

Indications for CT of the thorax

- Any pathological condition not diagnosed by Rad or US
- Tumoral diagnosis/staging
- Interventional radiology (guided-biopsy/treatment)
- Follow up

Technique

- **General Anaesthesia** (Propofol-Diazepam + O₂-Isoflurane)
- Hyperventilation and/or administration of a bolus of Fentanyl and/or Propofol to reach the **Apnea**
- Scan from caudal to cranial to minimize respiratory artifacts

Positioning

Sternal recumbency
if respiratory distress
is present and/or to
minimize atelectasis



CT vs Rad

- **Use of radiography in combination with computed tomography for the assessment of noncardiac thoracic disease in the dog and cat.**

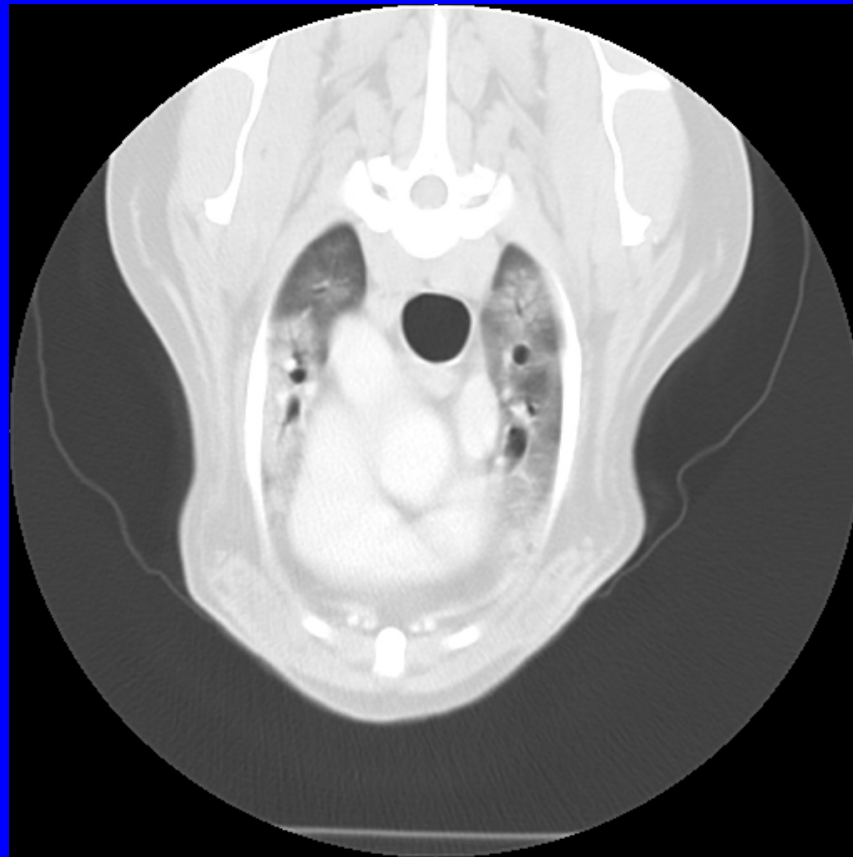
Prather AB et al. *Vet Radiol & Ultrasound* 2005

- Additional informations (AI) of the disease in 5/5 cats and 21/28 dogs
- AI about **location** of the lesion in 4/5 cats and 19/28 dogs
- AI **extension** of the lesion in 5/5 cats 20/28 dogs
- AI **mediastinal involvement** in 2/5 cats and 10/28 dogs
- **Changed the diagnosis in 3/5 cats and 13/28 dogs!!!!**

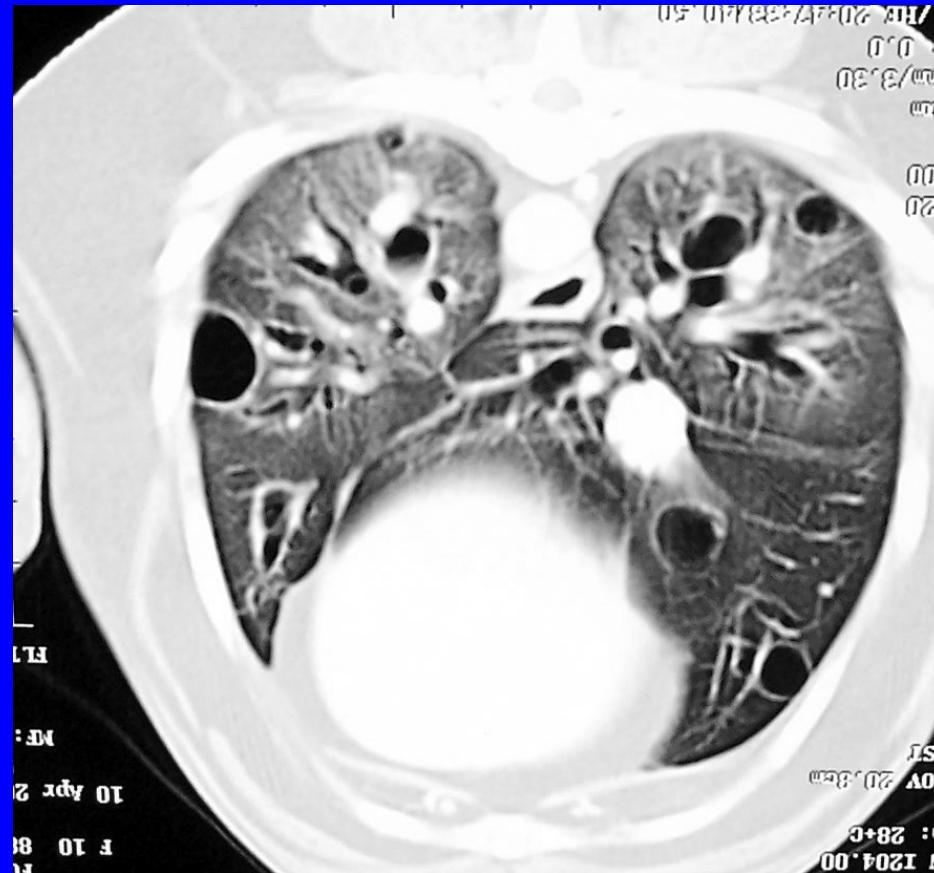


Lung infiltration

Breton – Allergic? Edema?

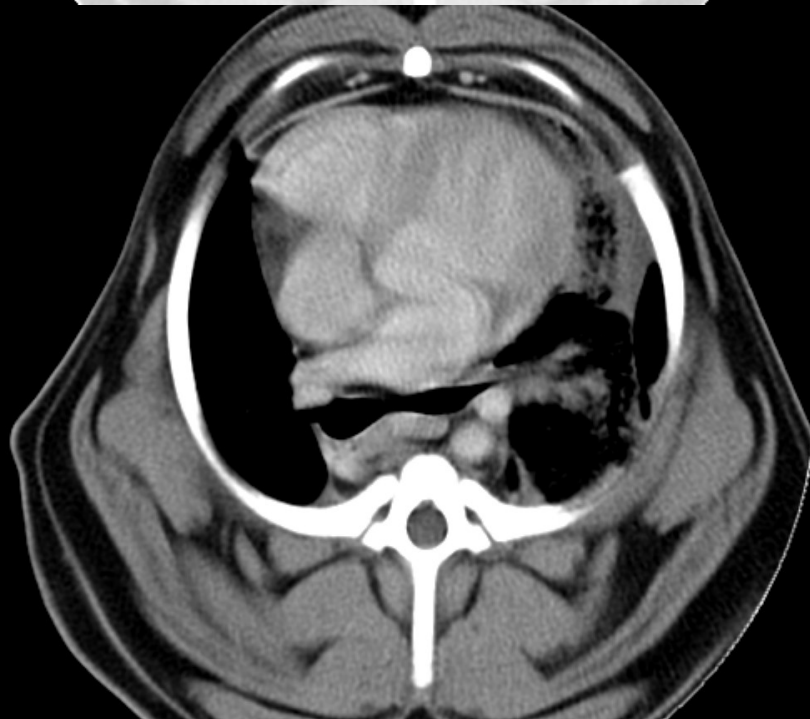
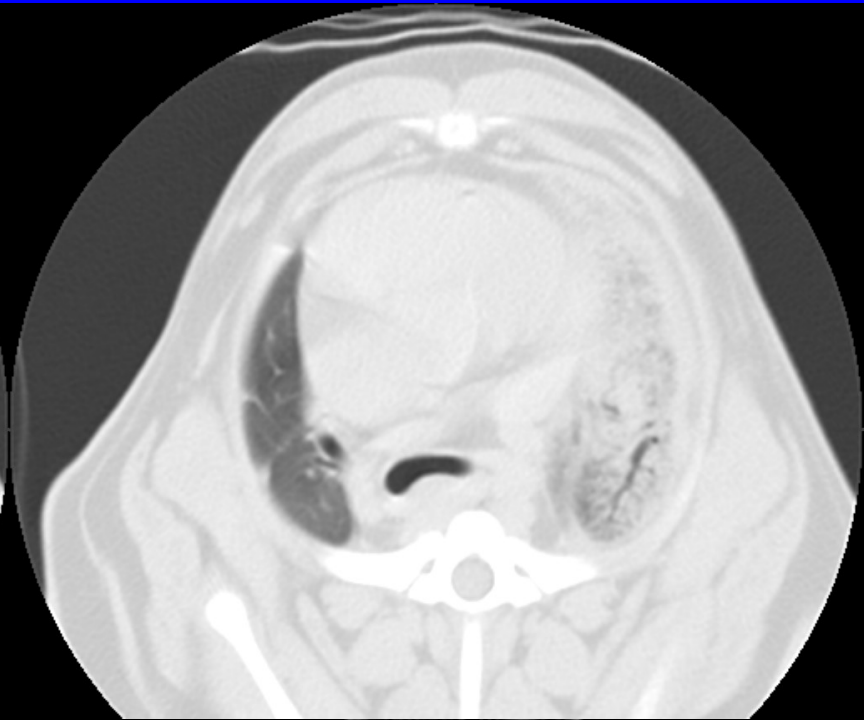
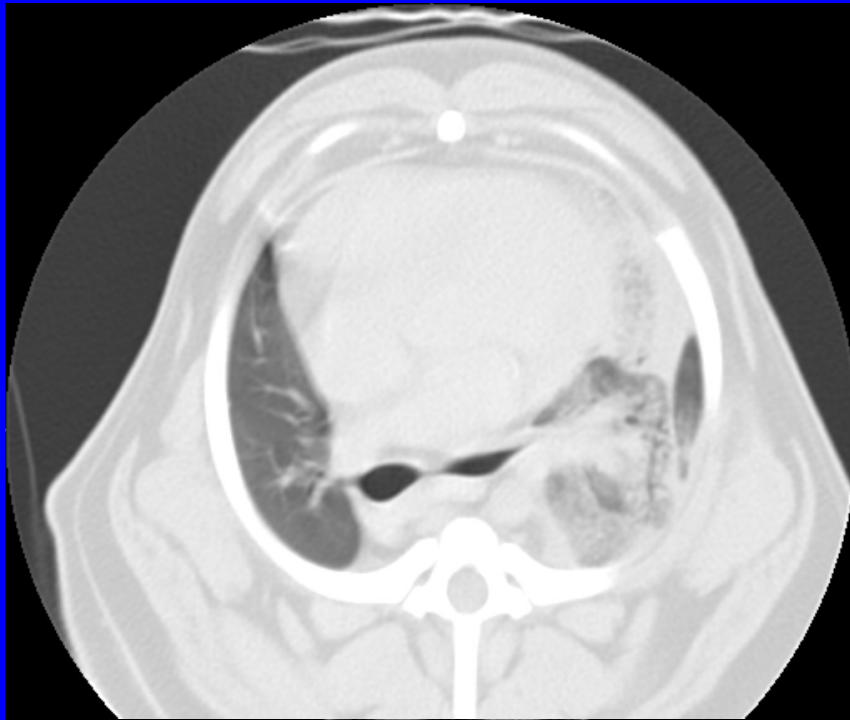


Fox T., m, 13 yr - Bullae/Blebs/Fibrosis



Pug, m, 9 m – Acute sickness 24 hrs before

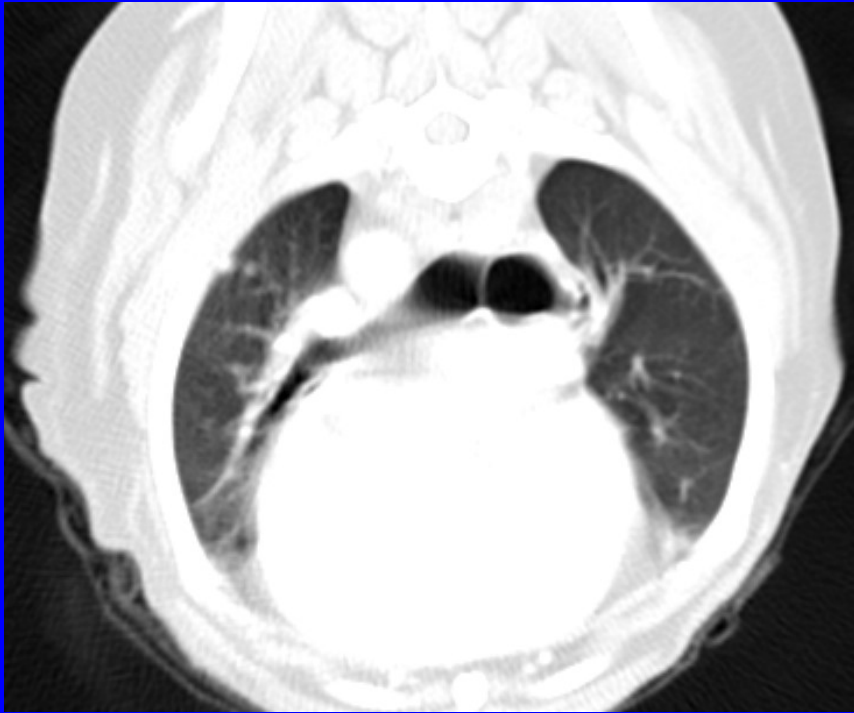




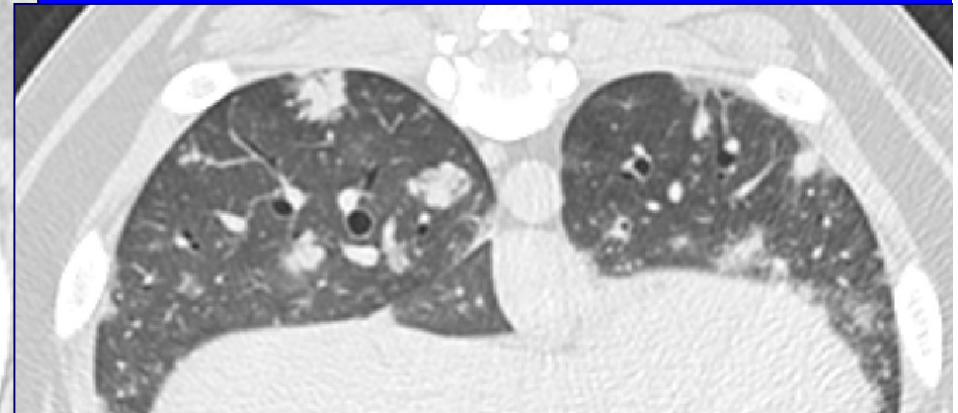
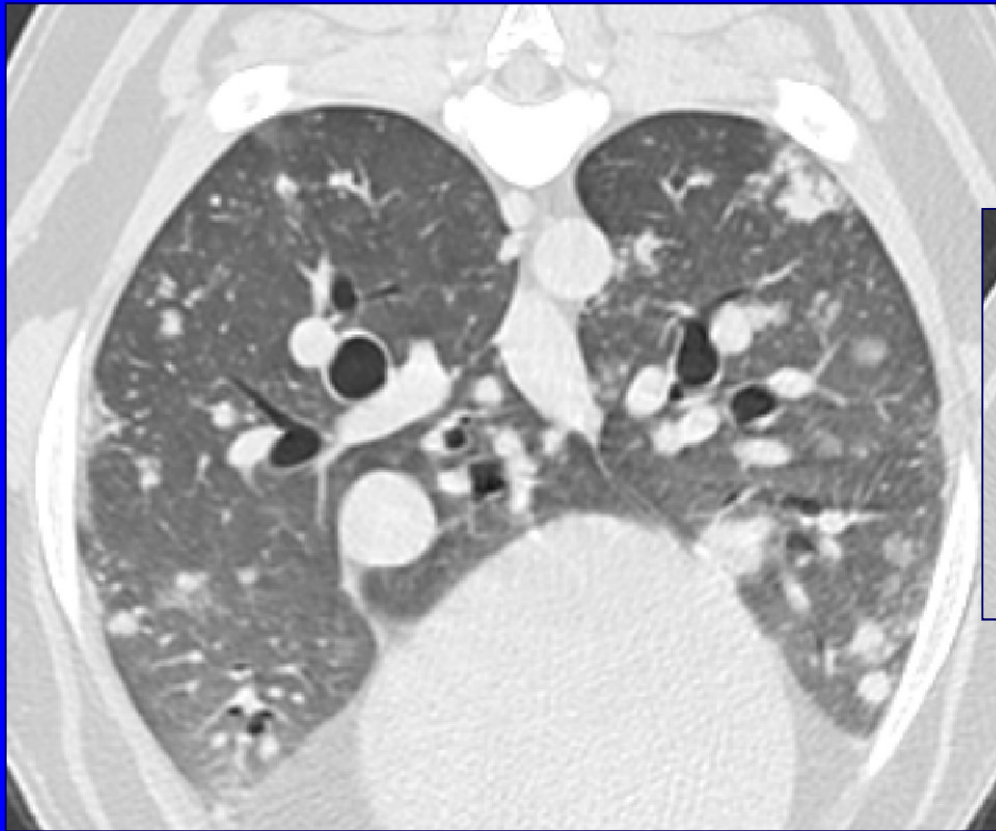
Pulmonary metastases

Comparison of thoracic radiographs and single breath-hold helical CT for detection of pulmonary nodules in dogs with metastatic neoplasia. Nemanic S, London CA, Wisner ER.
J Vet Intern Med. 2006 May-Jun;20(3):508-15.

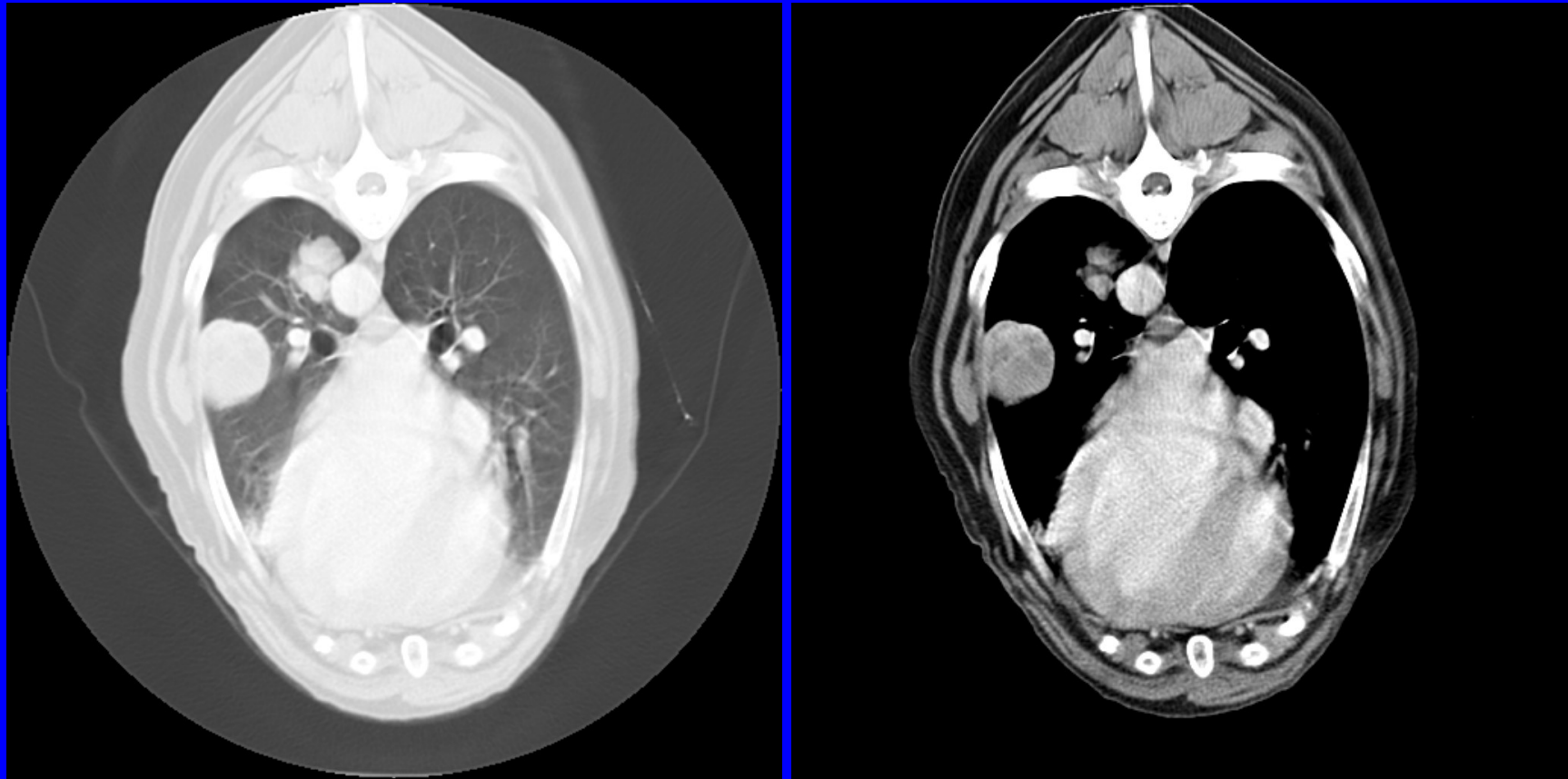
- 9% of CT-detected pulmonary nodules were identified on thoracic radiographs
- The **lower size threshold** was approximately **1 mm** for CT
- **7-9 mm** for radiographs
- Thoracic CT should be considered in any patient with neoplasia that has potential for pulmonary metastasis



Thoracic High Resolution CT in the diagnosis of metastatic carcinoma. *V. Johnson et al, JSAP 2004*



GSD – Pulmonary Ca + metastases



Mix – Pulmonary Ca + spinal invasion



Indications for CT of the Abdomen

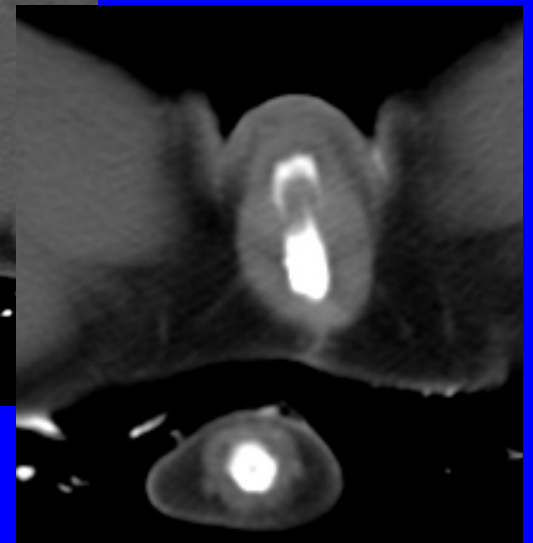
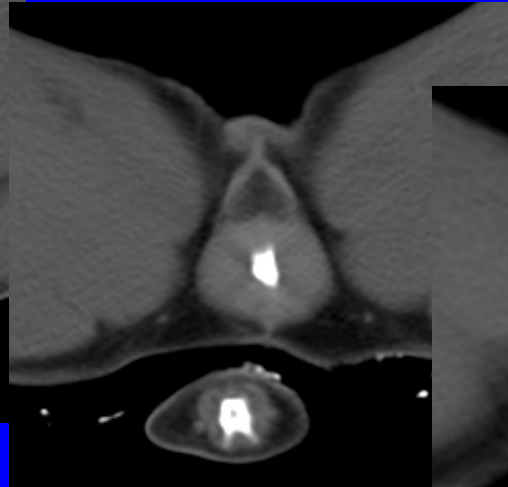
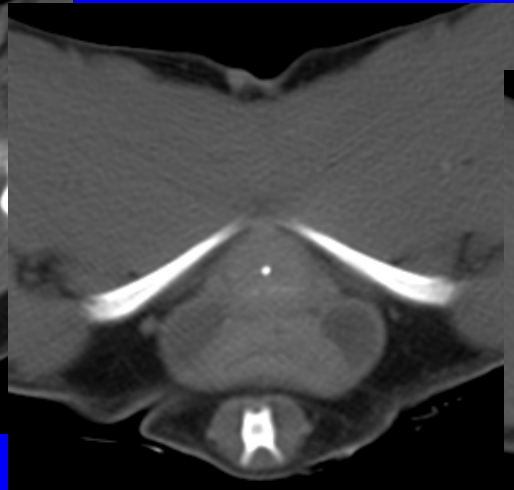
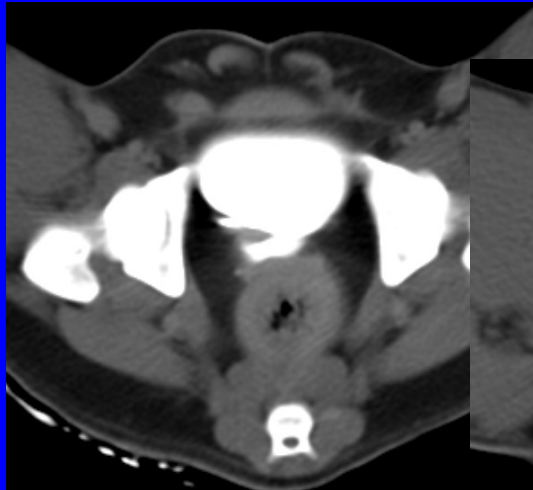
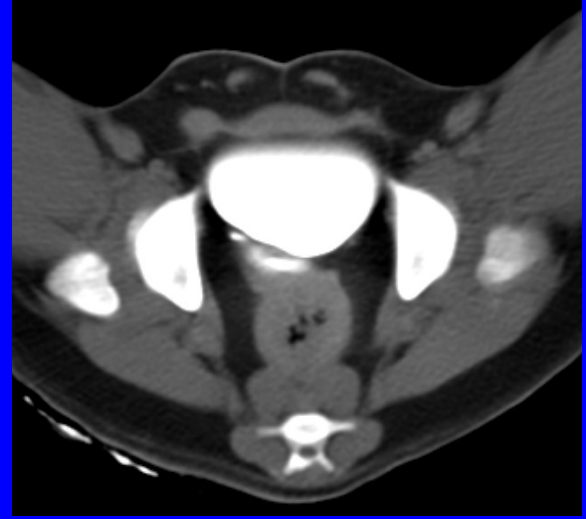
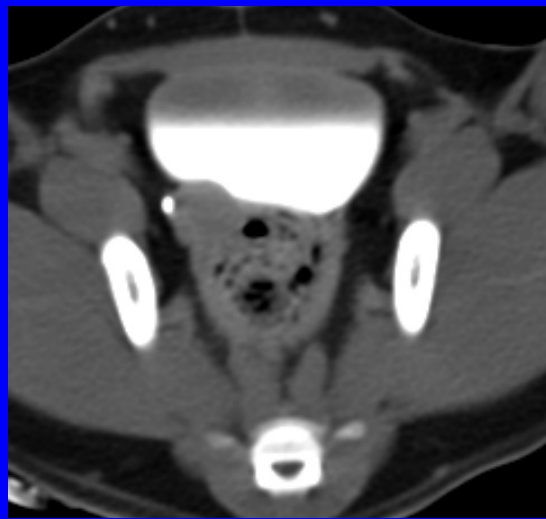
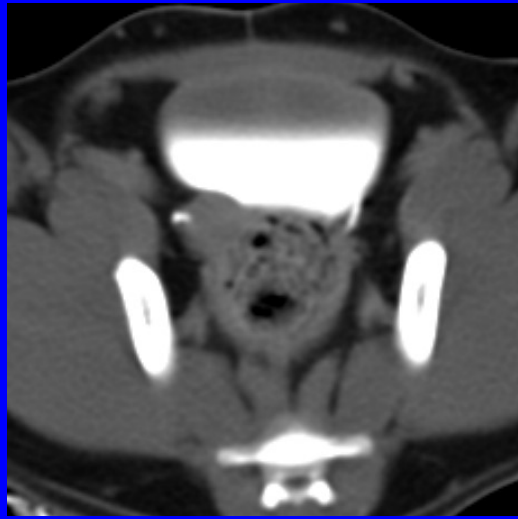
- In general when it is not possible to reach the diagnosis with other imaging modalities
- Tumoral staging

Uro-genital apparatus

Ectopic Ureter

- CT better than urethrography with digital fluoroscopy, excretory urography, cystoscopy
- Cystoscopy: a false positive

Samii VF et al. J Vet Intern Med. 2004 May-un;18(3):271-81



Labrador m





Volume Rendering No cut

Ex: ott 18 2013

DFOV 26.0 cm
STND



SAR

IPL

A

Renal Mass

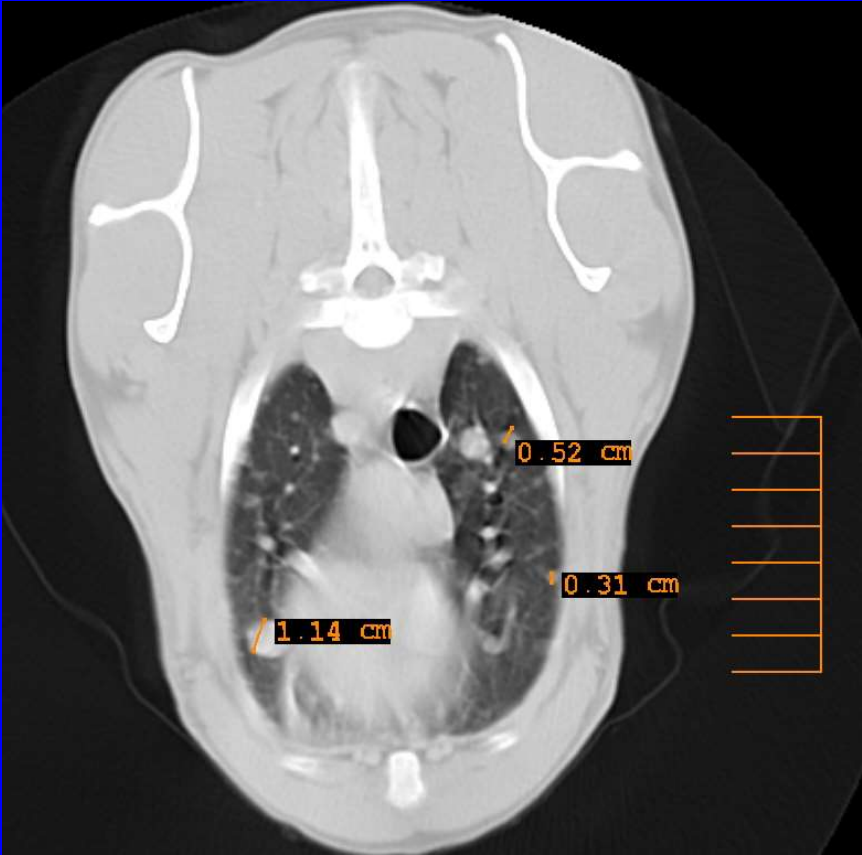
- CT with CM useful to differentiate tumoral areas from normal tissue
- Urography and US are as efficient as CT for cystic lesions, but CT is superior for complex lesion and allow 3D reconstructions

Computed tomography on renal masses in dogs and cats.
Yamazoe K et al., J Vet Med Sci, 1994

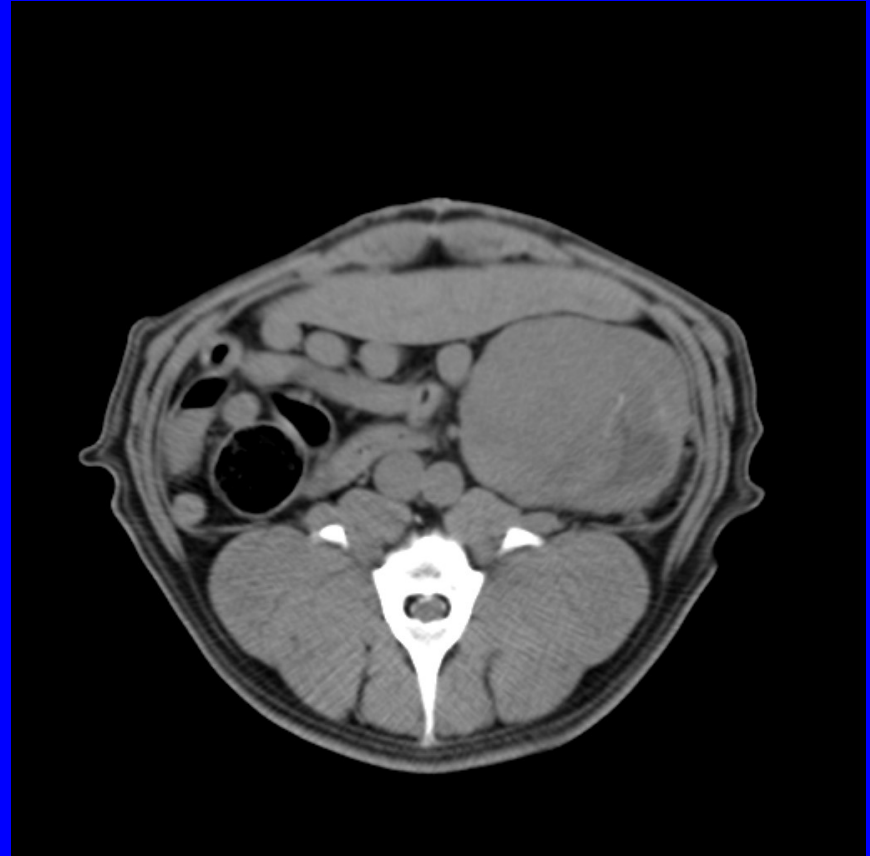
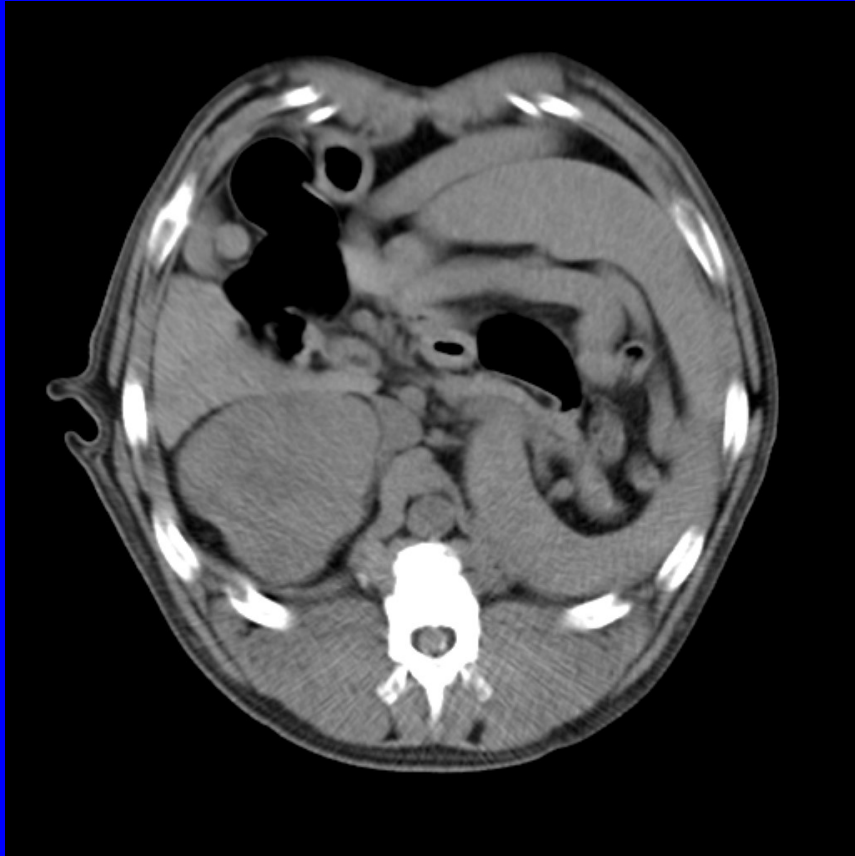
Neoplasia

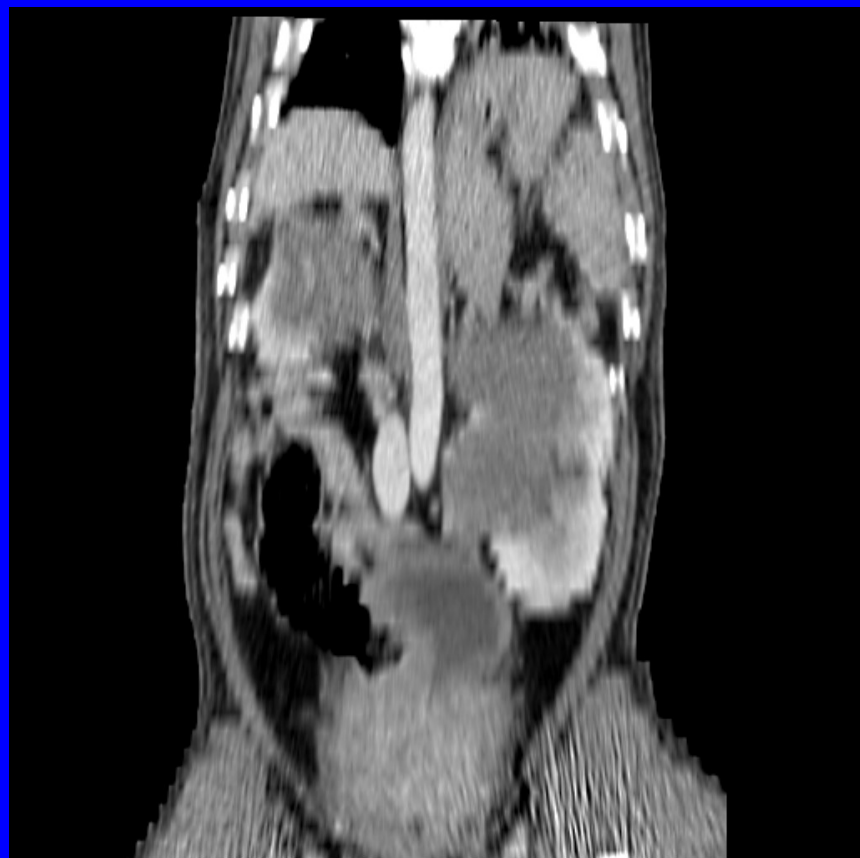
adeno Ca - Labrador





Bilateral renal lymphoma - Boxer

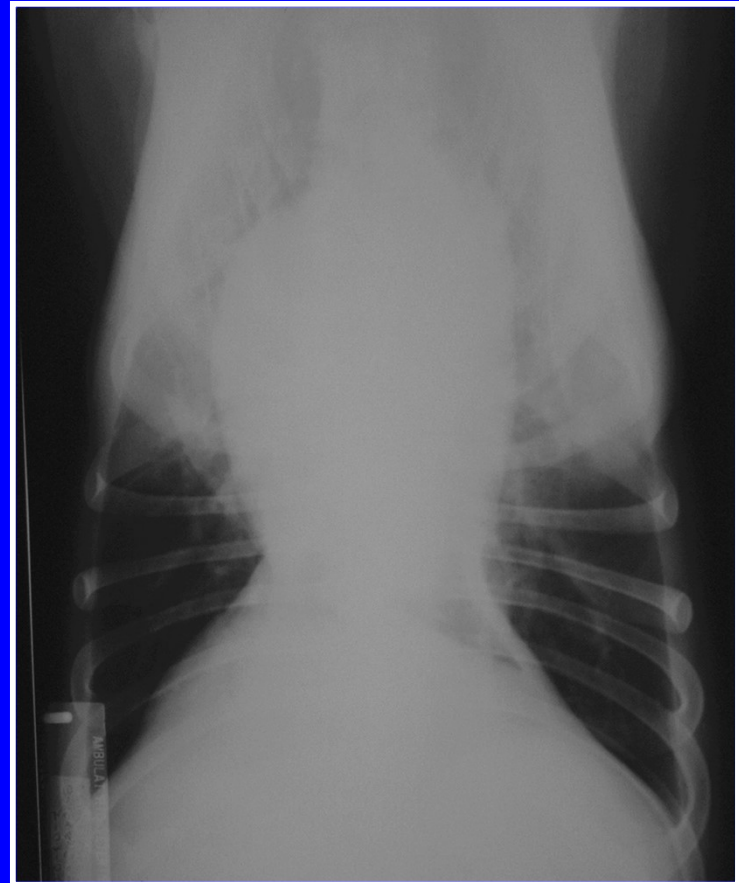
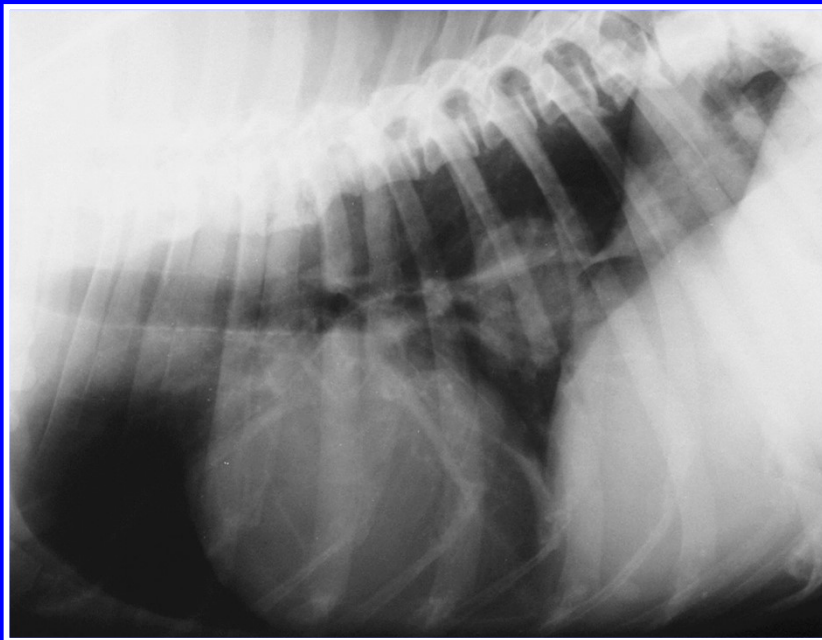
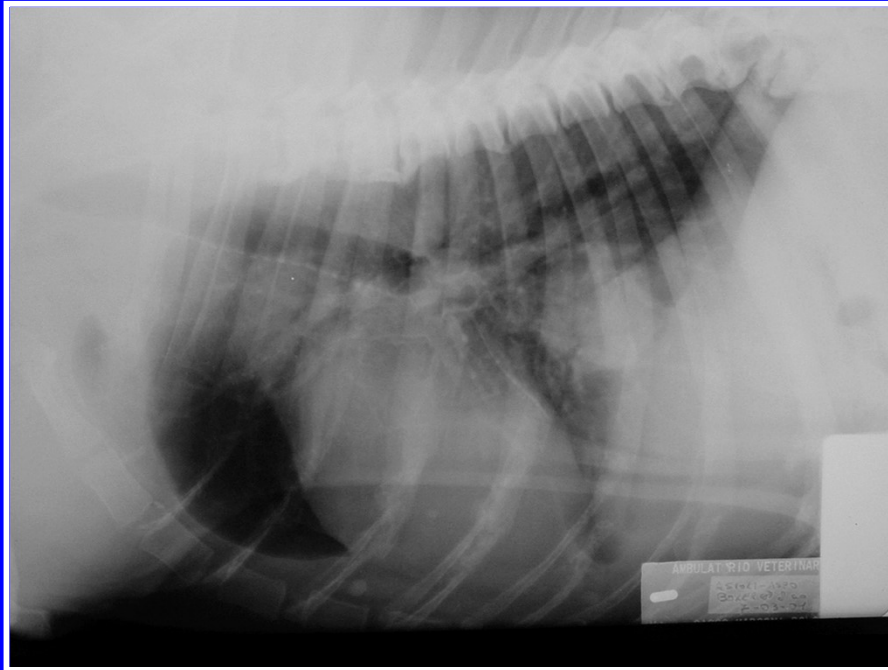




G-I tract and glands

- Esophagus
- Stomach
- Small bowel
- Large bowel
- Liver
- Pancreas

Boxer m 6y



Ex: 129
Se: 8
SN 1183.00
In: 11

DFOV 25.0cm
CHST

L
1
2
5

kV 120
mA 160

Medium
5.00mm/3.30
Tilt: 0.0
1.5s /HE 08:05:17/15.00
W:251 L:16

A 125

Req Num: torace
boxer
M 8 129
11 Mar 2001
512

DFOV 25.0cm
CHST

L
1
2
5
R
1
2
5

kV 120
mA 160

Req Num: torace
boxer
M 8 129
11 Mar 2001
512

51

Ex: 129
Se: 8
SN 1168.00
In: 8

DFOV 25.0cm
CHST

L
1
2
5

kV 120
mA 160

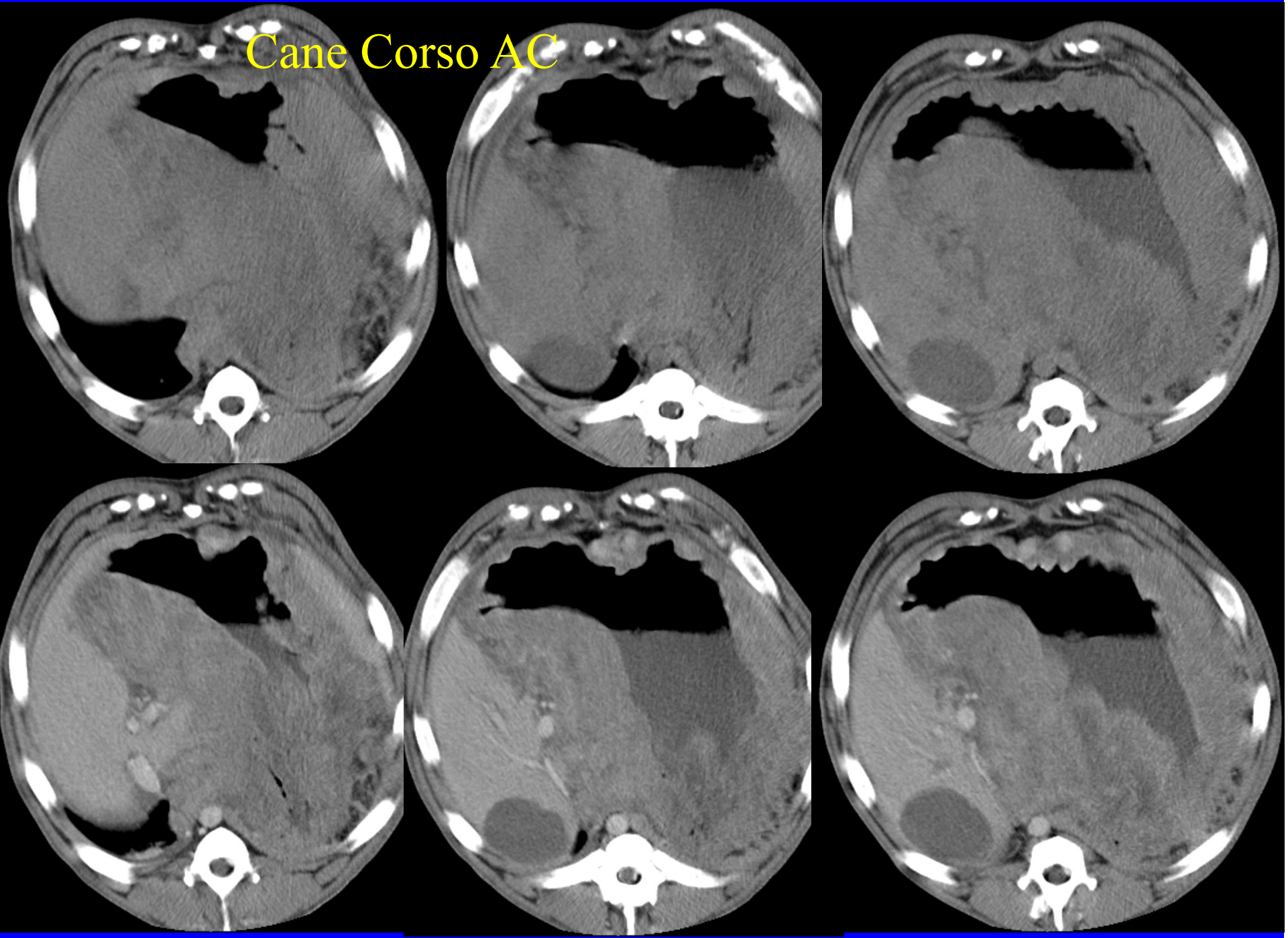
Medium
5.00mm/3.30
Tilt: 0.0
1.5s /HE 08:05:17/10.50
W:1112 L:-715

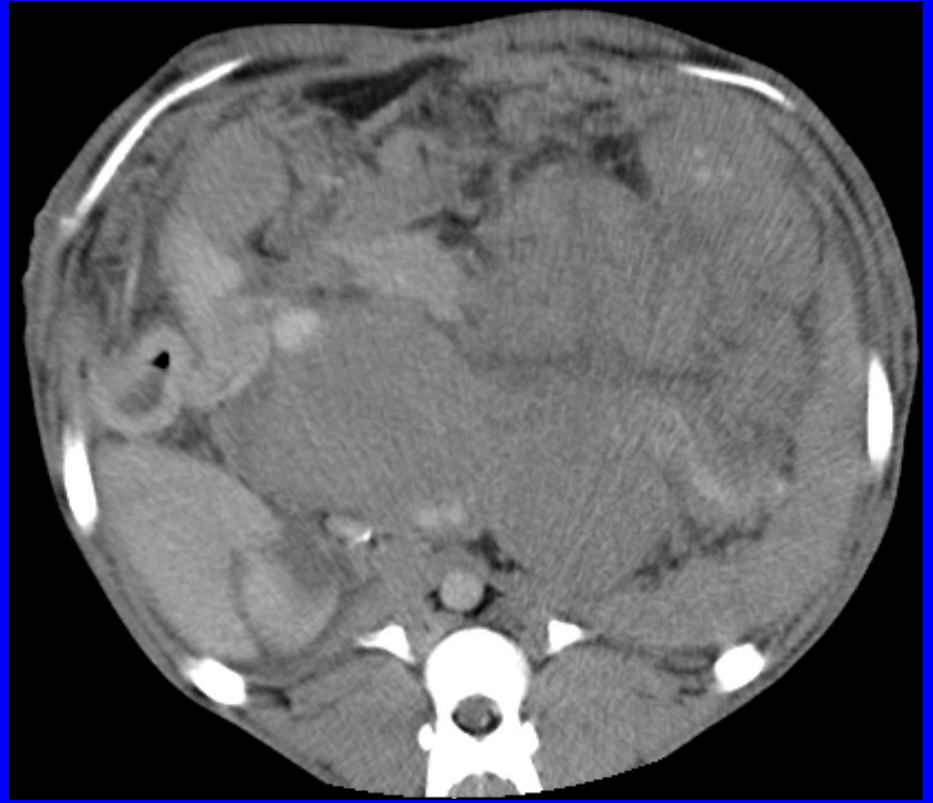
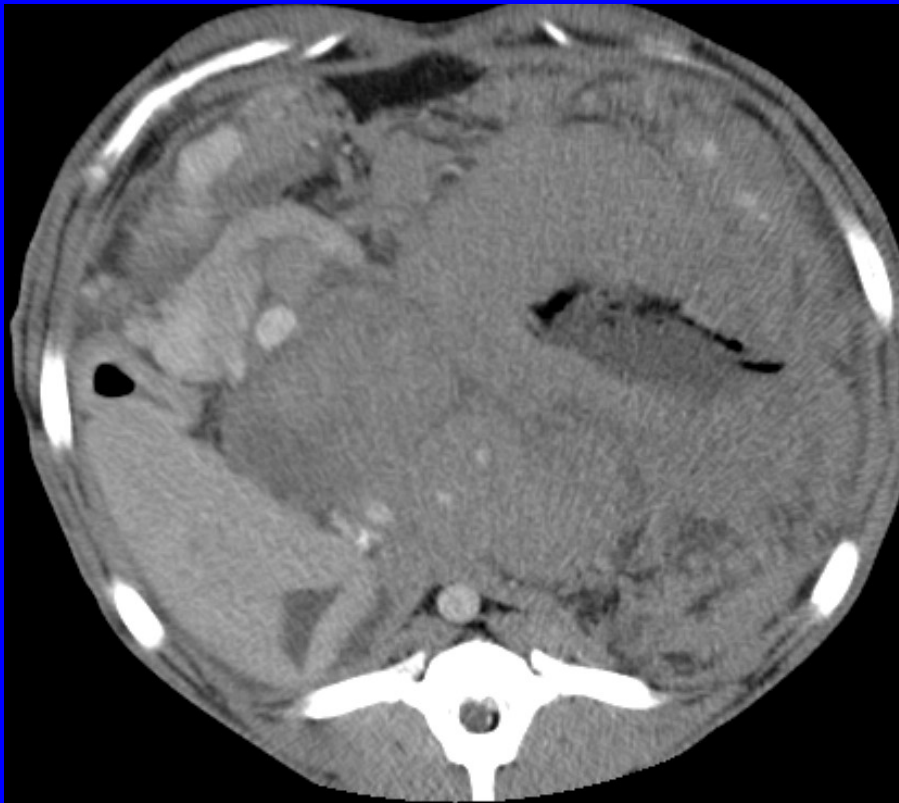
A 125

R
1
2
5

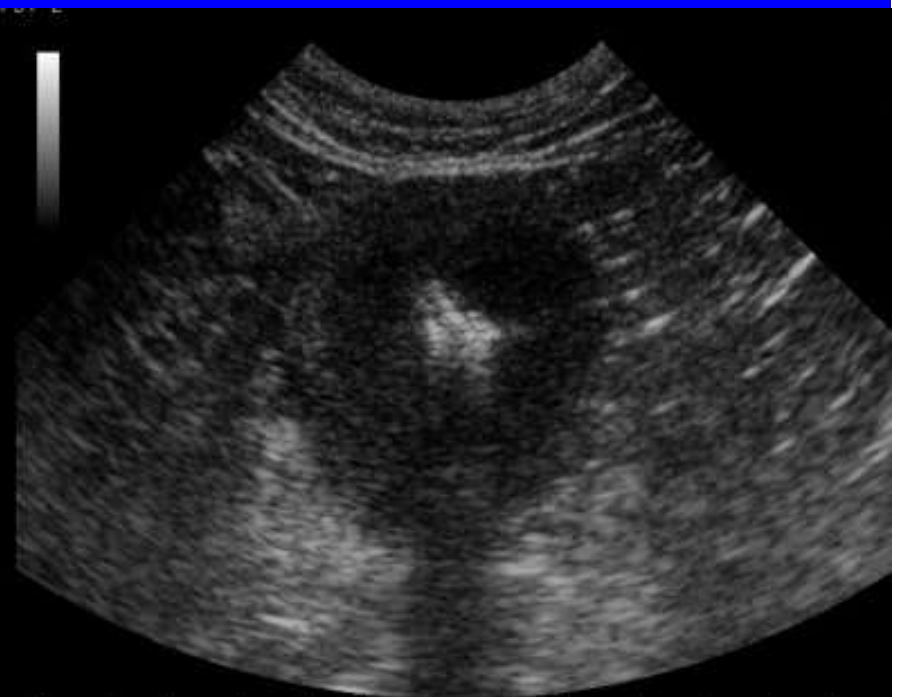
Stomach

Cane Corso AC

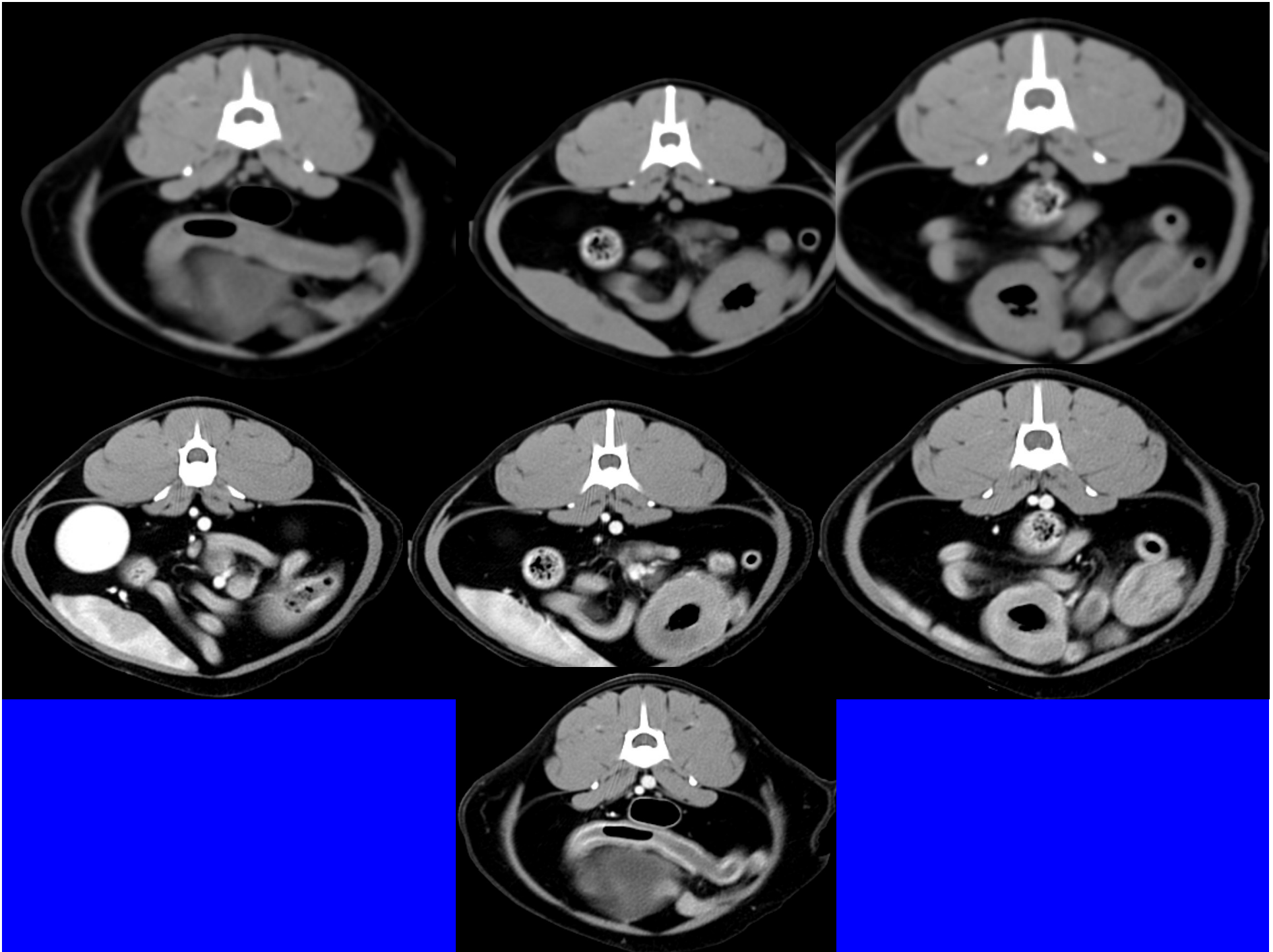




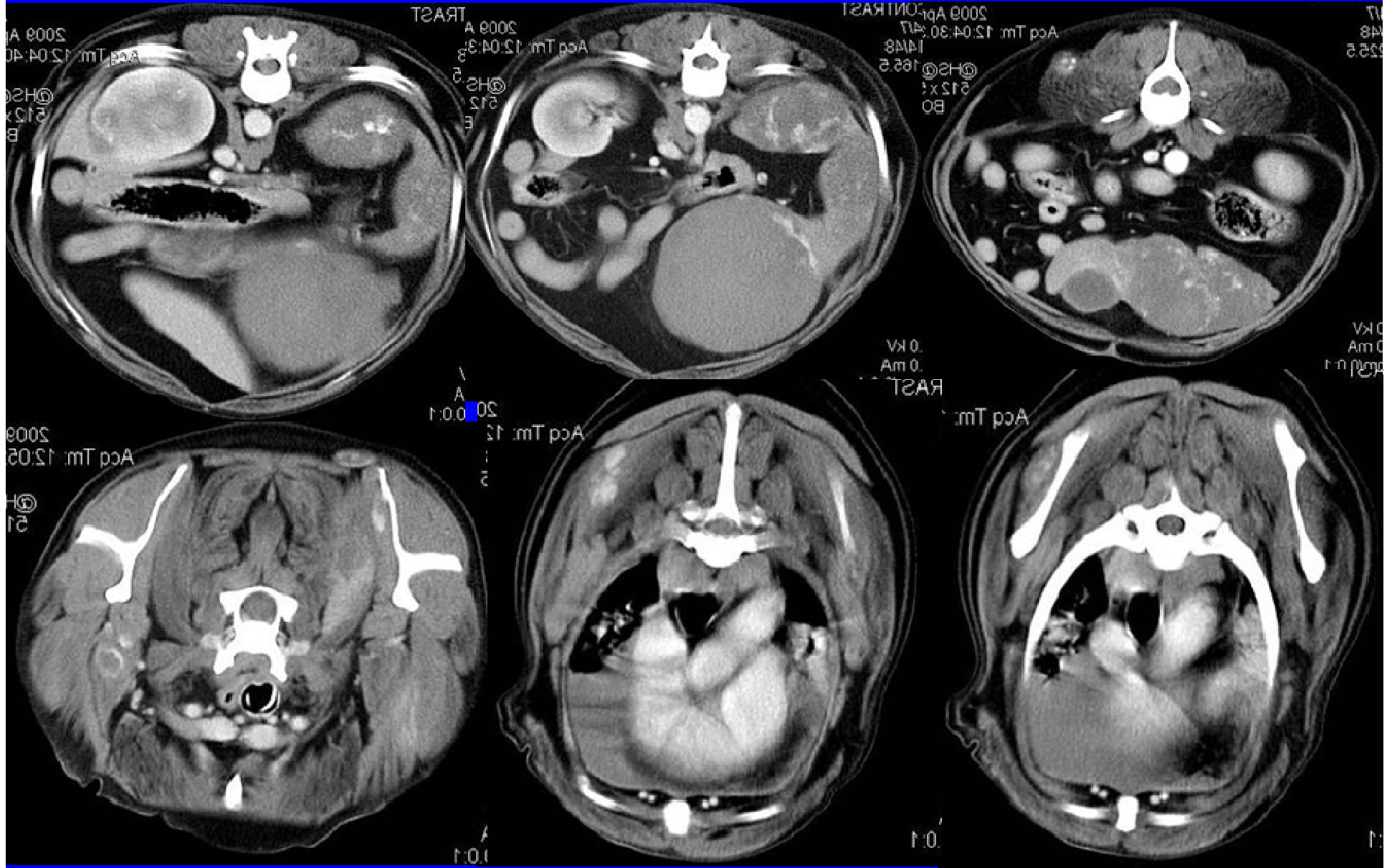
Small bowel



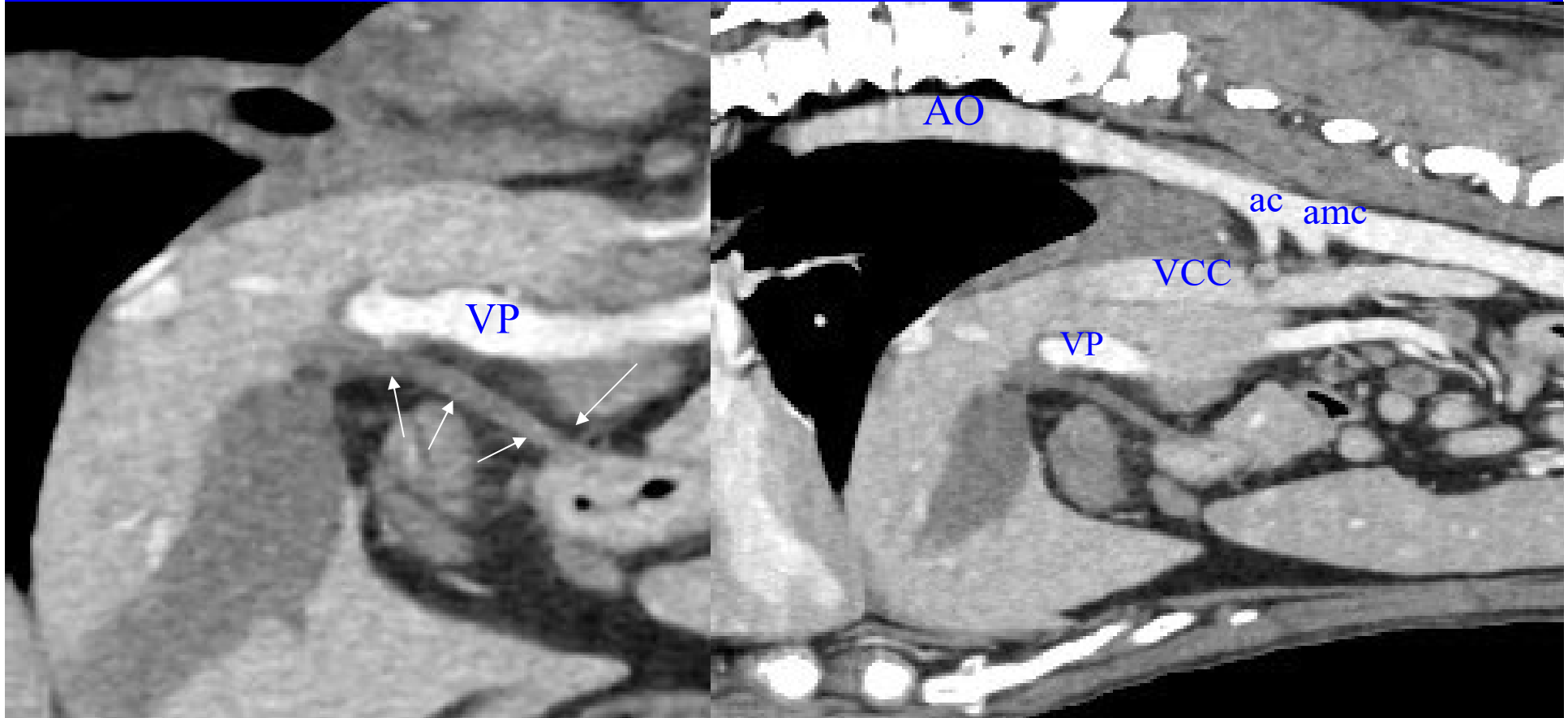
DSH cat



Spleen



Liver - Gall bladder - Bile duct (Ductus choleducus)

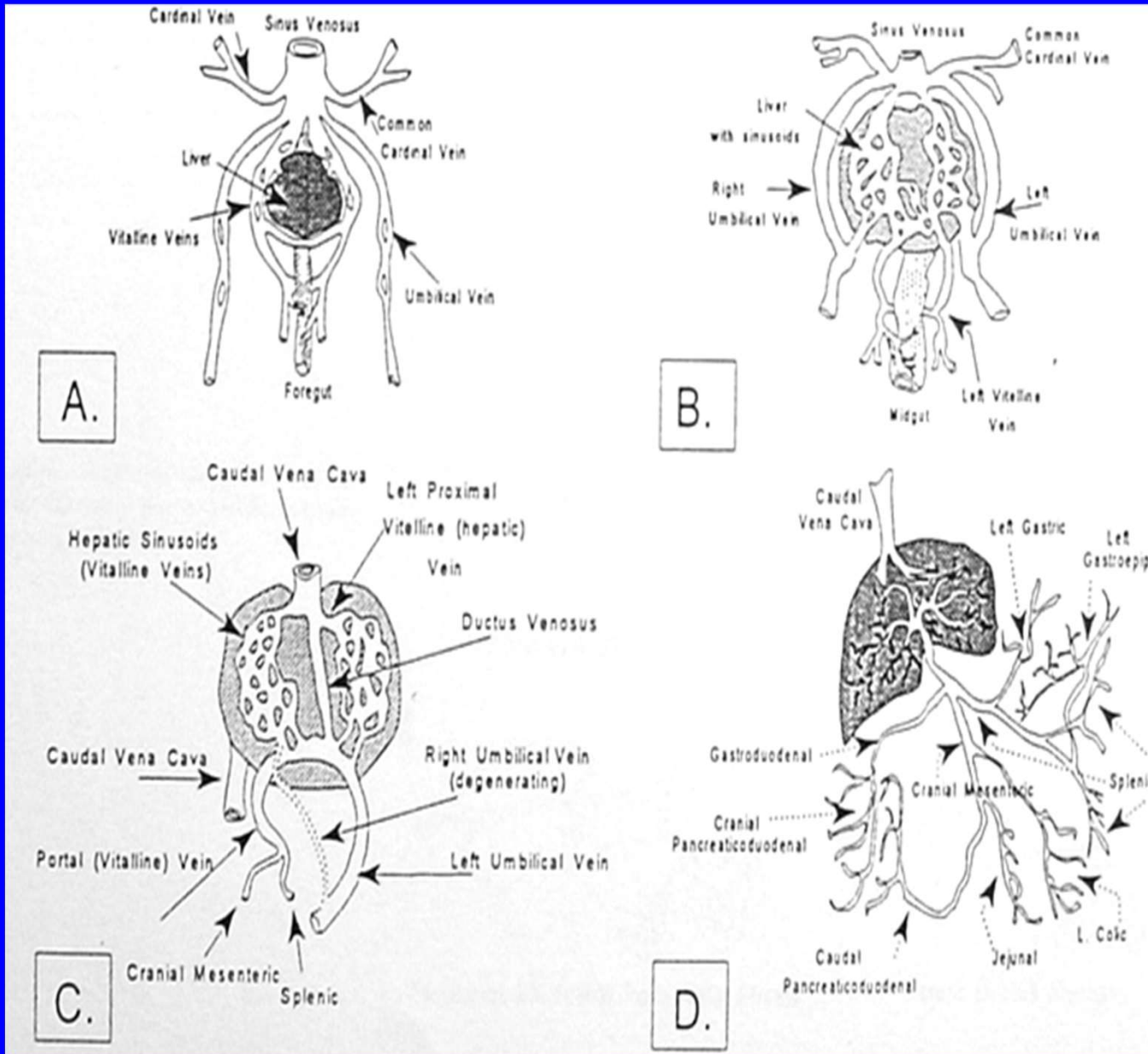


Vignoli M and Saunders J, Gastrointestinal tract,
in Veterinary Computed Tomography, 2011

Vascular Anomalies - PSS

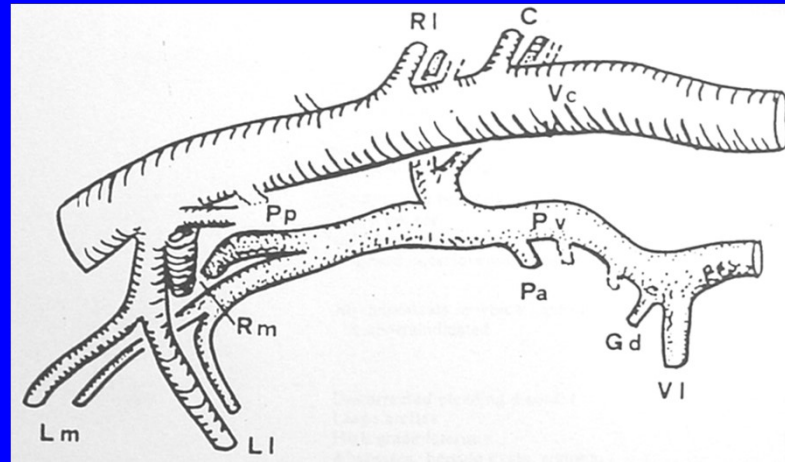
- **Congenital:**
 - Intrahepatic (RT, central; LT; > PDV; > large breed)
 - Extrahepatic (> small breed)
 - Arteriovenous fistula (artery-portal vein)
- **Acquired:**
 - Secondary to portal hypertension
 - Usually multiple shunts

Fetal Circulation

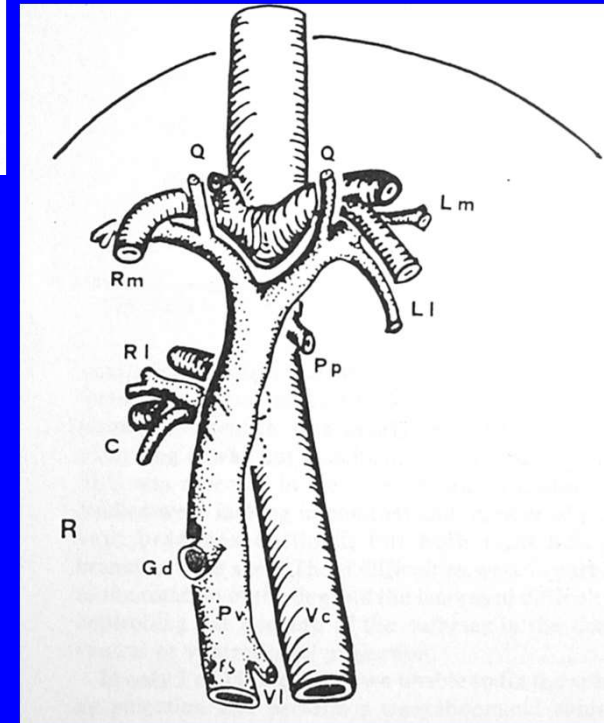


Center SA, 1996

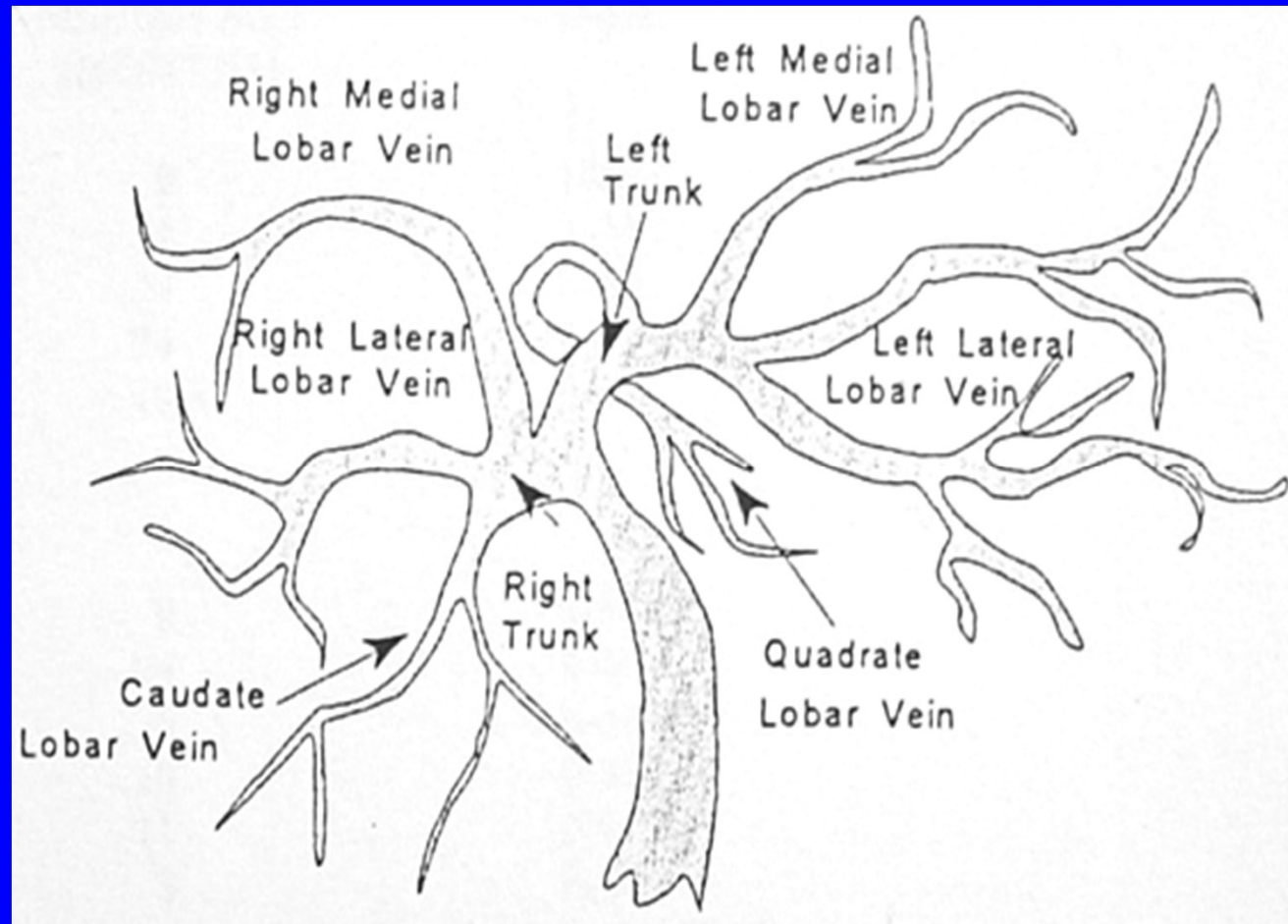
Relationship between cvc and portal v



Schmidt & Suter, Vet. Rad., 1980



vena porta



Center SA, 1996

CT technique

- Anesthesia
- Survey examination
- Eventual “bolus test” (cm 0.55 ml/kg and scan at T12-13 or T13-L1)
- Contrast study with 600-800 mg/kg of cm, power injector
- Scan 7-9 seconds after the injection (arterial phase) and again after > 30 secs (portal phase)
- CVC is the first vein injected by the cm getting blood from the renal veins
- Post processing (MPR, Volume Rendering)

Vascular Anomalies

