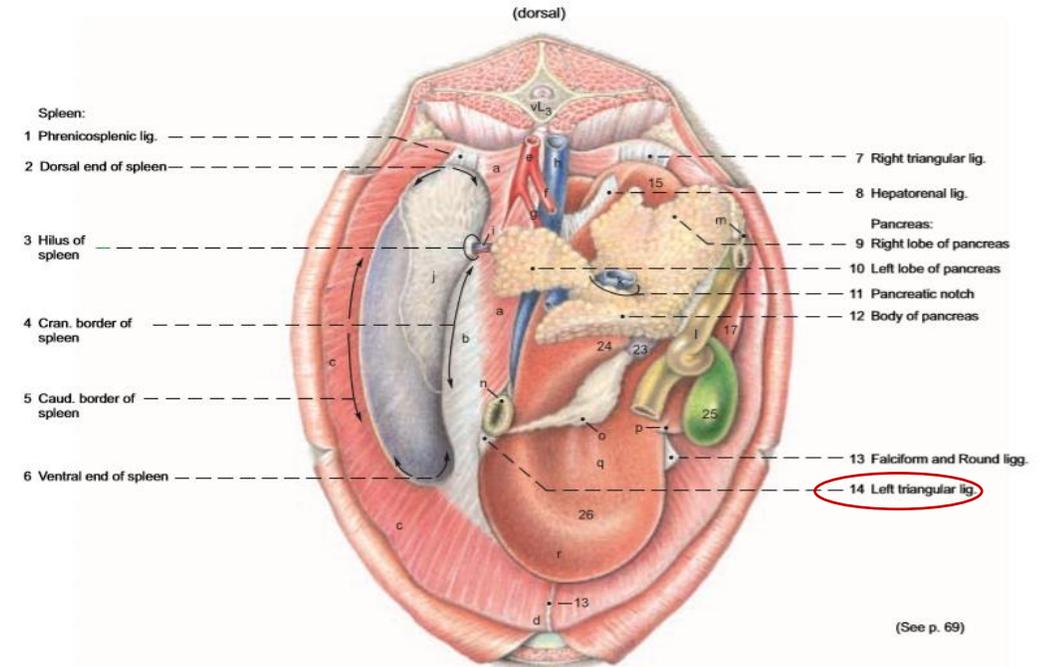
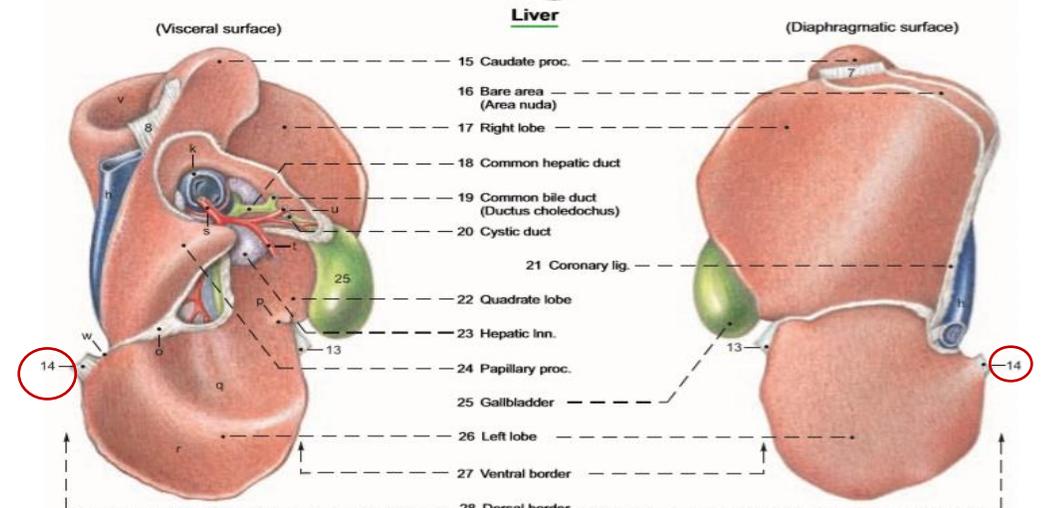


FIGURE 7-49 Liver, diaphragmatic aspect.



(See p. 69)



LOBES OF THE LIVER (LOBUS HEPATIS)

divided in four main lobes by fissures:

1. LOBUS HEPATIS SINISTER (left hepatic lobe)
2. LOBUS HEPATIS DEXTER (right hepatic lobe)
3. LOBUS HEPATIS CAUDATUS (caudate lobe)
4. LOBUS HEPATIS QUADRATUS (quadrate lobe)

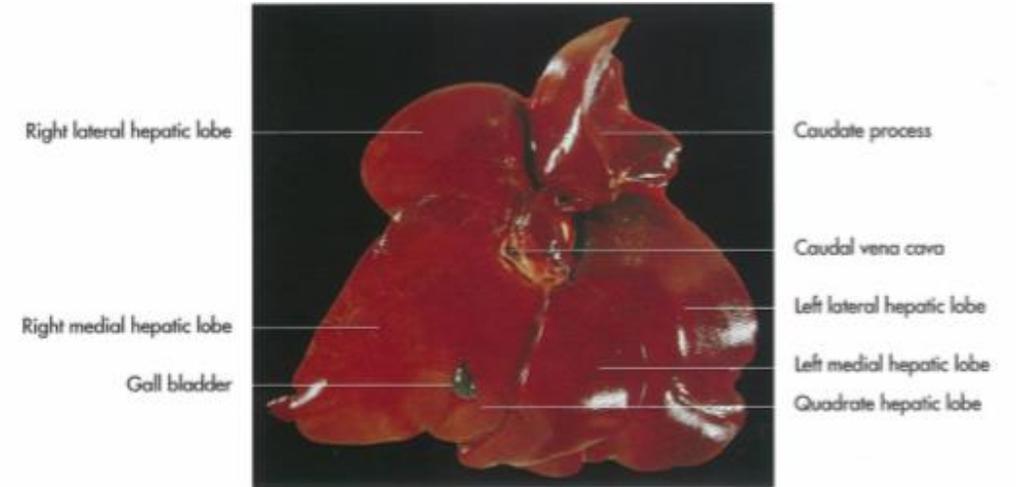
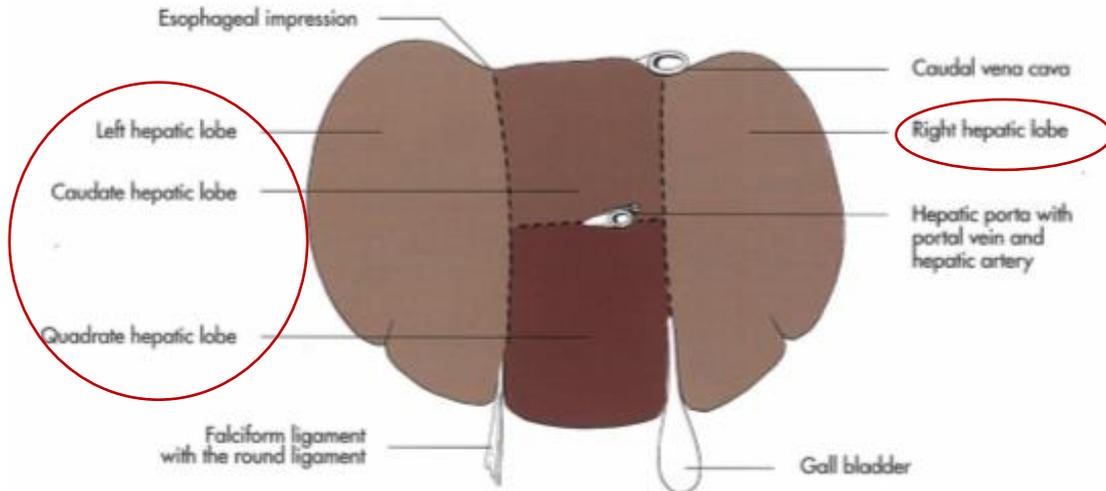


Fig 7-101. Liver of a cat, diaphragmatic surface (König, 1992).



Fig 7-102. Liver of a cat, visceral surface (König, 1992).

LOBES OF THE LIVER (LOBUS HEPATIS)

LOBUS HEPATIS SINISTER (left hepatic lobe):

may be subdivided into:

1. lobus hepatis sinister medialis (left medial lobe)

between:

- left lateral lobe
- incisura lig. teretis

2. lobus hepatis sinister lateralis (left lateral lobe)

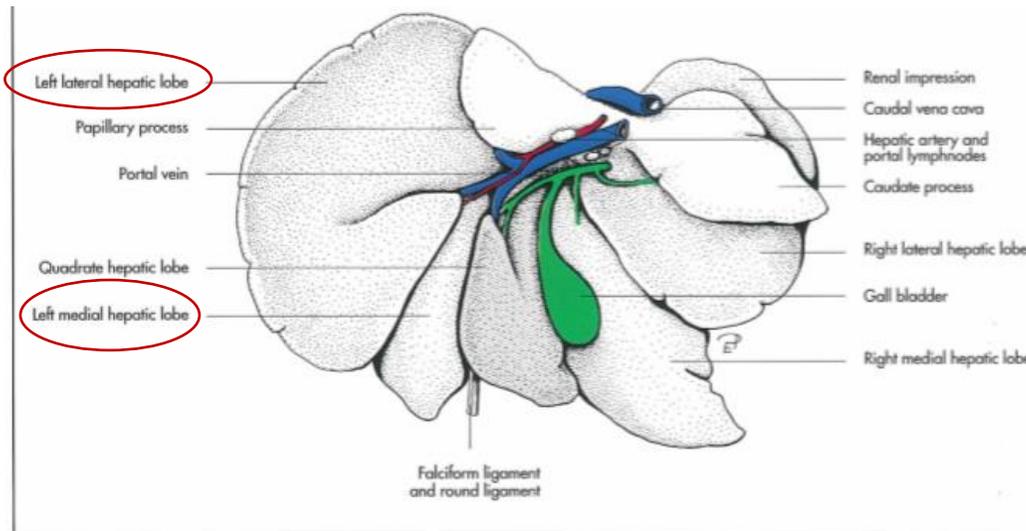


Fig 7-97. Liver of the dog, schematic, visceral surface.

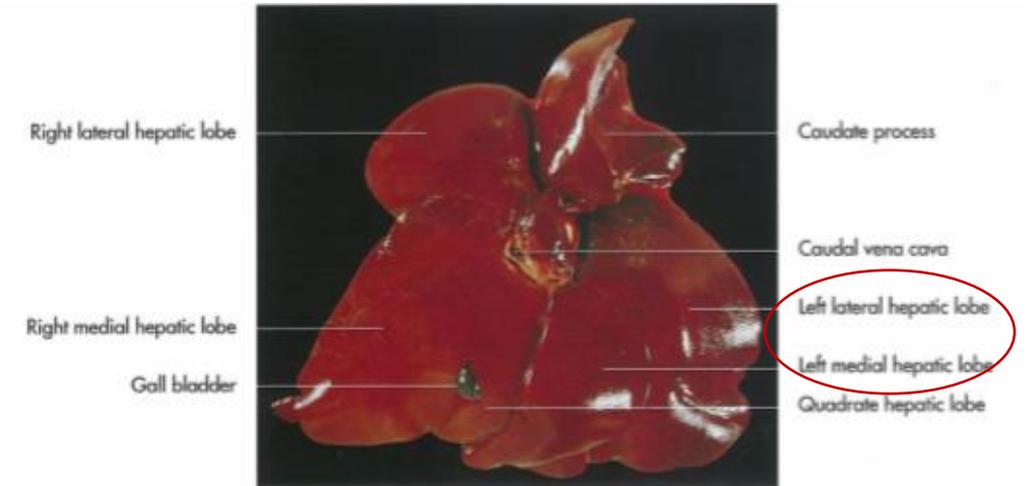


Fig 7-101. Liver of a cat, diaphragmatic surface [König, 1992].



Fig 7-102. Liver of a cat, visceral surface [König, 1992].

LOBES OF THE LIVER (LOBUS HEPATIS)

LOBUS HEPATIS DEXTER (right hepatic lobe)

may be subdivided into:

1. lobus hepatis dexter medialis (right medial lobe)
2. lobus hepatis dexter lateralis (right lateral lobe)

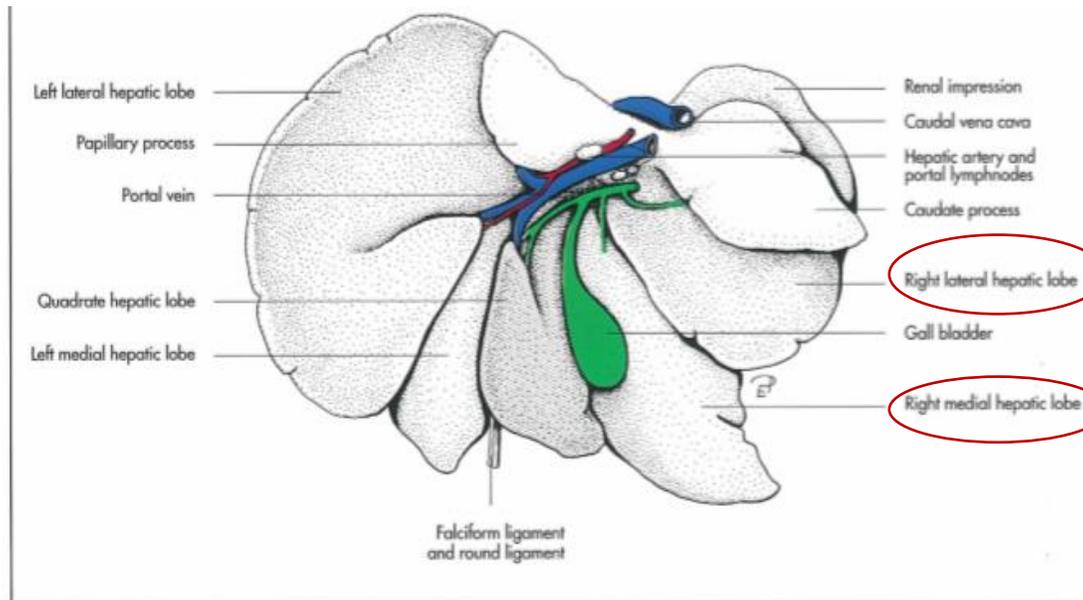


Fig 7-97. Liver of the dog, schematic, visceral surface.

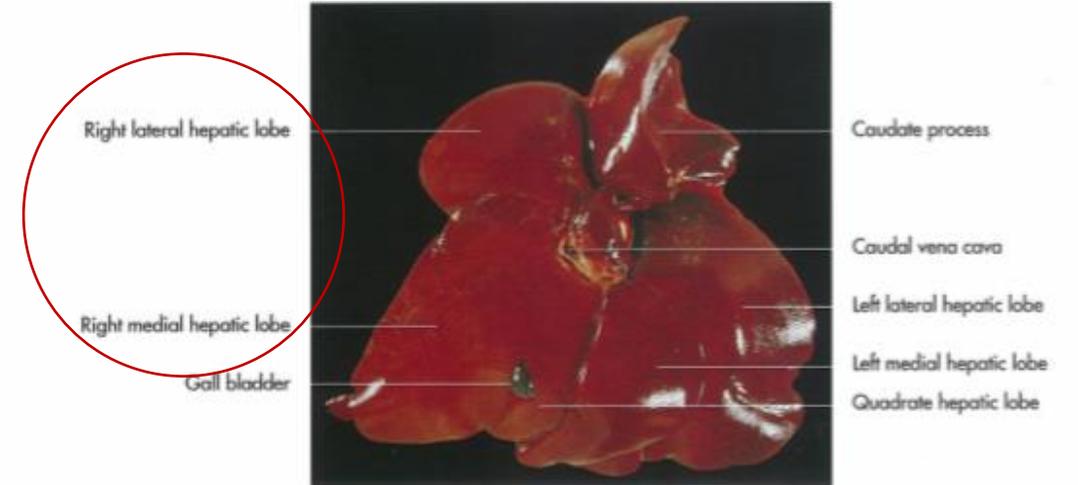


Fig 7-101. Liver of a cat, diaphragmatic surface [König, 1992].



Fig 7-102. Liver of a cat, visceral surface [König, 1992].

LOBES OF THE LIVER (LOBUS HEPATIS)

LOBUS HEPATIS CAUDATUS (caudate lobe)

- dorsal to the porta hepatis

may be subdivided into:

1. processus papillaris

- into the direction of the vestibulum bursae omentalis

2. processus caudatus

- from the visceral surface, into the direction of lesser omentum

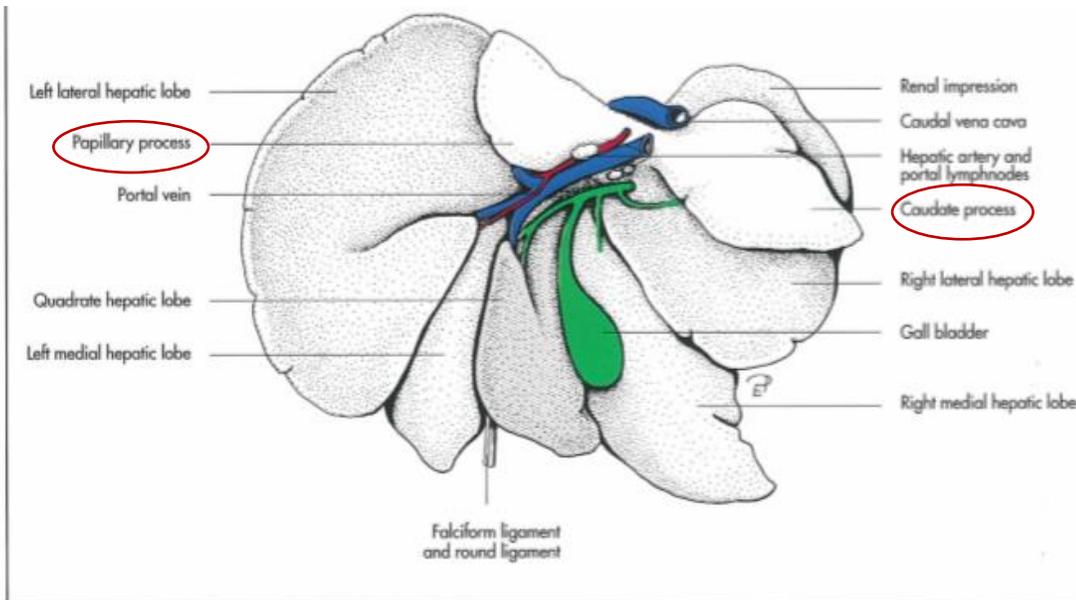


Fig 7-97. Liver of the dog, schematic, visceral surface.

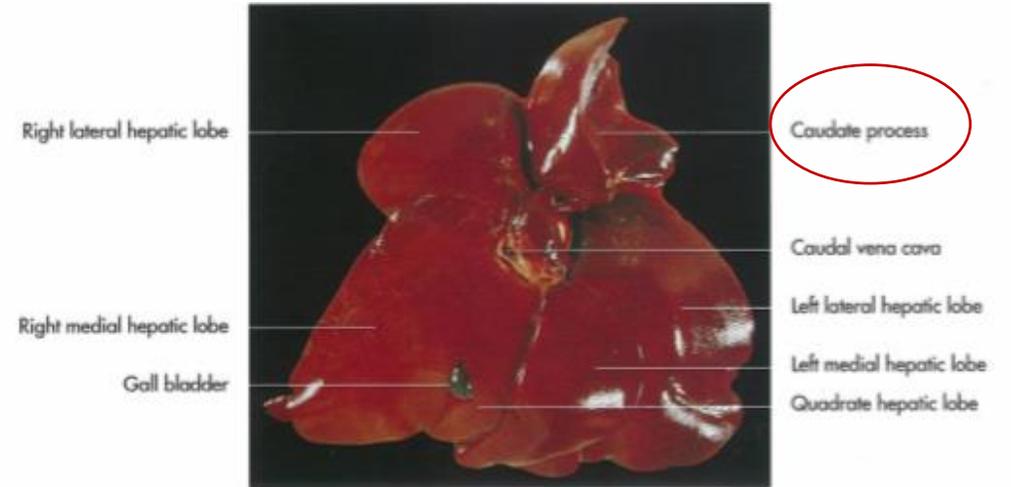


Fig 7-101. Liver of a cat, diaphragmatic surface (König, 1992).



Fig 7-102. Liver of a cat, visceral surface (König, 1992).

LOBES OF THE LIVER (LOBUS HEPATIS)

(quadrate lobe)

- ventral to the porta hepatis

between:

- a. fossa vesicae fellea
- b. incisura lig. teretis

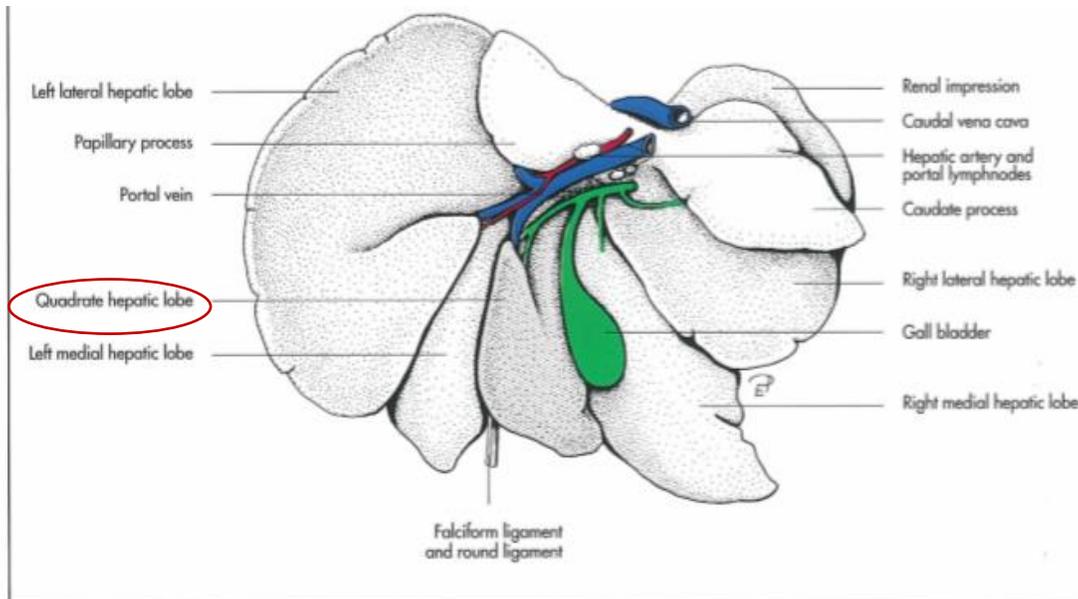


Fig 7-97. Liver of the dog, schematic, visceral surface.

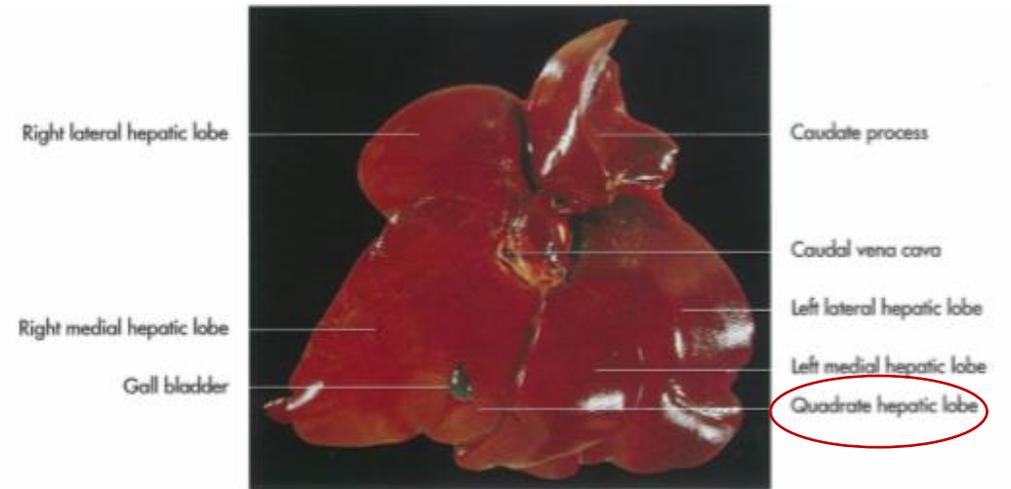


Fig 7-101. Liver of a cat, diaphragmatic surface (König, 1992).



Fig 7-102. Liver of a cat, visceral surface (König, 1992).

LOBES OF THE LIVER (LOBUS HEPATIS)

IN CARNIVORES:

1. Lobus hepatis sinister lateralis (left lateral lobe)
2. Lobus hepatis sinister medialis (left medial lobe)
3. Lobus hepatis dexter lateralis (right lateral lobe)
4. Lobus hepatis dexter medialis (right medial lobe)
5. Lobus quadratus
6. Lobus caudatus
 - a. proc. caudatus – on the right
 - b. proc. papillaris – on the left

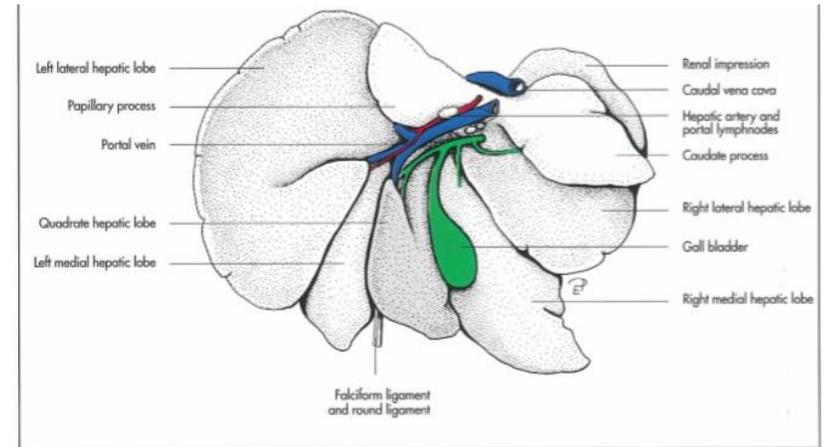
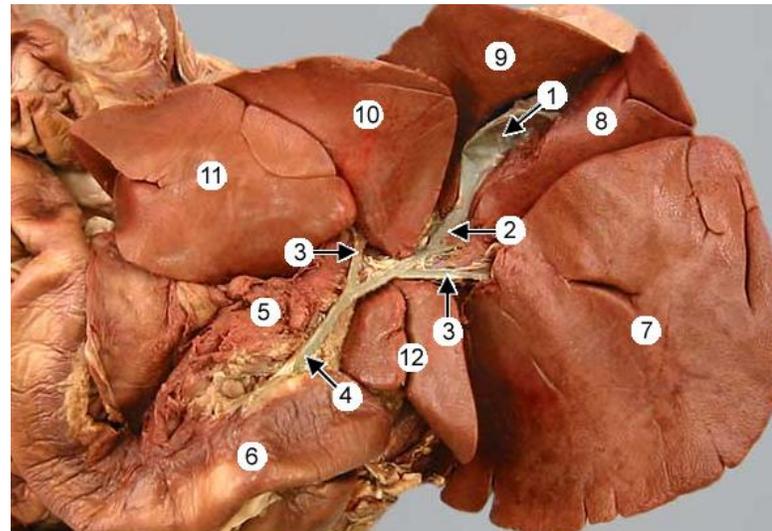
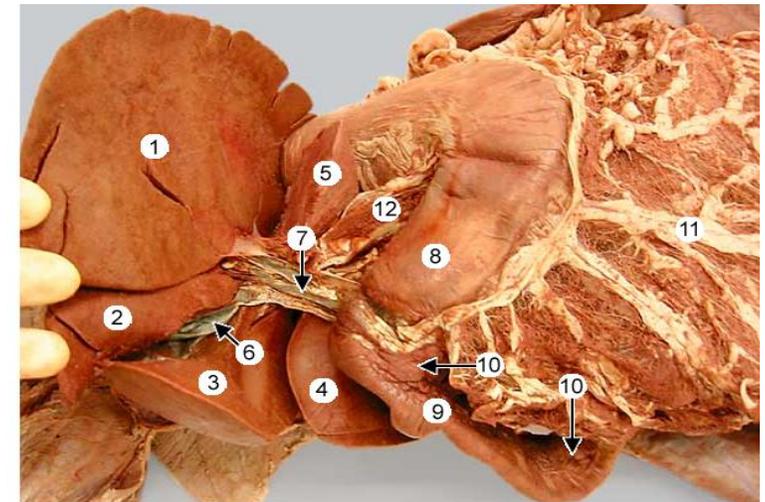


Fig 7-97. Liver of the dog, schematic, visceral surface.



Right lateral view of abdominal viscera with the liver reflected cranially and rotated (right toward the top). Observe the **gallbladder** (1), cystic duct (2), hepatic ducts (3), and the **bile duct** (4). The pancreas (5) has been reflected to expose the bile duct which opens into the duodenum (6). Identify **lobes of the liver**: left lateral (7), quadrate (8), right medial (9), right lateral (10), and the caudate (11) and papillary (12) processes of the caudate lobe.

<http://vanat.cvm.umn.edu/carnLabs/Lab16/Img16-7.html>



Right side view of abdominal viscera with the liver reflected cranially (left side toward the top). In addition to the left lateral (1), quadrate (2), right medial (3), and right lateral (4) lobes of the liver, the papillary (5) process of the caudate lobe of the liver is visible. The **gallbladder** (6) and cystic duct drain into the bile duct (7). The pyloric region (8) of the stomach opens into the **duodenum** (9). The pancreas (10) is beside the duodenum. Identify the **greater omentum** (11) and **lesser omentum** (12).

<http://vanat.cvm.umn.edu/carnLabs/Lab16/Img16-6.html>

LOBES OF THE LIVER (LOBUS HEPATIS)

CARNIVORE

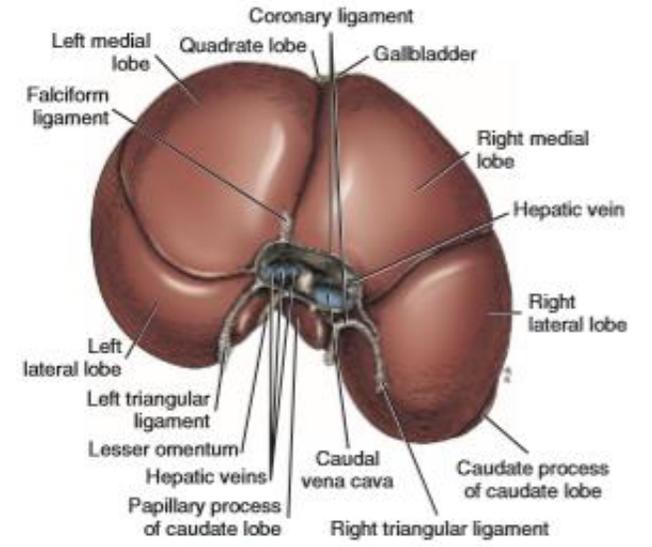
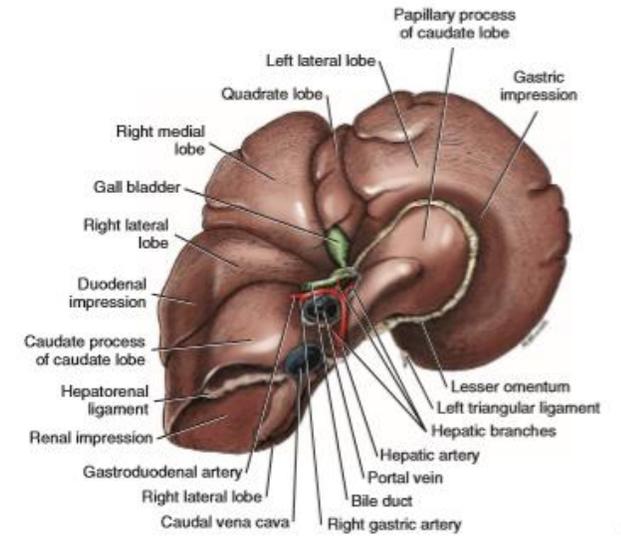


FIGURE 7-49 Liver, diaphragmatic aspect.



LOBES OF THE LIVER (LOBUS HEPATIS)

IN FIG:

1. Lobus hepatis sinister lateralis (left lateral lobe)
2. Lobus hepatis sinister medialis (left medial lobe)
3. Lobus hepatis dexter lateralis (right lateral lobe)
4. Lobus hepatis dexter medialis (right medial lobe)
5. Lobus quadratus
6. Lobus caudatus
 - a. proc. caudatus – on the right

- NO proc. papillaris

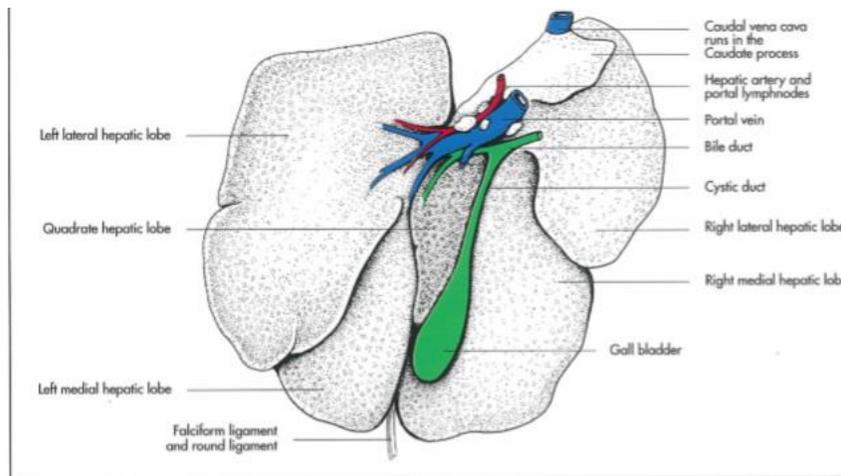


Fig 7-98. Liver of the pig, schematic, visceral surface.

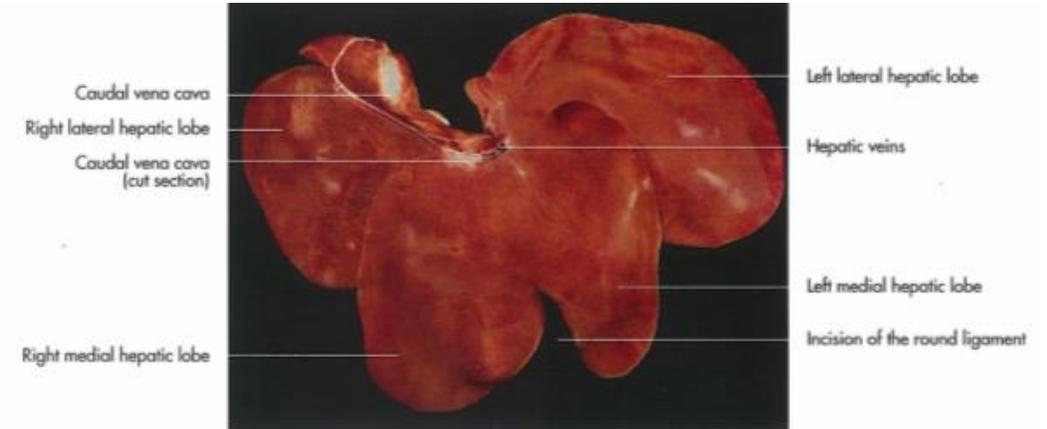


Fig 7-103. Liver of a pig, diaphragmatic surface.



Fig 7-104. Liver of a pig, visceral surface.

LOBES OF THE LIVER (LOBUS HEPATIS)

IN FIG:

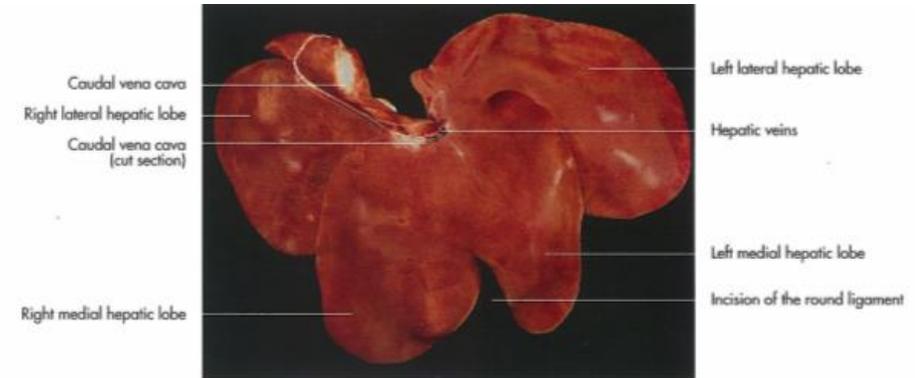


Fig 7-103. Liver of a pig, diaphragmatic surface.



Fig 7-104. Liver of a pig, visceral surface.

LOBES OF THE LIVER (LOBUS HEPATIS)

IN RUMINANTS:

1. Lobus hepatis sinister
2. Lobus hepatis dexter
3. Lobus quadratus

UNDIVIDED!!!

- between the fossa ligamenti teretis and gall bladder

4. Lobus caudatus

a. proc. caudatus – LARGE

b. proc. papillaris - small

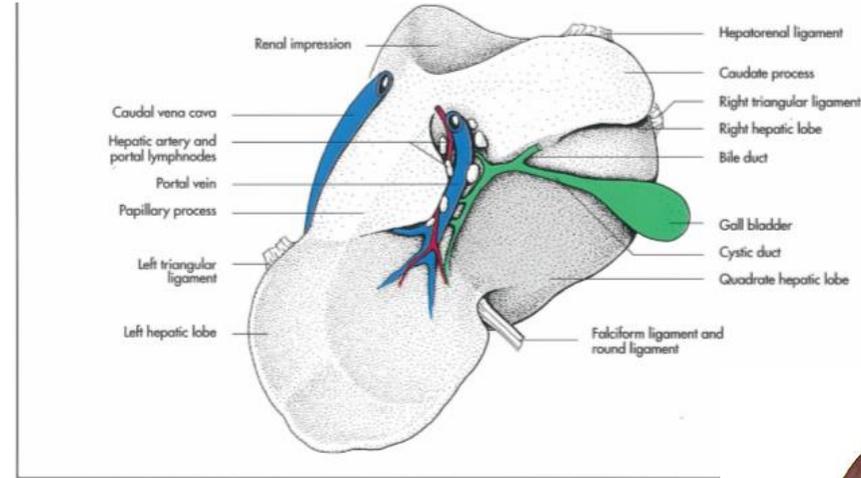
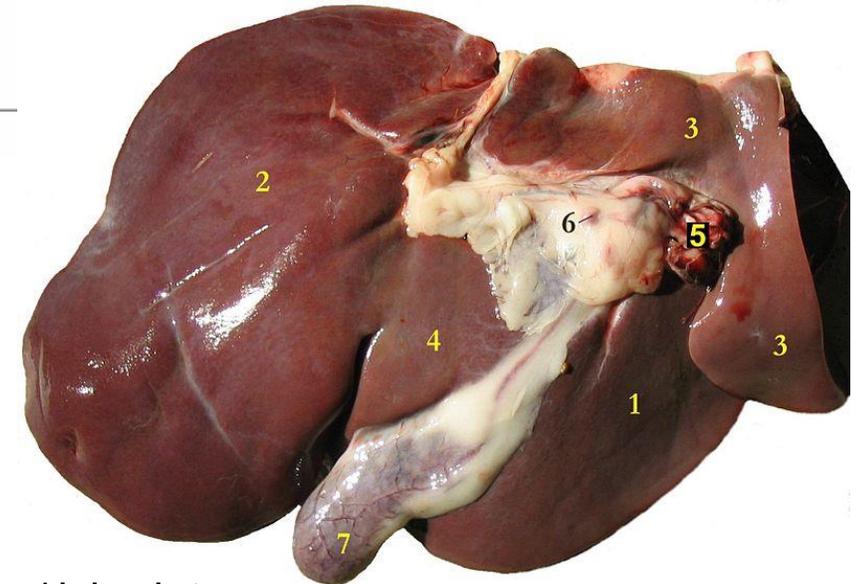
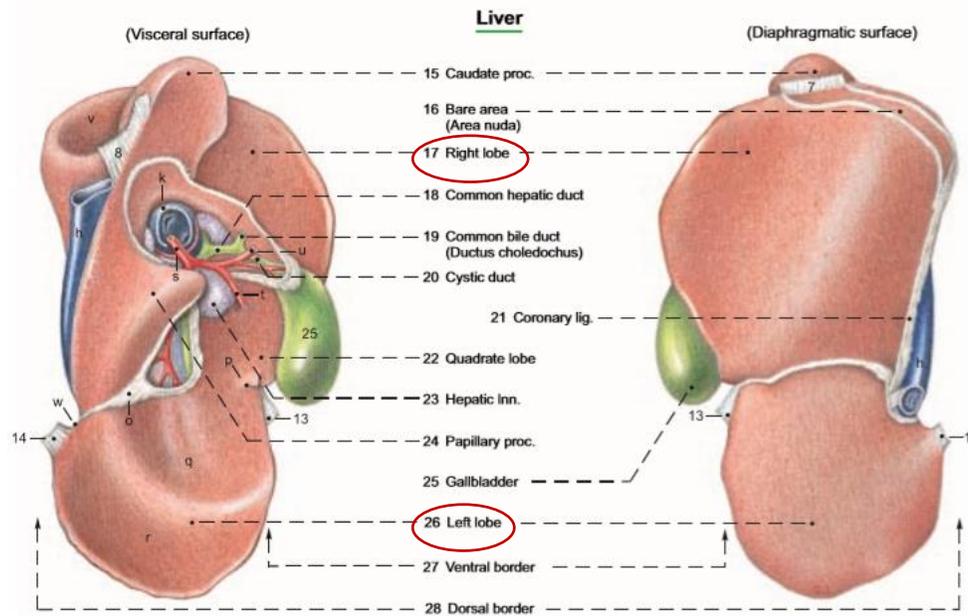


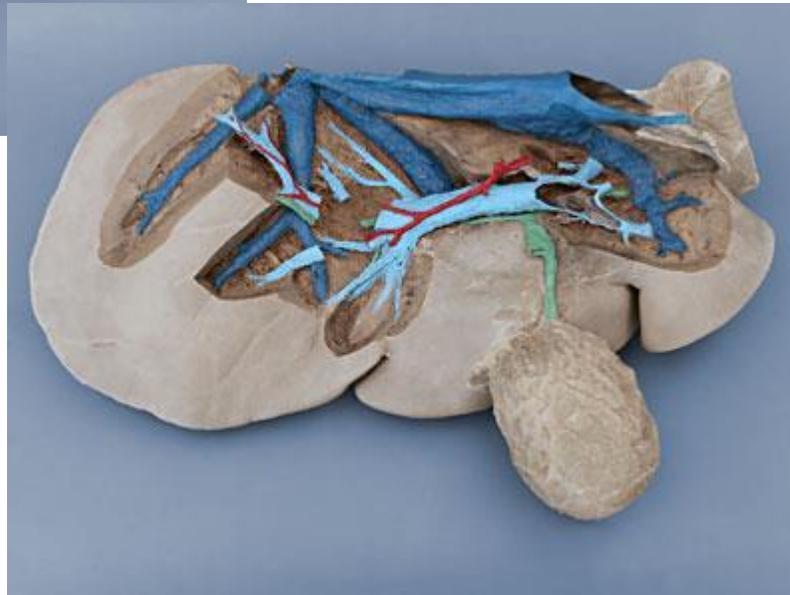
Fig 7-99. Liver of the ox, schematic, visceral surface.



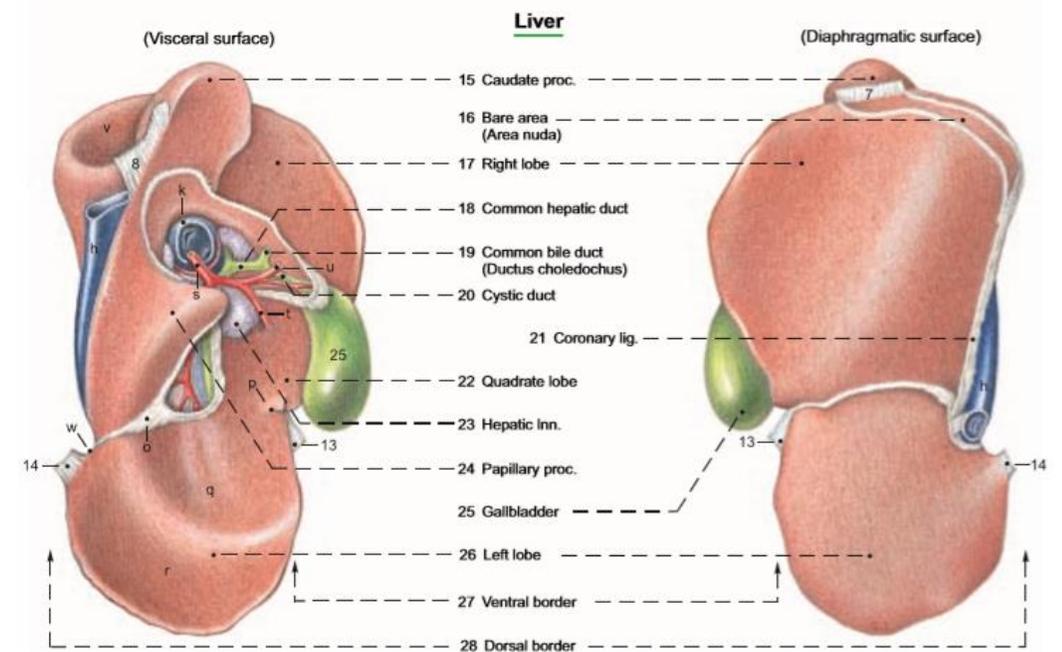
- 1 Lobus dexter,
 Lobus sinister,
 2 3 Lobus caudatus,
 4 Lobus quadratus,
 5 Porta hepatica
 (Arteria hepatica et Vena portae),
 6 Lymphonodi hepatici,
 7 Vesica fellea

LOBES OF THE LIVER (LOBUS HEPATIS)

IN RUMINANTS:



dunkelblau: Lebervenenensystem, hellblau: Pfortadersystem, grün: Gallengänge, rot: Arterien



LOBES OF THE LIVER (LOBUS HEPATIS)

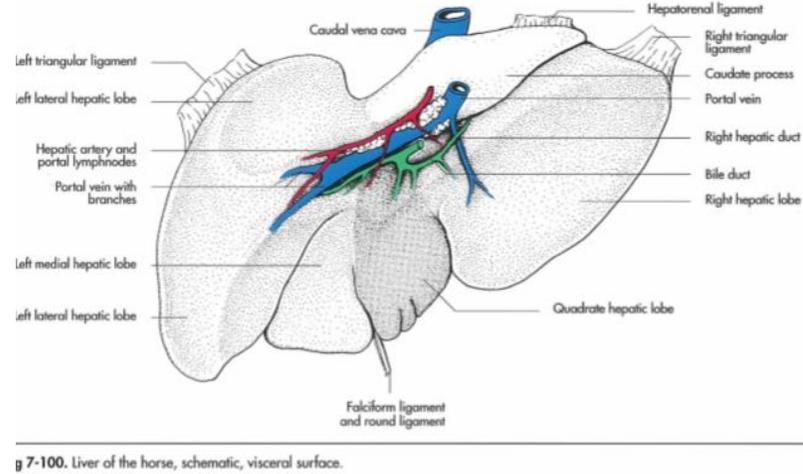
IN HORSE:

1. Lobus hepatis sinister lateralis
2. Lobus hepatis sinister medialis
3. Lobus hepatis dexter - **UNDIVIDED!!!**
4. Lobus quadratus

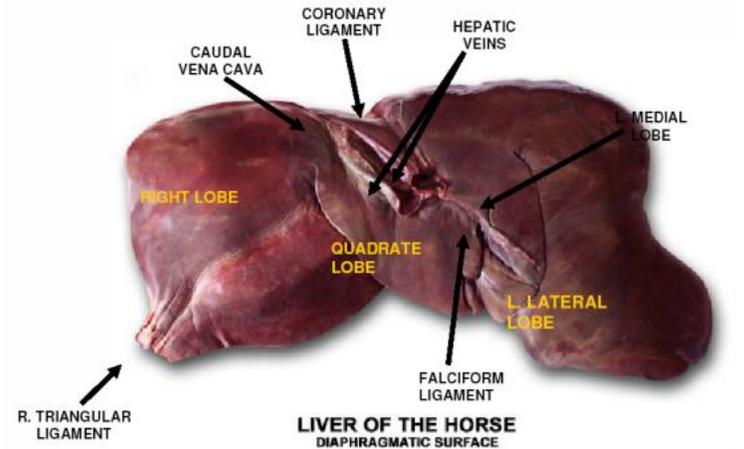
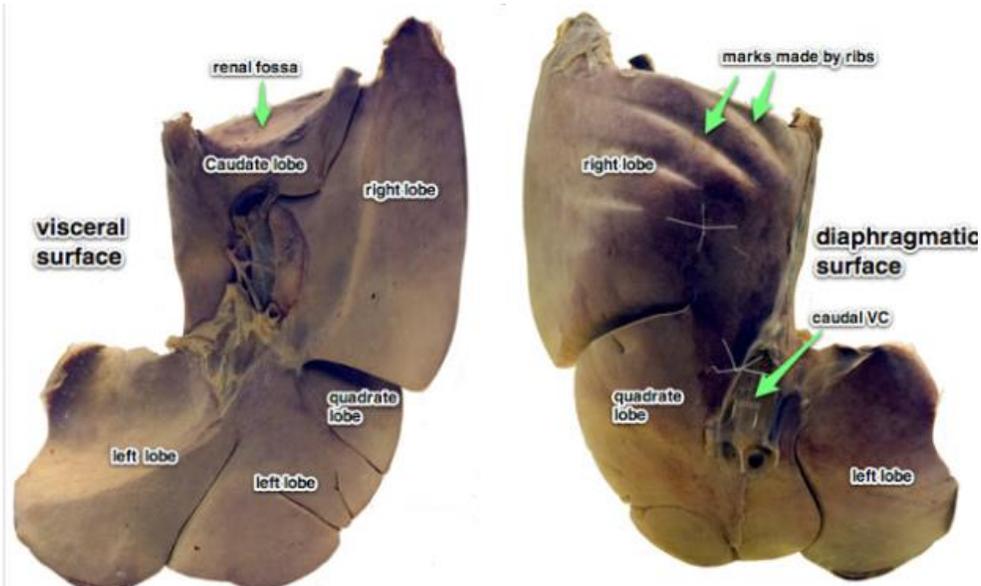
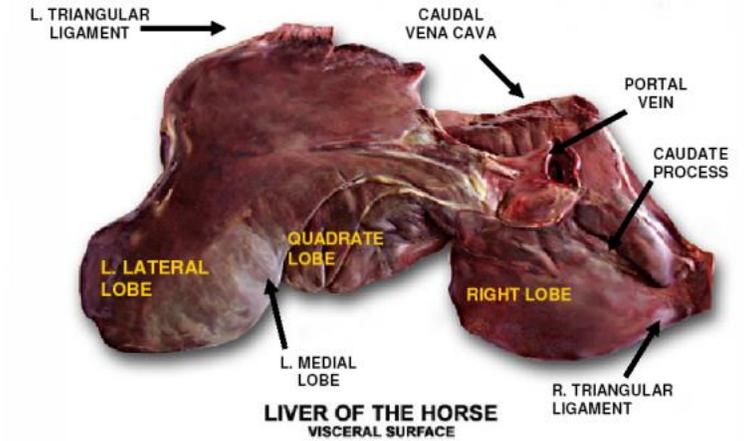
- between the fossa ligamenti teretis and gall bladder

4. Lobus caudatus

- a. proc. caudatus
- b. **NO proc. papillaris**



g 7-100. Liver of the horse, schematic, visceral surface.



BLOOD SUPPLY OF THE LIVER

Arteria hepatica

- nutritinal supply of the liver
- branch of A. coeliaca
- enter the liver through the hepatic porta
- gives the Aa. interlobulares
- the Aa. interlobulares enter the liver sinusoids

MICROCIRCULATION OF LIVER

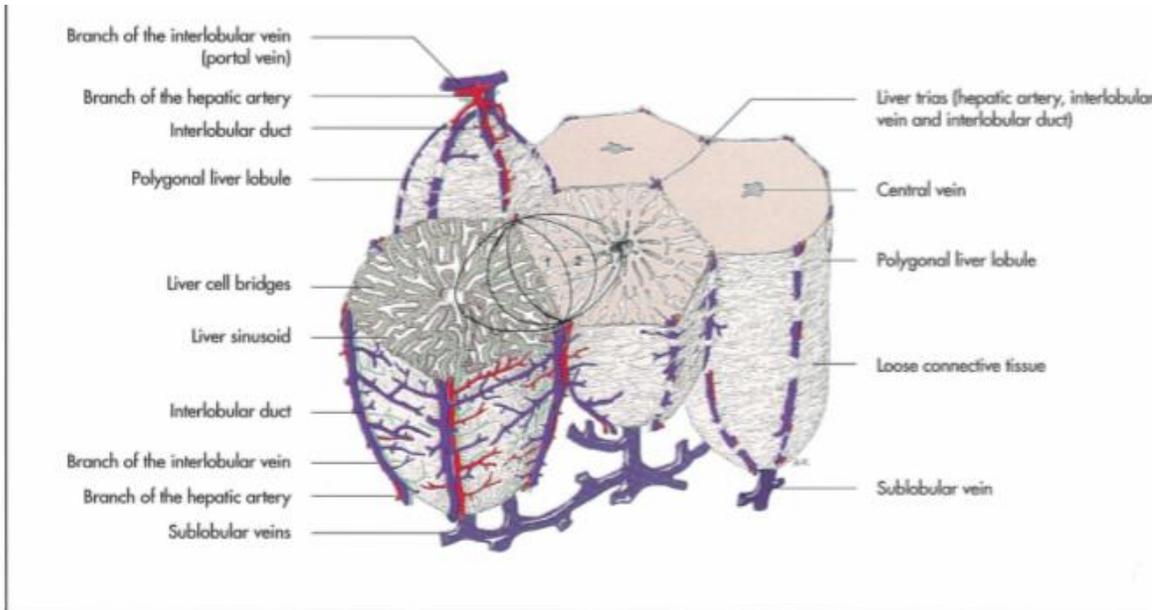


Fig 7-105. Hepatic lobules in relation to afferent and efferent vessels, three-dimensional, schematic [Liebich, 2004].

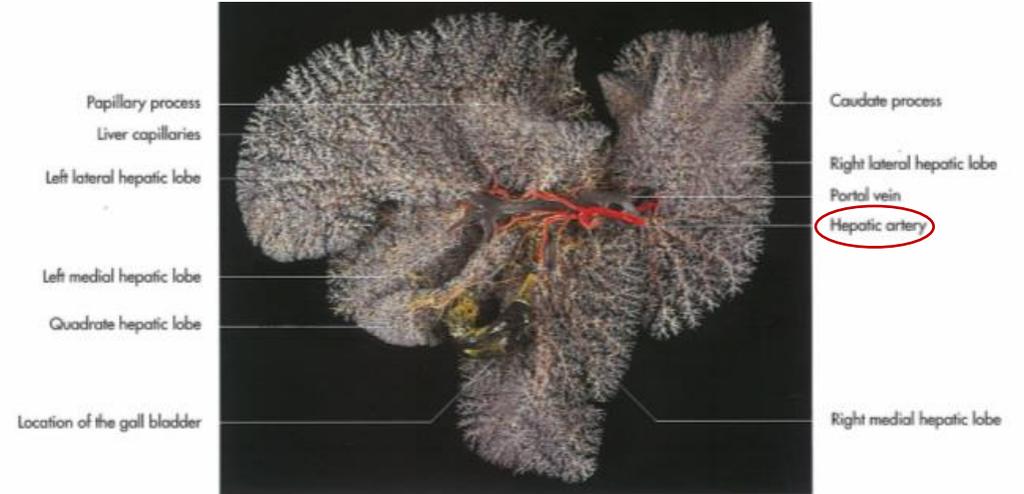
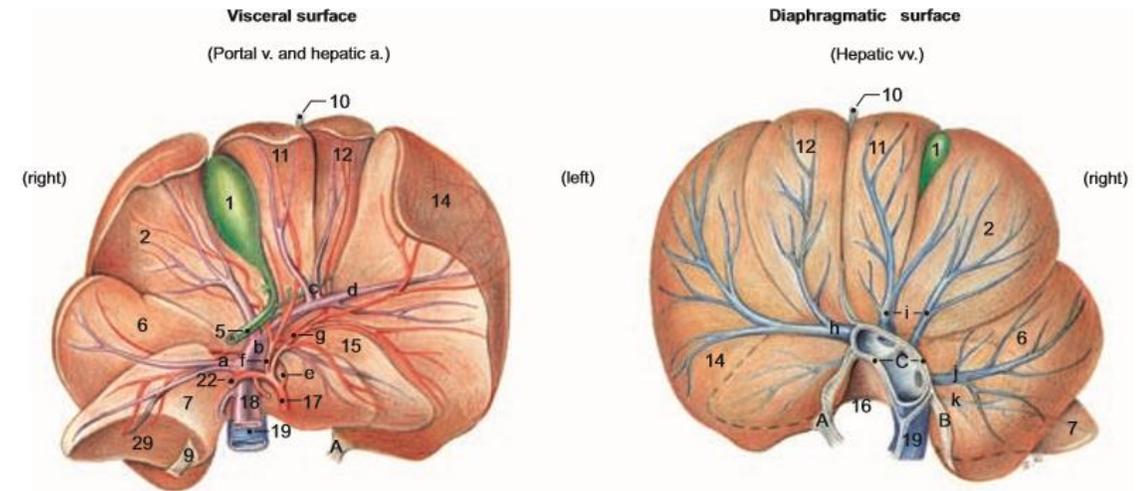


Fig 7-108. Corrosion cast of the liver of a dog after injection of the hepatic artery and the portal vein.



Legend :

- A Left triangular lig.
- B Right triangular lig.
- C Coronary lig. of liver

- Portal vein:
- a Right br.
- b Left br.
- c Umbilical part
- d Transverse part

- Hepatic a.:
- e Right lat. br.
- f Right med. br.
- g Left br.

- Hepatic vv.:
- h Left hepatic v.
- i Middle hepatic v.
- j Right hepatic v.
- k Right acc. hepatic v.

DOG

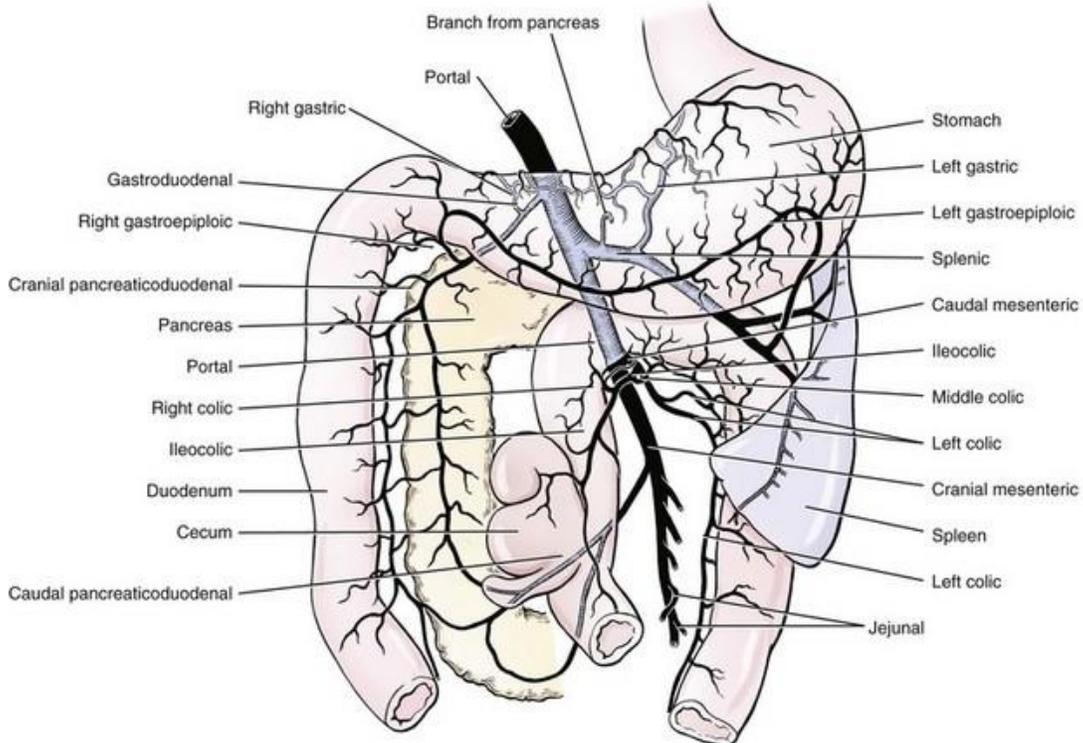
BLOOD SUPPLY OF THE LIVER

VENA PORTAE:

- transport venous blood
- portal blood contains nutrients and toxins extracted from digested contents

carries blood from the:

1. gastrointestinal tract
2. gallbladder
3. pancreas
4. spleen to the liver



Tributaries of the portal vein in a dog: ventral aspect. (From Evans HE, de Lahunta A: Miller's anatomy of the dog, ed 4, St Louis, 2013, Saunders/Elsevier.)

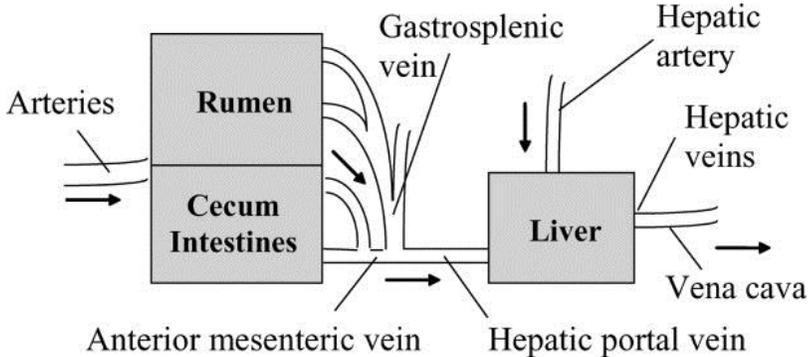


Corrosion cast of the portal vein and caudal vena cava of an adult dog. A, Right portal vein branch. B, Left portal vein branch. C, Central branch off the left portal vein. D, Branch to the left lateral and medial liver lobes. E, Right hepatic vein. F, Caudal vena cava, with central branches entering on the ventral midline. G, Left hepatic vein branches.

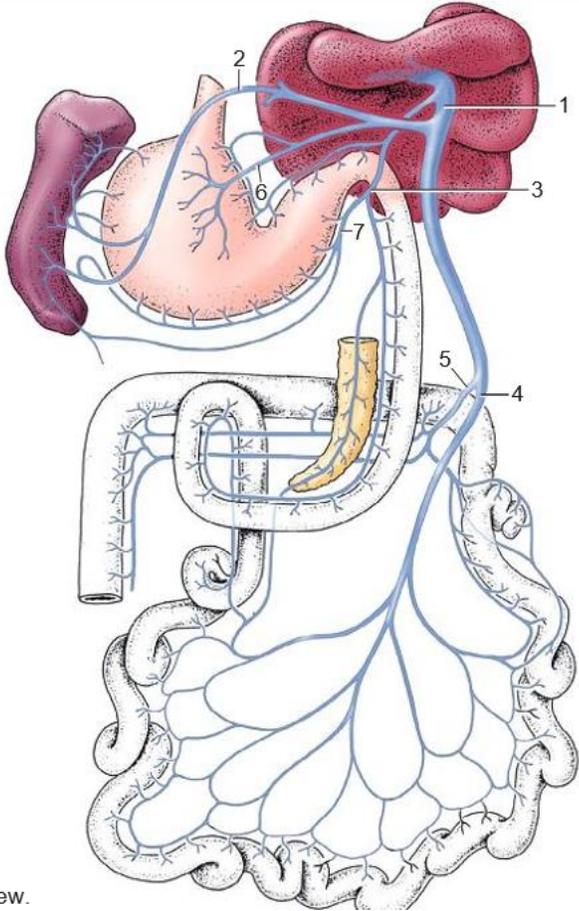
BLOOD SUPPLY OF THE LIVER

VEINS DRAIN INTO VENA PORTAE:

- 1. VENA LIENALIS
- 2. VENA MESENTERICA CRANIALIS
- 3. VENA MESENTERICA CAUDALIS



Stylized view of the splanchnic vasculature; arrows show direction of blood flow.
<https://www.sciencedirect.com/science/article/pii/S0022030206722007>



- 1. Portal vein
- 2. Splenic vein
- 3. Gastroduodenal vein
- 4. Cranial mesenteric vein
- 5. Caudal mesenteric vein
- 6. Left gastric vein
- 7. Right gastroepiploic vein

Note: Semischematic dorsal view.

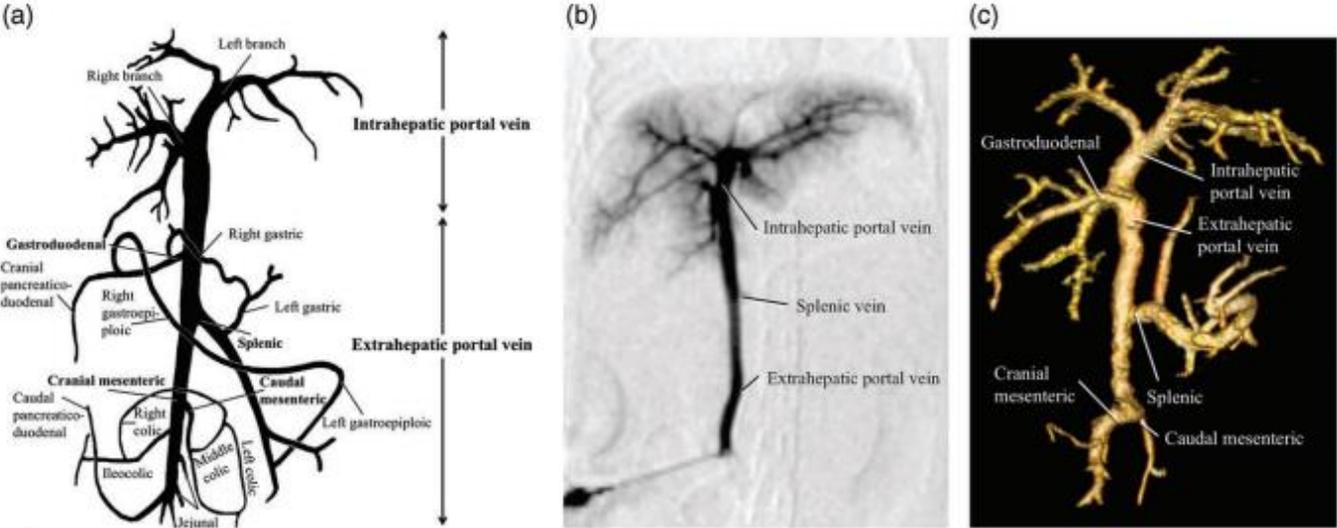


FIG 1. Anatomy of the portal vein. (a) Diagrammatic representation of the portal vein and its tributaries. (b) Example of a static image from an intraoperative mesenteric portovenography video loop. Minimal back filling of the splenic vein is identified. (c) Example of a computed tomography angiography surface shaded volume-rendered 3D image of the portal vein.

<https://onlinelibrary.wiley.com/doi/pdf/10.1111/jsap.12392>

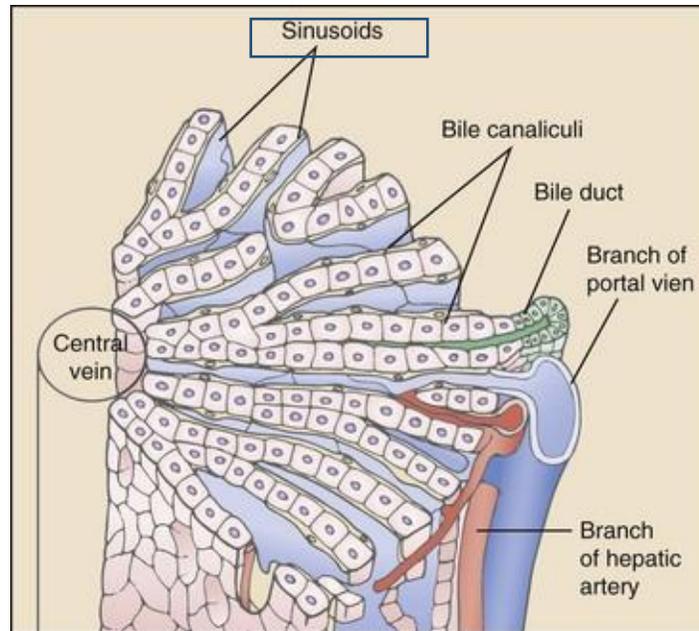
MICROCIRCULATION OF THE LIVER

VENA PORTAE:

- enter the liver through porta hepatis
- gives Vv. interlobulares
- Vv. interlobulares enter the liver sinusoids

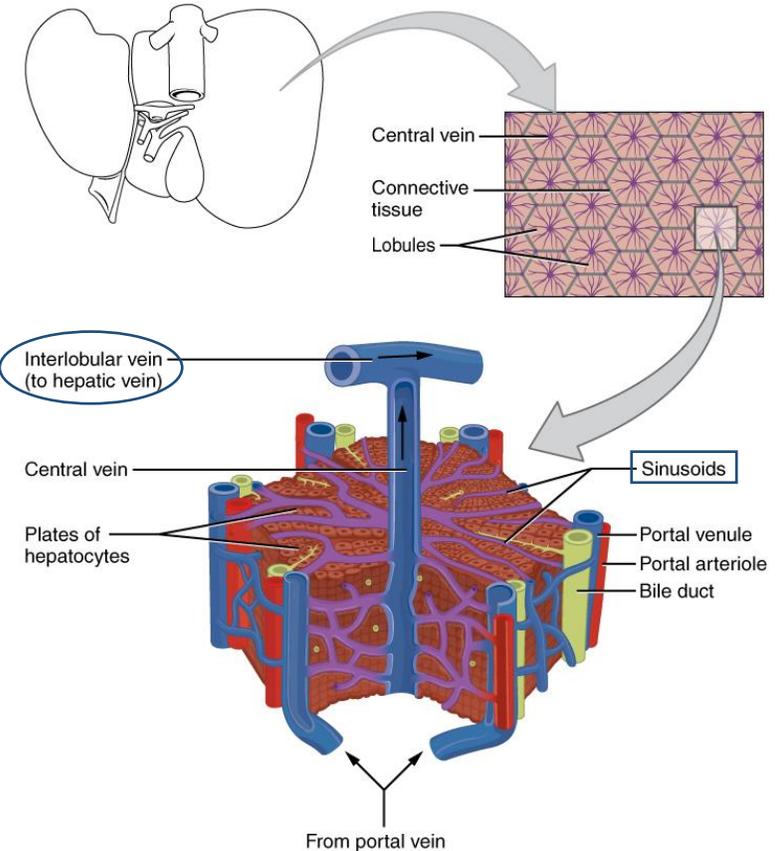
LIVER SINUSOIDS CONTAIN MIXED BLOOD:

- blood from Aa. interlobulares
 - blood from Vv. Interlobulares
- liver sinusoids empty into the central veins



Microscopic anatomy of the liver. (From Levy MN: Berne & Levy principles of physiology, ed 4, St Louis, 2005, Mosby/Elsevier.)

<https://veteriankey.com/hepatic-vascular-anomalies/>



https://en.wikipedia.org/wiki/Liver#/media/File:2423_Microscopic_Anatomy_of_Liver.jpg

MICROCIRCULATION OF THE LIVER

CENTRAL VEINS:

- coalesce into sublobular veins

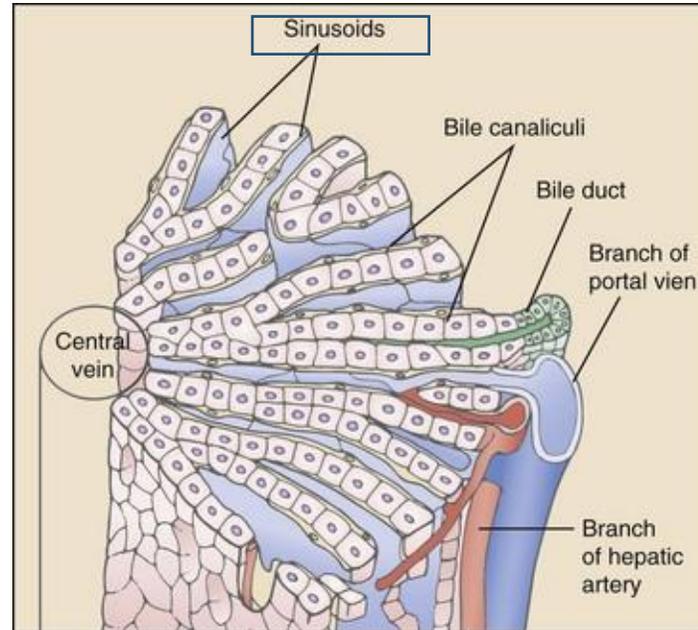
SUBLOBULAR VEINS:

- coalesce into hepatic veins (VENAE HEPATICAE)

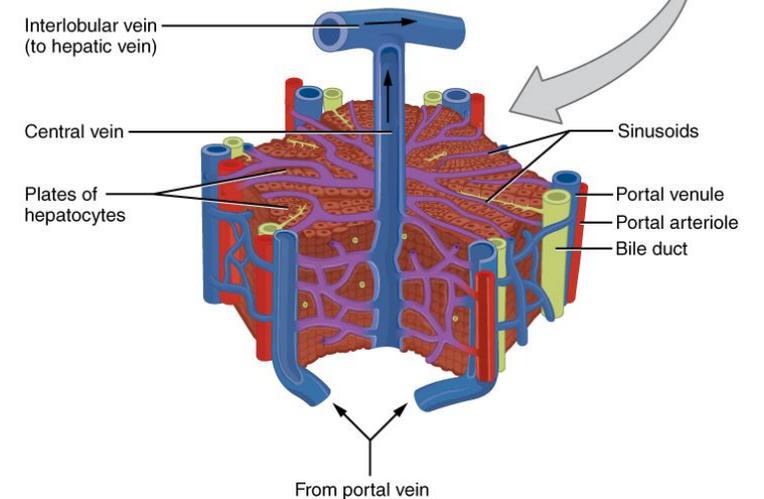
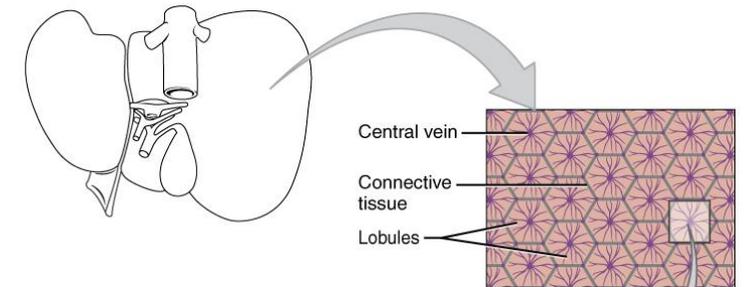
VENAE HEPATICAE:

- leave the liver

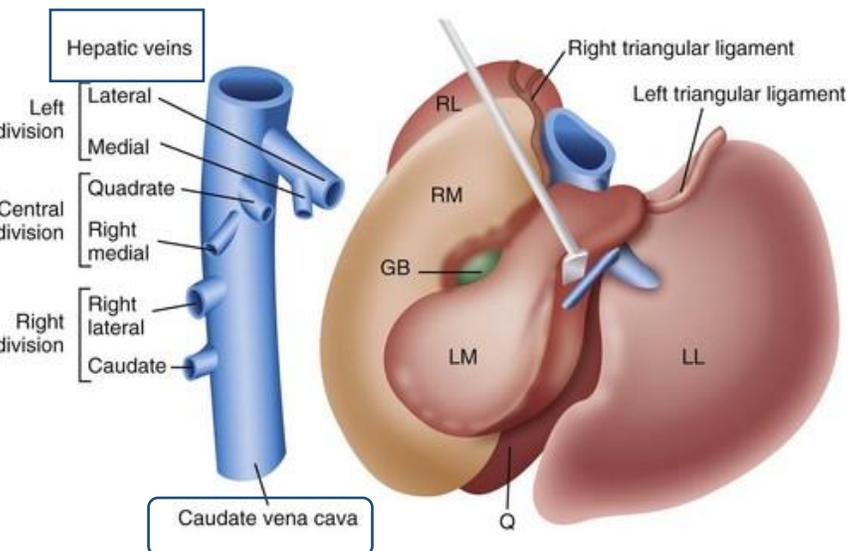
- drain into the caudal vena cava



Microscopic anatomy of the liver. (From Levy MN: Berne & Levy principles of physiology, ed 4, St Louis, 2005, Mosby/Elsevier.)



https://en.wikipedia.org/wiki/Liver#/media/File:2423_Microscopic_Anatomy_of_Liver.jpg



Gross anatomy of the liver (diaphragmatic surface) and hepatic veins. GB, Gallbladder; ligament; LL, left lateral; LM, left medial; Q, quadrate; RL, right lateral; RM, right medial.

BILE DUCTS OF THE LIVER

BILE:

1. produced by hepatocytes
2. collected into the bile canaliculi
3. canaliculi radiate to the edge of the liver lobule, where they merge to form interlobular bile ducts
4. interlobular bile ducts unite to form lobular ducts (ductus biliferi)

intrahepatic
bile
ducts

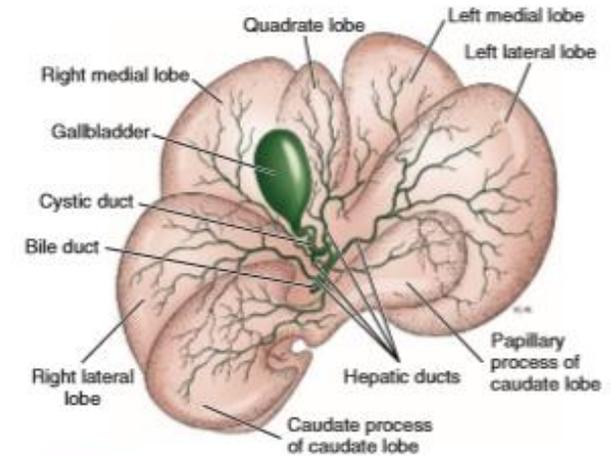
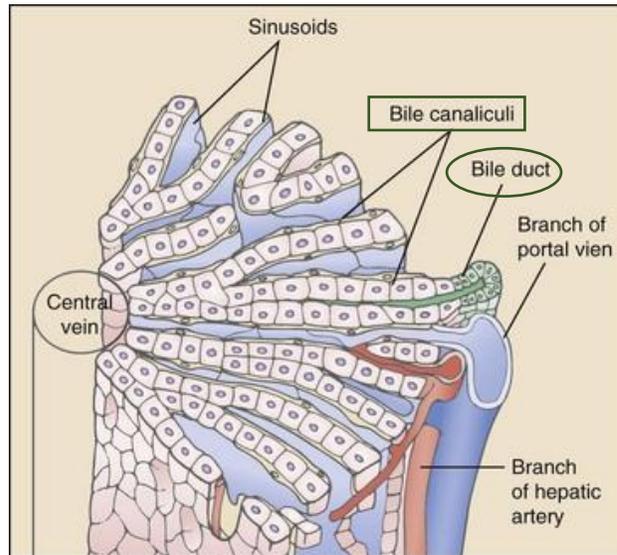
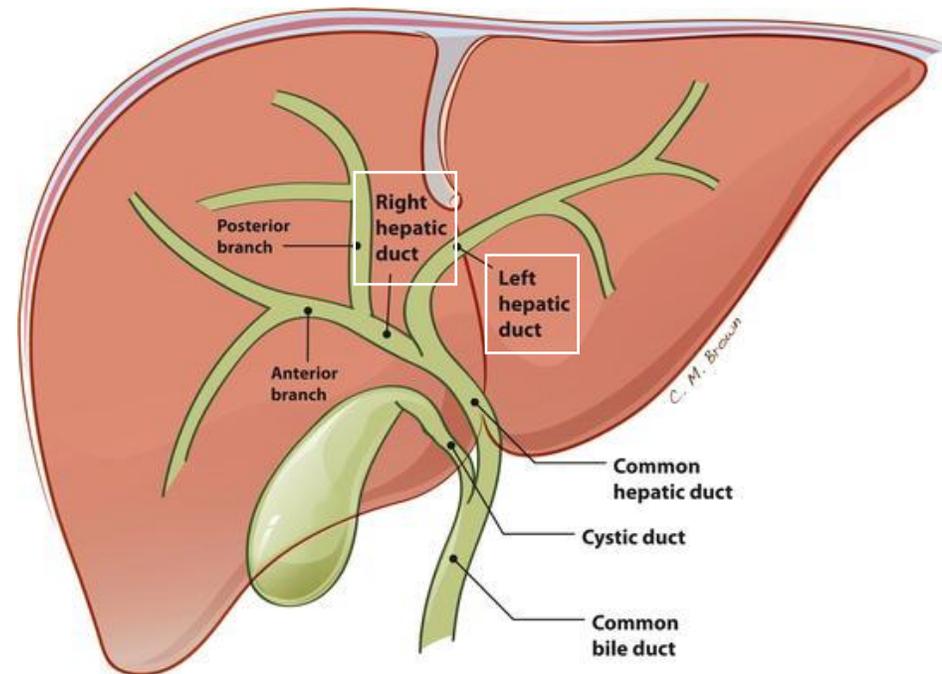


FIGURE 7-51 Schema of the gallbladder and hepatic ducts, visceral aspect.



Microscopic anatomy of the liver. (From Levy MN: Berne & Levy principles of physiology, ed 4, St Louis, 2005, Mosby/Elsevier.)

<https://veteriankey.com/hepatic-vascular-anomalies/>



https://link.springer.com/referenceworkentry/10.1007%2F978-3-642-13327-5_144

BILE DUCTS OF THE LIVER

EXTRAHEPATIC BILE DUCTS:

5. intrahepatic ducts drain into the right and left hepatic ducts (ductus hepatici)

DUCTUS HEPATICUS:

- extrahepatic bile ducts

IN HORSE, RUMINANTS:

- the lobar ducts unite to form the right and left hepatic duct (ductus hepaticus dext. et sin.)
- ductus hepaticus dext. et sin. unite to form the common hepatic duct (ductus hepaticus communis)
- ductus hepaticus comm. and ductus cysticus form the ductus choledochus (common bile duct)
- ductus choledochus ends on papilla duodeni major

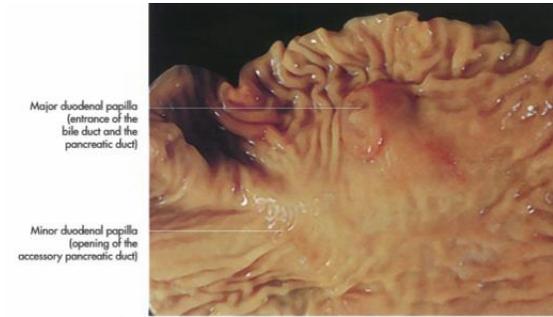
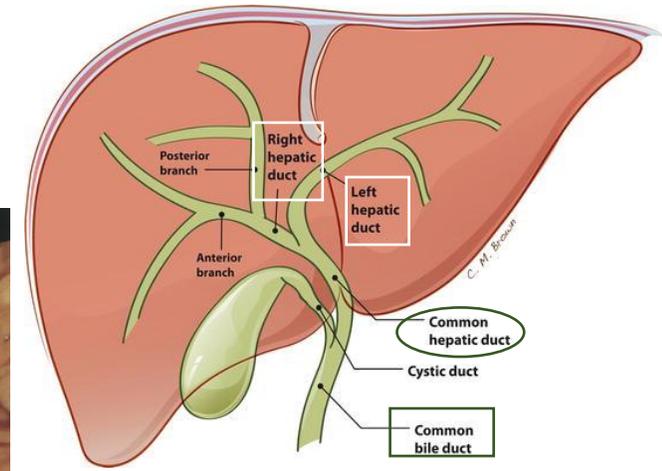


Fig 7-82. Luminal surface of the duodenal mucosa of a horse.

https://link.springer.com/referenceworkentry/10.1007%2F978-3-642-13327-5_144

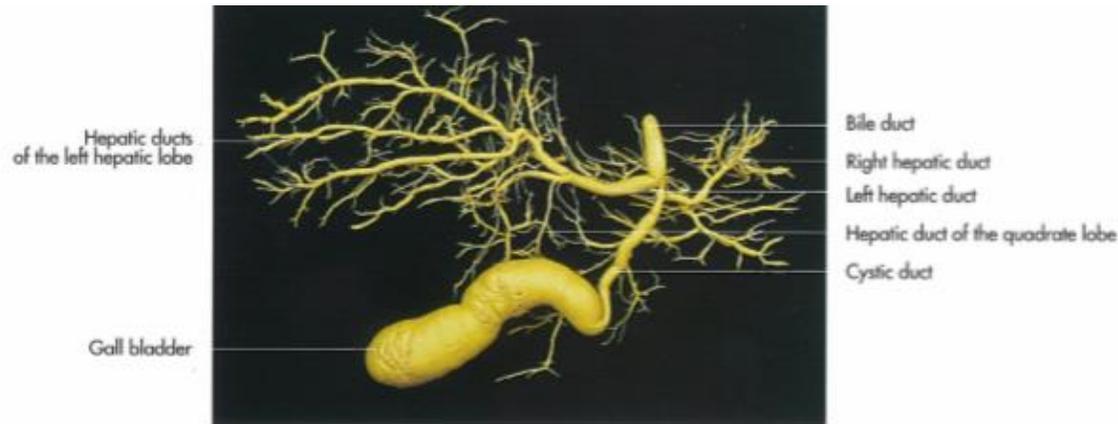
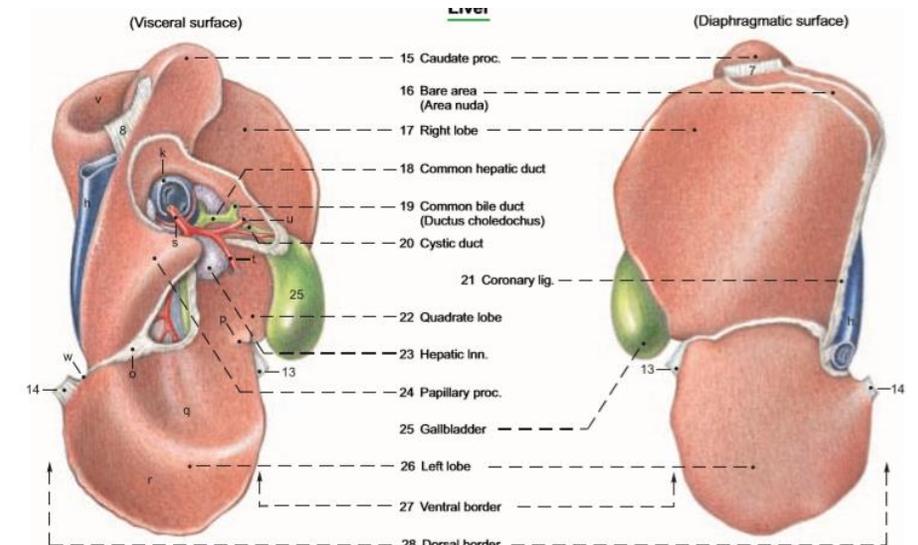


Fig 7-109. Bile drainage system of a sheep, corrosion cast (courtesy of Prof. Dr. Ana Carretero, Barcelona).



BILE DUCTS OF THE LIVER

IN CARNIVORES:

- each sublobule has own lobar duct
- lobar ducts drain into the cystic duct
- NO right and left hepatic duct (ductus hepaticus dext. et sin.)
- NO common hepatic duct (ductus hepaticus communis)
- ductus choledochus ends on papilla duodeni major

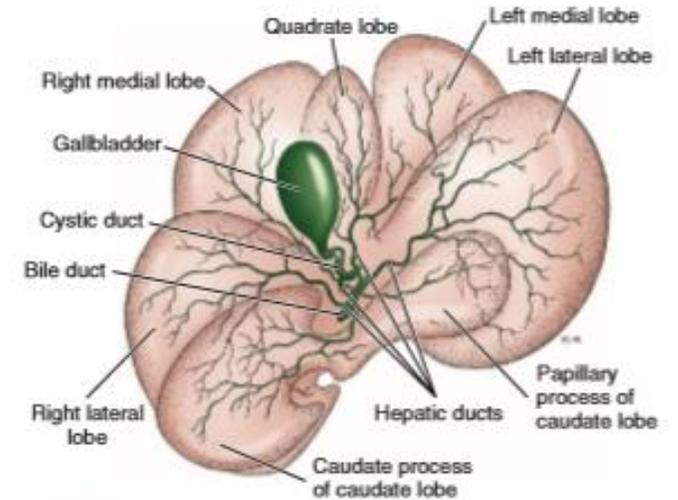


FIGURE 7-51 Schema of the gallbladder and hepatic ducts, visceral aspect.

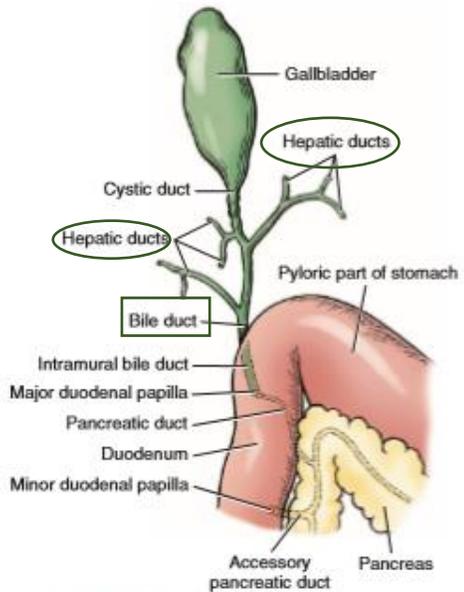
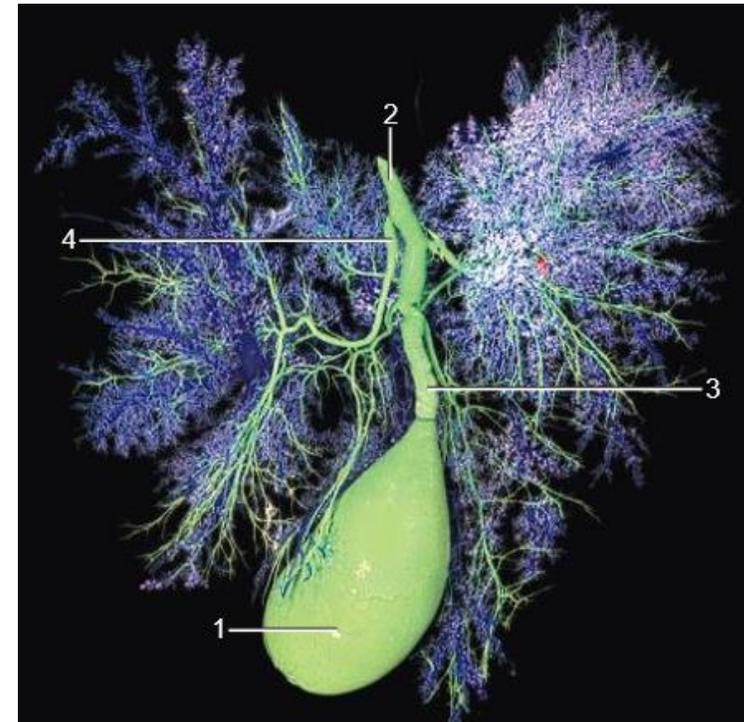
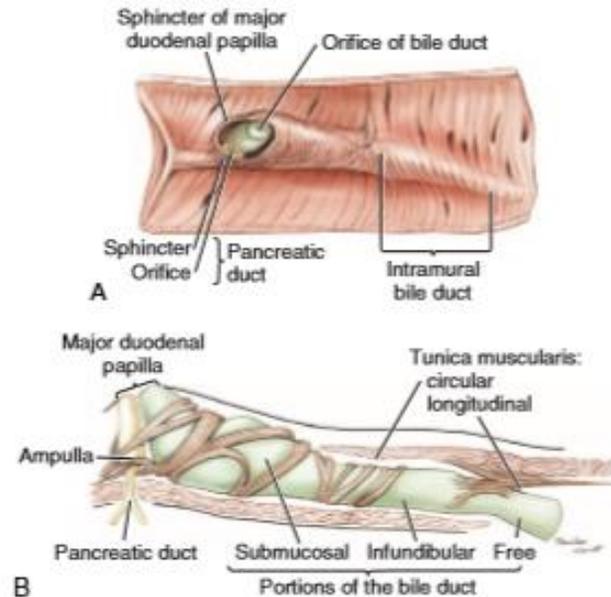


FIGURE 7-52 Bile, hepatic, and pancreatic ducts.



1. Gallbladder
2. Bile duct
3. Cystic duct
4. Hepatic ducts

BILE DUCTS OF THE LIVER

DUCTUS HEPATOCYSTICUS:

- pass directly from the liver into the gall bladder
- in Car and Ru

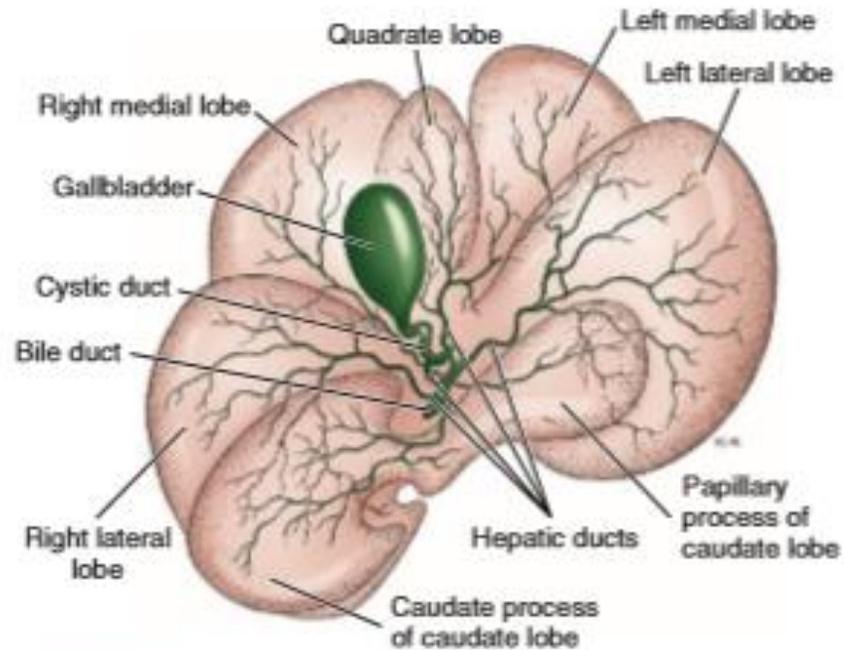
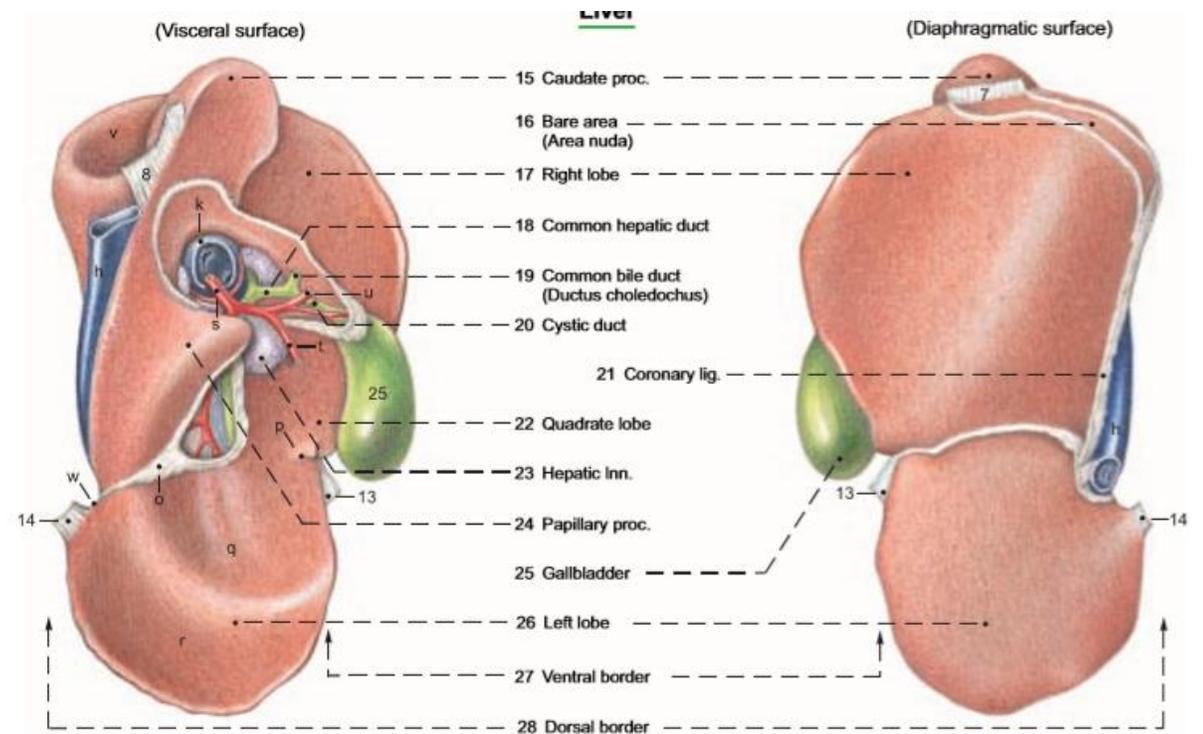


FIGURE 7-51 Schema of the gallbladder and hepatic ducts, visceral aspect.

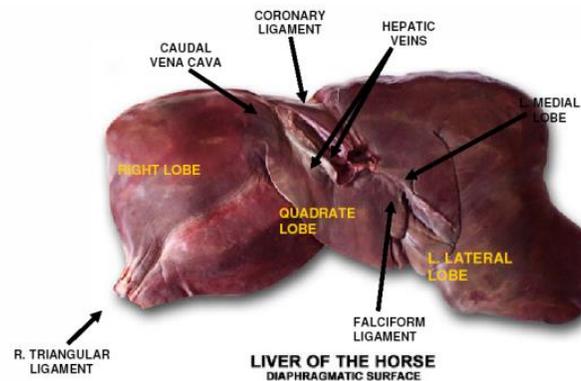
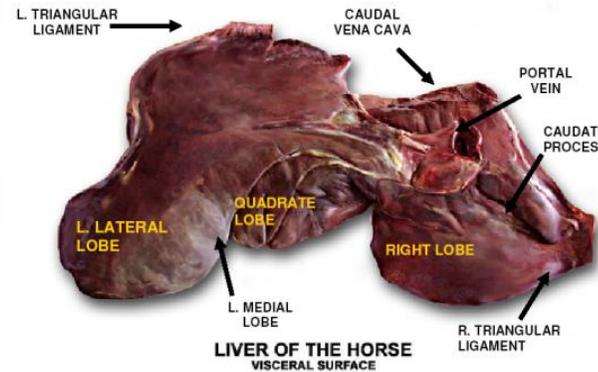


GALL BLADDER (VESICA FELLEA)

FUNCTION:

1. store bile
2. concentrates the bile by water absorption through mucosa
3. discharges bile into the duodenum

- HORSE HAS NO GALL BLADDER



https://www.quia.com/files/quia/users/medicnehawk/2107-Anatomy2/Liver_Pancreas.pdf



Fig 7-101. Liver of a cat, diaphragmatic surface (König, 1992).



Fig 7-102. Liver of a cat, visceral surface (König, 1992).

GALL BLADDER (VESICA FELLEA)

- sac – like
 - lies on the visceral surface of the liver
 - in fossa vesicae felleae
1. COLLUM VESICAE FELLEA
 2. CORPUS VESICAE FELLEA
 3. FUNDUS VESICAE FELLEA
 - bottom, blind end

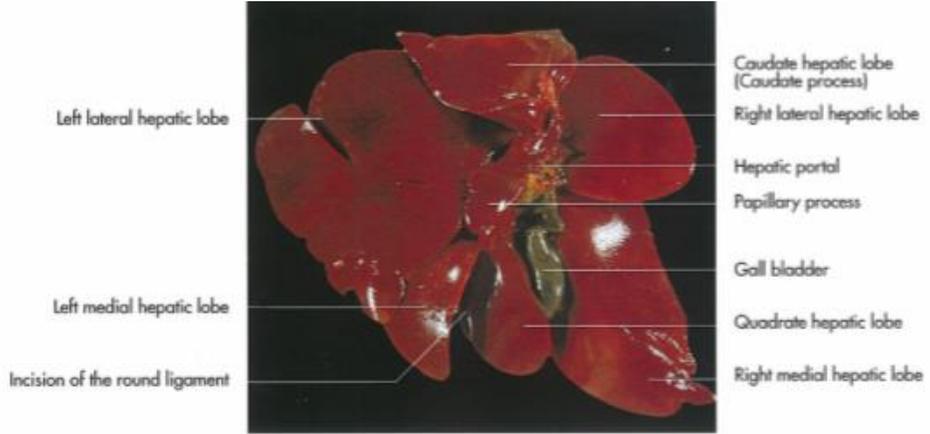
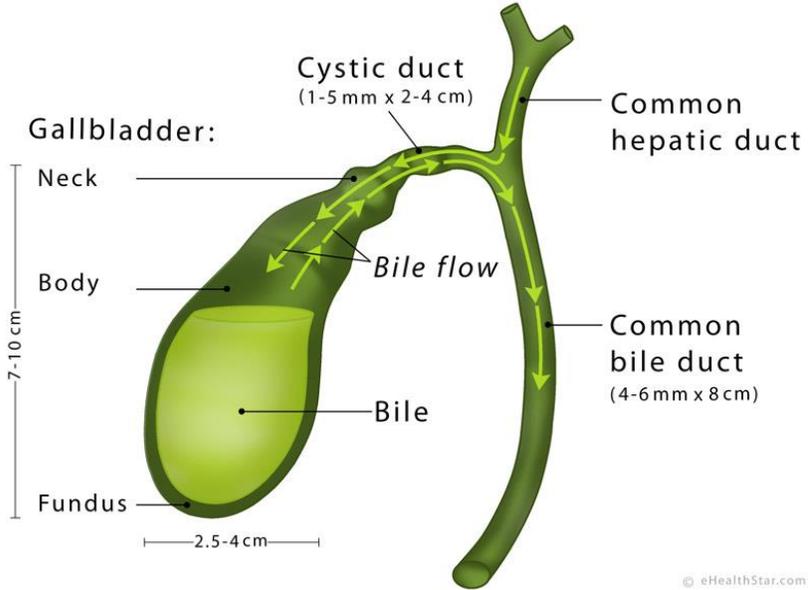


Fig 7-102. Liver of a cat, visceral surface (König, 1992).

Gallbladder Anatomy



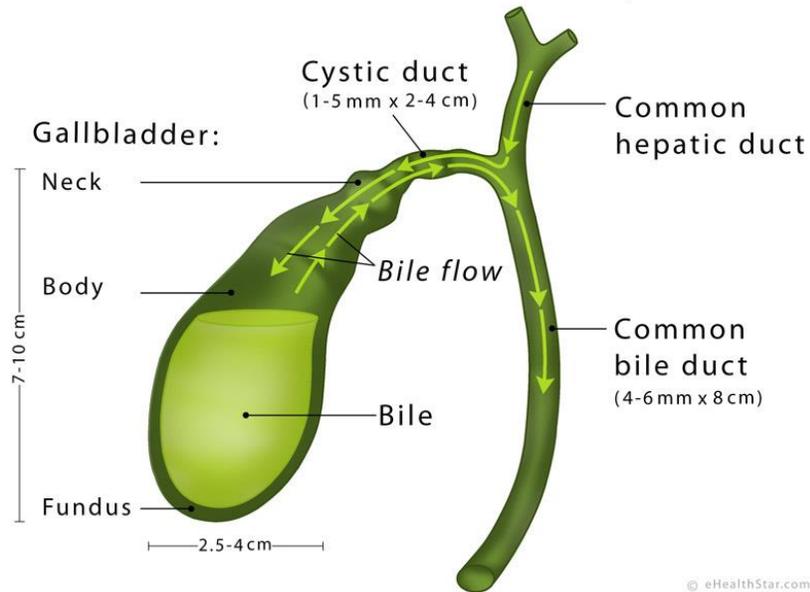
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GALL BLADDER (VESICA FELLEA)

DUCTUS CYSTICUS:

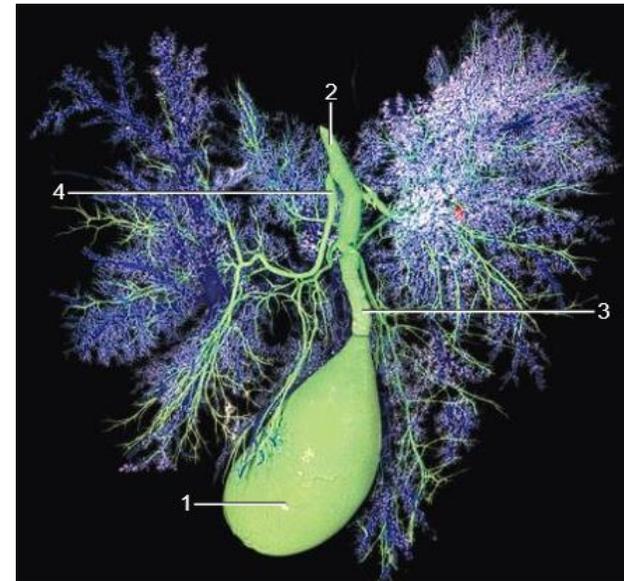
- ductus cysticus + ductus hepaticus communis = ductus choledochus

Gallbladder Anatomy



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<https://www.ehealthstar.com/anatomy/gallbladder>



1. Gallbladder
2. Bile duct
3. Cystic duct
4. Hepatic ducts

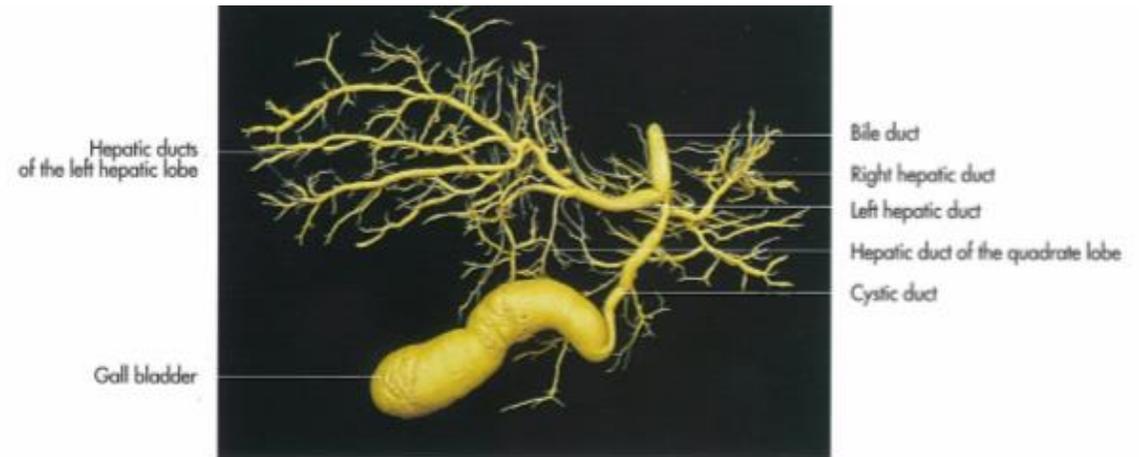


Fig 7-109. Bile drainage system of a sheep, corrosion cast (courtesy of Prof. Dr. Ana Carretero, Barcelona).

PANCREAS

- large digestive gland

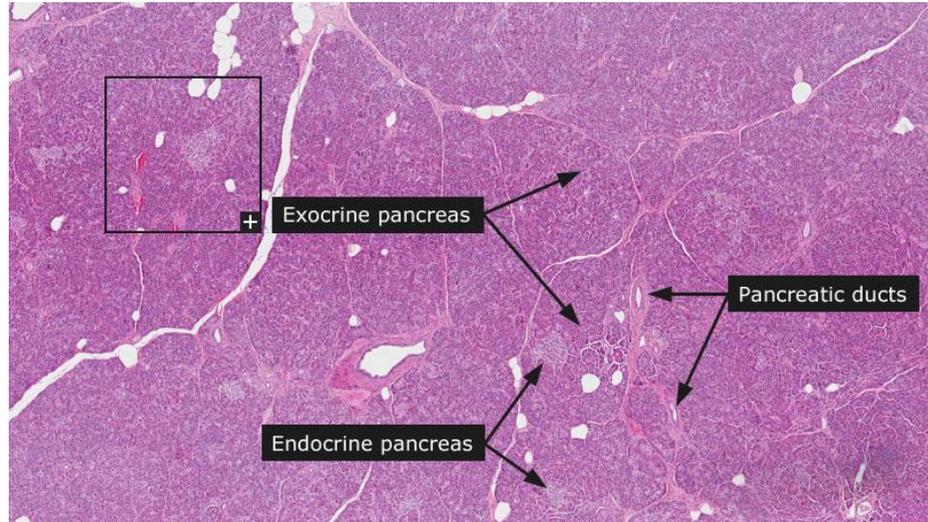
EXOCRINE FUNCTION:

- production of pancreatic juice

ENDOCRINE FUNCTION:

production of:

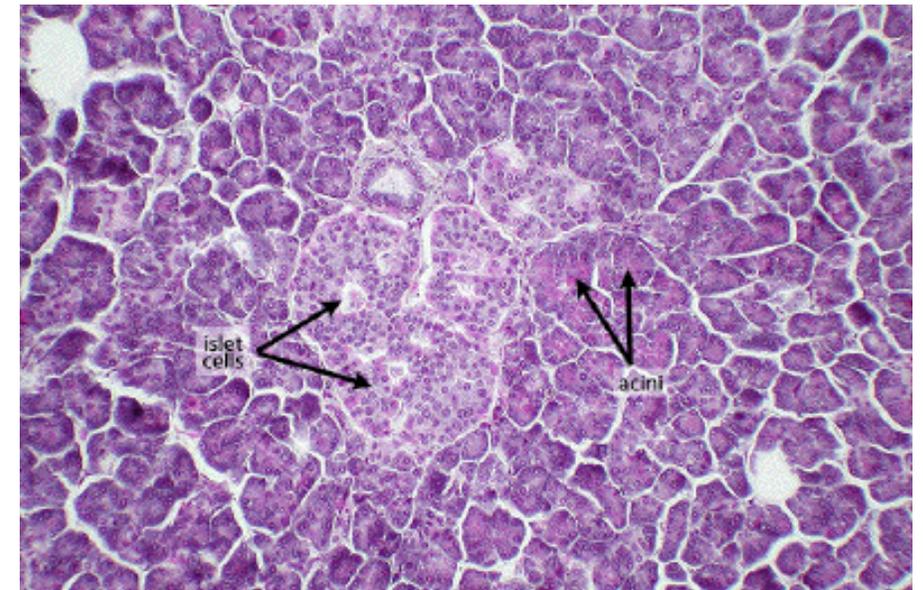
1. insulin
2. glucagon
3. somatostatin



<https://www.proteinatlas.org/learn/dictionary/normal/pancreas>



Fig 7-111. Pancreas of a dog, dorsal aspect.



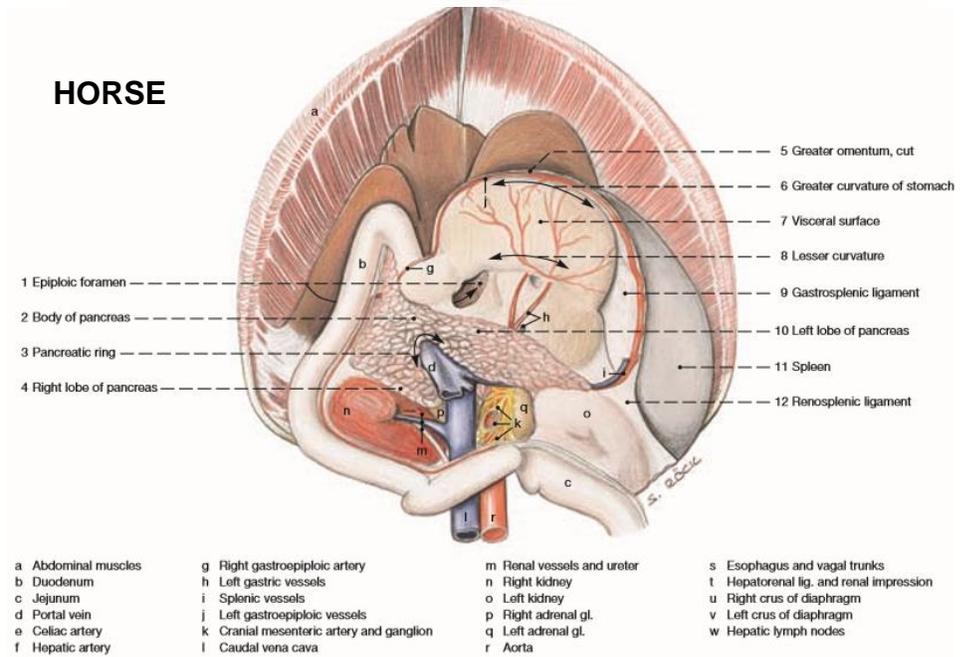
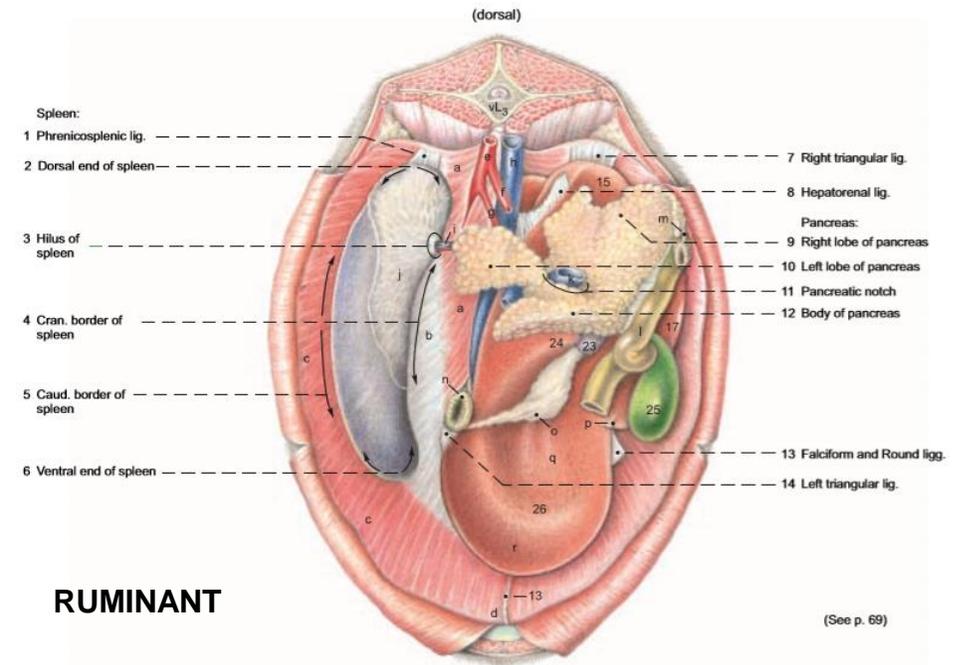
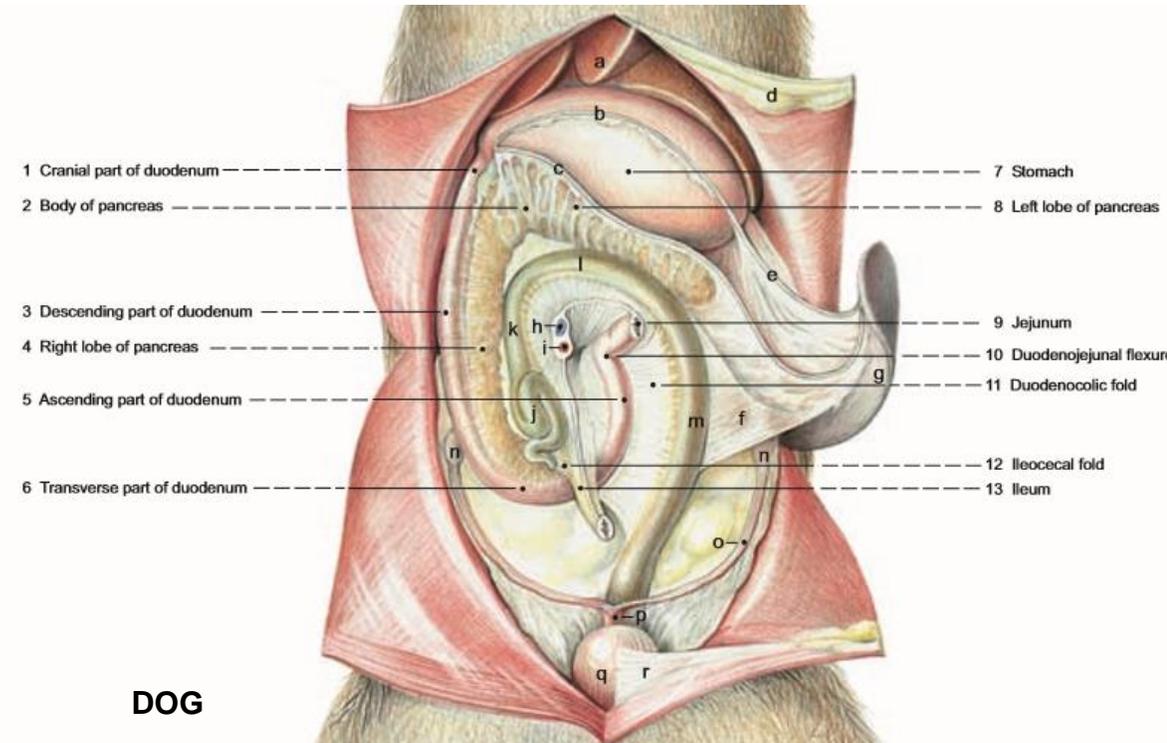
https://www.dartmouth.edu/~anatomy/Histo/lab_6/endocrine/DMS143/popup.html

PANCREAS

- located in the dorsal part of the abdominal cavity

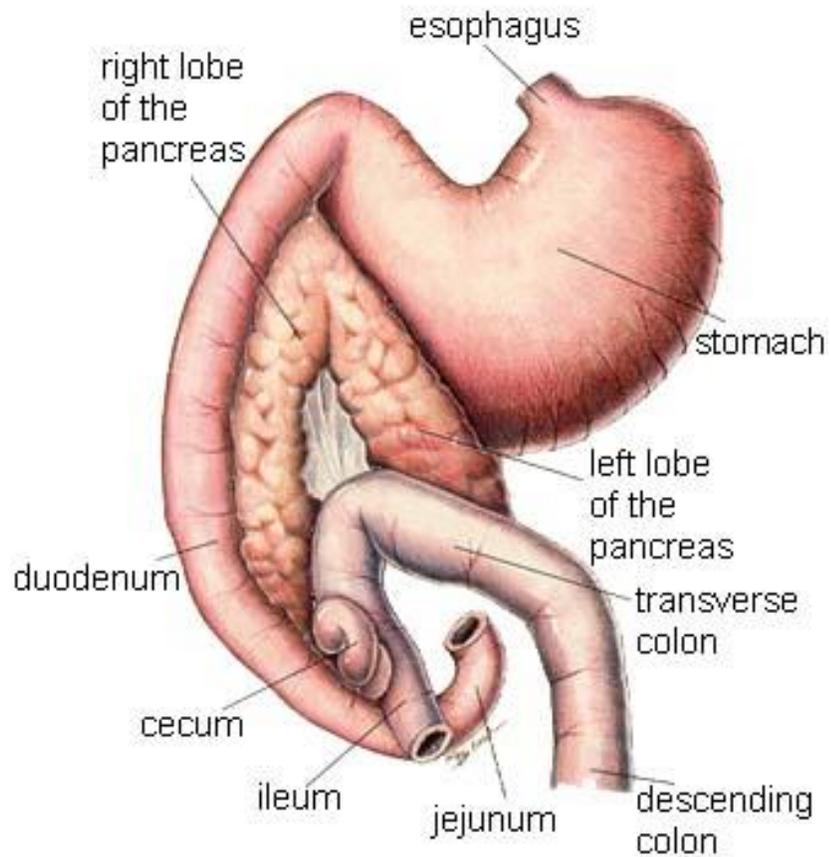
associated with the:

- a. stomach
- b. cranial and descending portion of the duodenum

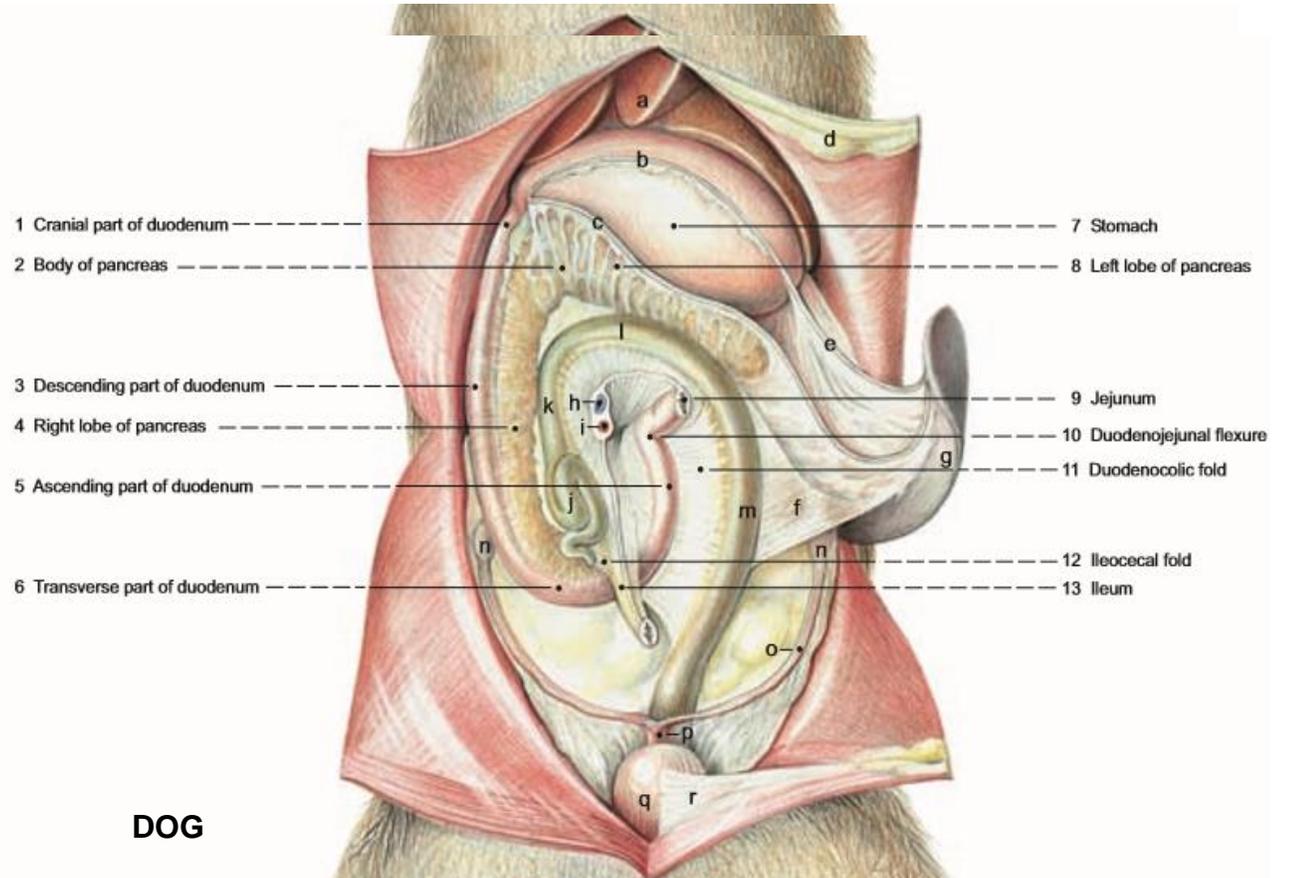


PANCREAS

1. FACIES VENTRALIS
2. FACIES DORSALIS



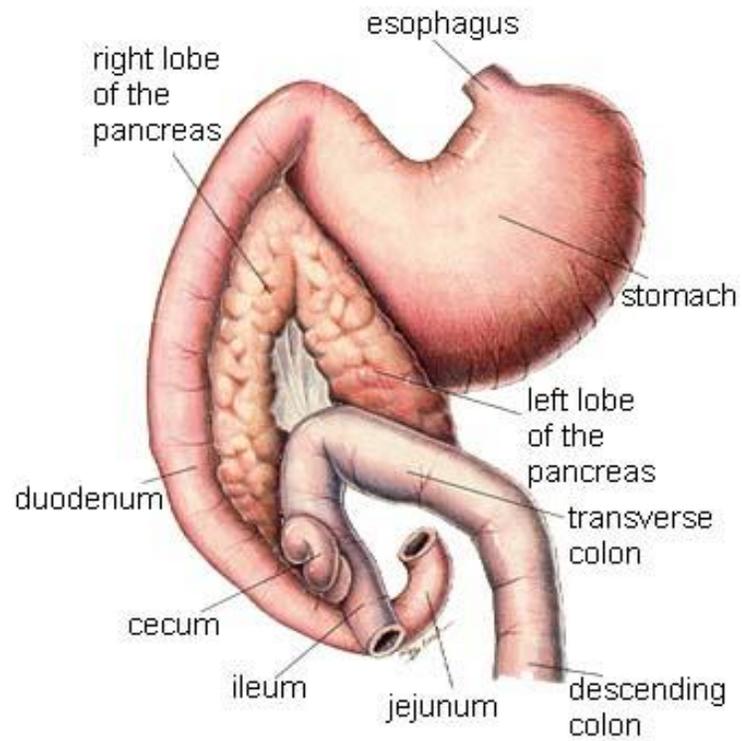
<http://www.vetmed.wsu.edu/outreach/Pet-Health-Topics/categories/cat-and-dog-anatomy/digestive-system-of-the-dog>



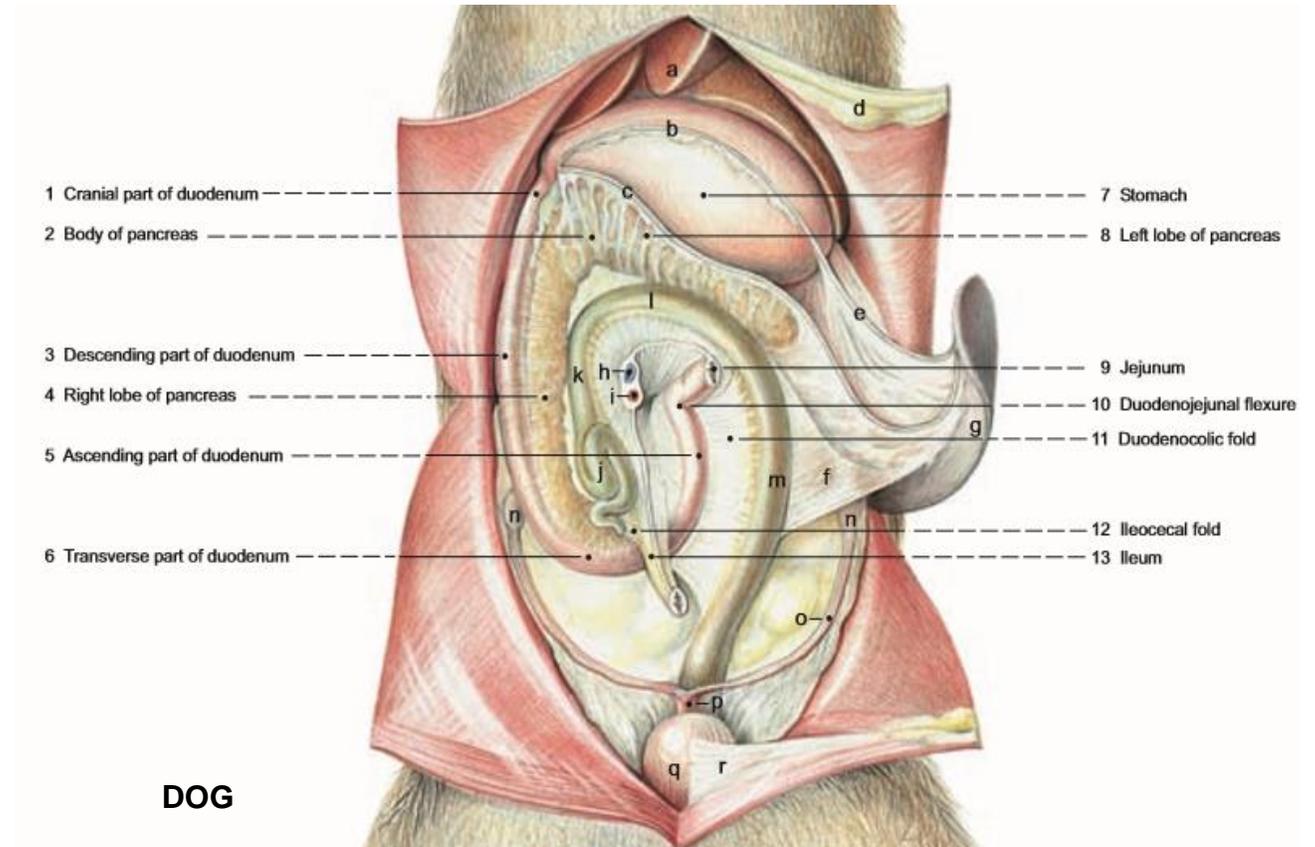
DOG

PANCREAS

1. MARGO CRANIALIS
2. MARGO CAUDALIS
3. MARGO DEXTER
4. MARGO SINISTER



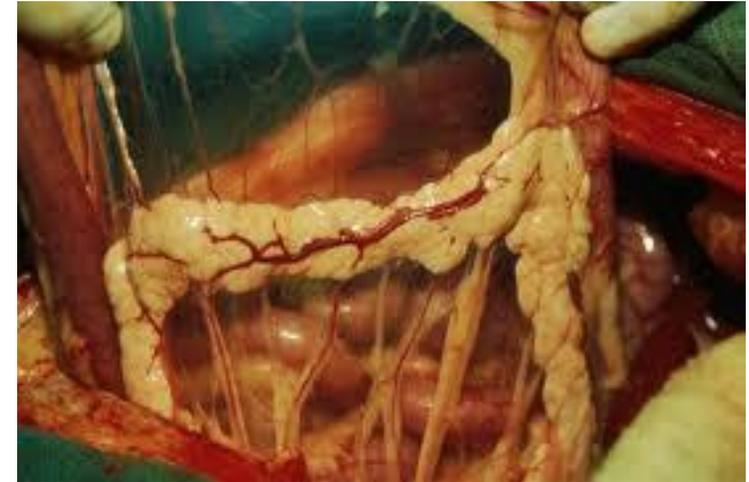
<http://www.vetmed.wsu.edu/outreach/Pet-Health-Topics/categories/cat-and-dog-anatomy/digestive-system-of-the-dog>



PANCREAS

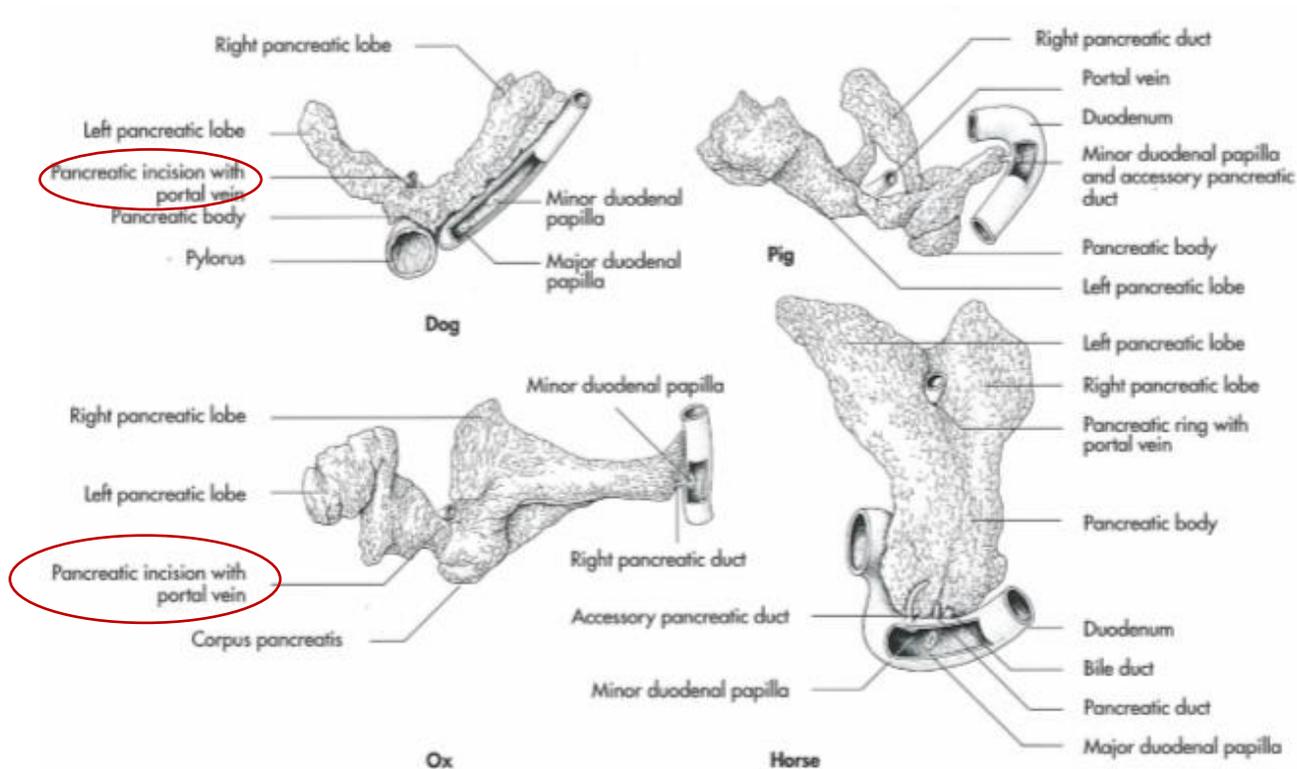
INCISURA PANCREATIS:

- in Car, Ru
- notch for the portal vein
- in the margo caudalis



a normal canine pancreas

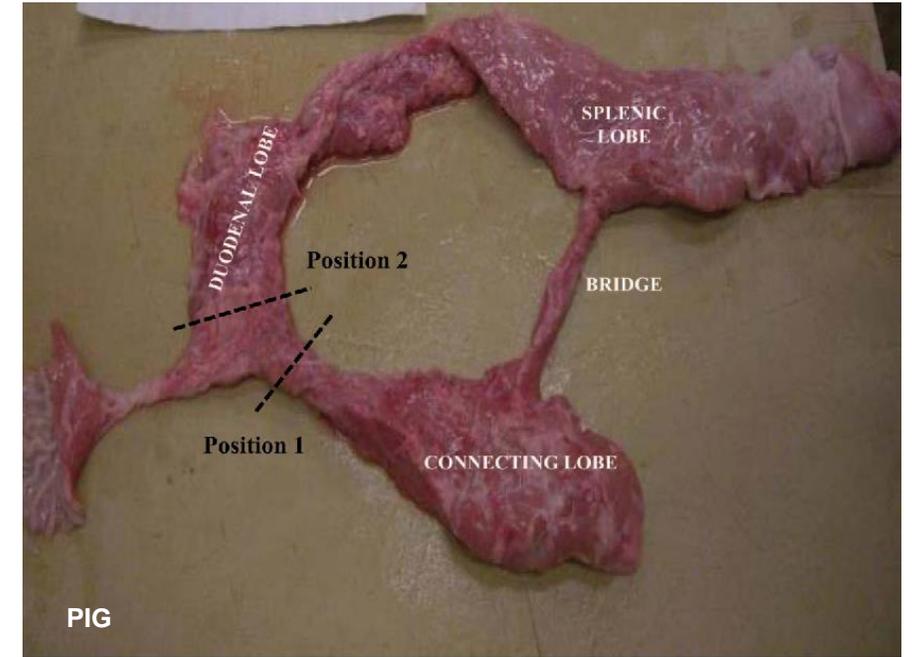
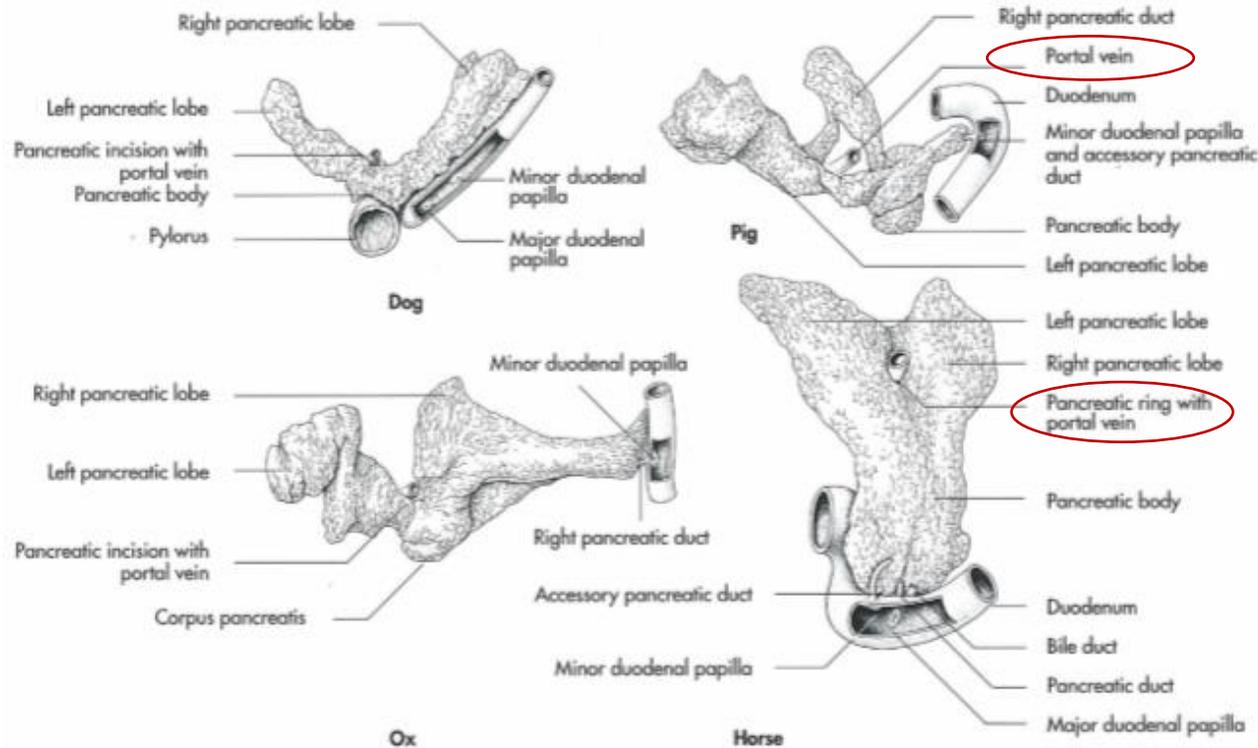
<https://epi4dogs.com/the-pancreas/>



PANCREAS

ANULUS PANCREATIS:

- in Eq, Su
- ring around the portal vein



<https://www.semanticscholar.org/paper/Pig-pancreas-anatomy%3A-implications-for-pancreas-and-Ferrer-Scott/084f64a3fa05a49e9bae5958bad7ad4fd23fb07f0>

PANCREAS

divided into:

1. CORPUS PANCREATIS (body)
2. LOBUS PANCREATIS DEXTER (right lobe)
3. LOBUS PANCREATIS SINISTER (left lobe)

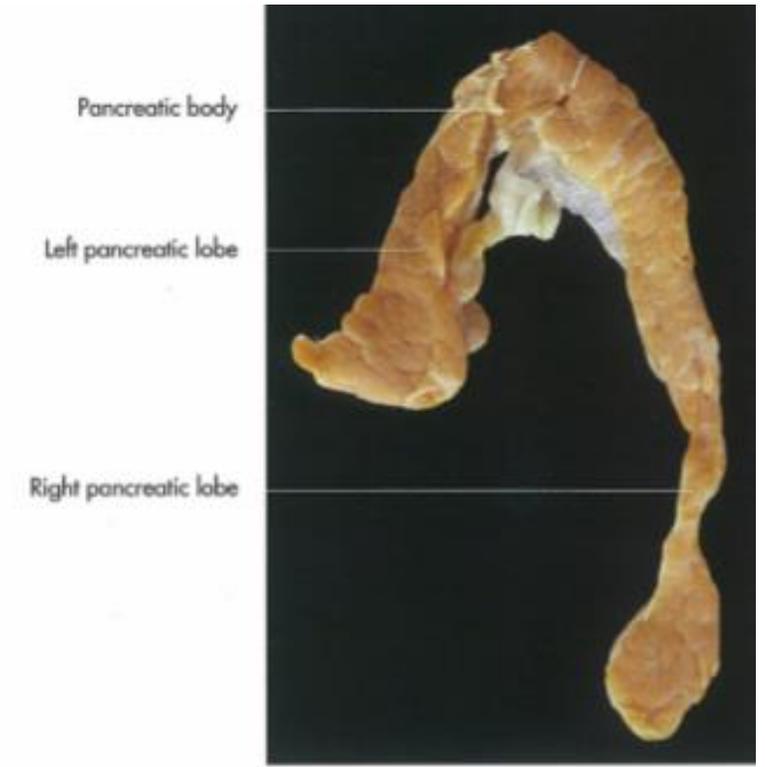
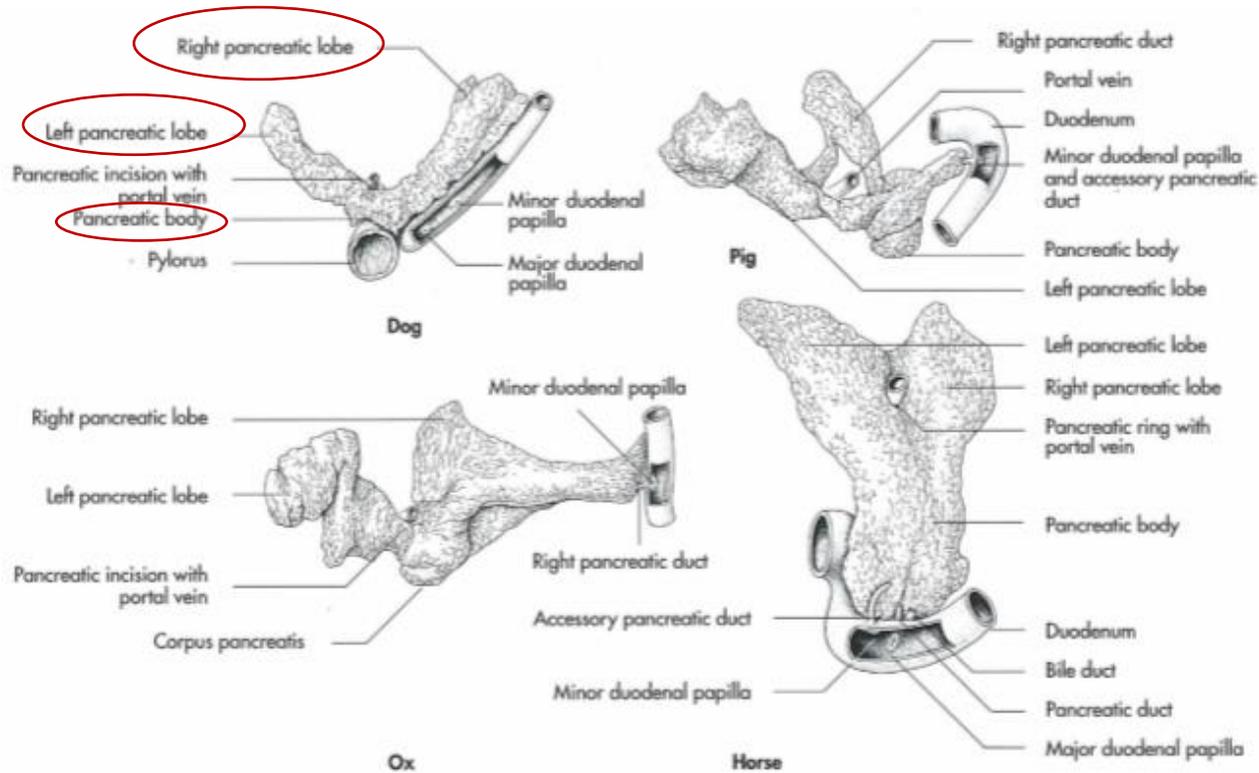
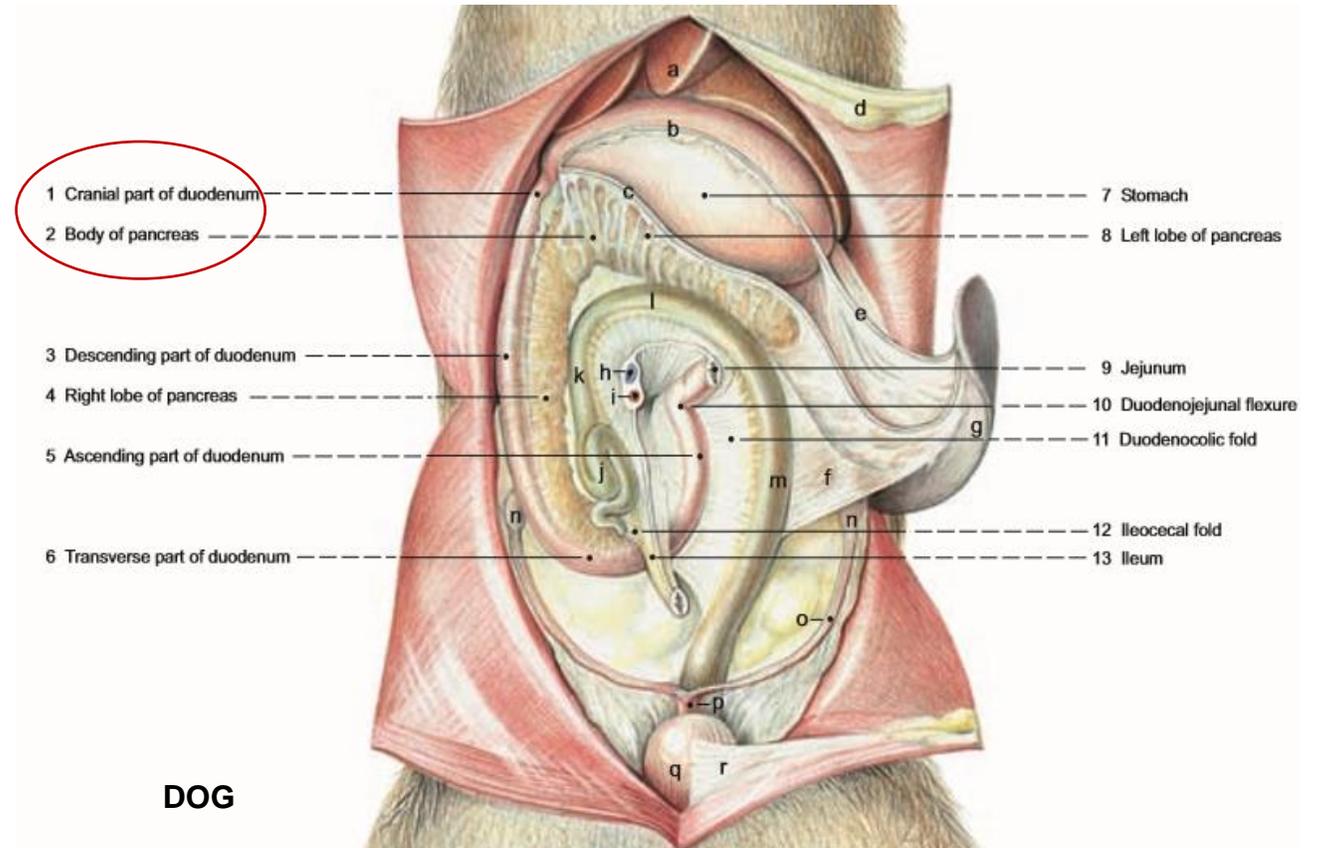
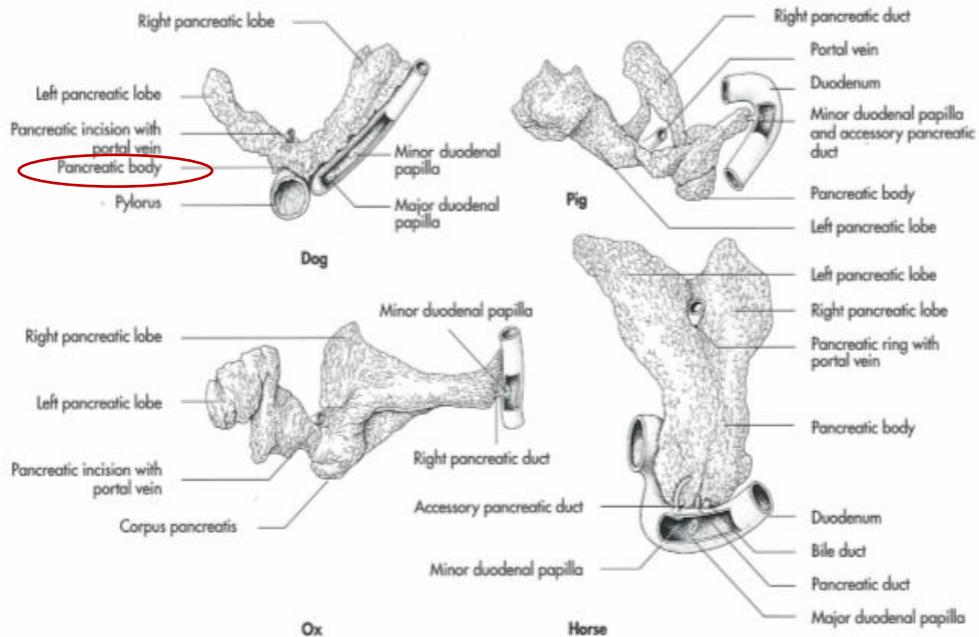


Fig 7-111. Pancreas of a dog, dorsal aspect.

PANCREAS

CORPUS PANCREATIS (body):

- the middle part
- in contact with the cranial part of the duodenum

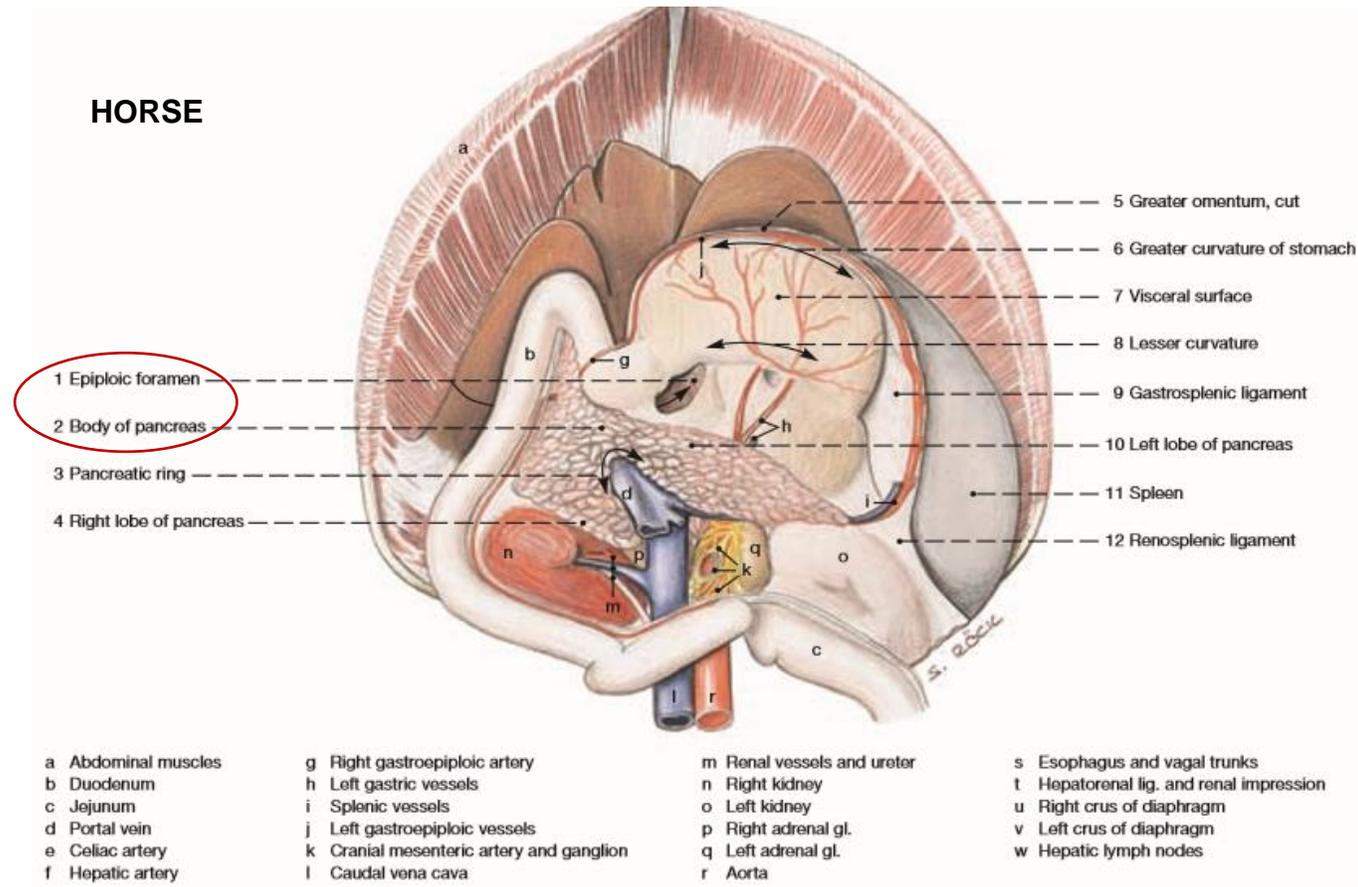


PANCREAS

TUBER OMENTALE:

- ventral prominence of body

- in the bursa omentalis

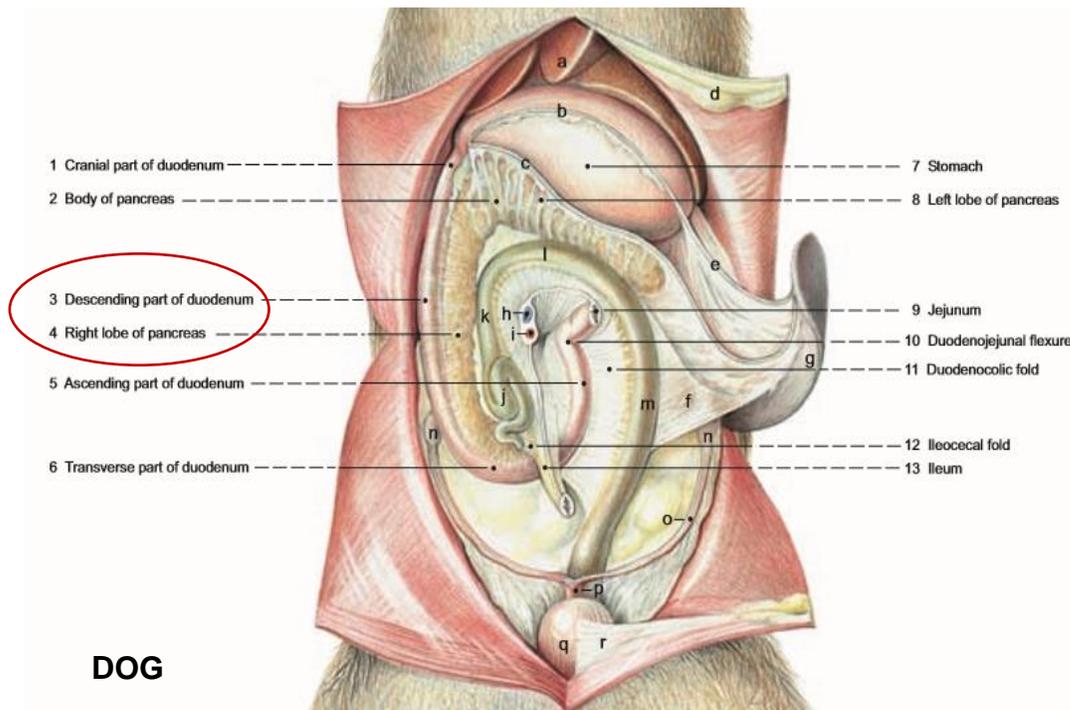
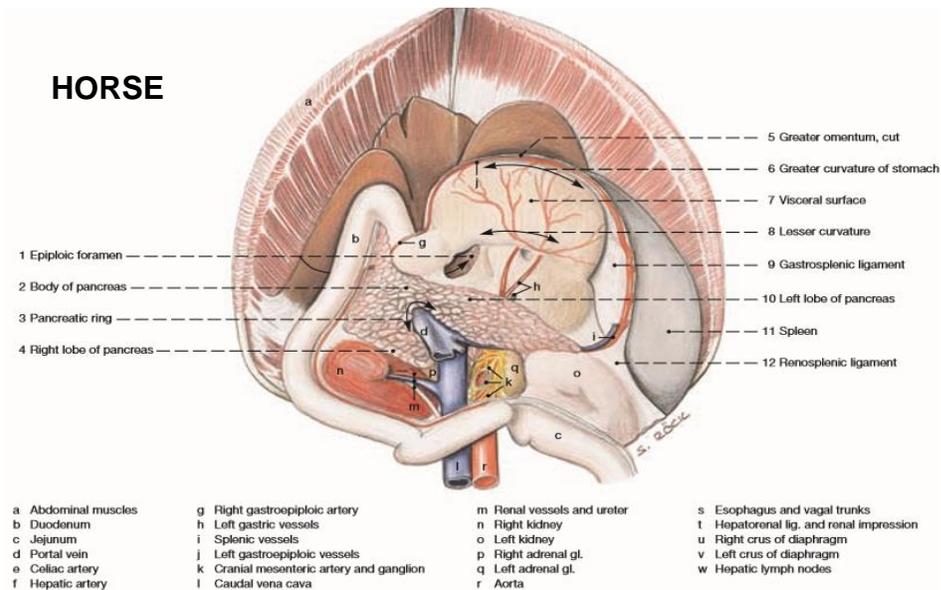


PANCREAS

LOBUS PANCREATIS DEXTER (right lobe):

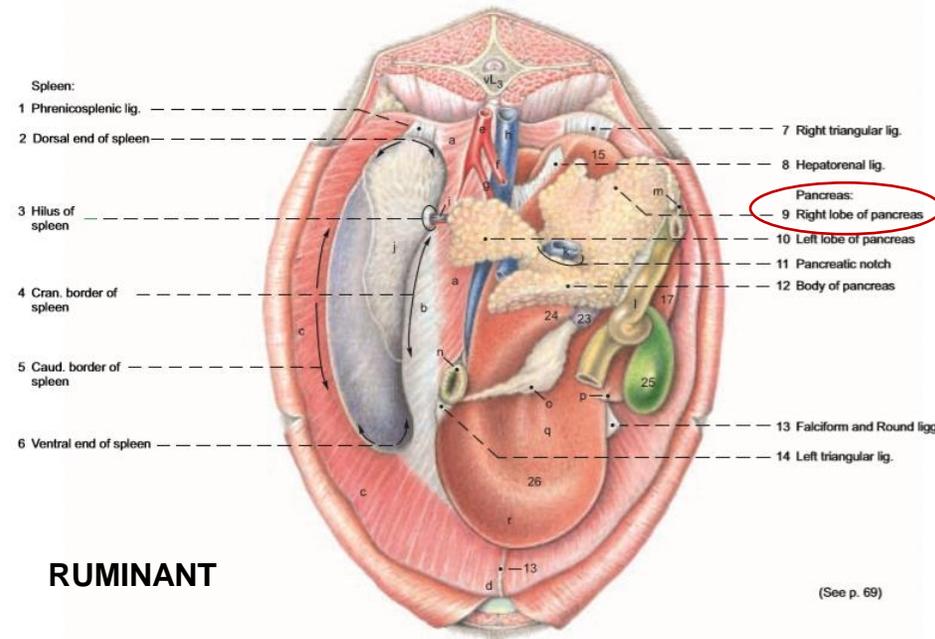
- in the mesoduodenum descendens
- along the descending duodenum (except in Eq)

HORSE



DOG

(dorsal)



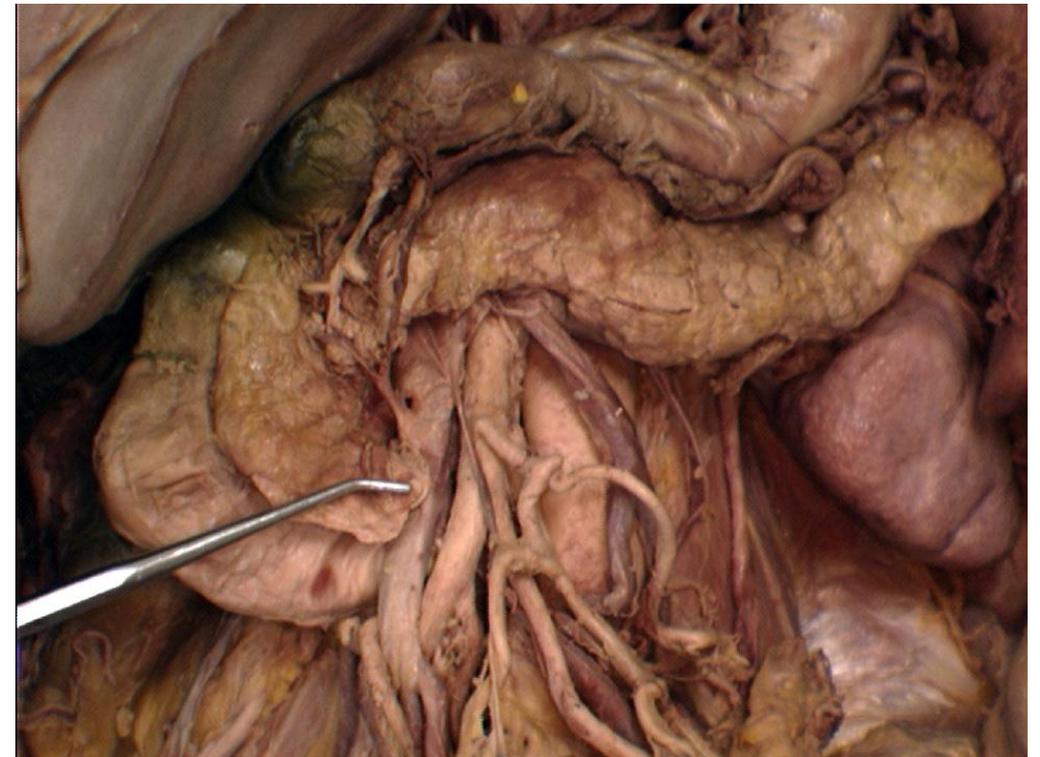
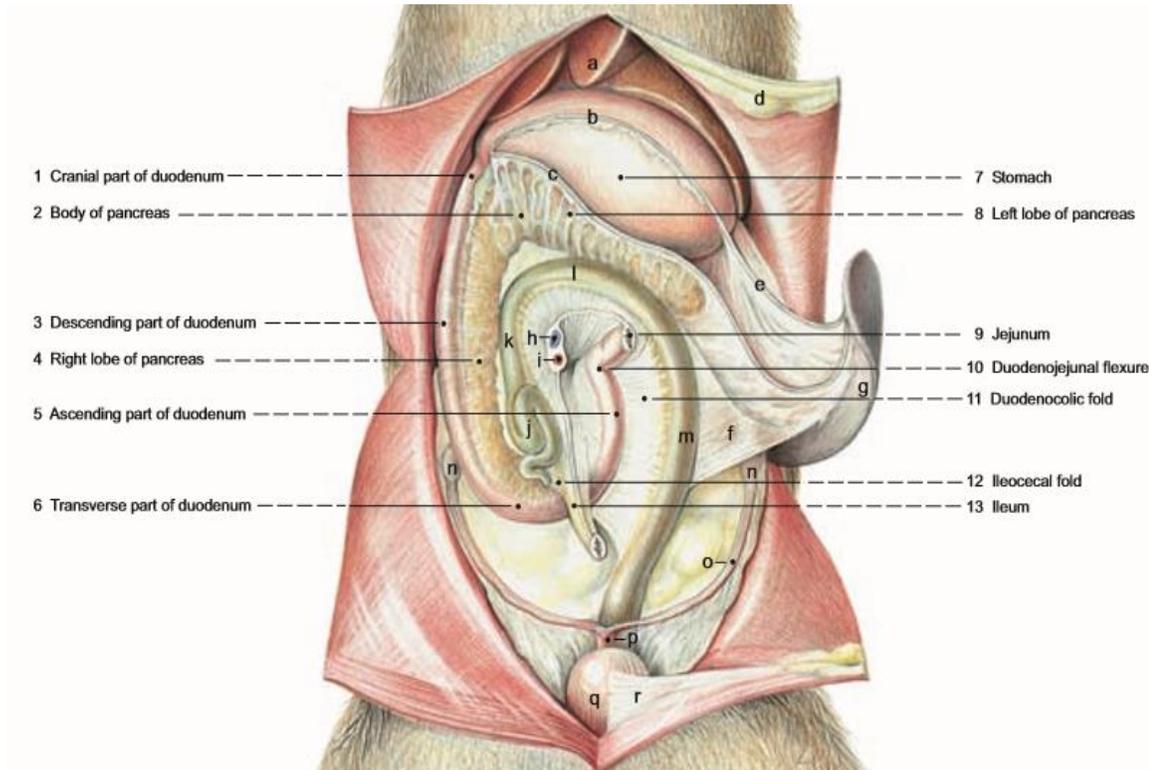
RUMINANT

(See p. 69)

PANCREAS

PROCESSUS UNCINATUS:

- hooked process
- extends medially from the right lobe around the caudodorsal surface of the portal vein



[Processus uncinatus](http://www.thebodyonline.net/body_view.php?image_path=abdomen/pancreas_uncinate_process.jpg)
http://www.thebodyonline.net/body_view.php?image_path=abdomen/pancreas_uncinate_process.jpg

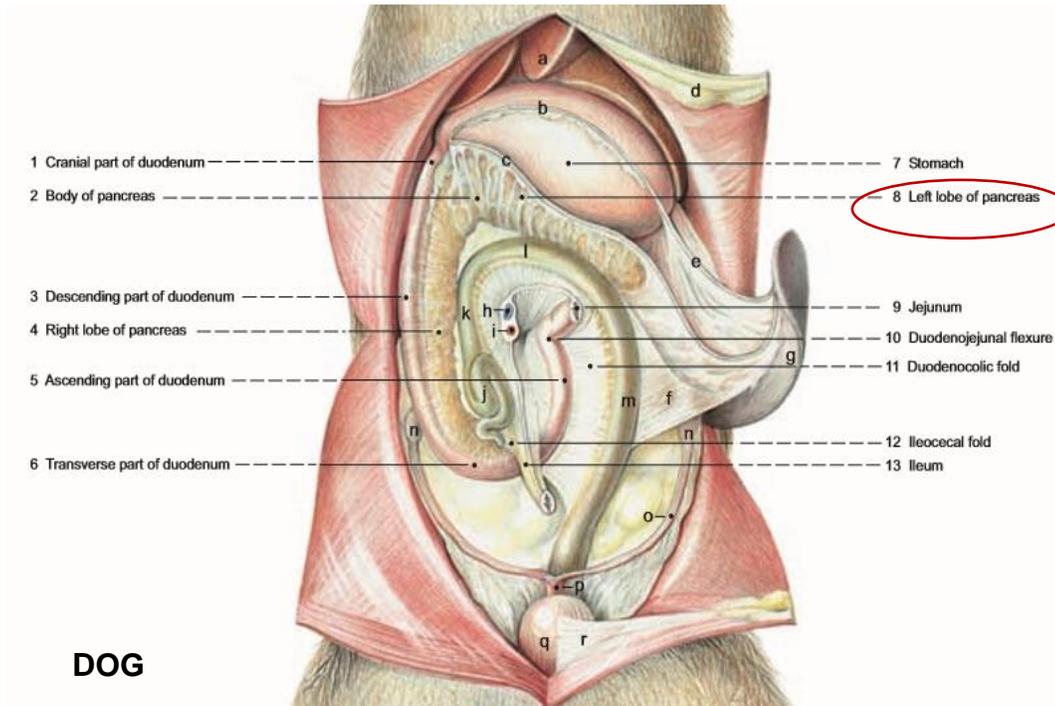
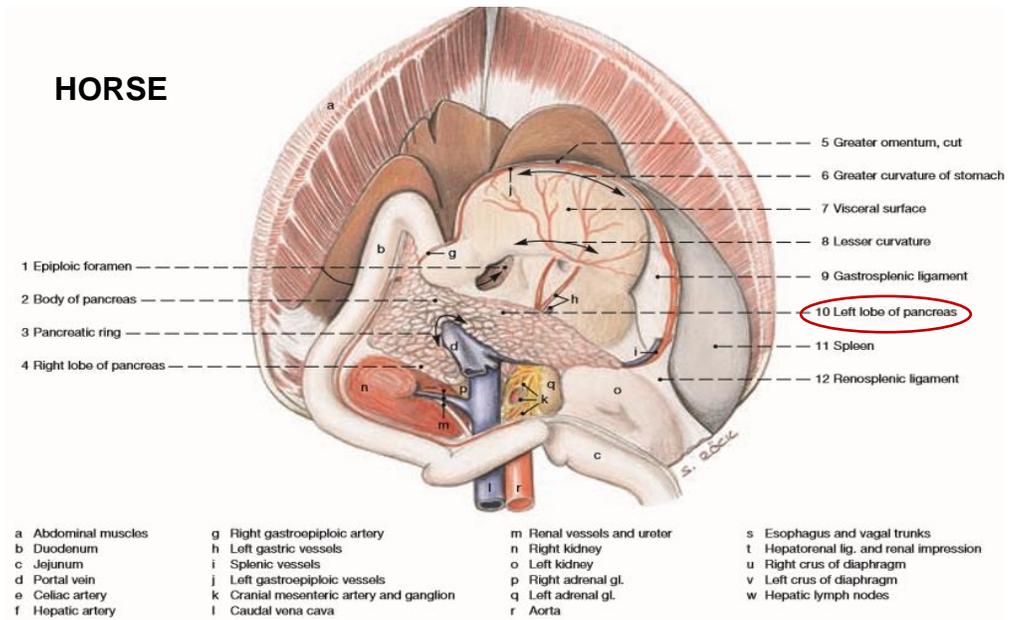
PANCREAS

LOBUS PANCREATIS SINISTER (left lobe):

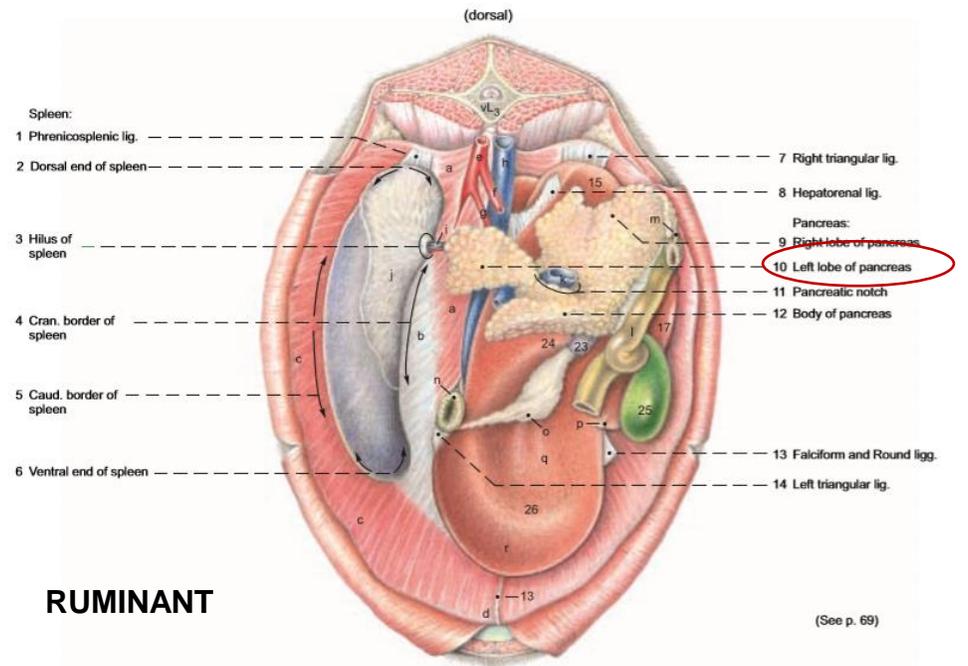
- on the visceral surface of the stomach

- in Ru dorsal to the rumen

HORSE



DOG



RUMINANT

PANCREAS

IN CARNIVORES:

- U (V) - shaped loop

1. body:

- central

2. left lobe:

- shorter, thicker
- runs within the origin of greater omentum
- on the dorsal abdominal wall

3. right lobe:

- longer
- follows the descending duodenum
- in mesoduodenum descendens

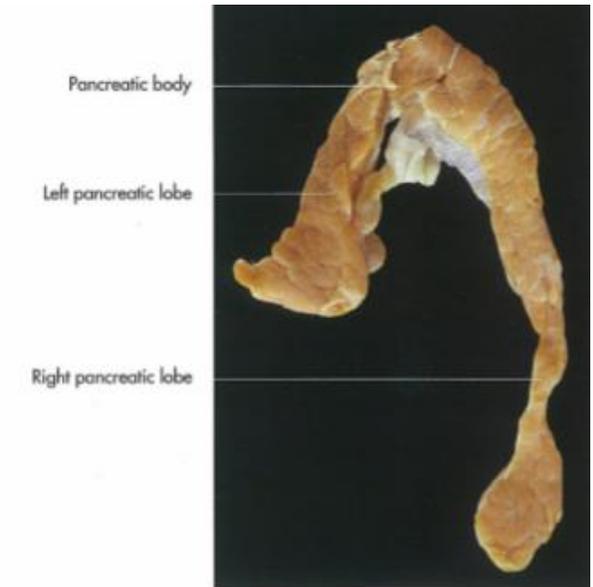
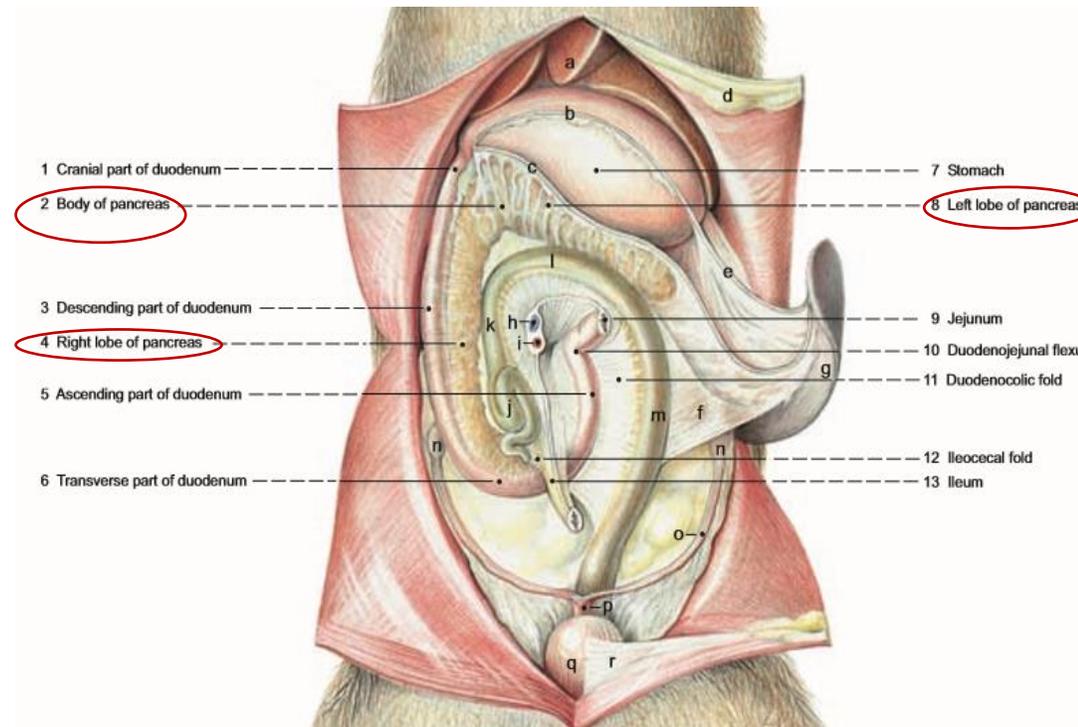


Fig 7-111. Pancreas of a dog, dorsal aspect.

PANCREAS

IN PIG:

1. body:

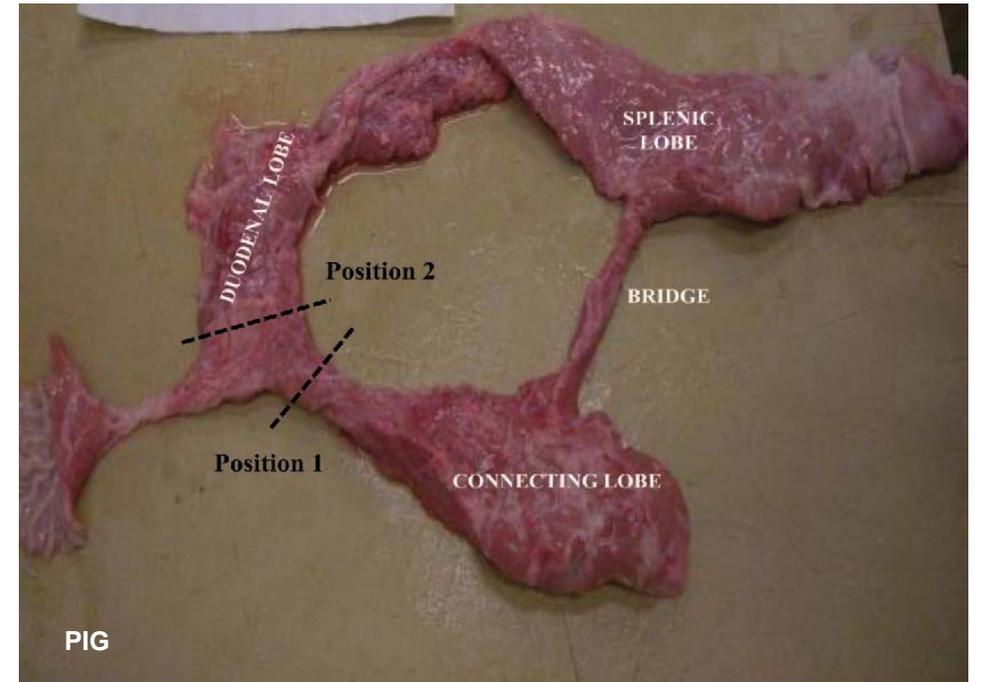
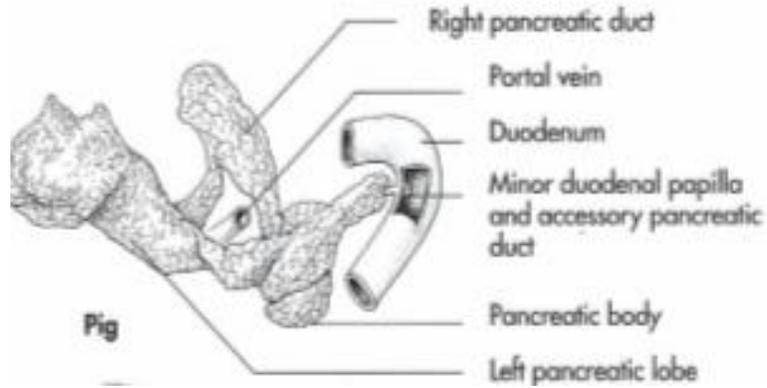
- large
- anulus pancreatis

2. left lobe:

- large

3. right lobe:

- small



<https://www.semanticscholar.org/paper/Pig-pancreas-anatomy%3A-implications-for-pancreas-and-Ferrer-Scott/084f64a3fa05a49ebae5958bad7ad4fd23fb07f0>

PANCREAS

IN HORSE:

- triangular - shaped

1. body:

- large, compact

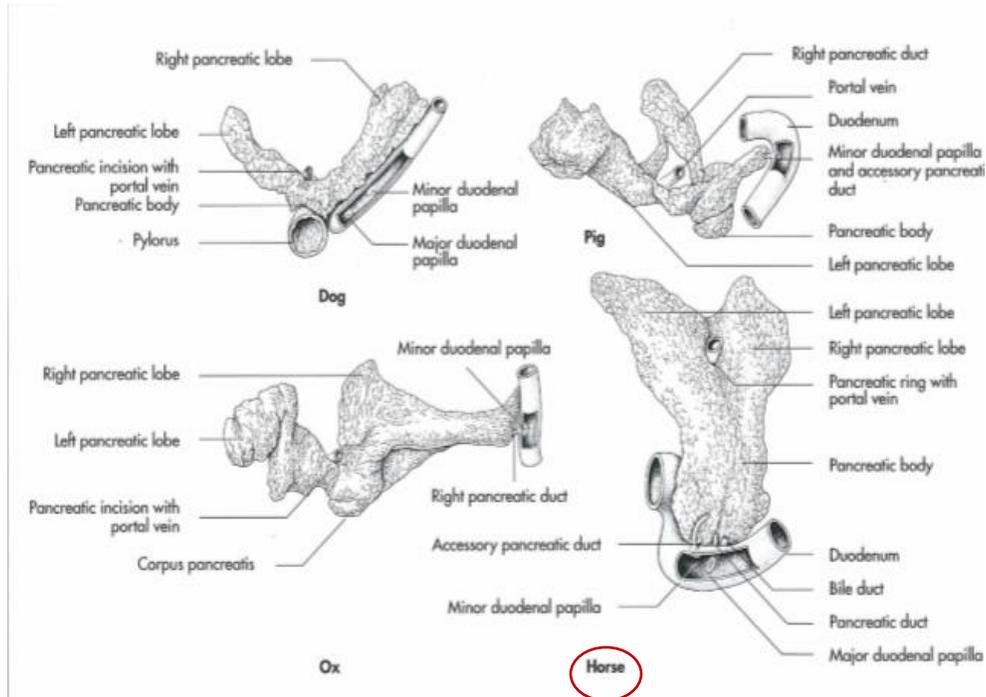
- anulus pancreaticus

2. left lobe:

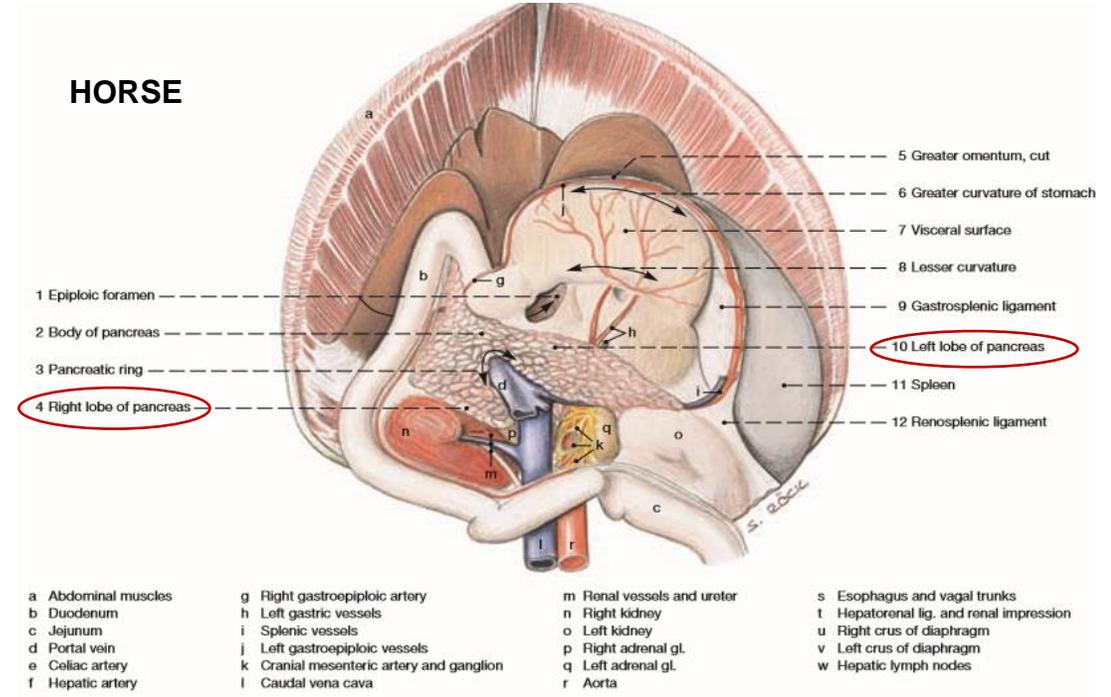
- long

3. right lobe:

- short



HORSE



PANCREAS

IN RUMINANTS:

1. body:

- short

2. left lobe:

- wide

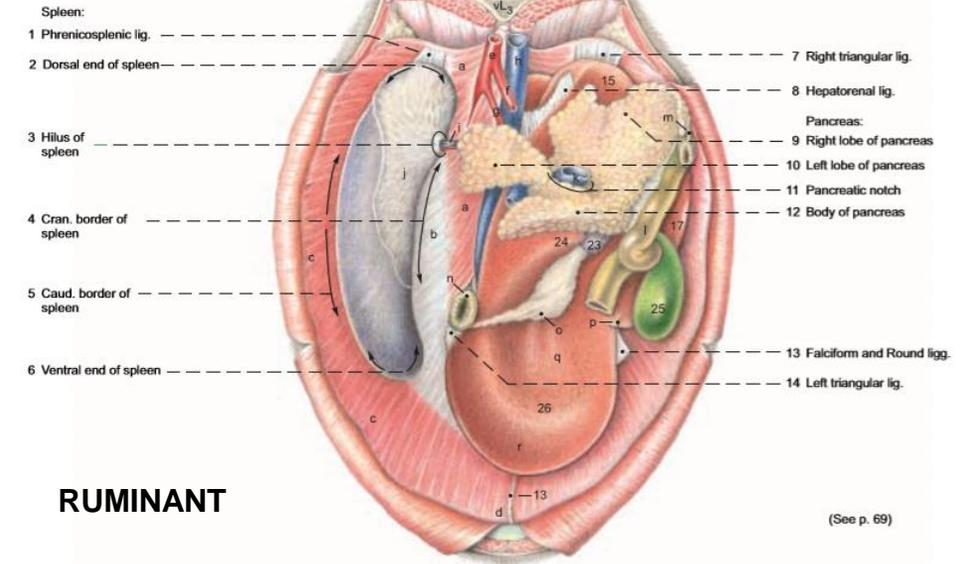
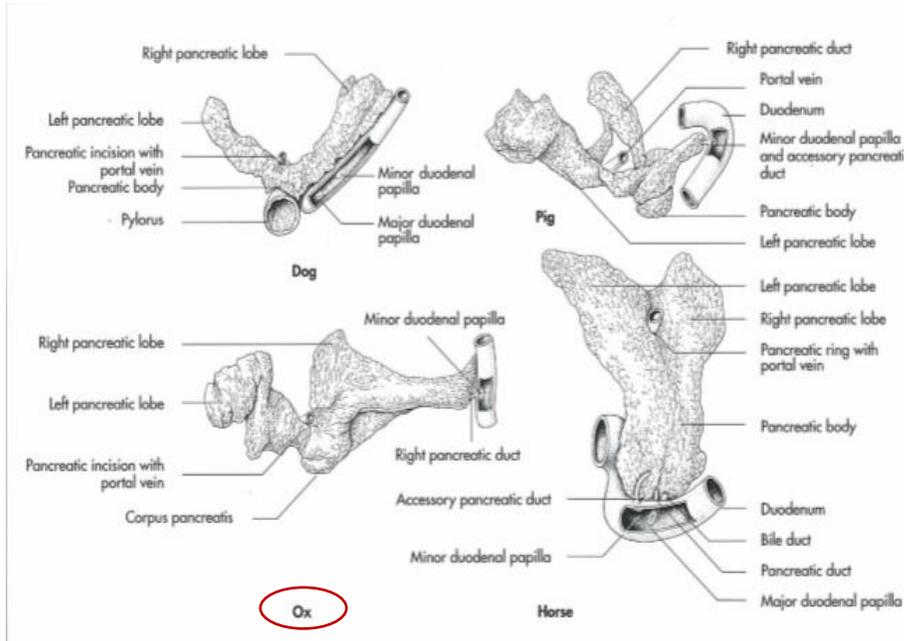
3. right lobe:

- long

- follows the mesoduodenum descendens

4. Incisura pancreatis:

- vena portae passes over the dorsal border



RUMINANT



<https://www.meiwoscience.com/animal-plastinated-specimens/cattle-liver-biliary-pancreas-spleen-duodenum-plastinated-specimen.html>

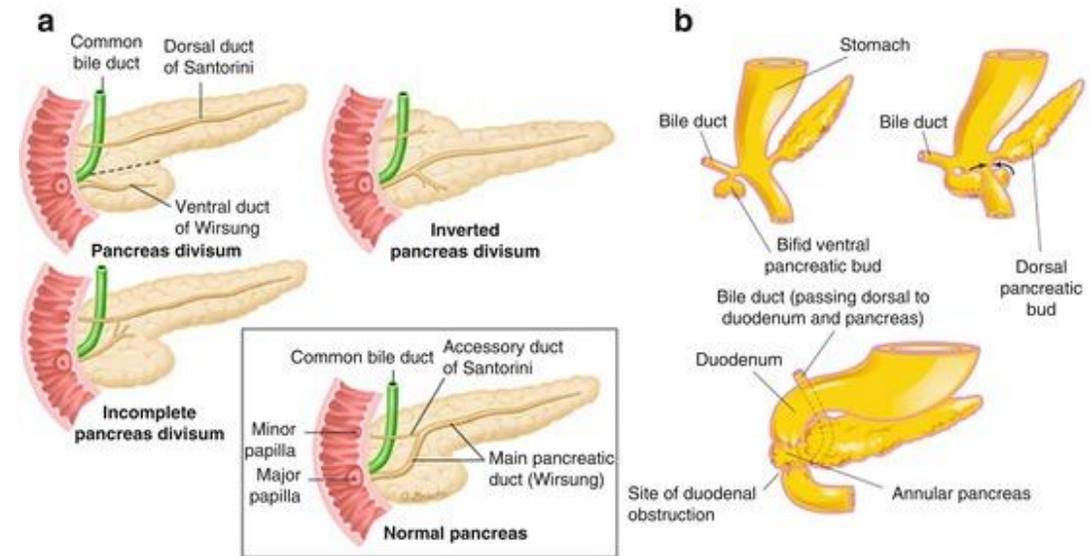
PANCREATIC DUCTS (DUSTUS PANCREATICUS)

1. DUCTUS PANCREATICUS:

- drains the part of pancreas arised from the ventral primordium
- opens on the papilla duodeni major
- main duct in Eq
- absent in Su, Bo

2. DUCTUS PANCREATICUS ACCESSORIUS:

- emerges from the part that formed by the dorsal primordium
- opens on the papilla duodeni minor
- largest duct in Car
- only one duct in Bo, Su



https://link.springer.com/chapter/10.1007/978-3-319-58256-6_2

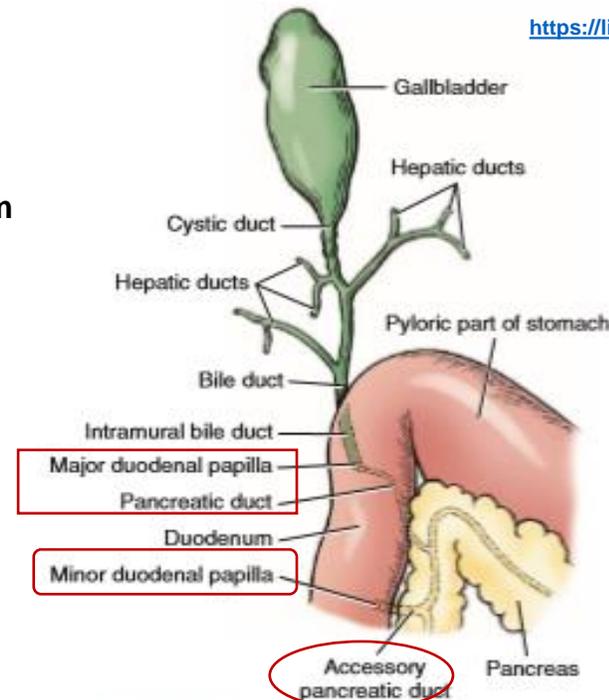
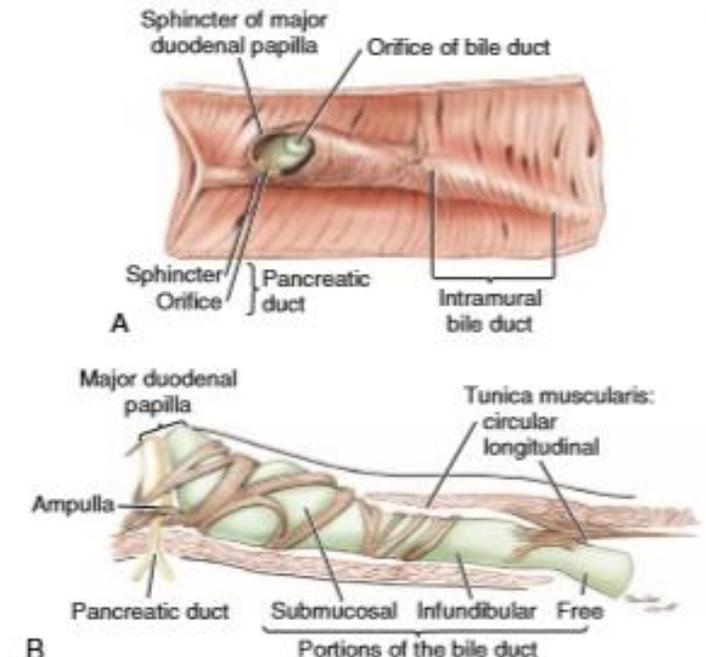


FIGURE 7-52 Bile, hepatic, and pancreatic ducts.



BLOOD SUPPLY OF THE PANCREAS

1. ARTERIA PANCREATICODUODENALIS CRANIALIS:

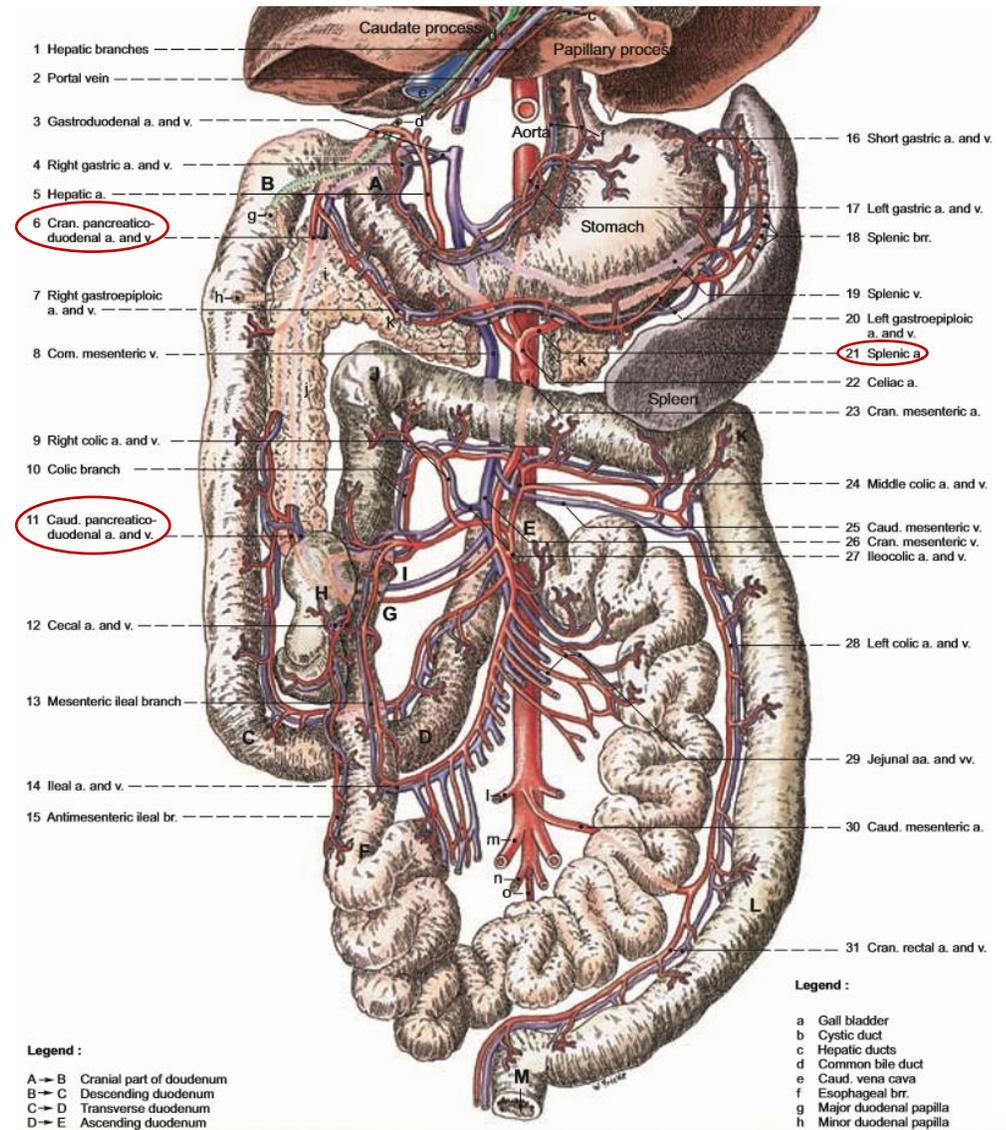
- branch of A. hepatica (from A. coeliaca)
- supplies the right lobe

2. ARTERIA PANCREATICODUODENELIS CAUDALIS:

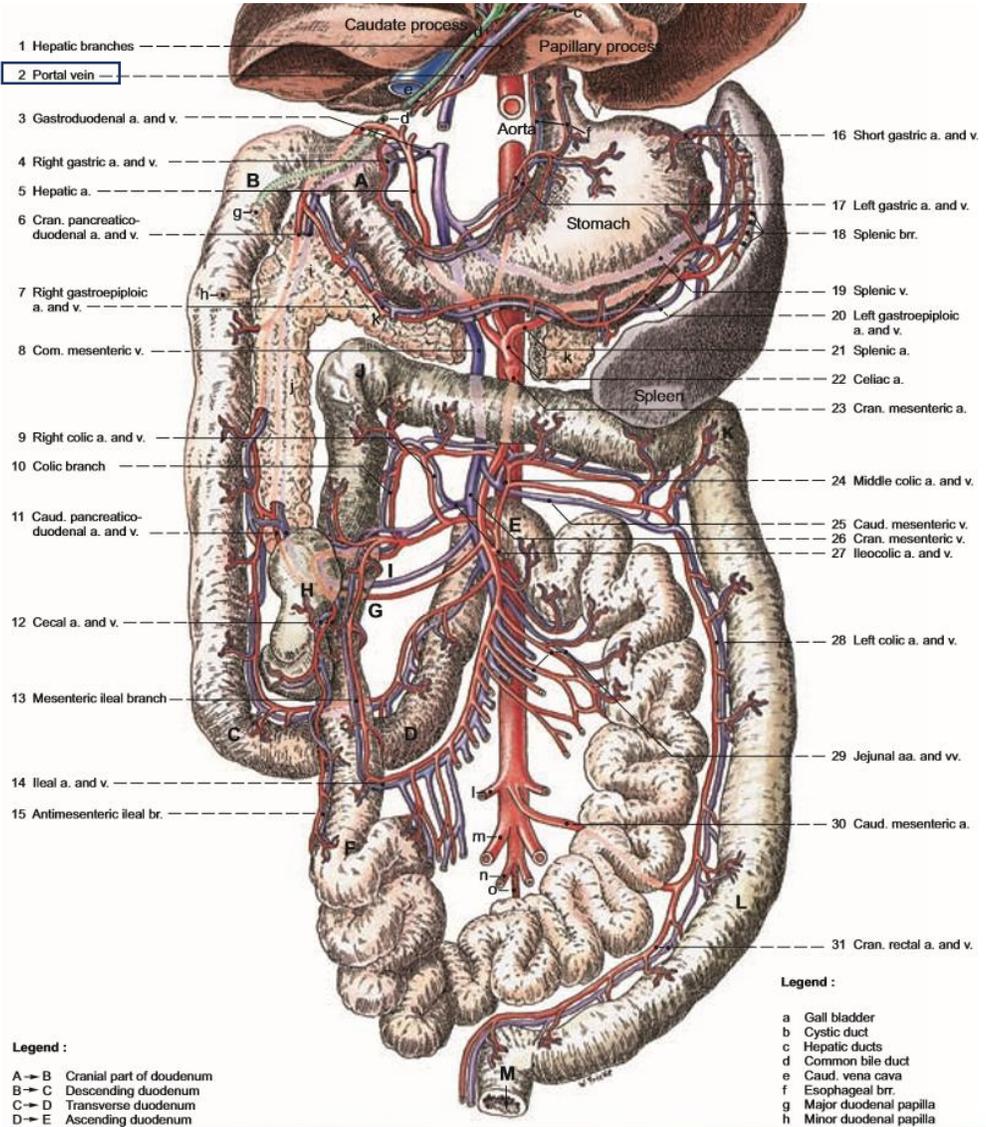
- branch of A. mesenterica cranialis
- supplies the left lobe and body

3. ARTERIA LIENALIS:

- branch of A. coeliaca
- gives Rr. pancreatici
- supplies the left lobe and body



BLOOD SUPPLY OF THE PANCREAS



VEINS:

- drain into the portal vein

SPLEEN (LIEN, SPLEN)

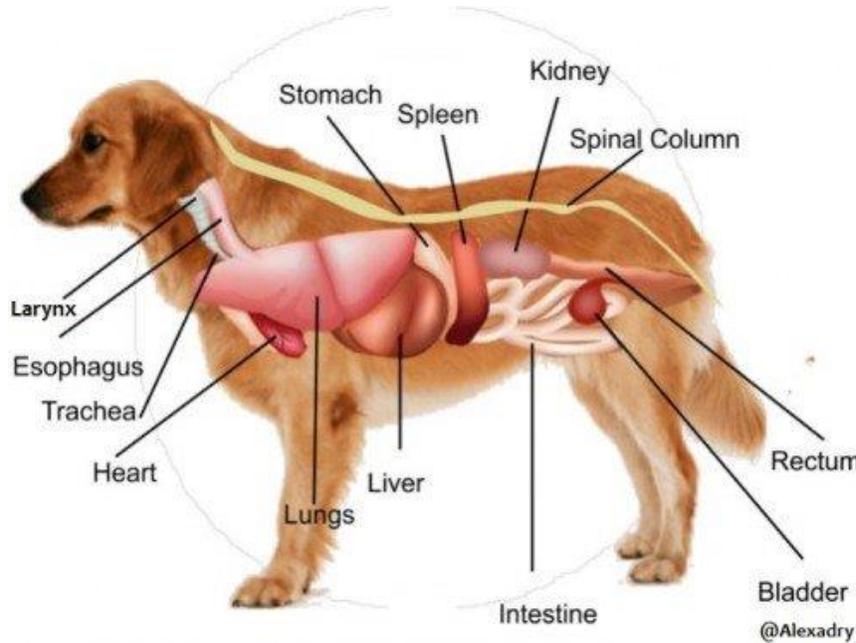
FUNCTION:

DURING EMBRYONIC LIFE:

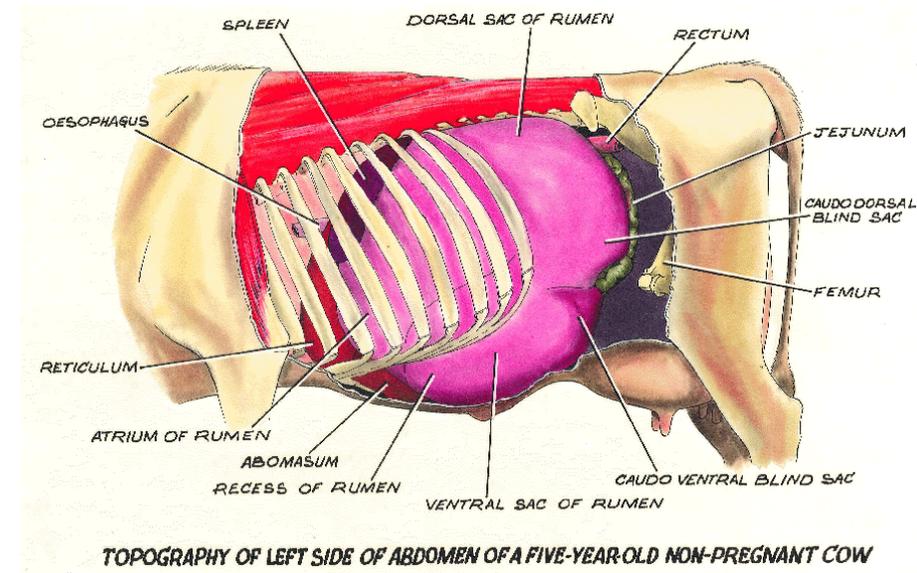
- production of erythrocytes

IN ADULT:

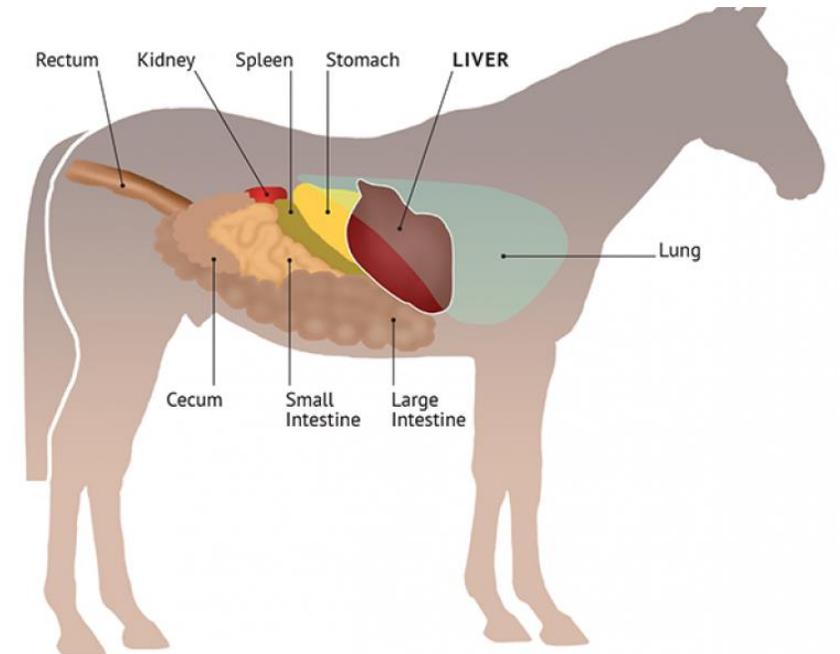
- production of lymphocytes
- destruction of erythrocytes
- storage of iron (hemosiderin)
- storage of blood



<https://pethelpful.com/dogs/Causes-of-Abdominal-Enlargement-in-Dogs>



<http://www.ucd.ie/vetanat/images/image.html>

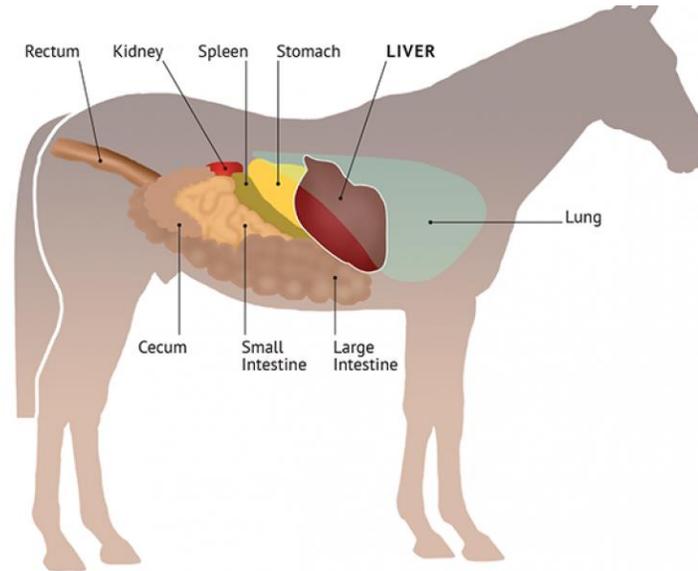


<https://www.horsejournals.com/understanding-equine-liver>

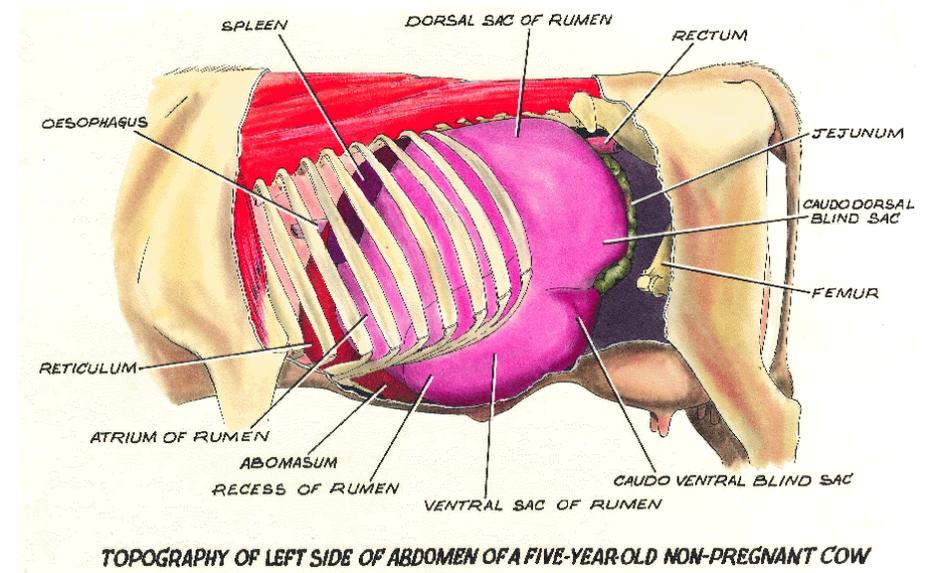
SPLEEN (LIEN, SPLEN)

POSITION:

- intraperitoneal
- CAPSULA LIENIS – below the peritoneum
- lies against the abdominal wall
- caudal to the diaphragm
- within the left cranial part of the abdomen
- covered by the ribs
- in Car, Eq, Su – the position depends on the fullness of stomach

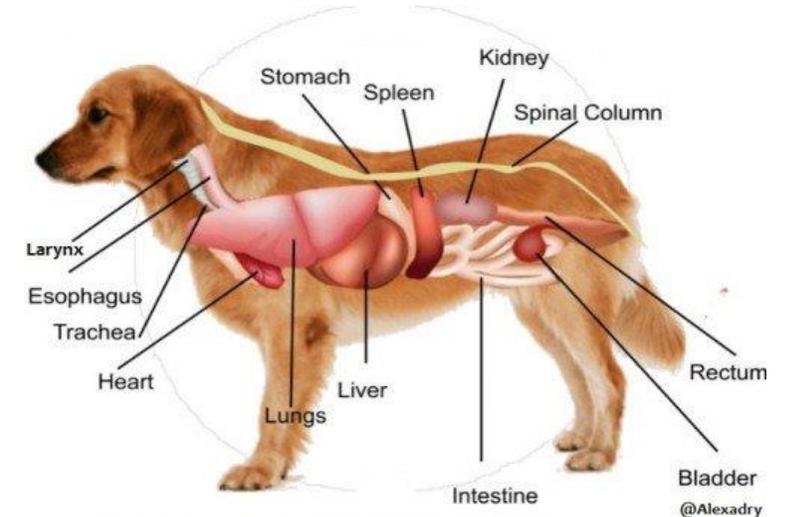


<https://www.horsejournals.com/understanding-equine-liver>



TOPOGRAPHY OF LEFT SIDE OF ABDOMEN OF A FIVE-YEAR-OLD NON-PREGNANT COW

<http://www.ucd.ie/vetanat/images/image.html>



<https://pethelpful.com/dogs/Causes-of-Abdominal-Enlargement-in-Dogs>

SPLEEN (LIEN, SPLEN)

SHAPE:

1. **FALCIFORM** – in Eq
2. **TONGUE – SHAPED** – in Su
3. **BOOT – SHAPED** in Car
4. **LEAF- SHAPED** - in small ruminants
5. **WIDE STRAP** – in Ox



<http://www1.zu.edu.eg/Plastination/spleen-Horse2.jpg>

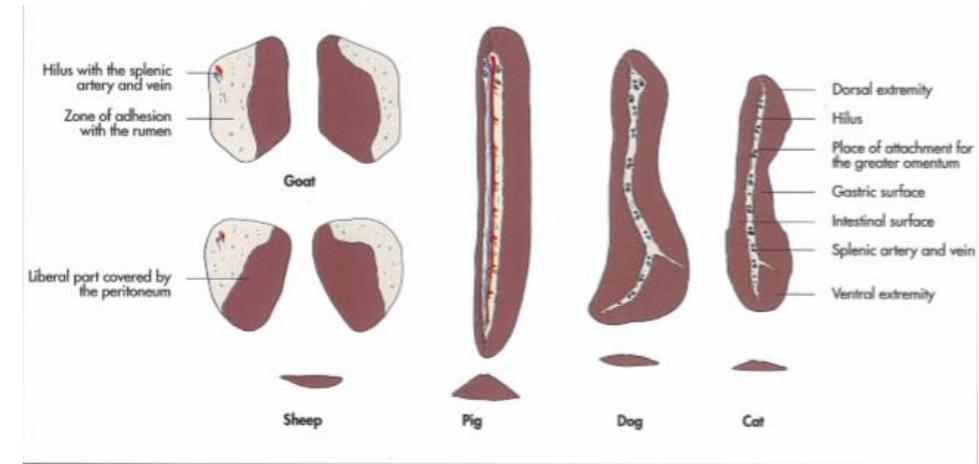
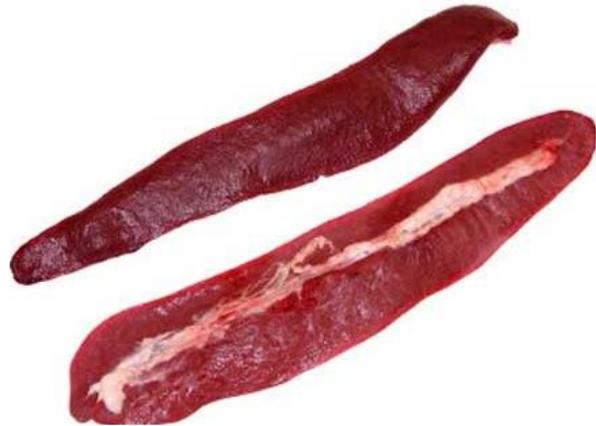


Fig. 13-20. Spleen of the small ruminants, pig, dog and cat, medial aspect and cross section, schematic.



Su

<http://gqb.co.za/product/pork-spleen/>



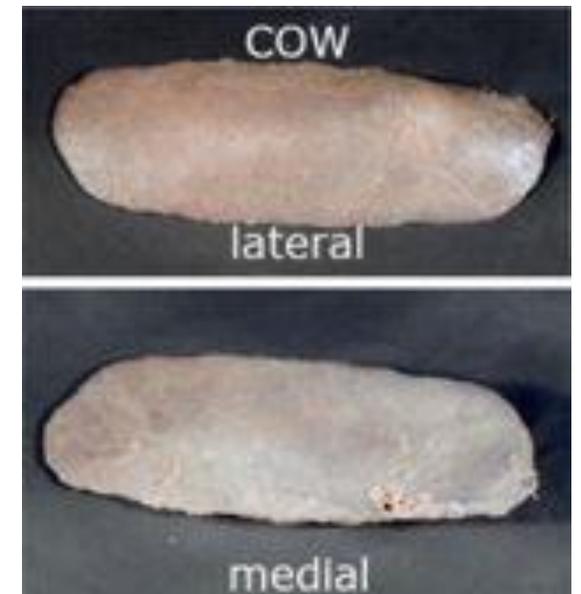
A normal spleen in a medium sized dog

<https://www.lbah.com/canine/spleen-disease/>



sheep

https://vet.uga.edu/oldvpp/programs/afvet/aps_disturbances_of_growth_wk1.php



[https://en.wikivet.net/Spleen - Anatomy %26 Physiology](https://en.wikivet.net/Spleen_-_Anatomy_%26_Physiology)

SPLEEN (LIEN, SPLEN)

FACIES PARIETALIS (diaphragmatica):

- convex lateral surface
- faces diaphragm in Ru, Eq
- faces left cranial abdominal wall



<http://www1.zu.edu.eg/Plastination/photo16.htm>

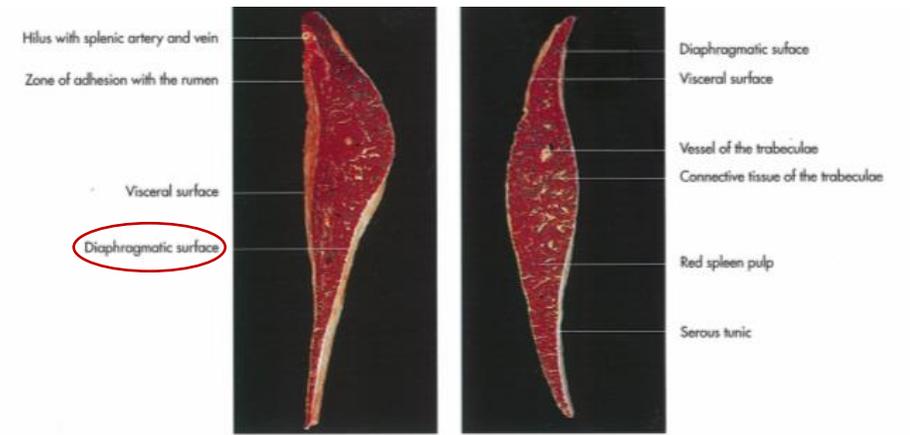
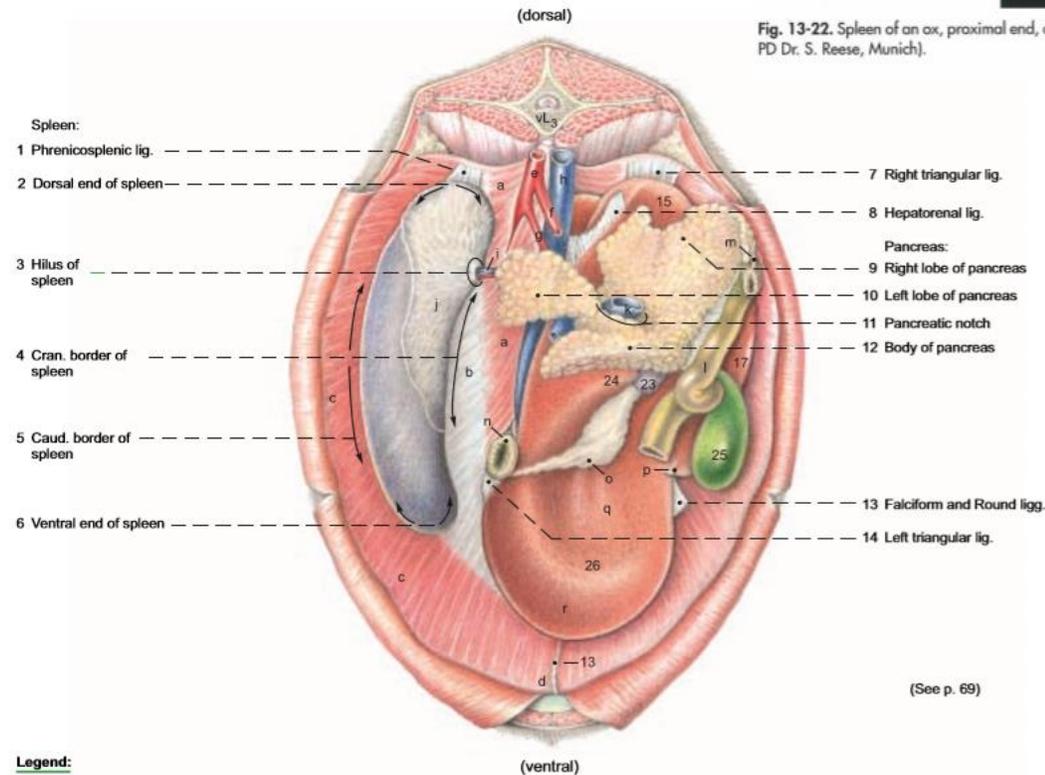


Fig. 13-22. Spleen of an ox, proximal end, cross section (courtesy of PD Dr. S. Reese, Munich).

Fig. 13-23. Spleen of an ox, distal end, cross section (courtesy of PD Dr. S. Reese, Munich).



Legend:

Diaphragm:
 a Lumbar part
 b Tendinous center
 c Costal part
 d Sternal part

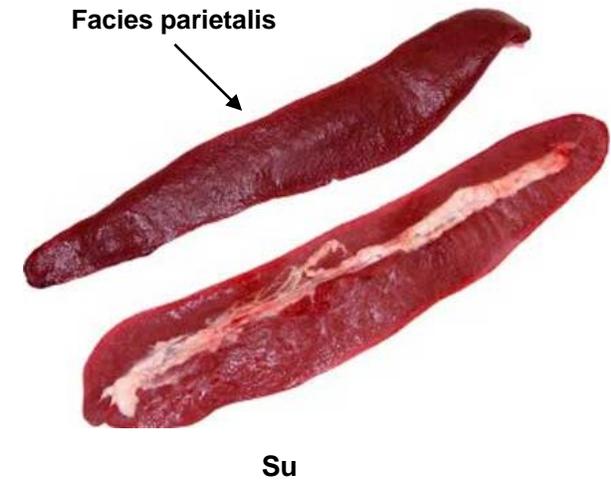
e Aorta
 f Cran. mesenteric a.
 g Celiac a.
 h Caud. vena cava
 i Splenic a. and v.

j Splenico-ruminal adhesion
 k Portal v.
 l Duodenum
 m Accessory pancreatic duct
 n Esophagus

o Lesser omentum
 p Fissure for round lig.
 q Omasal impression
 r Reticular impression
 s Hepatic a.

t Right gastric a.
 u Gastroduodenal a.
 v Renal impression
 w Esophageal impression (cut edge)

(See p. 69)



<http://gqb.co.za/product/pork-spleen/>

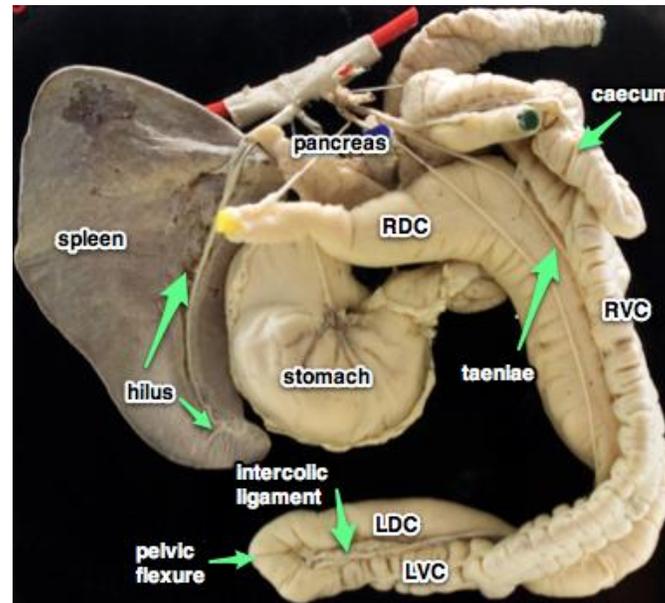
SPLEEN (LIEN, SPLEN)

FACIES VISCERALIS:

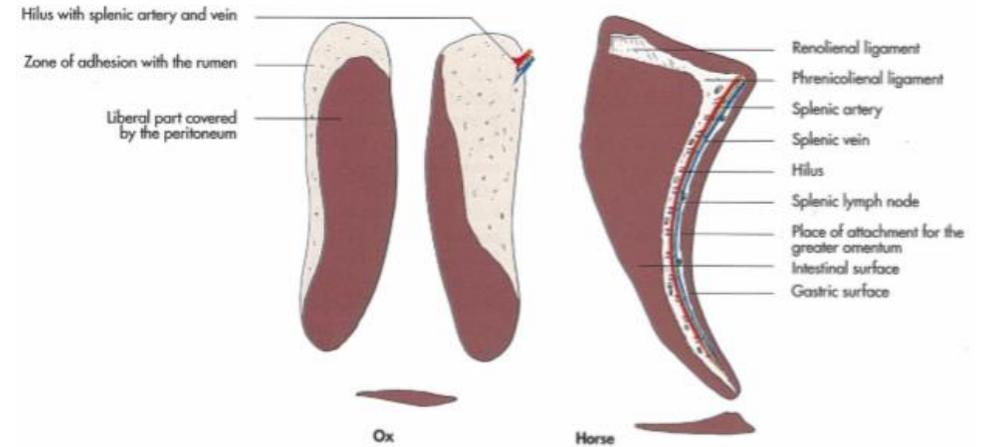
- concave medial surface
- contains HILUS LIENIS
- in Ru largely free from peritoneum



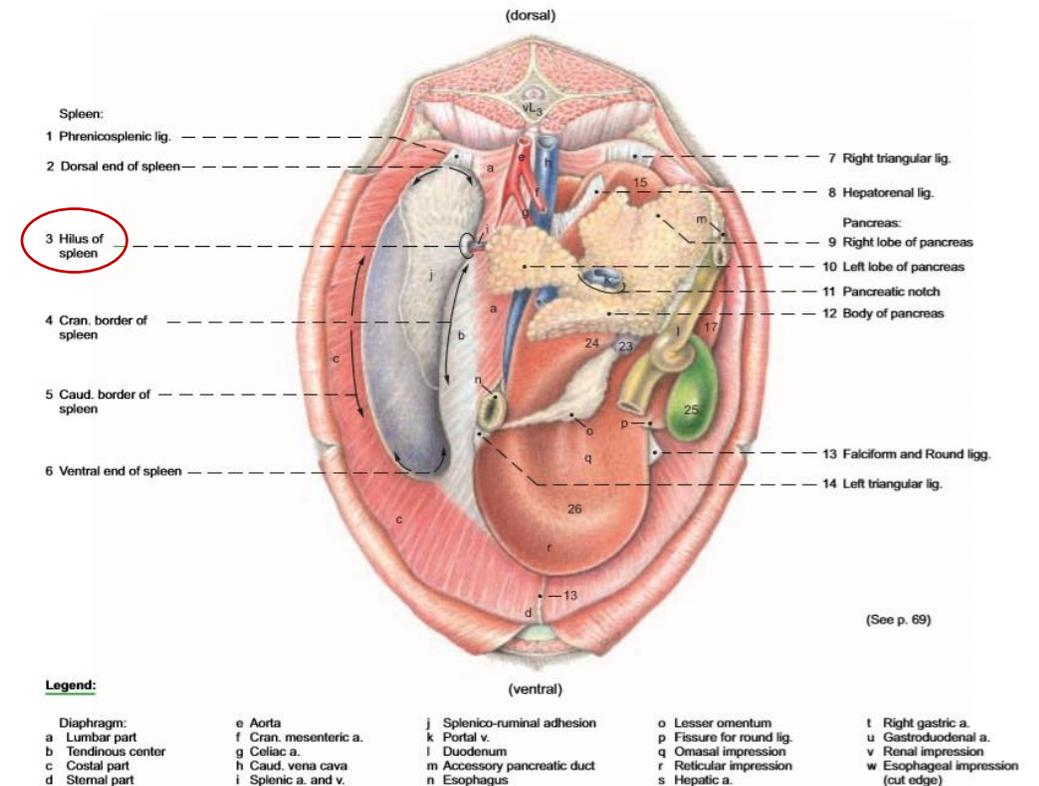
<http://www1.zu.edu.eg/Plastination/photo16.htm>



<http://bvetmed1.blogspot.com/2013/03/horse-and-pig-abdomen-lecture-164.html>



ig. 13-21. Spleen of the ox (medial and lateral aspect, cross section) and horse (medial aspect, cross section), schematic.

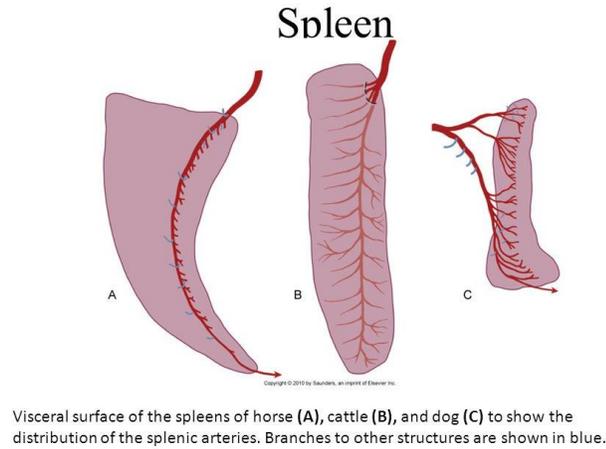


SPLEEN (LIEN, SPLEN)

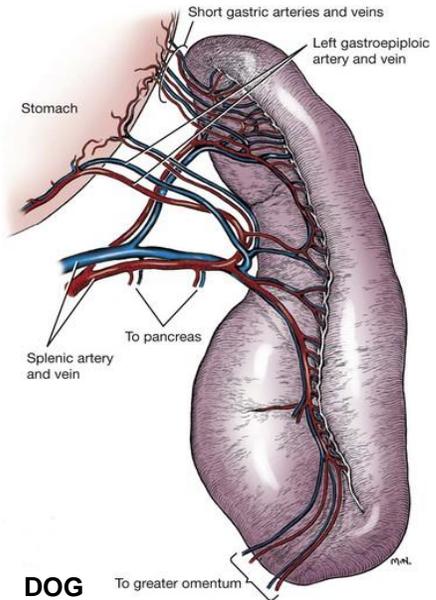
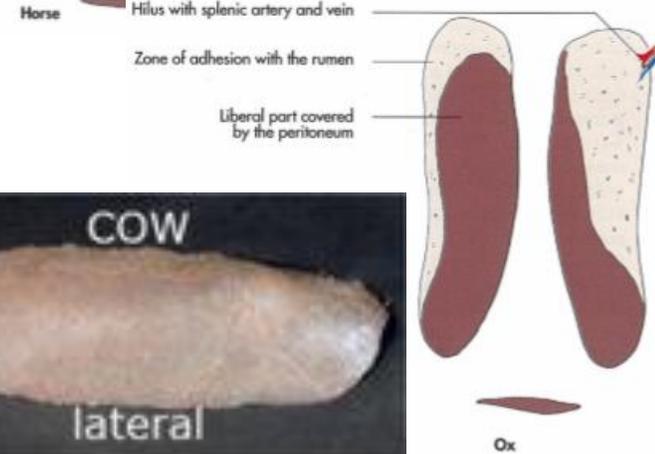
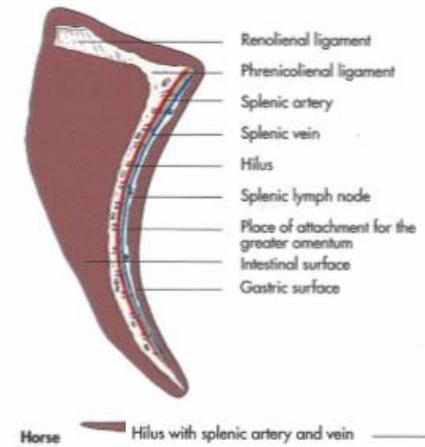
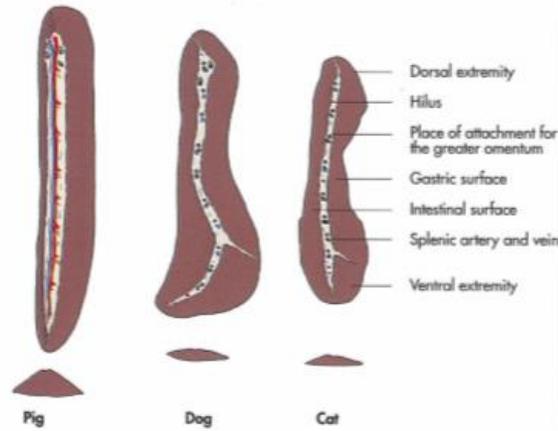
FACIES VISCERALIS:

HILUS LIENIS:

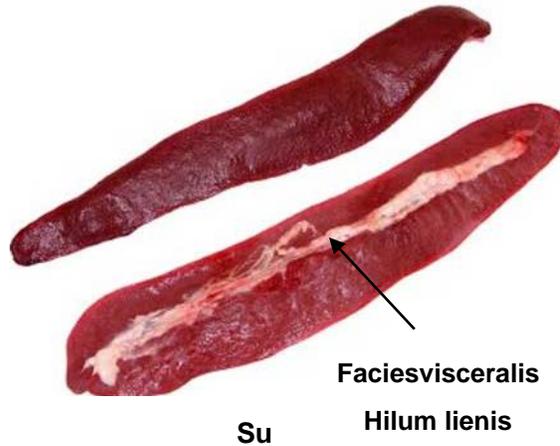
- longitudinal ridge in Car, Su, Eq
- round depression in Ru
- entrance of nerves, A. lienalis
- exit of V. lienalis, lymphatic vessels



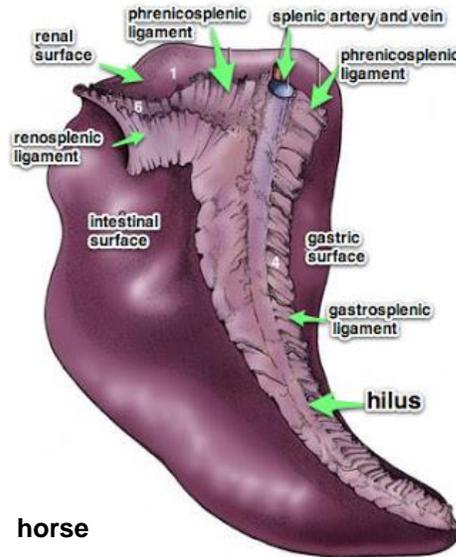
<https://slideplayer.com/slide/4767166/>



<https://veteriankey.com/spleen/>

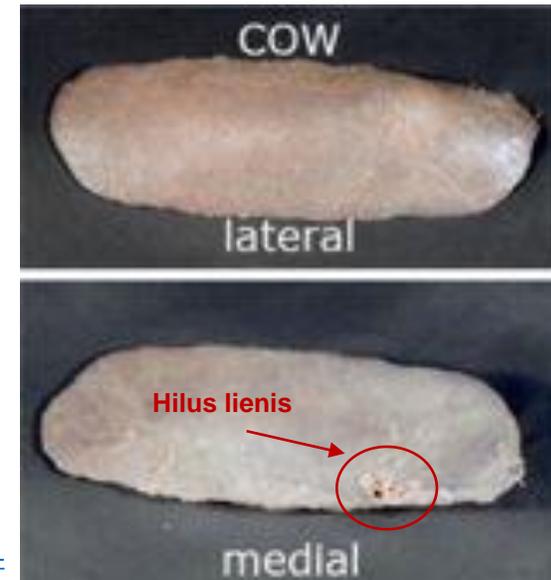


<http://qgb.co.za/product/pork-spleen/>



horse

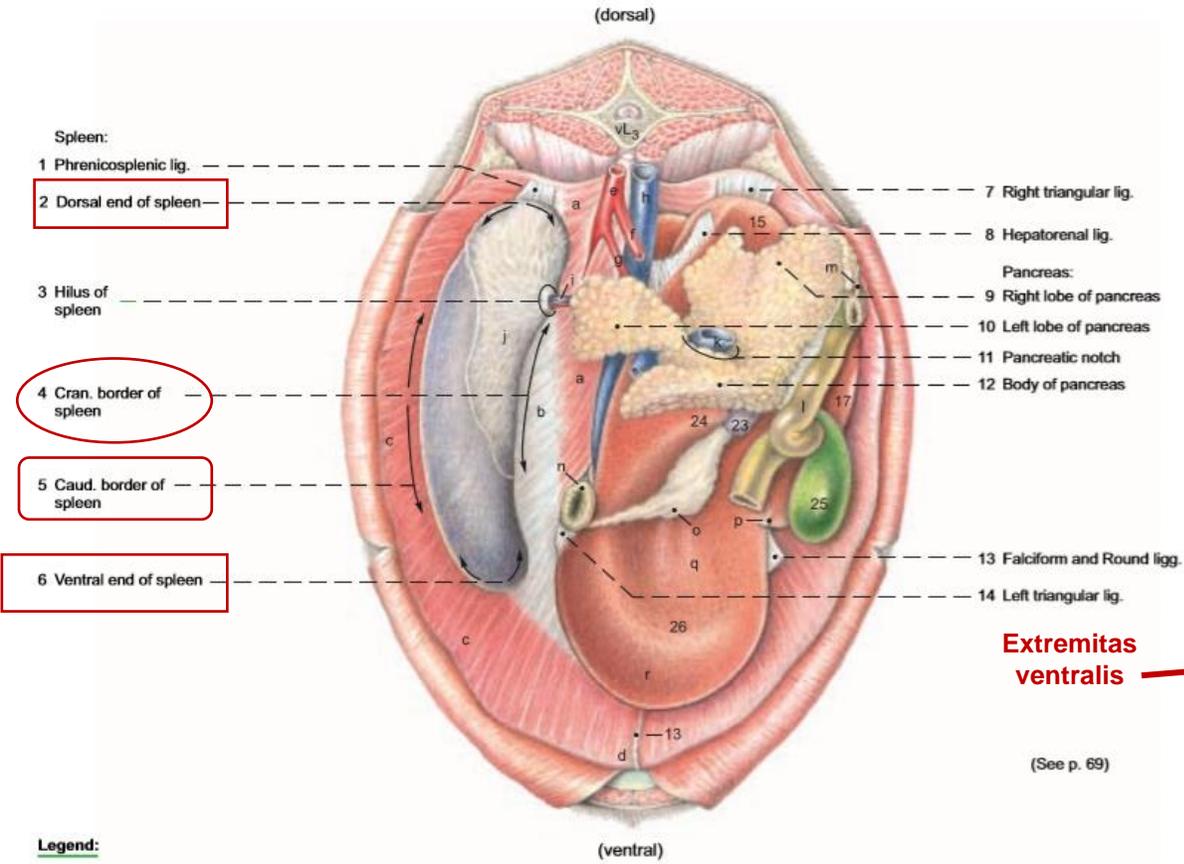
<http://bvmed1.blogspot.com/2013/03/horse-and-pig-abdomen-lecture-164.html>



[https://en.wikivet.net/Spleen - Anatomy %26 Physiology](https://en.wikivet.net/Spleen_-_Anatomy_%26_Physiology)

SPLEEN (LIEN, SPLEN)

- 1. EXTREMITAS DORSALIS
- 2. EXTREMITA VENTRALIS
- 3. MARGO CAUDALIS
- 4. MARGO CRANIALIS

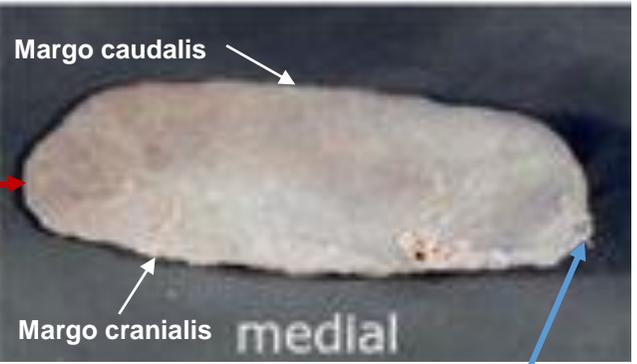
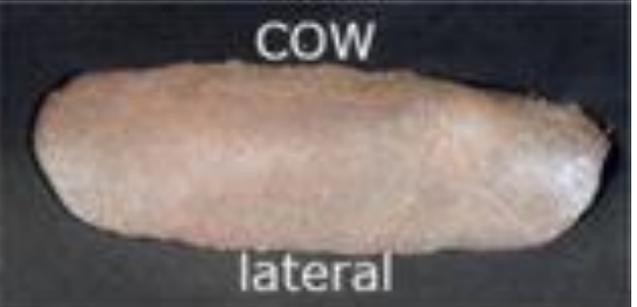


- Spleen:
- 1 Phrenicosplenic lig.
 - 2 Dorsal end of spleen
 - 3 Hilus of spleen
 - 4 Cran. border of spleen
 - 5 Caud. border of spleen
 - 6 Ventral end of spleen

- 7 Right triangular lig.
- 8 Hepatorenal lig.
- Pancreas:
- 9 Right lobe of pancreas
- 10 Left lobe of pancreas
- 11 Pancreatic notch
- 12 Body of pancreas
- 13 Falciform and Round ligg.
- 14 Left triangular lig.

Legend:

Diaphragm:	e Aorta	j Splenico-ruminal adhesion	o Lesser omentum	t Right gastric a.
a Lumbar part	f Cran. mesenteric a.	k Portal v.	p Fissure for round lig.	u Gastroduodenal a.
b Tendinous center	g Celiac a.	l Duodenum	q Omasal impression	v Renal impression
c Costal part	h Caud. vena cava	m Accessory pancreatic duct	r Reticular impression	w Esophageal impression (cut edge)
d Sternal part	i Splenic a. and v.	n Esophagus	s Hepatic a.	

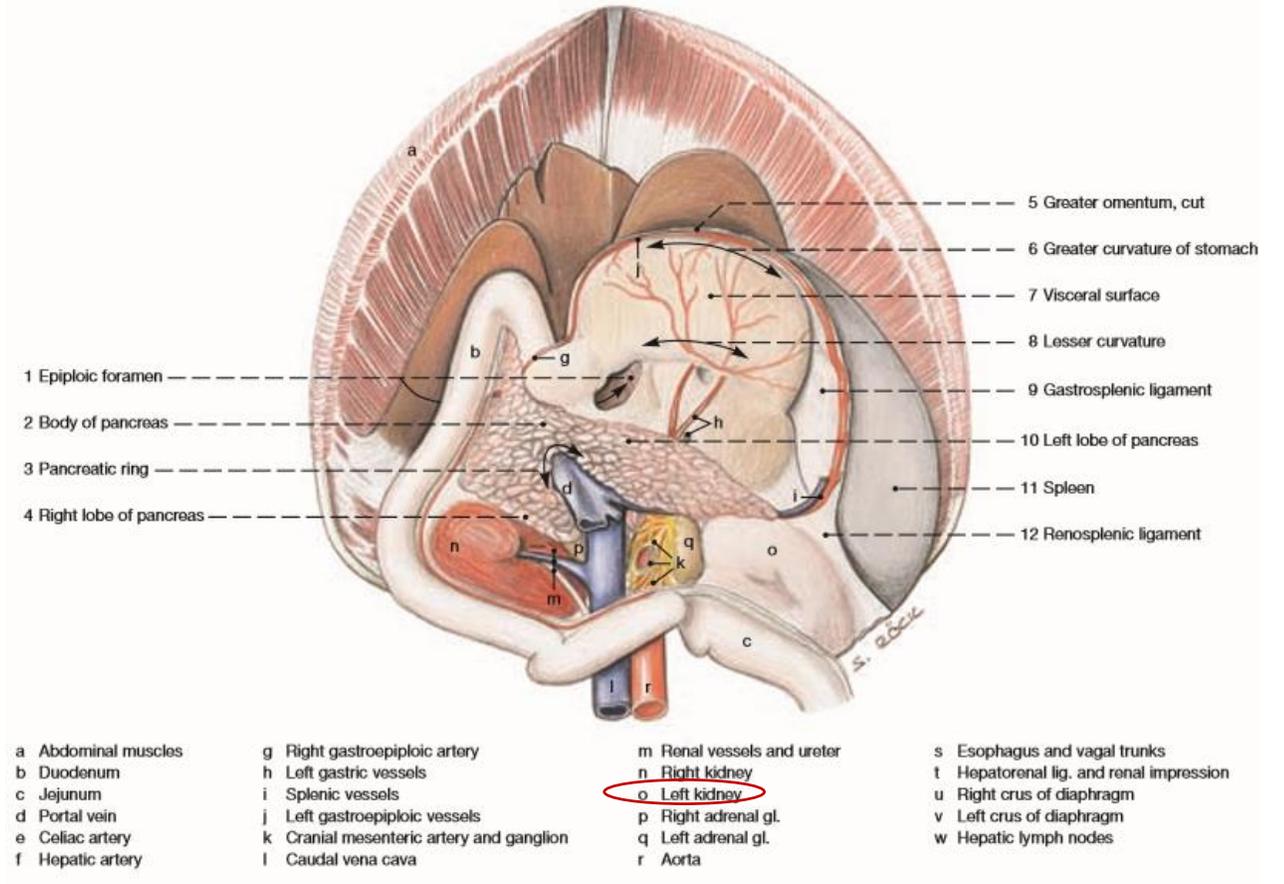
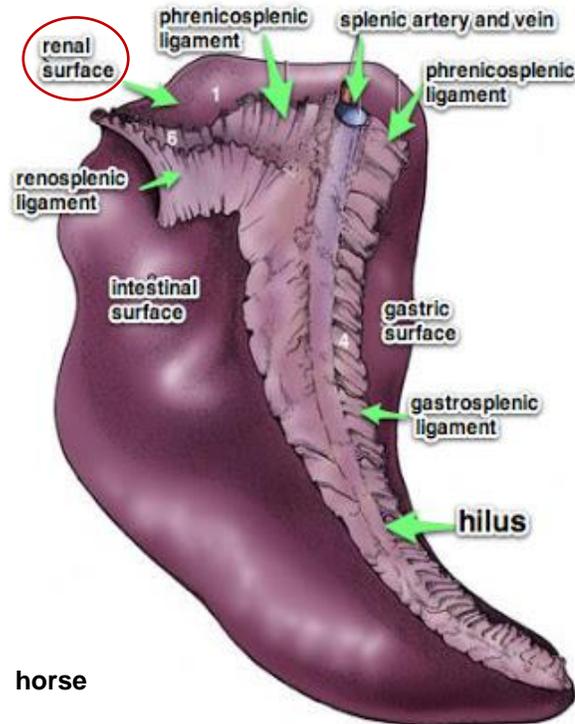


SPLEEN (LIEN, SPLEN)

ON FACIES VISCERALIS:

1. Facies renalis:

- dorsal part of the visceral surface
- faces the left kidney
- absent in Ru

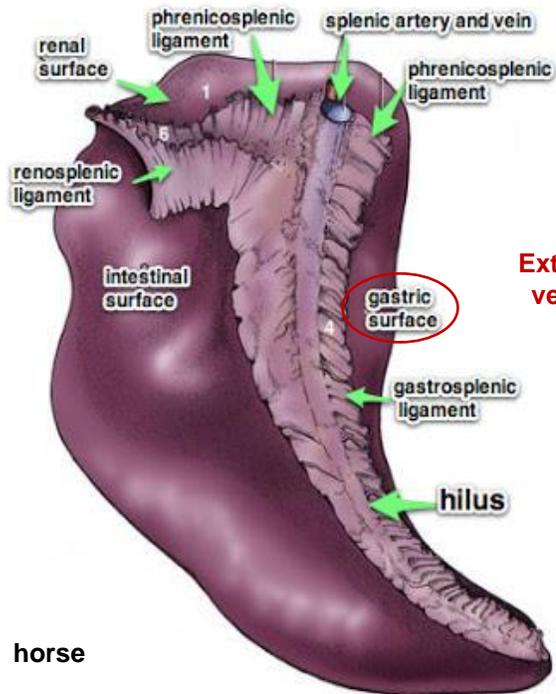
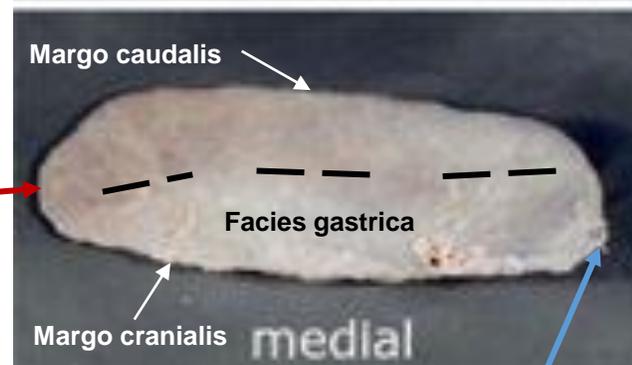
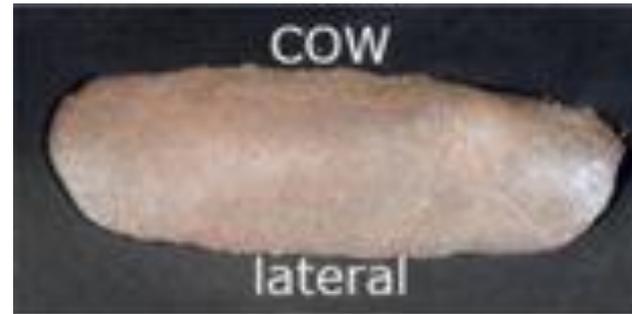


SPLEEN (LIEN, SPLEN)

ON FACIES VISCERALIS:

2. Facies gastrica:

- cranial part of facies visceralis
- faces stomach
- in Ru the entire facies visceralis



Extremitas ventralis

Extremitas dorsalis

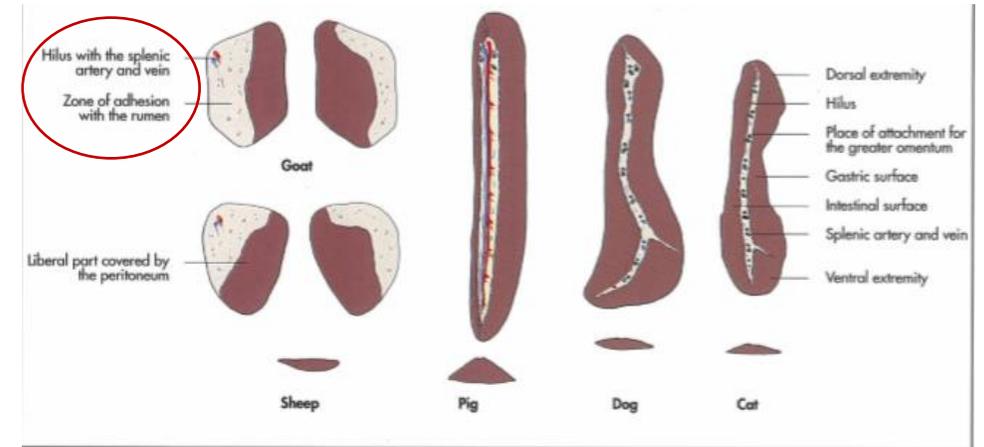


Fig. 13-20. Spleen of the small ruminants, pig, dog and cat, medial aspect and cross section, schematic.

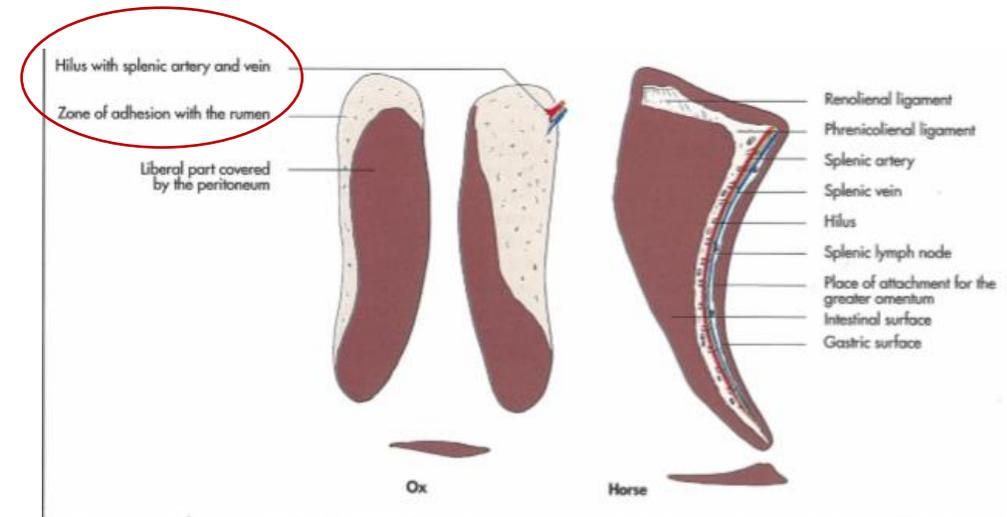


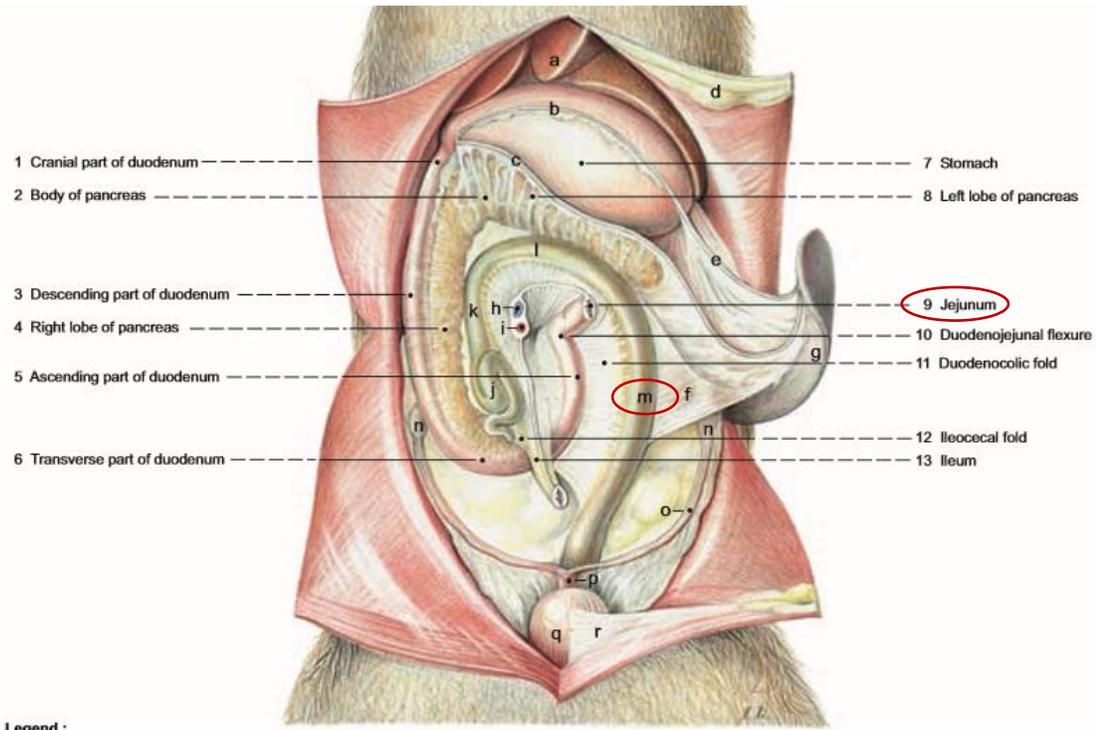
Fig. 13-21. Spleen of the ox (medial and lateral aspect, cross section) and horse (medial aspect, cross section), schematic.

SPLEEN (LIEN, SPLEN)

ON FACIES VISCERALIS:

3. Facies intestinalis:

- caudal segment of facies visceralis
- faces portion of jejunum and colon
- absent in Ru



Legend :

- | | | | | |
|------------------------------|--|-----------------------|-----------------|--------------------------|
| a Liver | d Falciform lig. and round lig. of liver | g Spleen | k Asc. colon | o Uterine horn |
| b Greater omentum: | e Gastrospenic lig. | h Com. mesenteric v. | l Transv. colon | p Body of uterus |
| c Superficial wall (section) | f Velum omentale | i Cran. mesenteric a. | m Desc. colon | q Urinary bladder |
| | | j Cecum | n Ovary | r Median lig. of bladder |

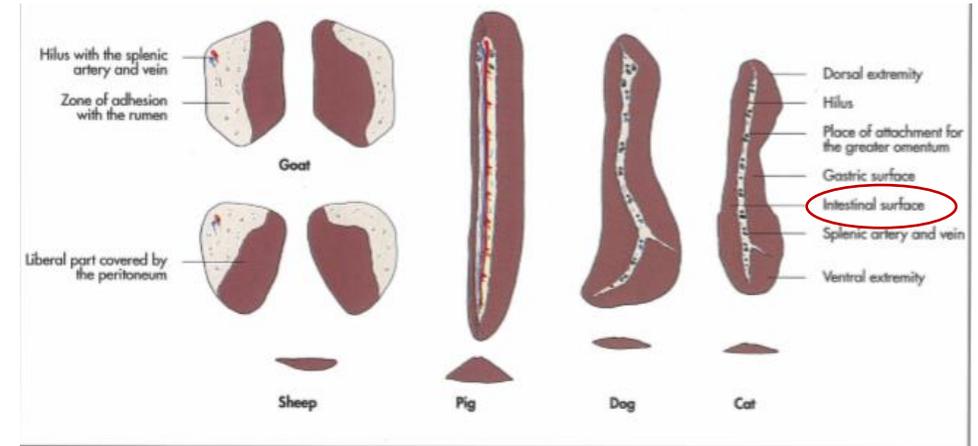


Fig. 13-20. Spleen of the small ruminants, pig, dog and cat, medial aspect and cross section, schematic.

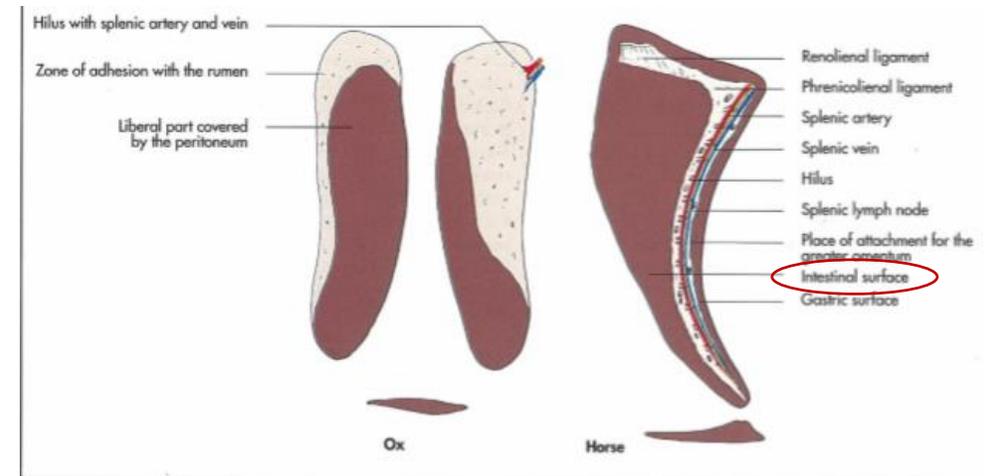


Fig. 13-21. Spleen of the ox (medial and lateral aspect, cross section) and horse (medial aspect, cross section), schematic.

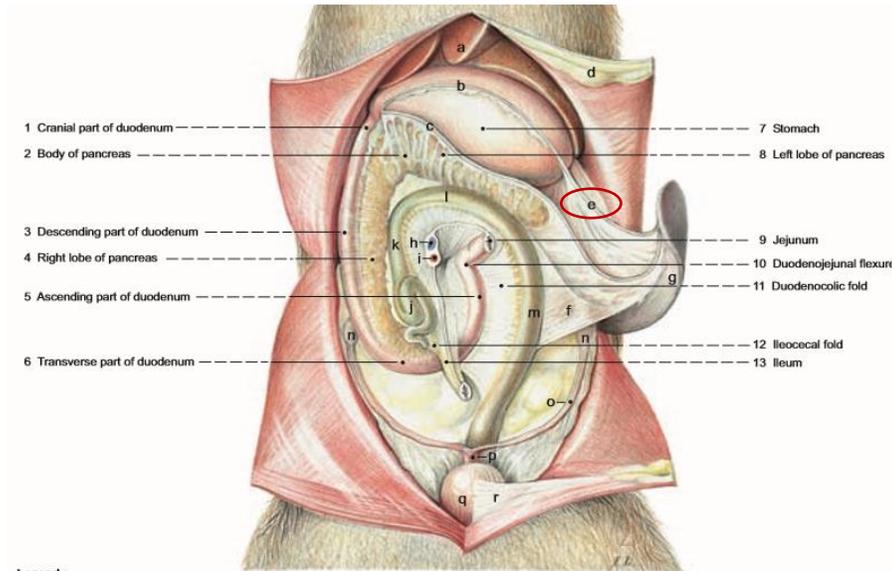
LIGAMENTS OF SPLEEN

LIGAMENTUM GASTROSPLENICUM:

- attaches spleen to the stomach
- part of the omentum minus

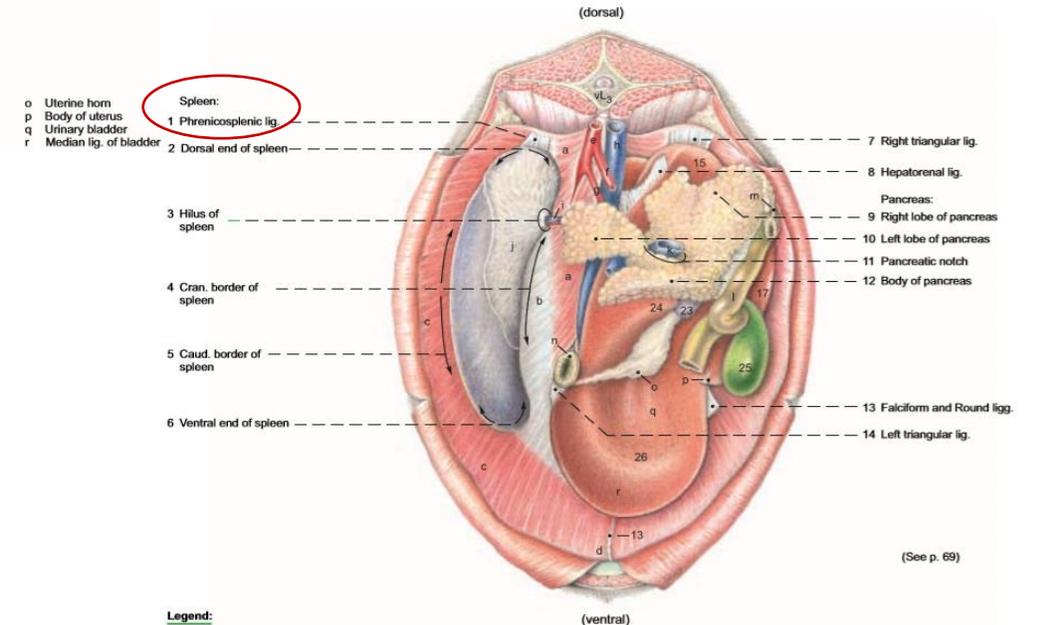
LIGAMENTUM PHRENICOSPLENICUM:

- in Ru, Eq
- between parietal surface and diaphragm



Legend :

- | | | | |
|------------------------------|--|-----------------------|-----------------|
| a Liver | d Falciform lig. and round lig. of liver | g Spleen | k Asc. colon |
| b Greater omentum: | e Gastrospenic lig. | h Com. mesenteric v. | l Transv. colon |
| b Superficial wall (section) | f Vellum omentale | i Cran. mesenteric a. | m Desc. colon |
| c Deep wall (section) | | j Cecum | n Ovary |



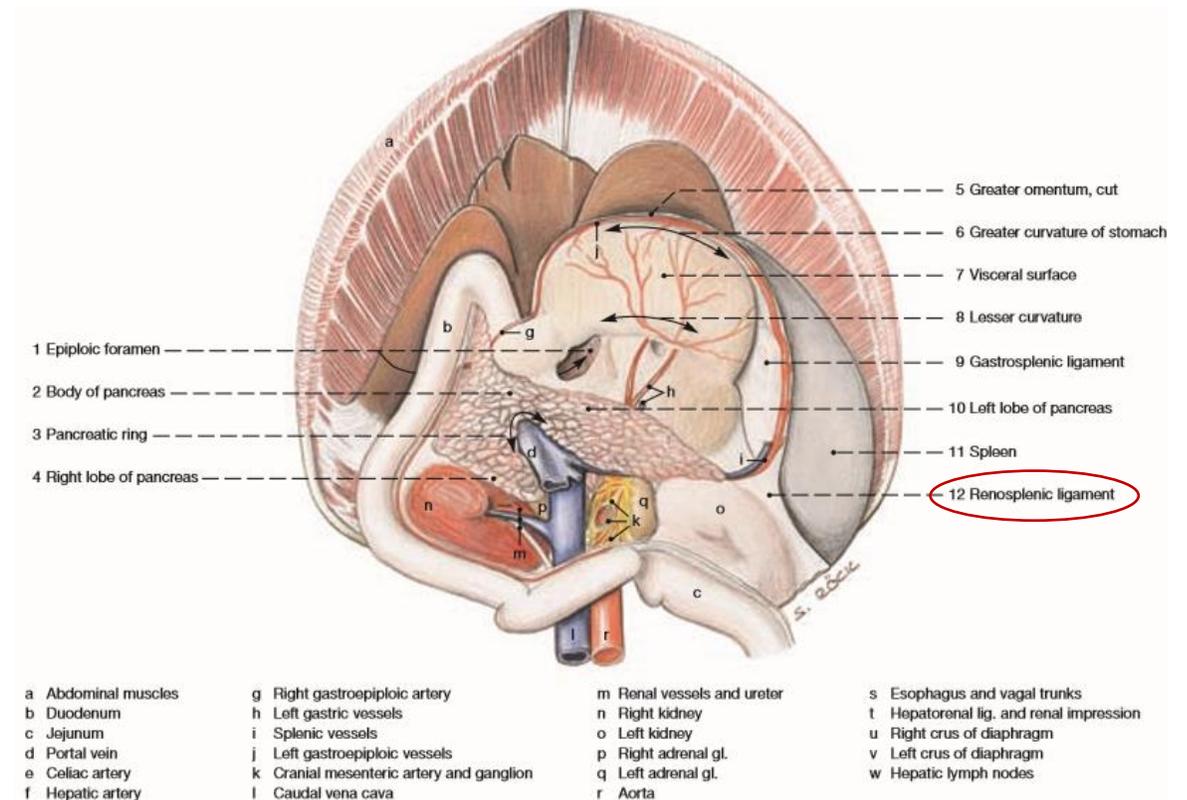
Legend:

- | | | | | |
|--------------------|-----------------------|-----------------------------|--------------------------|------------------------------------|
| Diaphragm: | e Aorta | j Splenico-uminal adhesion | o Lesser omentum | t Right gastric a. |
| a Lumbar part | f Cran. mesenteric a. | k Portal v. | p Fissure for round lig. | u Gastroduodenal a. |
| b Tendinous center | g Celiac a. | l Duodenum | q Omasal impression | v Renal impression |
| c Costal part | h Caud. vena cava | m Accessory pancreatic duct | r Reticular impression | w Esophageal impression (out edge) |
| d Sternal part | i Splenic a. and v. | n Esophagus | s Hepatic a. | |

LIGAMENTS OF THE SPLEEN

LIGAMENTUM LIENORENALE:

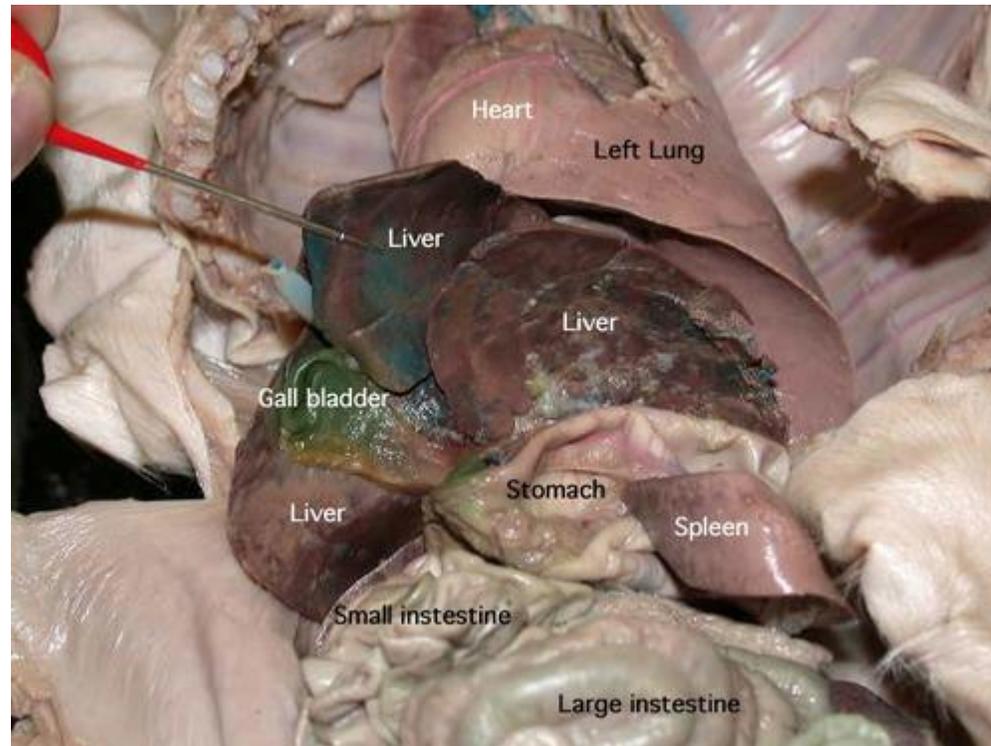
- in Eq
- between spleen and left kidney
- creates the nephrosplenic space – in which the intestine can become trapped resulting in colic



SPLEEN

LIEN ACCESSORICUS:

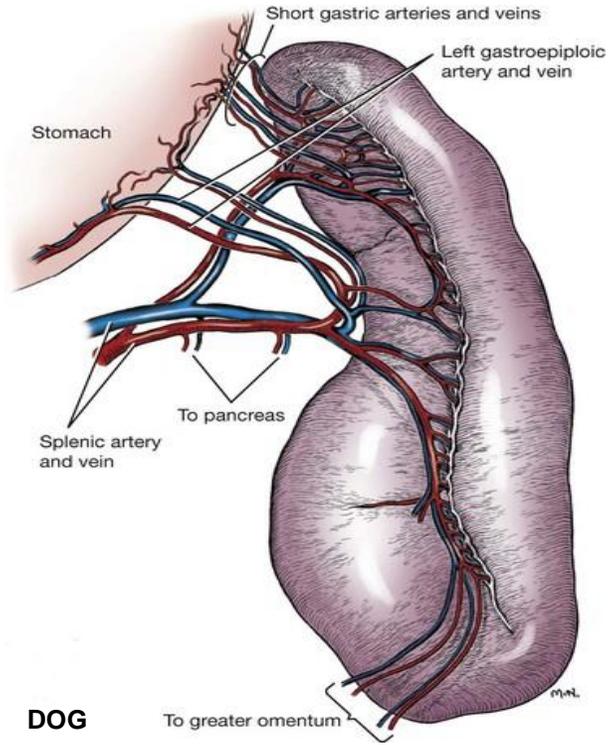
- small island of additional splenic tissue
- in lig. gastrolienale
- in Su



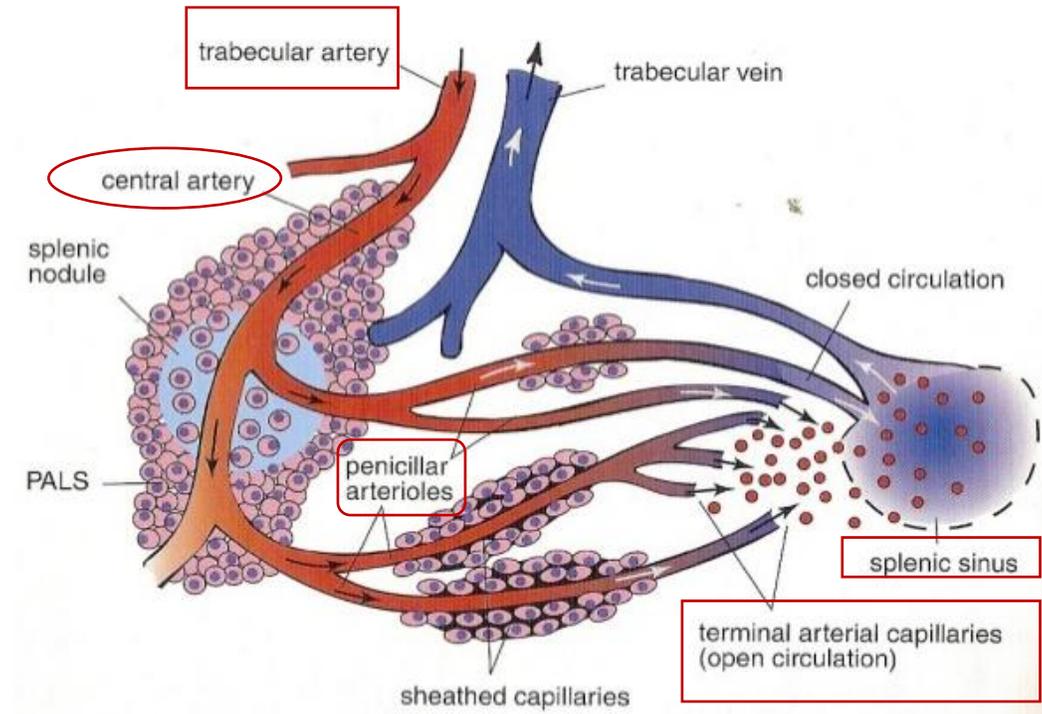
BLOOD SUPPLY OF THE SPLEEN

ARTERIA LIENALIS:

- branch of A. coeliaca
- gives Rr. lienalis – enter capsule and trabecule as Aa. trabeculares – continue Arteriolae centrales – enter red pulp and branch into Aa. penicillares – open into capillary beds – splenic sinus



<https://veteriankey.com/spleen/>

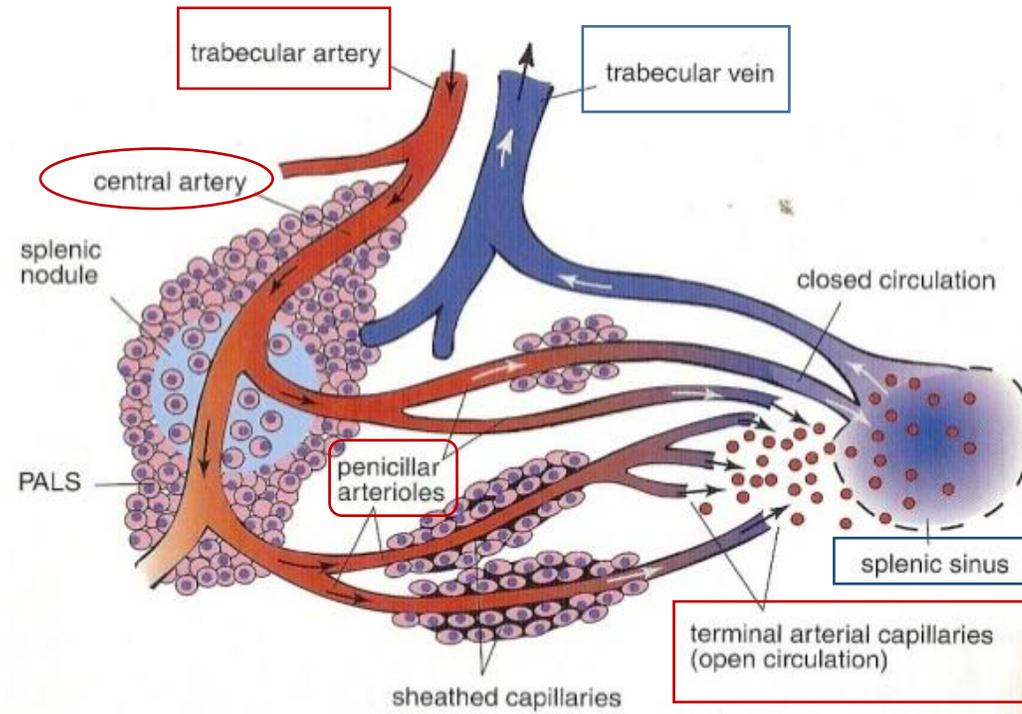
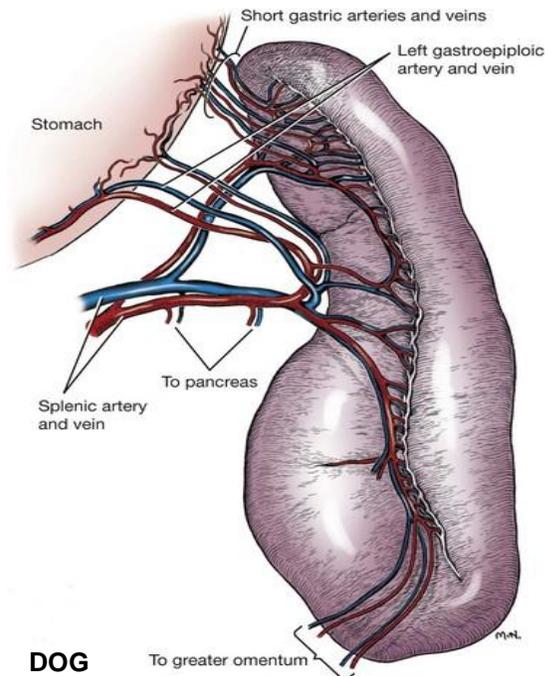


<https://www.slideshare.net/rongon28us/13-lymphoid-organs-dr-kirti-21-dec-2>

BLOOD SUPPLY OF THE SPLEEN

VEINS:

1. **VENOUS SINUSES** – communicate with each other – coalesce into veins of red pulp
2. **VEINS OF RED PULP** – become **TRABECULAR VEINS**
3. **TRABECULAR VEINS** open into **VENA LIENALIS**
4. **VENA LIENALIS** opens into **VENA PORTAE**



<https://www.slideshare.net/rongon28us/13-lymphoid-organs-dr-kirti-21-dec-2>

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THANK YOU FOR YOUR ATTENTION!



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