STOMACH IN MY WAY!!

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STOP IGNORING THE STOMACH!

- Physiology
  - What it does and why
- Anatomy
  - GEJ
  - Body
  - Antrum
  - Pyloric canal
- What is abnormal?
IN CONCLUSION:

- Sonography is sensitive and specific to detect gastric abnormalities.

- Sonographer’s should be familiar with the ability to detect gastric lesions.
WHAT DOES THE STOMACH DO, HOW AND WHY?

- Bulk storage
- Mechanical breakdown
  - Gastrin = acid
  - Secretin = antacid
  - Cholecystokinin = GB
- Mixer
FUN FACT: ACID
SONOGRAPHICALLY, WHAT'S NORMAL?

- "Gut signature"
- 1-16 mm
GUT SIGNATURE
RUGAE
FUN FACT:
GASTRIC EMPTYING

Scintigraphy

• Meal: cooked eggs and toast mixed with radiopharmaceutical

• 2-4 hours

• Gastroparesis - delay in emptying
SIZE MATTERS
BODY HABITUS

Hypersthenic: 5%
Sthenic: 50%
Hyposthenic: 35%
Asthenic: 10%
GASTROESOPHAGEAL JUNCTION
GASTROESOPHAGEAL JUNCTION
IN CONCLUSION:

- Ultrasound is an effective method in the investigation of GERD in children
- Easy to perform
- High sensitivity
- NO radiation
GASTROESOPHAGEAL JUNCTION

No Reflux
GASTROESOPHAGEAL JUNCTION

Reflux
GASTROESOPHAGEAL REFLUX DISEASE (GERD)
SCANNING FOR GERD

Very common in infants
- Vomiting
- Irritability and crying
- Failure to thrive
- Refusal to eat
- Aspiration pneumonia

1. MILD:
   <3 refluxes in 10 min

2. MODERATE:
   4-6 refluxes in 10 min

3. SEVERE:
   >6 refluxes in 10 min
ESOPHAGEAL REFLUX
REFLUX COLOR DOPPLER
THICKENED ESOPHAGEAL WALL
THICKENED ESOPHAGEAL WALL
ESOPHAGEAL VARICES
GASTRIC VARICES
ESOPHAGEAL CYST
SPINAL MASS
ESOPHAGUS CARCINOMA
ESOPHAGUS CARCINOMA
FUN FACT:

WHICH ANIMAL DOES NOT HAVE A STOMACH?

A. Puffer fish
B. Platypus
C. Seahorse
ANTRUM

- spleno-portal confluence
- splenic vein
- pancreas
- stomach
- liver
- spleen
- vena cava
- aorta
ANTRUM
WATER PANCREAS
PANCREATITIS MIMICKING STOMACH
PSEUDOCYST VS. STOMACH
PANCREATITIS MIMICKING STOMACH
PANCREATITIS MIMICKING STOMACH
THICKENED ANTRUM WALL
THICKENED ANTRUM WALL
THICKENED ANTRUM WALL
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THICKENED ANTRUM WALL
THICKENED ANTRUM WALL
THICKENED ANTRUM WALL
PARTIAL THICKENED ANTRUM WALL
PARTIAL THICKENED ANTRUM WALL
ANTRUM MASS (CARCINOMA)
GASTRIC ULCER
FUN FACT: HAGGIS

• Scottish savory pudding

• Sheep's stomach stuffed with diced sheep's liver, lungs and heart, oatmeal, onion, suet and seasoning

• Against US law because of sheep lungs
PYLORUS SPHINCTER

Pyloric Sphincter

Pylorus

Pyloric Antrum
PYLORUS SPHINCTER
HYPERTROPHIC PYLORIC STENOSIS

- 3 per 1,000 infants
- Males 4:1
- White
- First born
- Family history

- Gastric outlet obstruction
- Thickening of the muscular layer
- Failure of the canal to relax
IHPS DIAGNOSIS

- Muscle width >3mm
- Canal length >12mm
- No fluid passing
IHPS
HOW TO SCAN FOR IHPS

1. Supine or RPO
2. Longitudinal pyloric canal
3. Water feeding
4. Watch what happens!
WHICH IS HPS?
GASTRIC OUTLET OBSTRUCTION
GASTRIC OUTLET OBSTRUCTION
DILATED STOMACH
DILATED STOMACH
FUN FACT:

Joey Chestnut

World record:
• 69 Hot Dogs and Buns
• 10 minutes
UNUSUAL INCIDENTALS
UNUSUAL INCIDENTALS
"A bezoar is a stone taken from the stomach of a goat and it will save you from most poisons."
—Snape lecturing in Harry Potter's first year Potion class
BEZOAR
RAPUNZEL SYNDROME
RAPUNZEL SYNDROME
PICA
FOREIGN BODY
FOREIGN BODIES
BODYPACKS
• Cecum
• Small bowel
• Iliac vessels
• Psoas muscle
• Appendix
CECUM, TERMINAL ILIUM AND THE APPENDIX
MCBURNEY’S POINT

- One-third the distance from the anterior superior iliac spine to the umbilicus
SYSTEMATIC SCANNING TECHNIQUE

Step #1  General survey
Step #2  Cecal tip
Step #3  Iliac vessels
Step #4  Muscle
Step #5  Retro-cecal
Step #6  Where does it hurt

Scan slowly and patiently with graded compression
STEP #1
GENERAL SURVEY

- Lawn-mower
- Screen for obvious findings
STEP #2
CECAL TIP

- Identify the Cecum in transverse
- Bumpy, gas and stool filled bowel
STEP #2
CECAL TIP

Bumpy vs. smooth bowel

Cecum

Ilium
**STEP #2**

**CECAL TIP**

- Identify the Cecal tip
- Look for appendix inferior/medial
STEP #3
ILIAC VESSELS

- Scan Parallel and transverse with vessels
- Look for appendix draping across vessels
STEP #3
ILIAC VESSELS
STEP #4
PSOAS MUSCLE

• Scan deep to identify the iliacus muscle
• Identify the appendix laying anterior
STEP #5
RETRO-CECAL

- Decrease MHz
- Scan deep
STEP #5 RETRO-CECAL

- Rotate patient LPO
- Apply compression on patient’s back
STEP #6
WHERE DOES IT HURT

RUQ??
MEASUREMENT

- Greater than 6-7mm is abnormal
- Always measure AP (not width)

* 12mm
+ 8mm
ACUTE APPENDICITIS
SONOGRAPHIC APPEARANCE
SECONDARY FINDING

- Free fluid
- Increased vascularity
SECONDARY FINDINGS

- Appendicolith
- Abscess
- Edema of surrounding fat
ALWAYS IMAGE THE TIP
OTHER FINDINGS

- Mesenteric adenitis
- Colitis/Crohn’s
- Intussusception
TAKE AWAYS:

- Look at the stomach!
- Recognize normal
- Identify abnormal
- 6 steps to the appendix
THANK YOU
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