Imaging the Stomach

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Reading
• Thrall Chapter 47

Anatomy (lateral radiograph)

Dog

Cat
Anatomy (ventrodorsal)

Dog

Cat

Gas rises!

<table>
<thead>
<tr>
<th></th>
<th>Fundus</th>
<th>Pylorus</th>
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<tbody>
<tr>
<td>R Lat</td>
<td>Gas</td>
<td>Fluid</td>
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<tr>
<td>L Lat</td>
<td>Fluid</td>
<td>Gas</td>
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<tr>
<td>VD</td>
<td>Fluid</td>
<td>Gas</td>
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<tr>
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<td>Gas</td>
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**GDV**

- Gastric dilation with volvulus
  - Surgical emergency
- Pylorus rotates and is in the left dorsal abdomen
  - Usually in the right ventral
- Double bubble or compartmentalization

**Positioning for GDV**

- THE MOST IMPORTANT VIEW
  - RIGHT LATERAL
- If you see pylorus = GDV
GD vs. GDV

GD or GDV?

ALWAYS RIGHT LATERAL!
To contrast or not to contrast

- Luminal obstructions
- Motility
- Rupture
- Function
  - Not quantitative but qualitative

Contraindications

- Radiography or ultrasound highly suggestive of obstruction
  - Ileus
- Suspected Perforation
- Acute abdominal pain
- Large volume of ingesta in stomach

Upper GI examination

- Very time consuming
  - Usually takes about 4 hours
- Low yield due to decreased motility
- Generally replaced with ultrasound
Types of contrast medium

• Barium
  – Powder vs. Liquid

Barium

**PROs**
- Coats well
- Tasty
- Not absorbed via GI tract

**CONs**
- Not sterile
- Generates granulomas in body cavities
Iodinated contrast media

Non-ionic  Ionic

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Iodinated Contrast

**PROs**
- Sterile
  - IV or urinary bladder
- Safe in body cavities

**CONs**
- Inflammatory reaction in lungs
- Can induce emesis
- Allergic reactions
  - Seizures
  - Renal failure
  - Pulmonary edema

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Procedure

- Nothing per os for 12-24 hours
- Use stomach tube
- No medications
- No sedatives
Dose

- 6-10 ml per pound of body weight
- Need to deliver as a bolus
  - Stomach starts emptying liquid fast

Delivery methods
Radiographic views

- Immediately (RL, LL, VD, DV)
- 15-30 min (RL, VD)
- 30-60 min (RL, VD)
- Hourly until barium in colon

Normal transit time (approximately)

- 15 min – barium in duodenum
- 30 min – jejunum well filled
- 1-2 hours – stomach empty
- 2-4 hours – enters colon
- 6 hours – jejunum empty
Normal variants

- Canine pseudoulcers
  - Peyer’s Patches
- Feline “sting of pearls”
Pseudoulcers

Complications

- Barium in lung
  - Only problem with large volume
- Stop radiographs too soon
- Insufficient volume of barium
- Decreases absorption of medications
4 hours after administration

- Treated with anti-diarrhea drugs

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**BIPS**

- Barium Impregnated Polyethylene Spheres
- Two diameters
  - 1.5 mm – empties with food
  - 5 mm – designed to detect obstructions
- Not very reliable
24 hours after BIPS

Pneumogastrogram

- Also called double contrast
- Coke® – o – gram
- Dew® – o – gram

Double contrast gastrogram

- Carbonation adds gas to stomach
- Dogs like the sugar!
- Look for pyloric outflow obstructions
  – So what view do we use?
Left lateral and ventrodorsal

- Pylorus fills with gas

Disease of the stomach

- Gastric neoplasia
  - Focal
  - Diffuse
- Mineralization
  - Uremia

Remember me?
**Diseases of the stomach**

- Gastric ulcers
  - Difficult to see even with contrast medium
  - In the foal, they have gas tracking up the biliary tract

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**Gastric ulcer**

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**Let’s talk pancreas**

- Pancreas lies surrounded by soft tissue
  - Difficult to see on radiographs
  - Difficult with ultrasound if normal
**Pancreas landmarks**

- Stomach cranially
- Spleen to the left
- Duodenum to the right
- Transverse colon and left kidney caudal

**Pancreatitis**

- Radiographs
  - Creates a mass effect +/- fluid
  - With contrast makes “C” sign
- Ultrasound
  - Large, hypoechoic
  - Hyperechoic surrounding fat
  - Fluid

**Radiograph**
Ultrasound

Conclusion

• Positioning is key
  – If you are not sure, take another view
• Right lateral = GDV
• Ultrasound useful
  – Fasting helps
• Pancreas is difficult to see if normal

Questions?