A Surgeon's Approach to the Acute Abdomen

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HESKA

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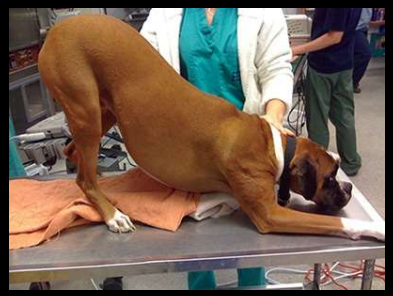
Outline

- Defining the acute abdomen
- Patient stabilization/management
- Diagnostic workup
- Timing of surgery
- Intraop pearls



https://todaysveterinarypractice.com/gastroenterology/acute-abdomen-in-dogs-and-cats/

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Definition/clinical signs

- Abdominal pain
- Vomiting
- Inappetence/nausea
- Diarrhea
- Abdominal distention
- Malaise/lethargy
- Fever

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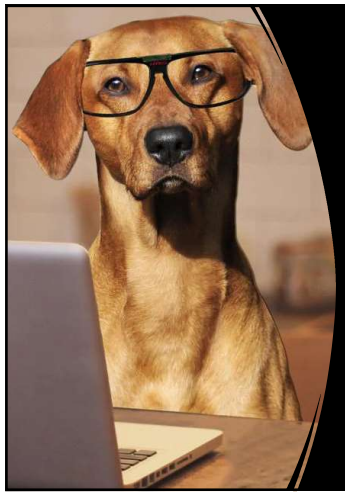

Differentials

- Degenerative
- Anomalous
- Metabolic, malformation
- Neoplastic, nutrition
- Inflammatory, infectious, immune-mediated, iatrogenic, idiopathic
- Trauma, toxin
- Vascular
- ***GI vs. extra-GI***

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Differentials

- Degenerative
- Anomalous
- Metabolic, malformation
  - DKA, Addisonian crisis, atresia ani, congenital hernias, torsions
- Neoplastic, nutrition
- Inflammatory, infectious, immune-mediated, iatrogenic, idiopathic
  - Peritonitis, pancreatitis, pyelonephritis, larval migrans, gastrointestinal parasites, intussusception, cholecystoliths, gall bladder mucocele, pyometra
- Trauma, toxin
  - Penetrating trauma, hernias, pelvic trauma, uroabdomen
- Vascular
  - PVT, hemoabdomen, portal hypertension

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Acute management and stabilization

- Start prior to definitive diagnosis!
- Fluid resuscitation
  - Reassess hydration and electrolyte status
- Pain control
- Anti-emetics
- Antibiotics?

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Estimating Hydration Status

Dehydration	Physical exam findings*
Euhydrated	Euhydrated (normal)
Mild (~ 5%)	Minimal loss of skin turgor, semidry mucous membranes, normal eye
Moderate (~ 8%)	Moderate loss of skin turgor, dry mucous membranes, weak rapid pulses, enophthalmos
Severe (> 10%)	Considerable loss of skin turgor, severe enophthalmos, tachycardia, extremely dry mucous membranes, weak/thready pulses, hypotension, altered level of consciousness[50]

AAHA

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Fluid Choice

- LRS, Plasmalyte, Norm-R
- Hypertonic saline
- Dextrose
- Colloids?
  - ~~Hetastarch/Vetstarch~~
  - Blood products
  - Canine albumin

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Pain control options

- Opioids
  - May contribute to nausea, ileus
  - Reversible
  - Mild sedation
- NMDA antagonists (ketamine)
  - Windup pain
  - Sedation +/-induction
- Acetominophen
  - If no evidence of hepatic compromise

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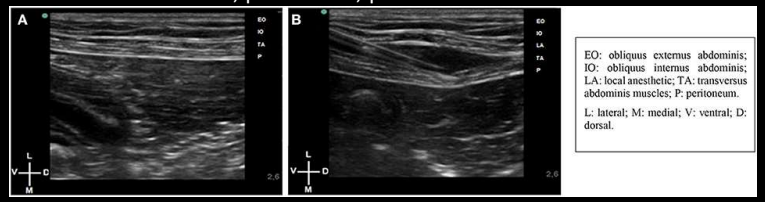
Pain control options cont'd

- Transversus abdominis plane (TAP) block
  - Severe trauma, pancreatitis, peritonitis



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Anti-emetic options

- Maropitant
- Ondansetron
- Prokinetics?
- Proton pump inhibitors?
- NG tube!

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What if you need sedation?

- Ideally reversible
  - Dexmedetomidine
  - Opioids
    - Butorphanol is inadequate!
  - Midazolam
  - Consider skipping reversal if emergent surgical disease is identified
- Avoid acepromazine

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Antibiotic selection for septic peritonitis

- Broad spectrum
  - Enteric bacteria
  - Unasyn+Baytril
  - Cefoxitin+clindamycin
  - Cefoxitin+amikacin
  - Piperacillin tazobactam

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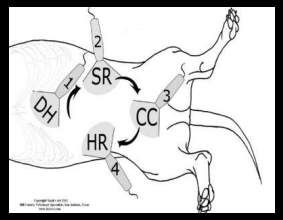
Diagnostics

- Labwork
  - Blood gas/electrolytes, PCV/TS, lactate, BG
  - CBC/chem/UA
  - Pancreatic lipase?
  - PT/PTT
- AFAST
- Abdominocentesis
- Abdominal radiography
- Abdominal ultrasound



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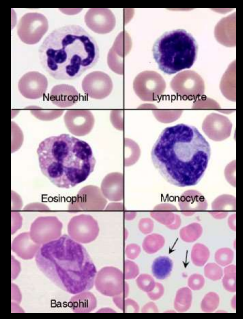
Diagnostics—possible findings

- Anemia
  - Regenerative vs. non-regenerative
- WBC count
  - Stress leukogram, inflammatory leukogram +/-degenerative change
- Thrombocytopenia
  - Clumps present?
    - Manual smear
  - Buccal mucosal bleeding time



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Chemistry

- Liver enzymes often elevated with vomiting, inappetence
  - Parafunction tests
- Total bilirubin
  - Ddx: extrahepatic biliary obstruction, hemolysis, hepatic failure
- Total proteins
  - Albumin—negative acute phase protein
  - Globulin—acute phase protein, can be markedly elevated w/some pathologies (i.e. FIV, multiple myeloma)
- BUN/creatinine
  - Interpret in light of USG

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Coagulation testing

- Disease associated with coagulopathic changes
- Surgery w/high risk of bleeding
- Pancreatitis, peritonitis, GDV, hemoabdomen, signs of SIRS/sepsis

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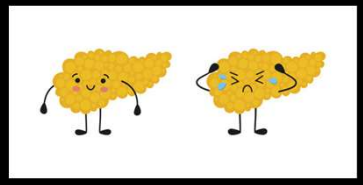
Pancreatic Lipase

- Cage side tests
  - High sensitivity
  - Low specificity
  - Good positive predictive value in patient populations likely to have acute pancreatitis
  - Good negative predictive value in patient populations w/low prevalence of disease
- Quantitative tests gold standard



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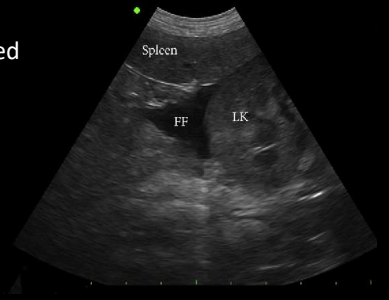
Abdominal Imaging

- AFAST for free fluid assessment
  - Serial repetition when rehydrated



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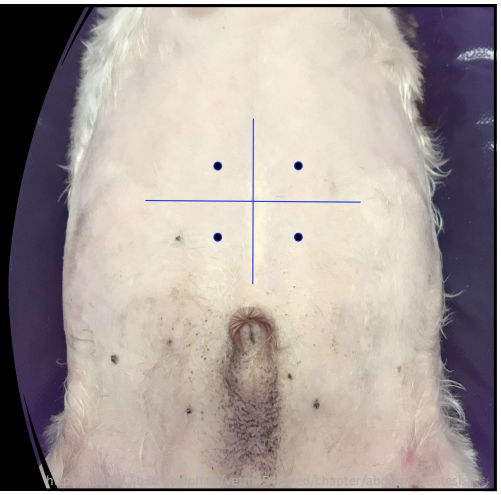
Abdominocentesis

- Ultrasound guided
- Four quadrant tap



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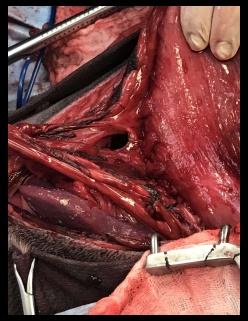
Abdominocentesis



- Cytology
  - Bacteria—intracellular vs. extracellular
  - Bile pigment
  - Other debris
- Peritoneal vs. peripheral values
  - Glucose LOWER in abdominal effusion w/septic peritonitis
  - Lactate HIGHER in abdominal effusion w/septic peritonitis
  - Creatinine and potassium HIGHER in abdominal effusion w/uroabdomen
  - Serosanguineous vs. hemorrhagic effusion

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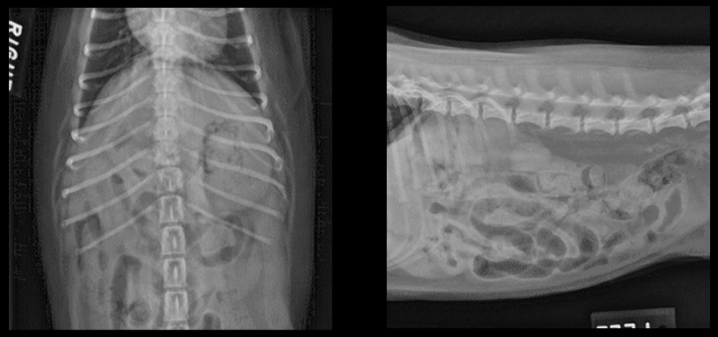
Abdominal radiographs



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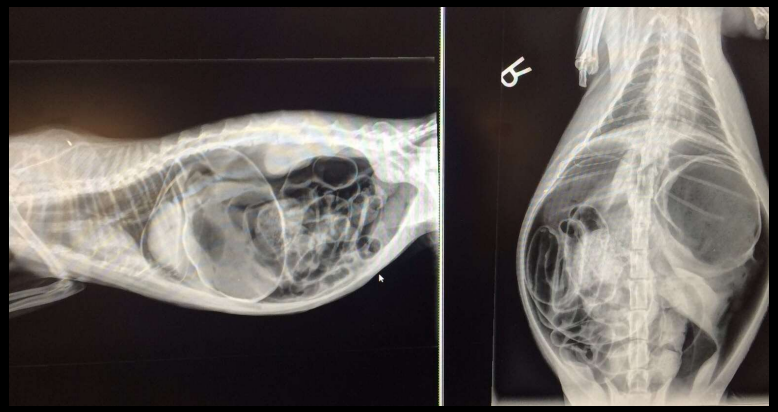

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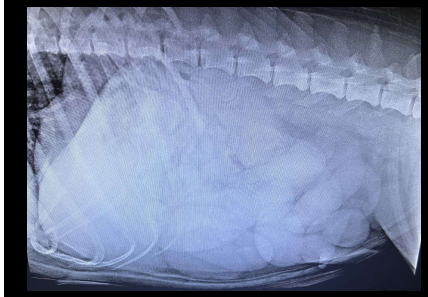
Pyometra



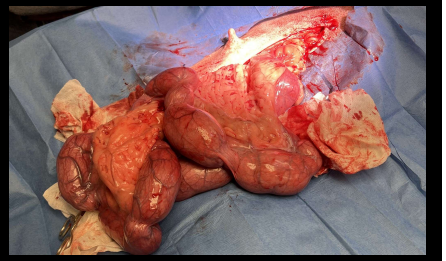


Photo credit: Dr. Zack Dombek

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Abdominal ultrasound

- Lumen contents
  - Is foreign material obstructive vs. non-obstructive
  - Linear component to gastric foreign material
  - Gall bladder disease
- Wall thickness/layering
- Organomegaly vs. mass
- Pancreas

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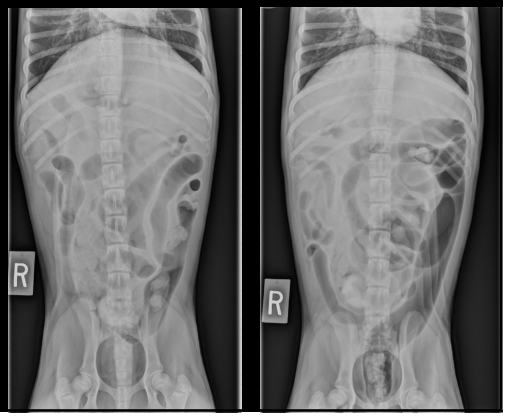
Is it in the colon?

- Two populations of bowel
- Pneomocologram
- Ultrasound



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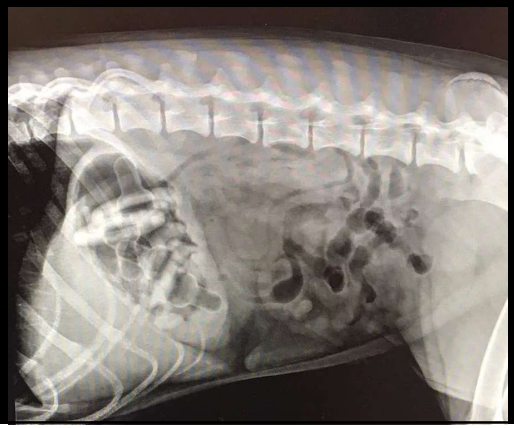
Not all foreign material requires surgery!



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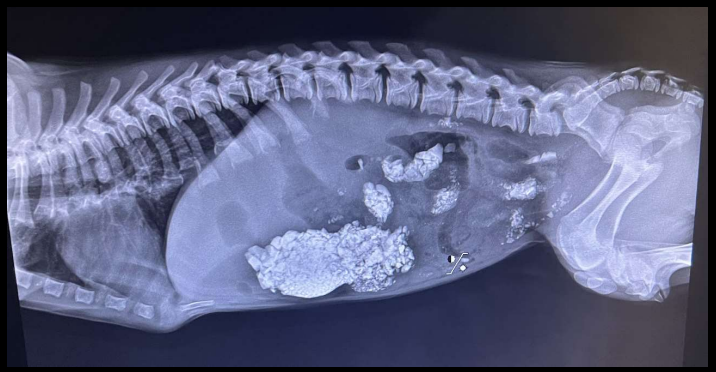

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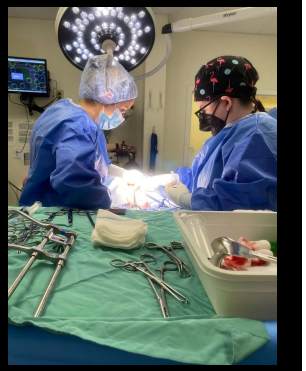
Medical vs. surgical management for foreign bodies

- Medical
  - Non-obstructive or equivocal obstruction
  - Additional diagnostics needed
- Surgical
  - Urgent vs. emergent
  - Failure of medical management
  - Diagnostic explore for collection of biopsies



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Timing of surgery

Emergent
- GDV
- Torsions
- C-section w/dam or puppies in distress
- Septic peritonitis
- Hernias with entrapped bowel
- Penetrating foreign body
- +/-linear foreign bodies

Urgent
- Gastric foreign body
- Pyometra
- Splenic and/or liver mass
- Uroabdomen
- Gall bladder mucocele

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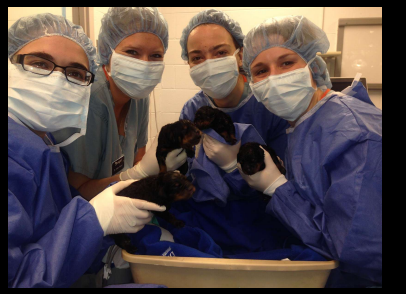
Timing of surgery

- Patient resuscitation!
  - Cardiovascular stabilization
  - Resolution of dehydration, electrolyte derangements if possible
- Team/resources available
- Triage of cases



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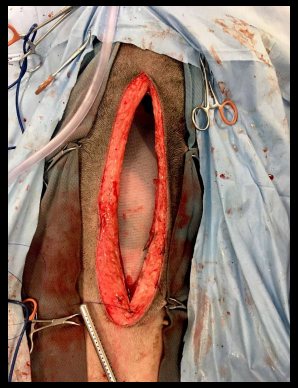
Abdominal Explore

- Full celiotomy from xiphoid to pubis
- Systematic approach
- Open the epiploic foramen
  - Left limb of pancreas
  - Dorsal aspect of stomach
- Is foreign material mobile?
- Does it need an R&A?
- Do not cut into the colon!



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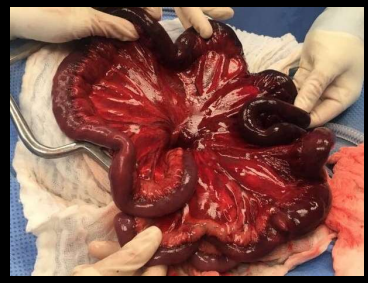
Does it need an R&A?

- Assess viability
  - Rupture
  - Pulses
  - Peristalsis
  - Color
  - Temperature
- Sutures vs. stapled



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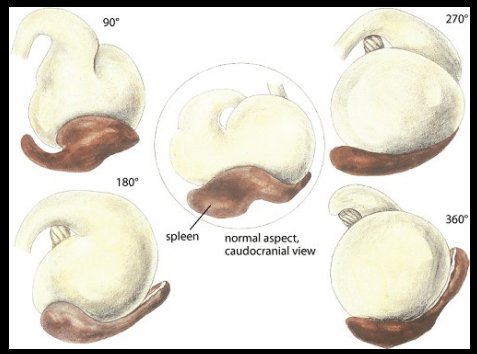
GDV

- Derotate stomach
  - Assess viability of stomach, spleen
  - Look for areas of hemorrhage
    - Falciform fat
    - Short gastric arteries
    - Splenic vessels
  - Have a plan for gastric necrosis
  - Gastropexy!



Merck Veterinary Manual, Dr. Gheorghe Constantinescu

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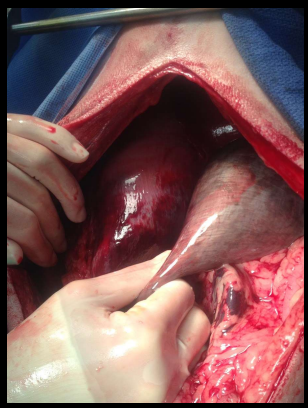

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Hemoabdomen splenectomy

- Ligasure, Ligating Dividing Stapler (LDS), hand tying
- Evacuate blood prior to lavage
- Assess for possible metastatic lesions
  - Sample if present!
- Consider prophylactic gastropexy

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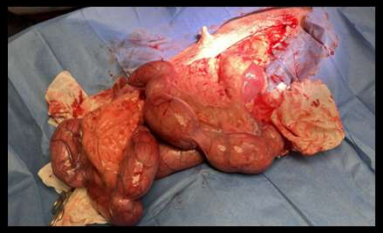
Pyometra

- Ovariohysterectomy
  - Remove entire cervix!
  - Uterine wall prone to rupture
- Culture and sensitivity of the uterine fluid



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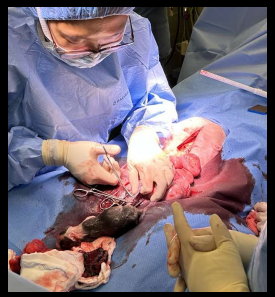
C-section

- Small volume of serous fluid is normal
- OVH vs. leave intact
  - Severe uterine rupture may necessitate
  - No change in ability of dam to nurse!
- Individual delivery vs. enbloc
- Stability of the dam intraop



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Surgical Resources

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Questions?

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in the handouts panel of
the webinar control panel.
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for watching the recording.

Questions about CE?
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Questions about topic?
wephipps@gmail.com

Thank you for joining us!

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