

# Ultrasound of the Pancreas

Wendy Blount, DVM



# Indications for Pancreatic Ultrasound

- Vomiting and/or Diarrhea
- Abdominal pain (acute abdomen)
- Anorexia, weight loss, dehydration in the cat
- Fever of Unknown Origin
- Serum panel – “pancreatitis pattern”
  - hyperlipidemia, elevated liver enzymes, bilirubinemia, hypocalcemia, hypoalbuminemia, abnormal cPLI or fPLI
- Diabetic Ketoacidosis

*As ultrasound technology has improved, the pancreas has become easier to visualize*

## Patient Preparation

- *Fast for 12 hours*
- Place in dorsal recumbency
- Lateral recumbency for:
  - Compromised or deep chested patients
  - Left lateral recumbency for the right limb & body of the pancreas (intercostal in deep chested dogs)
  - Right lateral recumbency for left limb of the pancreas
- Standing/sternal may be necessary for patients with large abdominal masses

## Transition Adjustments

- *Depth* – more superficial for right limb & body **in the dog**
- *Frequency* – varies 5-7.5 MHz
  - May need higher frequency for smaller pets
- *Gain and Contrast* – usually no change from liver & spleen
  - Setting the gain too high can cause false negatives
- *TGC* – top levers to the right

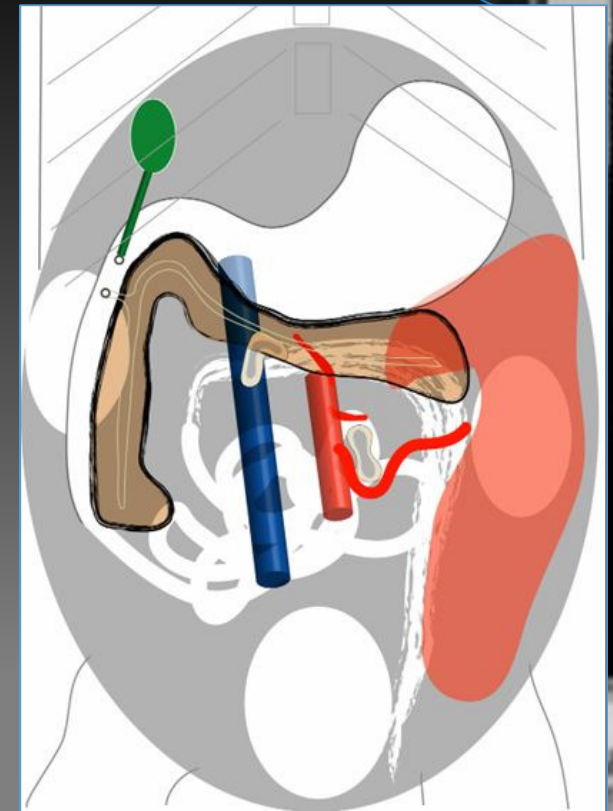
## Landmarks for Pancreas

*Right Limb* – Between the right kidney and the duodenum

*Body* - between the pylorus and the portal vein/colon

*Left Limb* – caudal to greater curvature of the stomach

- Between the stomach and the transverse colon



## Landmarks for Pancreas

### *Right Limb* – Between the right kidney and the duodenum

- Dorsomedial to duodenum, at mesenteric border
- Ventral to the right kidney and caudate lobe of liver
- Lateral and ventral to the portal vein
- Triangular in transverse view (easier to locate in this view)
- Hypoechoic pancreatic duct and vein in the center

### *Body* - between the pylorus and the portal vein

- Caudodorsal to pylorus
- Lateral to the portal vein
- If you can see the gall bladder, you are likely in the body

## Landmarks for Pancreas

*Left Limb* – caudal to greater curvature of the stomach

- slide from right limb to body to left limb
- Triangle just caudal to the greater curvature of the stomach on transverse view
- medial to spleen and left kidney
- cranial to colon
- Just ventral to the splenic vein

# Image Views

**Right Limb (2)** - right kidney, duodenum

1. *Short Axis (transverse)*
2. *Long Axis (sagittal)*

**Body (2)** - gall bladder, portal vein, stomach

1. *Sagittal*
2. *Transverse*

**Left Limb (2)** - stomach, spleen, left kidney

1. *Short Axis (sagittal)*
2. *Long Axis (transverse)*



## Image V

**Right Limb (2)** - right kidney, d

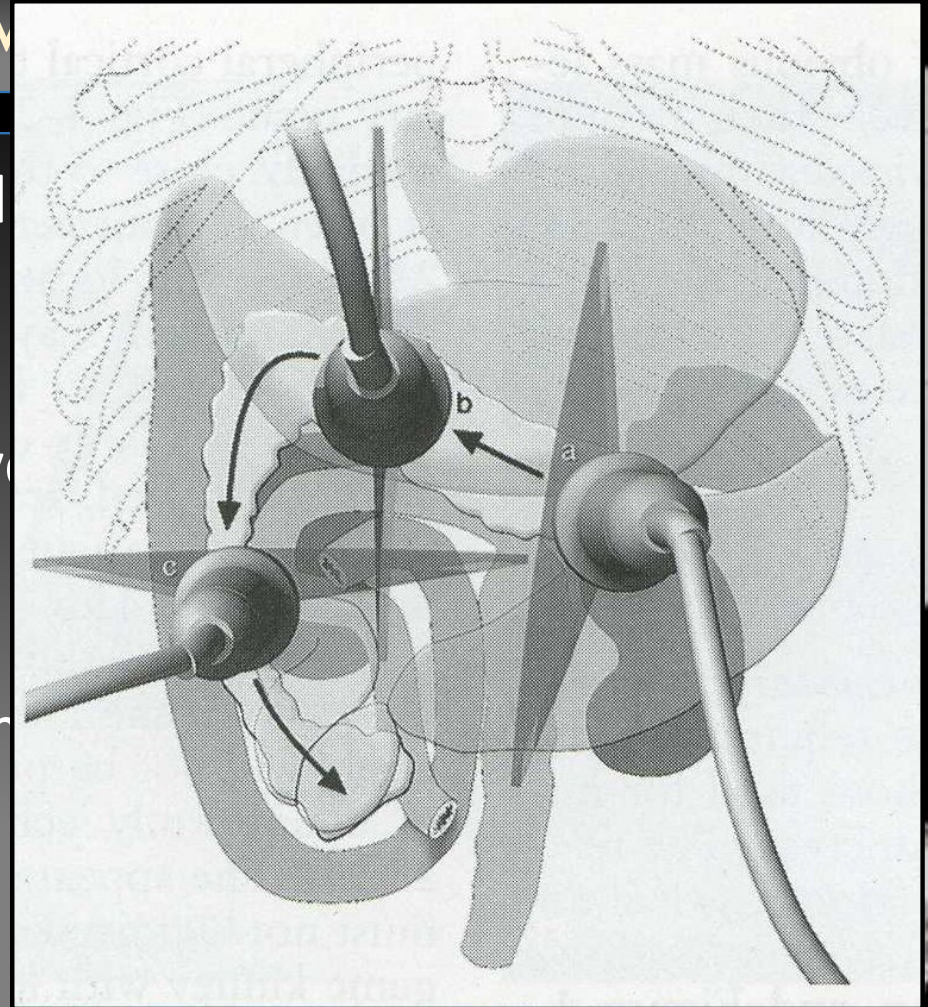
1. *Short Axis (transverse)*
2. *Long Axis (sagittal)*

**Body (2)** - gall bladder, portal v

1. *Sagittal*
2. *Transverse*

**Left Limb (2)** - stomach, spleen

1. *Short Axis (sagittal)*
2. *Long Axis (transverse)*



# Video

Oncura  
Daniel



## Goals – Pancreatic Ultrasound

- Identify pancreatitis in sick patients, to begin therapy that might be life saving
- Assess echogenicity relative to fat
  - isoechoic or slightly hypoechoic relative to mesenteric fat
  - Echotexture may be more lobular
  - *Normal pancreas may not be visible*
    - very thin (mm), obscured by GI gas, isoechoic to mesenteric fat
- Identify masses in the pancreas

## Tips – Pancreatic Ultrasound

- Left limb larger and easier to find in the cat
  - Along the greater curvature (caudal to) the stomach
  - Cranial to the transverse colon
- Signs of pancreatitis: pain at the scan site
  - Amorphous hyperechoic peripancreatic fat (steatitis)
    - May throw an acoustic shadow (saponification)
  - Hypoechoic pancreas, enlarged gall bladder
  - Tortuous common bile duct (some think normal variation)
  - Peripancreatic fluid or local ascites
  - Duodenal ileus and/or corrugation

SIEMENS

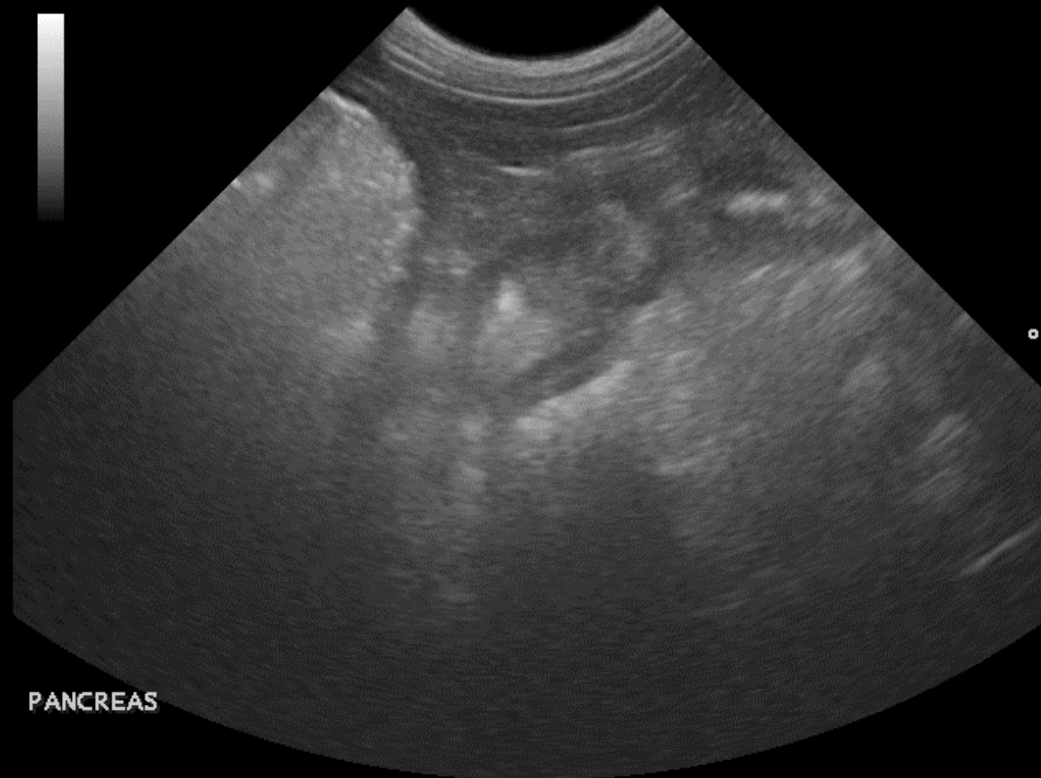
EASTEX VETERINARY CLINIC

GREG HALL, M, ID: CRICKET,

JUL 13 2015 11:02am

B	F	8.0	MHz	G	52%
D	7	cm	XV	C	
PRC	15-2-H		PRS	3	
PST	3		MV	3	

SM A VET CA123



- Left lobe
- Along
- Cran
- Signs of
- Amo
- Ma
- Hypo
- Tortu
- Perip
- Duod

iation)

## Tips – Pancreatic Ultrasound

- Left line
- Along
- Cran
- Signs of
- Amo
- Ma
- Hypo
- Tortu
- Perip
- Duodenal ileus and/or corrugation



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## Tips – Pancreatic Ultrasound

- Pancreatic adenocarcinoma can resemble pancreatitis
- Use a light touch when looking for the right limb near the duodenum
  - Pressure can displace the duodenum from the right kidney
  - Pressure tends to move the duodenum laterally
- *Ultrasound is the most sensitive test for diagnosing pancreatitis in the cat*
  - Still only 60-80% sensitive
  - Sonographic changes lag 1-2 days behind symptoms

## Pitfalls – Pancreas Ultrasound

- Gain set too high will make the pancreas difficult to see
- Pancreatic masses are often too small to be seen on ultrasound
  - Insulinoma
  - Adenocarcinoma
  - Hepatic metastasis may be the main sonographic clue
- *Cannot rule out pancreatitis based on normal pancreatic ultrasound*
  - Or even not finding the pancreas at all



## Summary

- PowerPoints - [Ultrasound of the Pancreas, Pancreas Ultrasound Cases](#)
- .pdf of PowerPoint - [Ultrasound of the Pancreas, Pancreas Ultrasound Cases](#)
- [Pancreas Ultrasound TIPS Sheet](#)
- Video: [Ultrasound of the Pancreas](#)
- Animated PowerPoint - [Scanning the Pancreas](#)



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