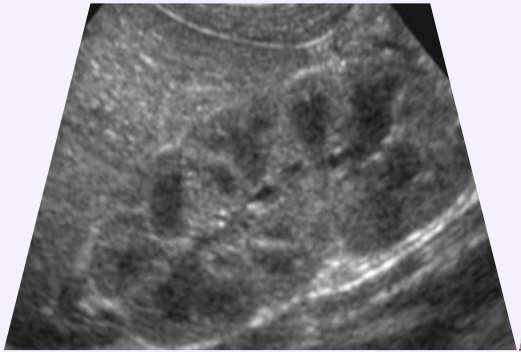
ULTRASOUND SOCIETY OF THE PHILIPPINES

Subspecialty of the Philippine College of Radiology

CASE REVIEW SERIES

Pediatric Ultrasound



JUNE 18, 2025 | WED

BIOPHARMA Medical Solutions, Inc.

LECTURE SERIES PART 1

Speaker: Dr. Benjamin Francis P. Rodriguez, Jr.

CASE #1: INTUSSUSCEPTION

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Overview

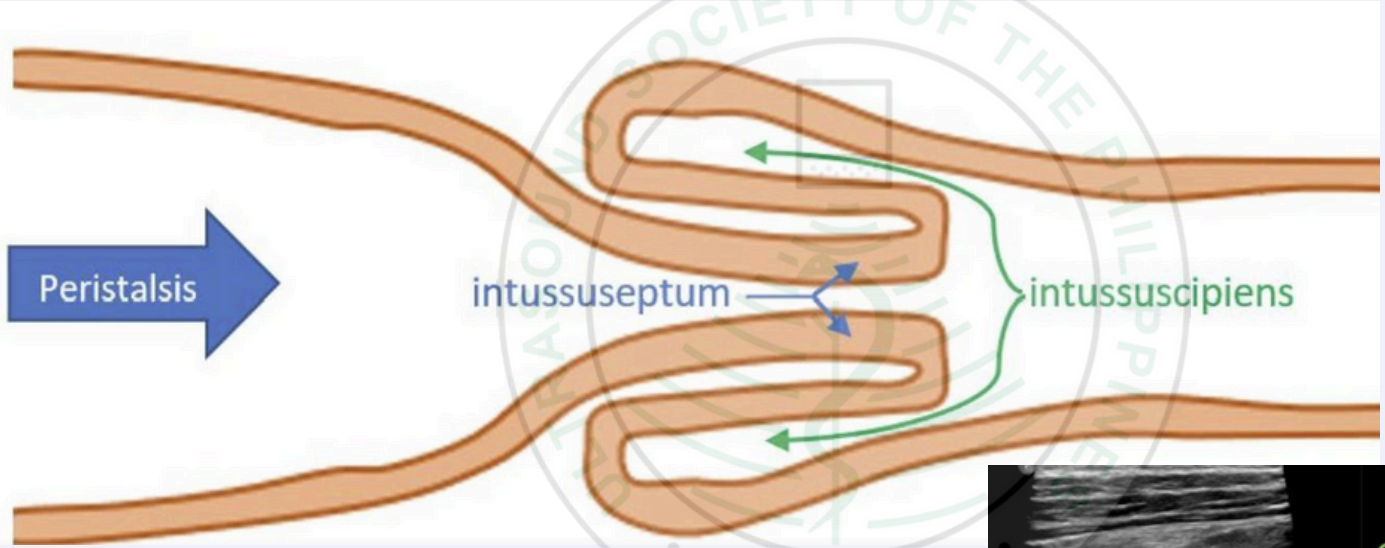
- **MC cause of small bowel obstruction in 6m –4y**
- **“Telescoping”** ofbowel loopintoanother
- May be due to a **lead point**
- **MC type: ileocolic**
- Classicclinicalfindings:
  - Crampy, intermittent abdominalpain
  - Vomiting
  - Palpable abdominal mass
  - “Currant jelly” stools

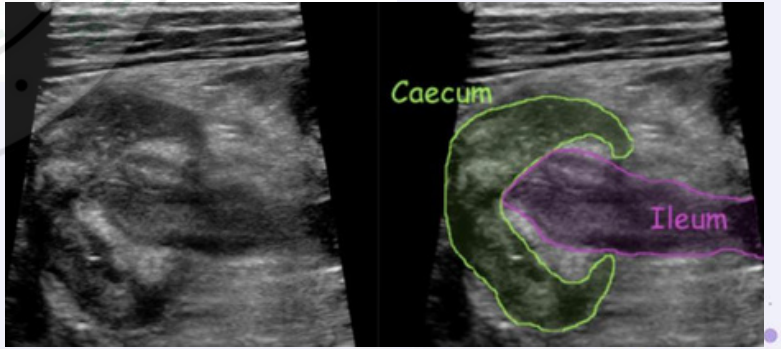
CASE #1: INTUSSUSCEPTION

Imaging

- **Ultrasound:** high sensitivity and specificity approaching 100% High frequency transducer
- May identify the **lead point**
- Done prior to **non-surgical reduction**

CASE #1: INTUSSUSCEPTION





CASE #1: INTUSSUSCEPTION

Ultrasound Findings

- Oval hypoechoic mass
- Hypoechoic rim with central echogenicity
- Multiple layers of concentric rings
- Doughnut or target sign
- Pseudokidney sign

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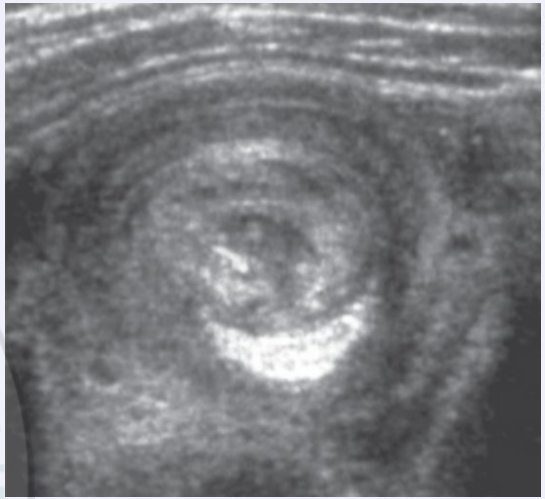

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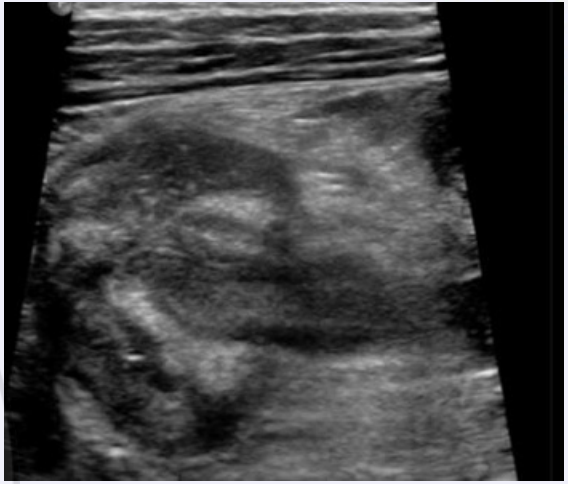

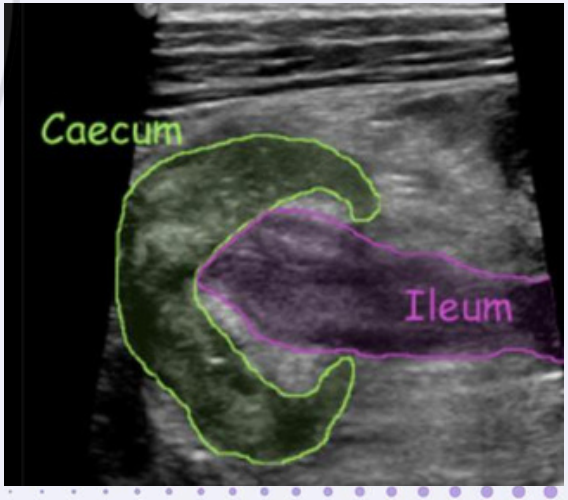

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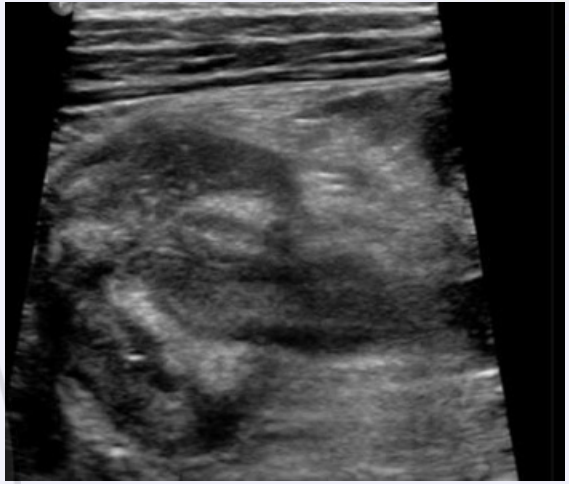
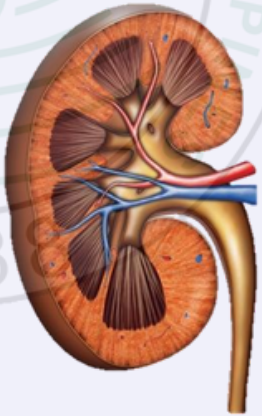
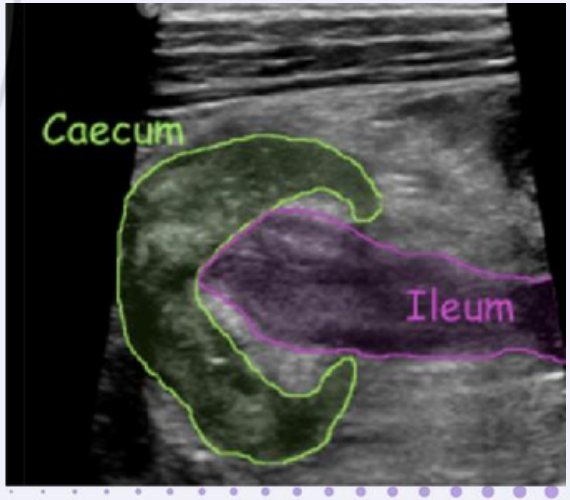






CASE #1: INTUSSUSCEPTION

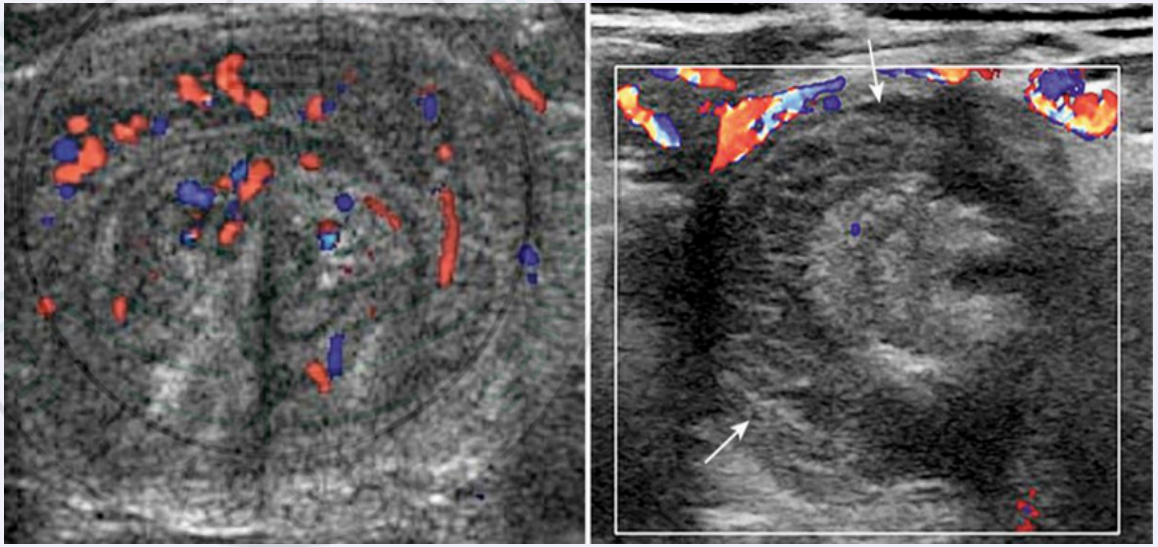
Ultrasound Findings

- **Associated findings:**
  - Obstruction
  - Hyperperistalsis
  - Small ascites is expected
  - Large amounts of echogenic ascites suggests *perforation*

CASE #1: INTUSSUSCEPTION

Ultrasound Findings

- **Color Doppler**



CASE #1: INTUSSUSCEPTION

Non-surgical reduction

- **Absolute contraindications:**
  - **Free intraperitoneal air**
  - **Clinicalsignsofperitonitis**
- Decreased success of reduction:
  - Peripheralrim >1cm
  - Large internal trapped fluid
  - Trapped lymph nodes > 1cm
- Increased risk of perforation:
  - Signs of bowel ischemia

CASE #2: HYPERTROPHIC PYLORIC STENOSIS

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Pathology

- Hypertrophy of the muscleof the pylorus *circular*

Epidemiology

- Incidence: 3 in 1000
- Male>female
- Etiology unknown, Familial
- *Between2and6 weeks of age*

Presentation

- Projectile *non-bilous* vomiting

Clinical diagnosis:

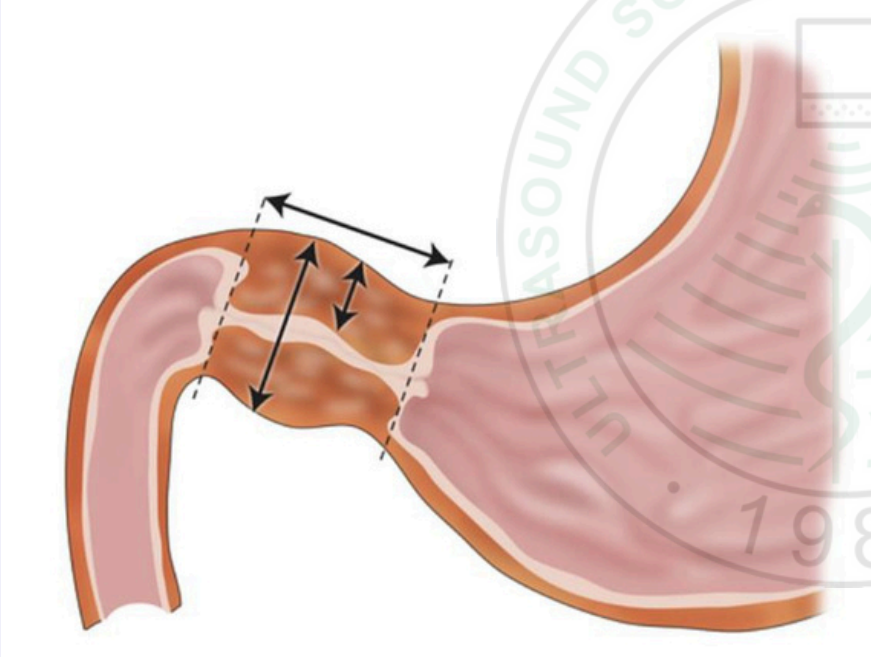
- Palpable *olive-shaped mass*
- in the epigastrium
- Gastric hyperperistalsis

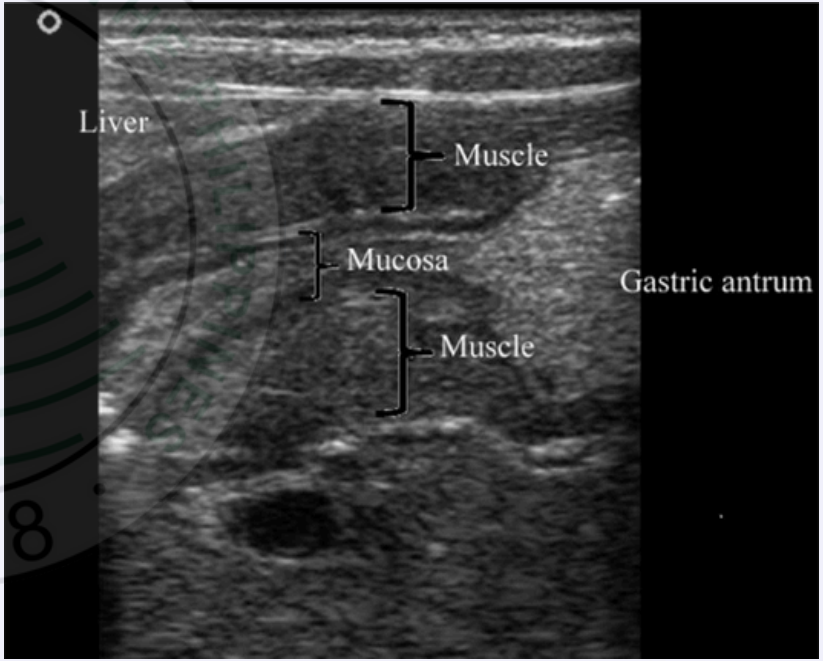
CASE #2: HYPERTROPHIC PYLORIC STENOSIS

Imaging

- **Ultrasound** is the modality of choice
- Performedinsupineorlateraldecubitus position
- **Hallmark: thickened pyloric muscle**
- No pyloric peristalsis/emptying

CASE #2: HYPERTROPHIC PYLORIC STENOSIS

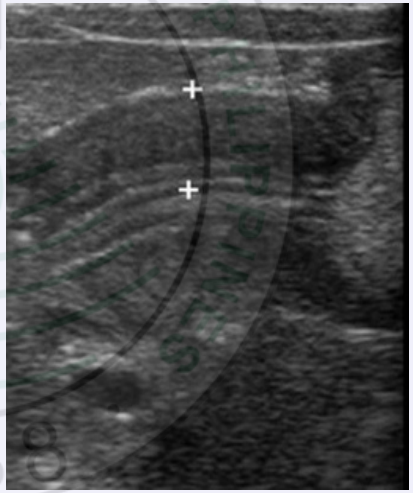




CASE #2: HYPERTROPHIC PYLORIC STENOSIS

Cut-offs

- *Siegel*
  - Single muscle thickness ≥3mm
  - Length 17mm
- *Rumack*
  - Single muscle thickness ≥ 3mm
  - Pyloric width ≥ 7mm
  - Length ≥ 15mm



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45d/M, CC: persistent non-bilousvomiting x3wks

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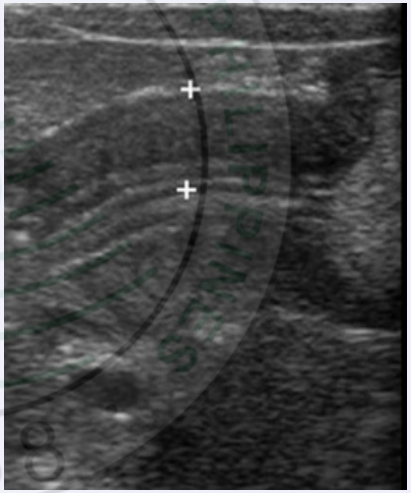

Muscle thickness: 8.3mm

Pyloric length: 28mm

CASE #2: HYPERTROPHIC PYLORIC STENOSIS

Ultrasound Findings

- Target or Bull's eye sign Double track sign Antral nipple sign
- Hypervascularity on Color Doppler
- Gastric dilatation or hyperperistalsis

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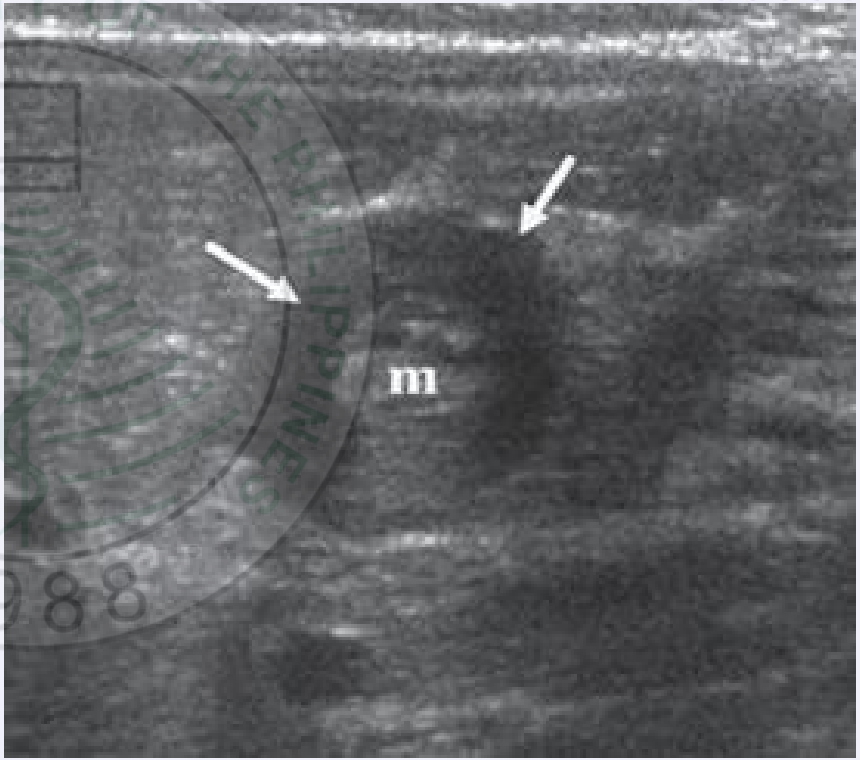

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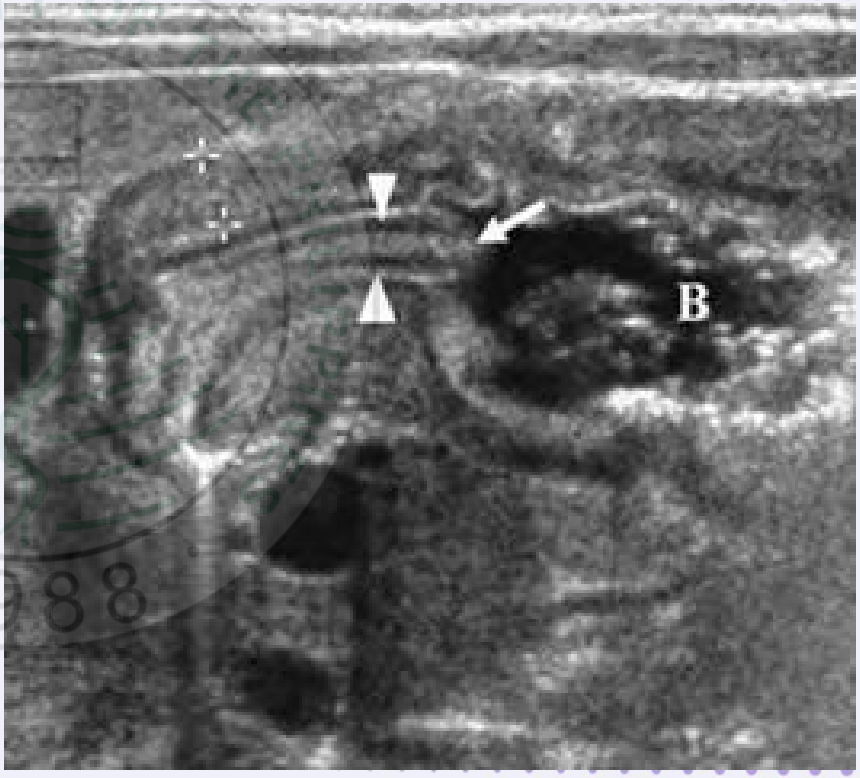

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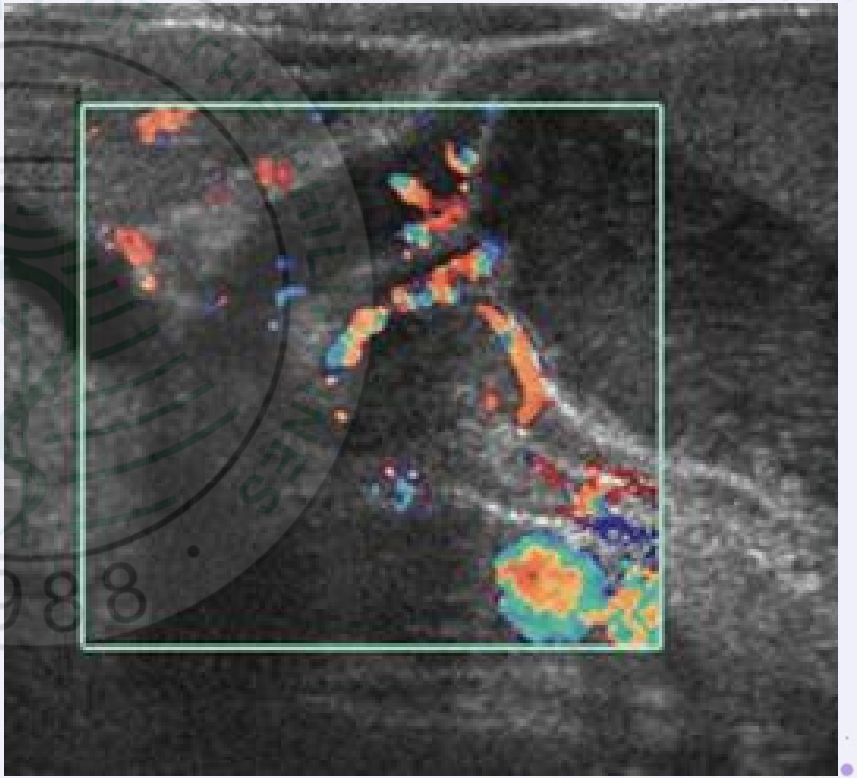
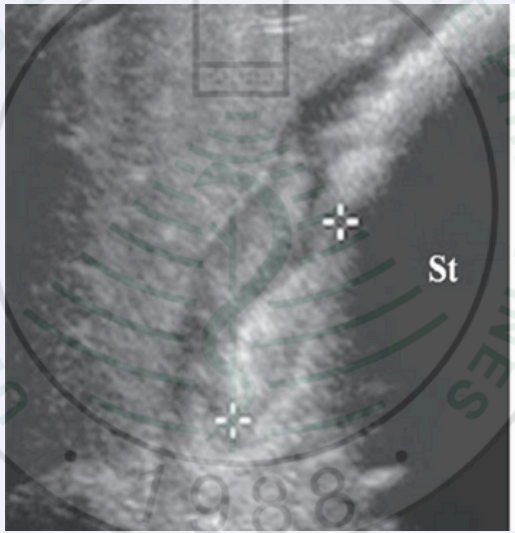
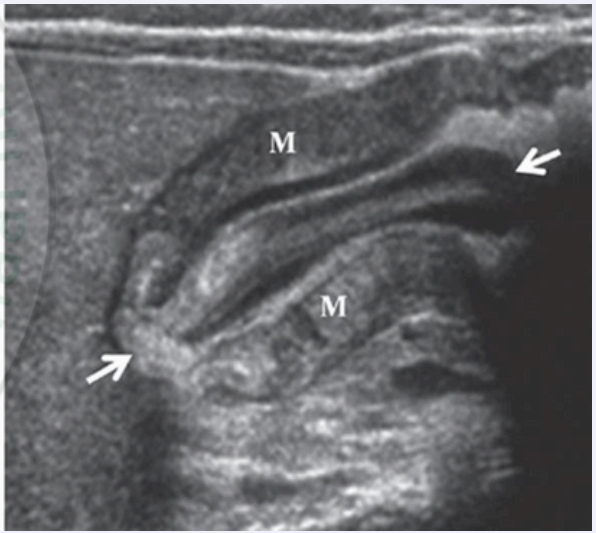


CASE #2: HYPERTROPHIC PYLORIC STENOSIS

Pitfalls

- Gastric overdistention
- Pylorospasm





CASE #3: ASCARIASIS

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Overview

- Prevalent in tropical and subtropical regions with poor sanitation
- Feco-oral route of spread
- Eggs hatch in small intestines and larvae migrate to **lungs or liver**
- Adult worms: 15 –30 cm long and 3 –6 mm thick

- **Complications:**
  - Abscesses
  - Obstruction
- **Treatment:**
  - Anti-parasitic drugs
  - Surgery

CASE #3: ASCARIASIS

Imaging

Intestinal

- Slender appearancewith thin internal echogenic line
- RTS mayshow curling movements

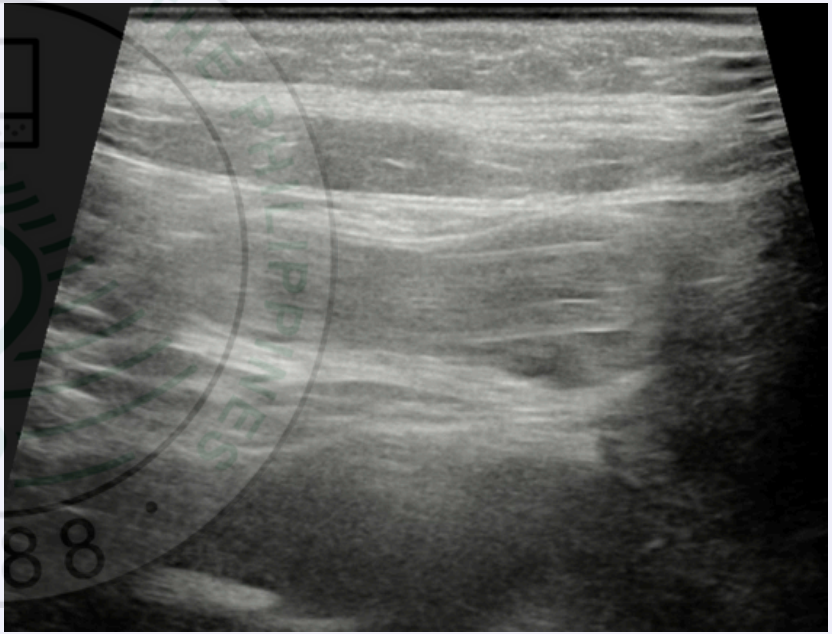
Biliary

- Mimics the appearanceof a stent

Liver abscess

- Ill-defined hypoechoiclesion with central echogenicity
- Linearechogenic structures may be seen

CASE #3: ASCARIASIS



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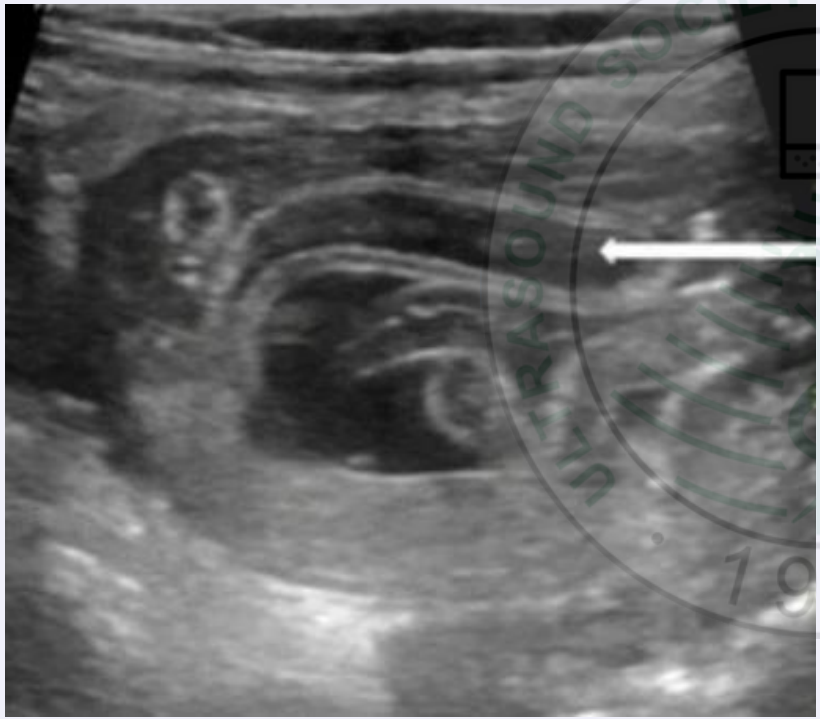
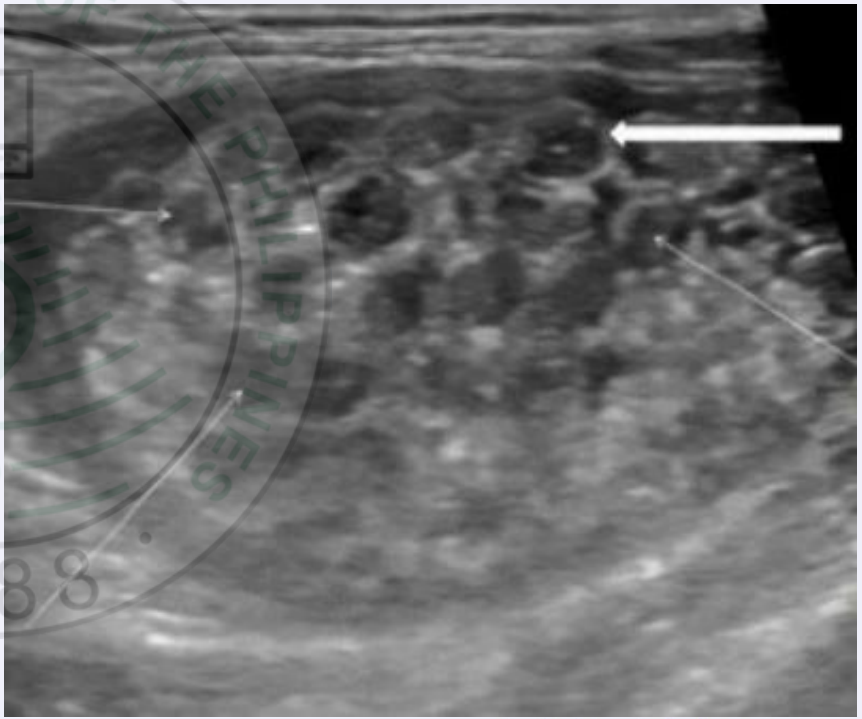
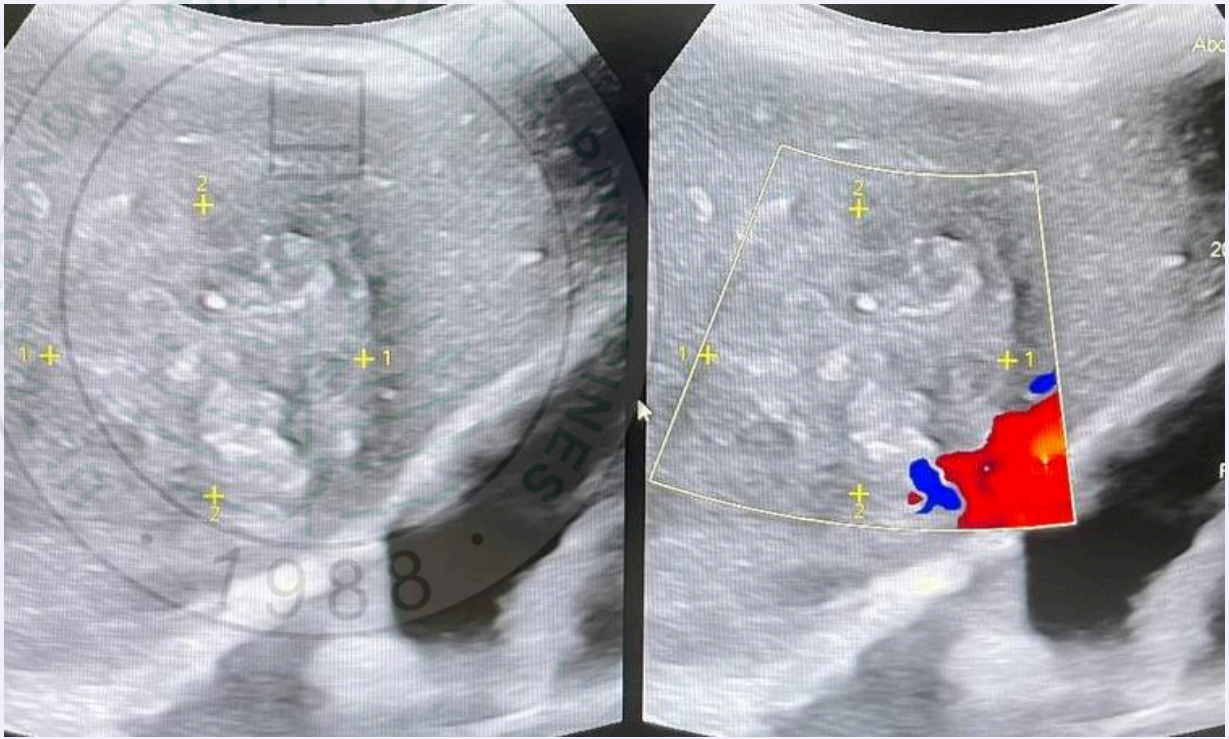




CASE #3: ASCARIASIS

Patient Case

- 3/F
- 2mo post-prandial vomiting & recurrent fever
- Passage of worms per oremand BM
- PE: RUQ tenderness, palpable liver edge



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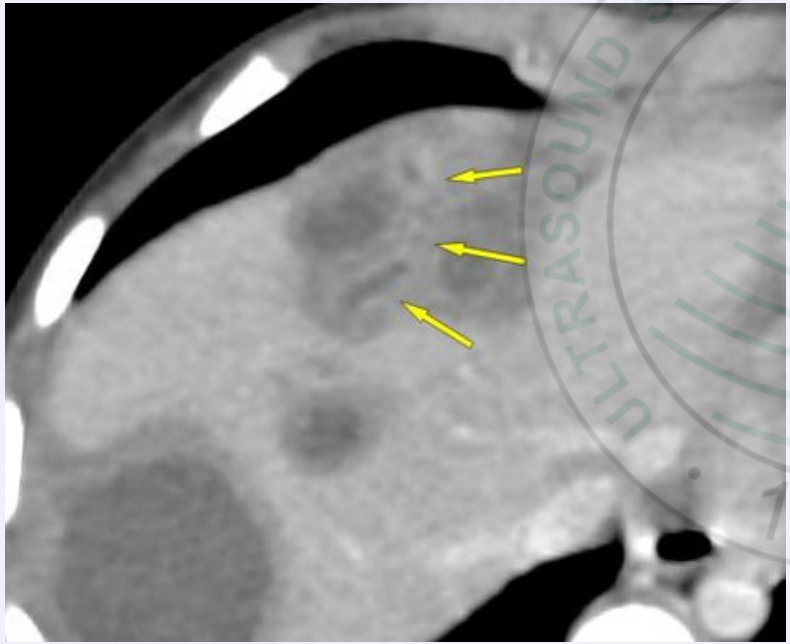

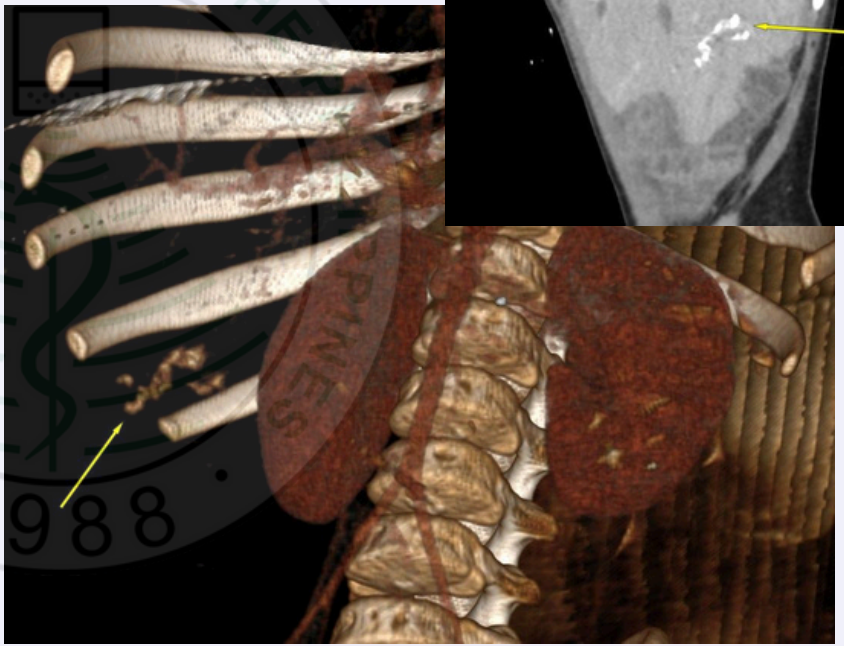

CASE #4: BILIARY ATRESIA

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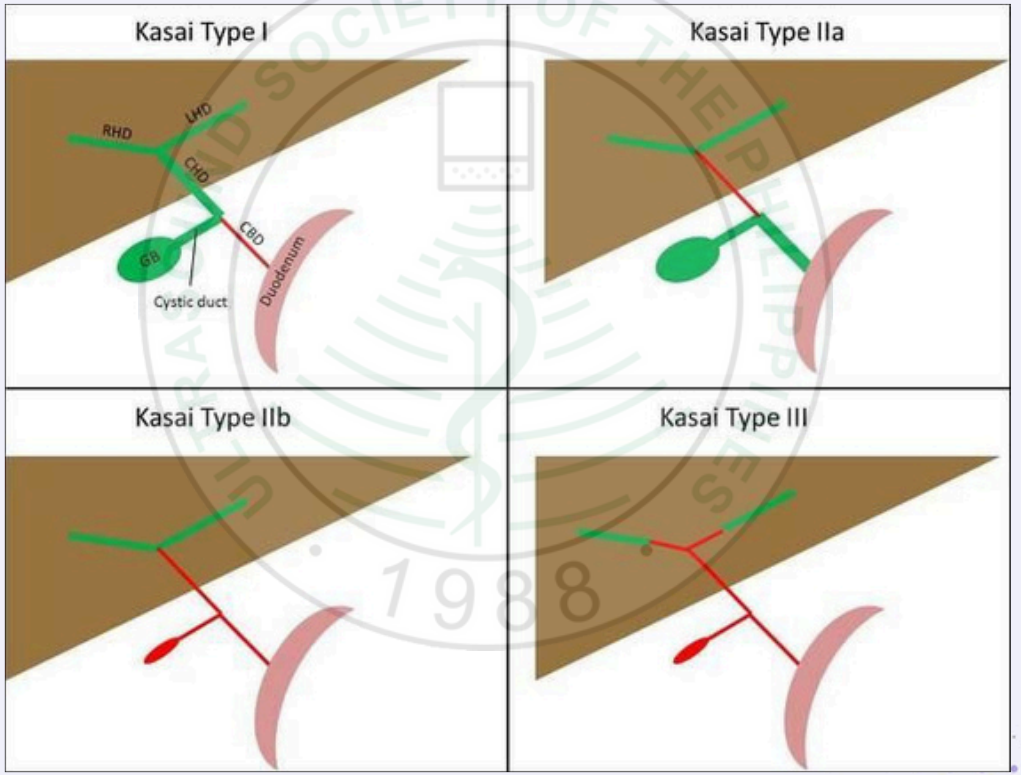
Overview

- **Progressive sclerosis and luminal obliteration of the intra-and extrahepatic bile ducts**
- 1in8000 to1in13,000 births
- Etiology unclear
- Associated with **splenic abnormalities** (polysplenia, biliary atresia – splenic malformation syndrome)
- **Cirrhosis** occurs early
- Treatment: Kasai procedure (hepatoportoenterostomy) or liver transplant

CASE #4: BILIARY ATRESIA

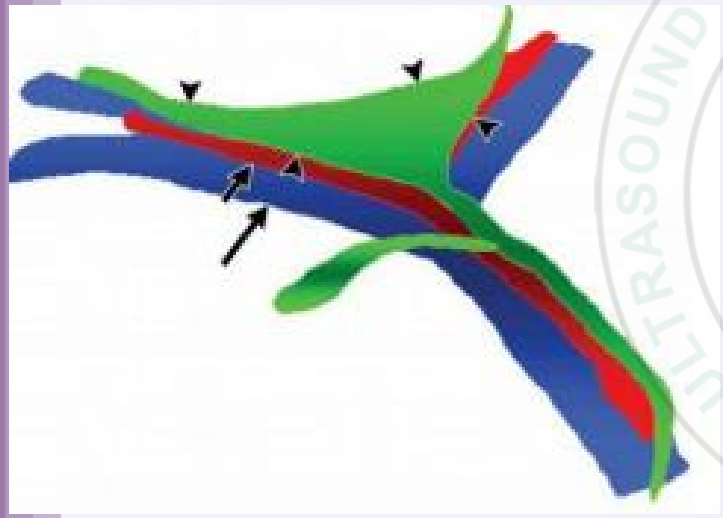


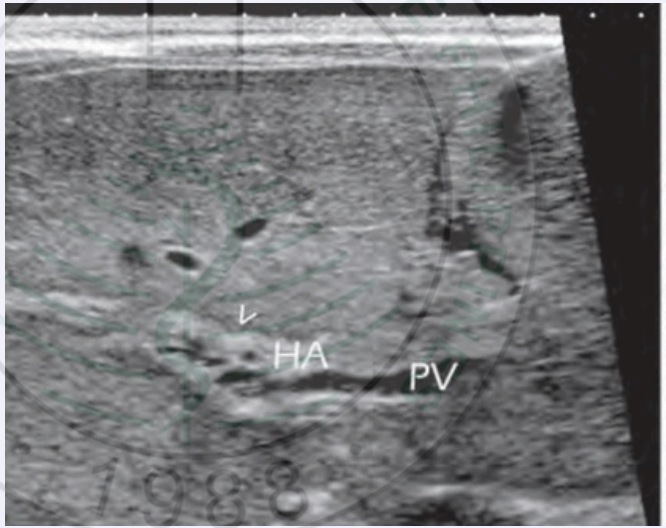
CASE #4: BILIARY ATRESIA

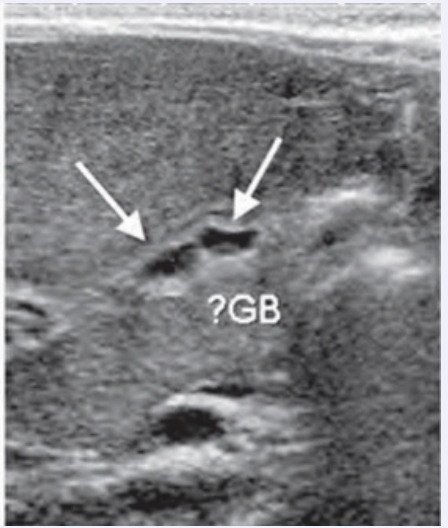
Imaging

- **Gallbladder** may be small (microgallbladder, 20%) or absent (80%)
- **Gallbladder "ghost" triad:**
  - GBlength < 1.5cm
  - Irregular or incomplete mucosal lining
  - Irregular or lobulated contour
- **Triangular cord sign**
  - Echogenic fibroticremnant of the biliary tree at the portal confluence

CASE #4: BILIARY ATRESIA



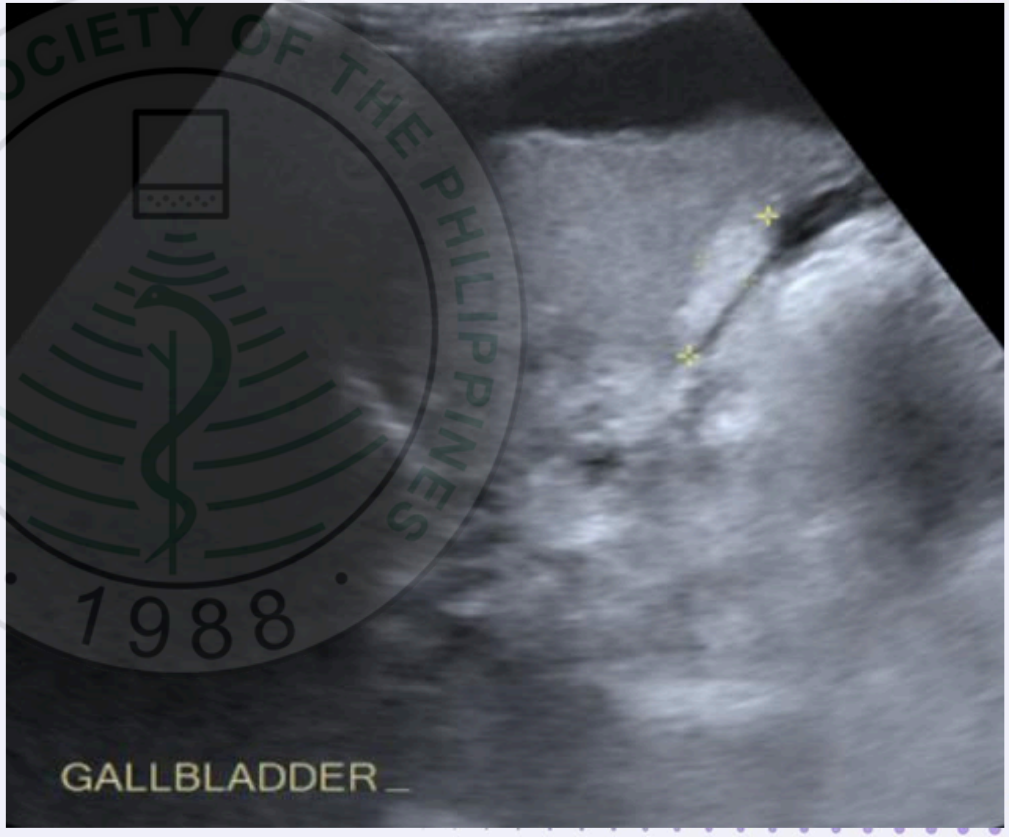




CASE #4: BILIARY ATRESIA

Patient Case

- 10mo/M
- Born full term via SVD
- Icteric sclerae and progressive jaundice



CASE #5: PEDIATRIC SPIGELIAN HERNIA

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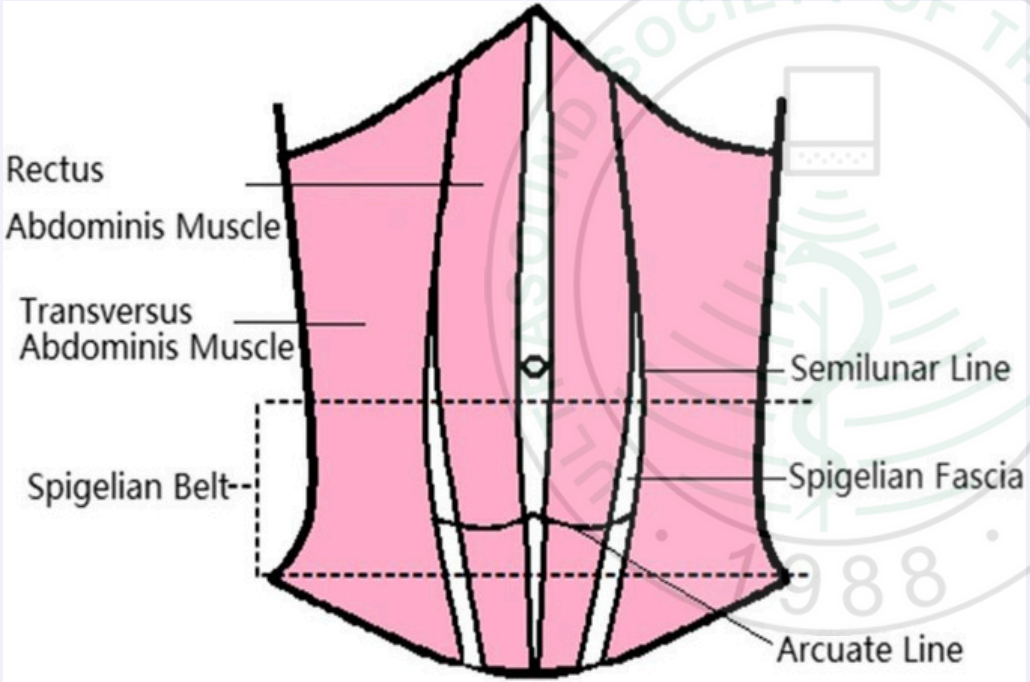
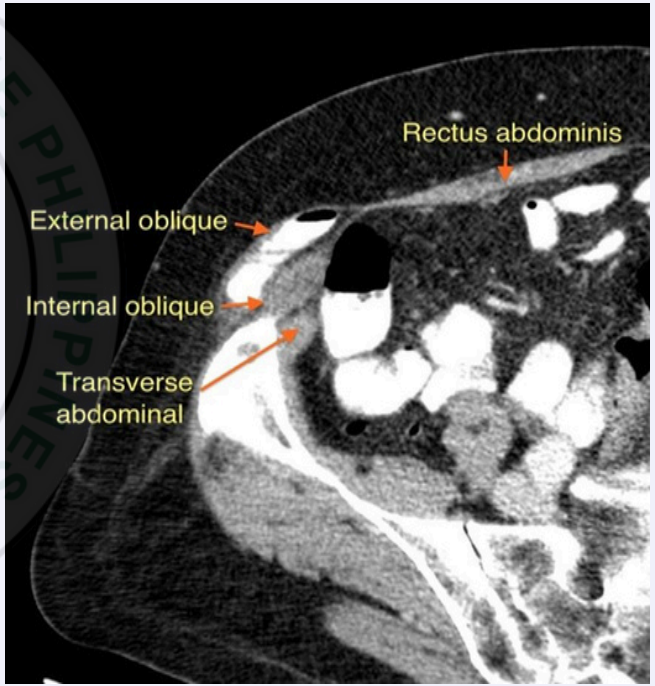
Overview

- Herniathrough the **Spigelian fascia**
- 90% in the **Spigelian belt**
- Also divided into:
  - Interparietal (intact **external oblique aponeurosis**)
  - Subcutaneous (penetrated aponeurosis)

CASE #5: PEDIATRIC SPIGELIAN HERNIA





CASE #5: PEDIATRIC SPIGELIAN HERNIA

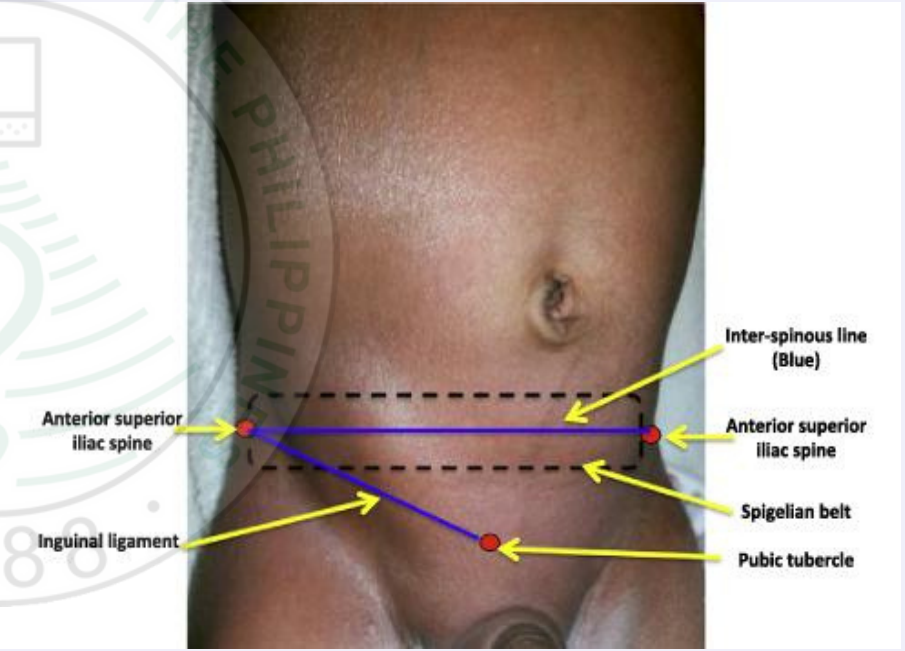
Epidemiology

- **Very rare**: case series (<1-2% of all hernias)
- **Congenital** versus acquired
- **Male** preponderance in pediatric population (3.5:1)
- **Right** more than left (5:3:2; 6:3:1); bilateral is least common
- Recognized association with **cryptorchidism** (40-75%)

CASE #5: PEDIATRIC SPIGELIAN HERNIA

ClinicalPresentation

- Rarity often leads to **misdiagnosis** or **late diagnosis**
- Vague abdominal pain
- Transient bulge during crying or coughing
- Persistent bulge in anterolateral abdomen
- **At consult:** lumbar hernia, inguinal hernia, cryptorchidism, non-specific abdominal pain



CASE #5: PEDIATRIC SPIGELIAN HERNIA

Imaging

- Demonstrate the **herniaorifice** and **sac**
- Document Documentlocation, **extent**
- **contents**
- Signs of **incarceration** or **strangulation**
- Check for **associated anomalies** (cryptorchidism)
- Recommend CT if equivocal

CASE #5: PEDIATRIC SPIGELIAN HERNIA

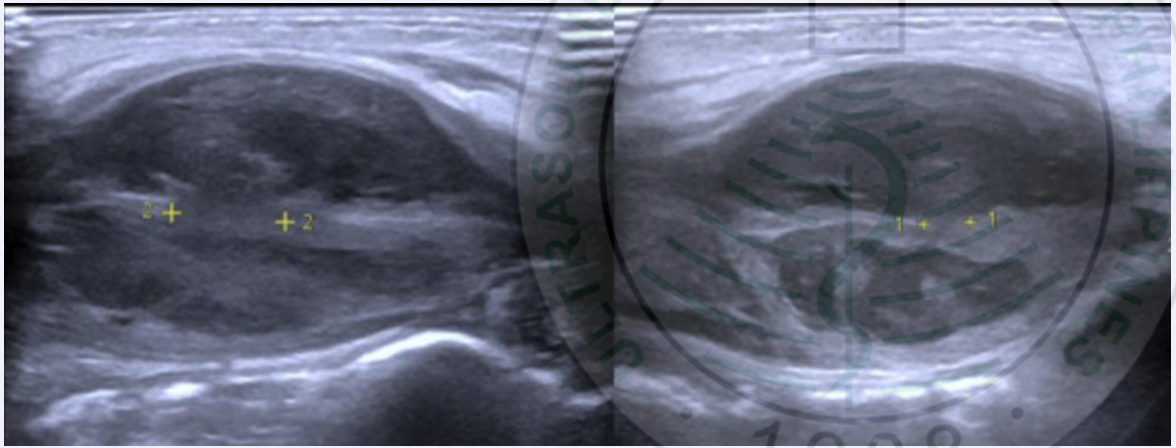
Case

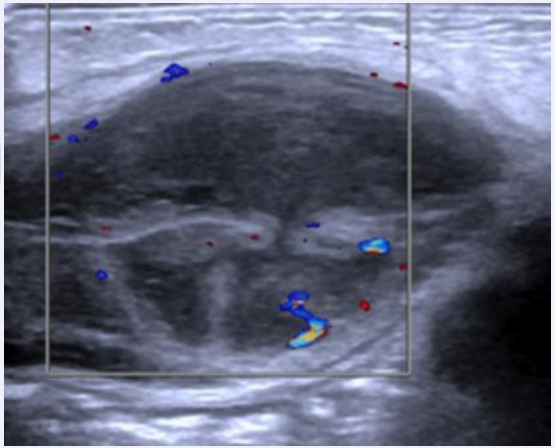
- CL, 2/M
- 4dhistoryofandsporaneousabdominalpain**RLQ pain**singfever, no vomiting, no bowel changes, no urinary changes
- 2d PTC, sought consult at local hospital, A> **t/cacute appendicitis**.
- Advised transfer for surgery.
  On admission: stable vitals, **(+)inguinalbulge,(+)RLQ tenderness,**

  (+) guarding

CASE #5: PEDIATRIC SPIGELIAN HERNIA

RLQ ultrasound:





CASE #6: ADRENAL ULTRASOUND

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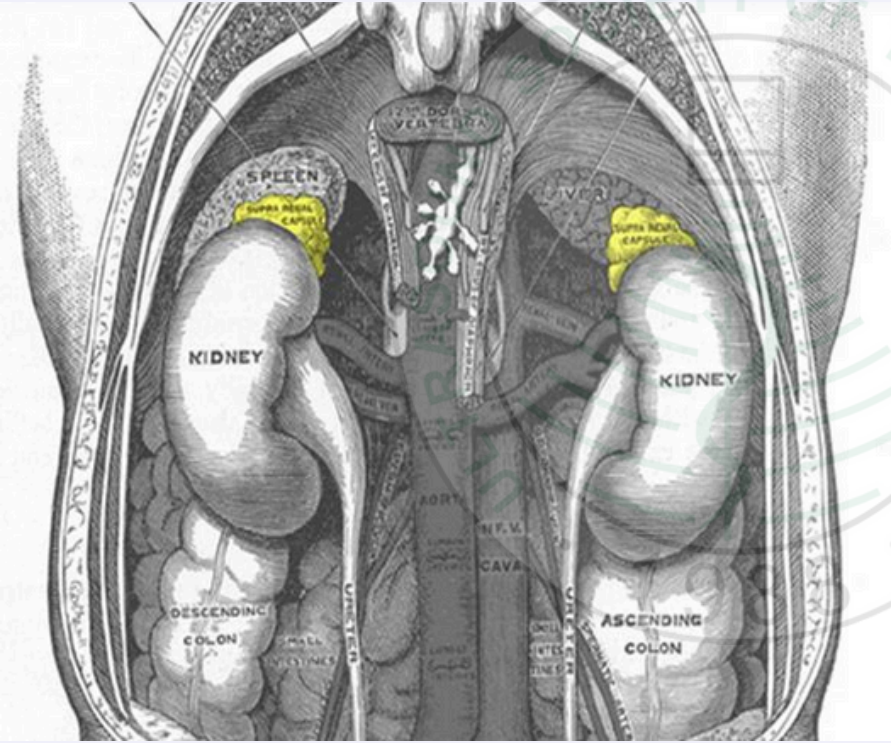
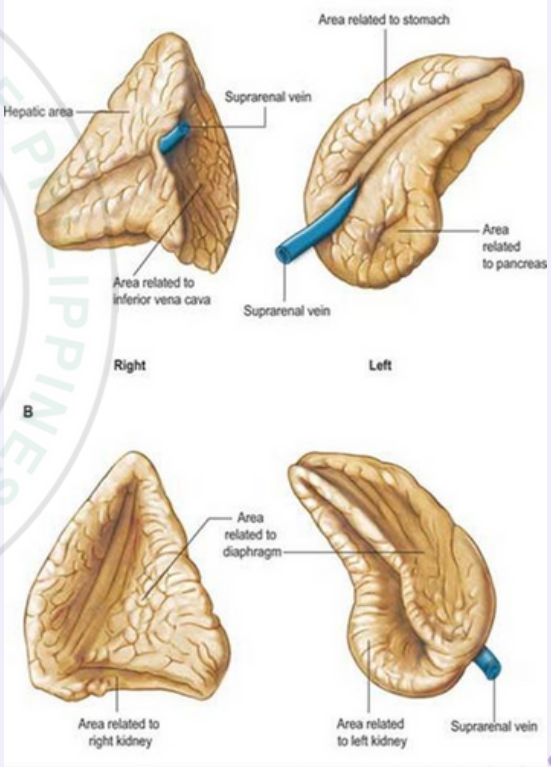
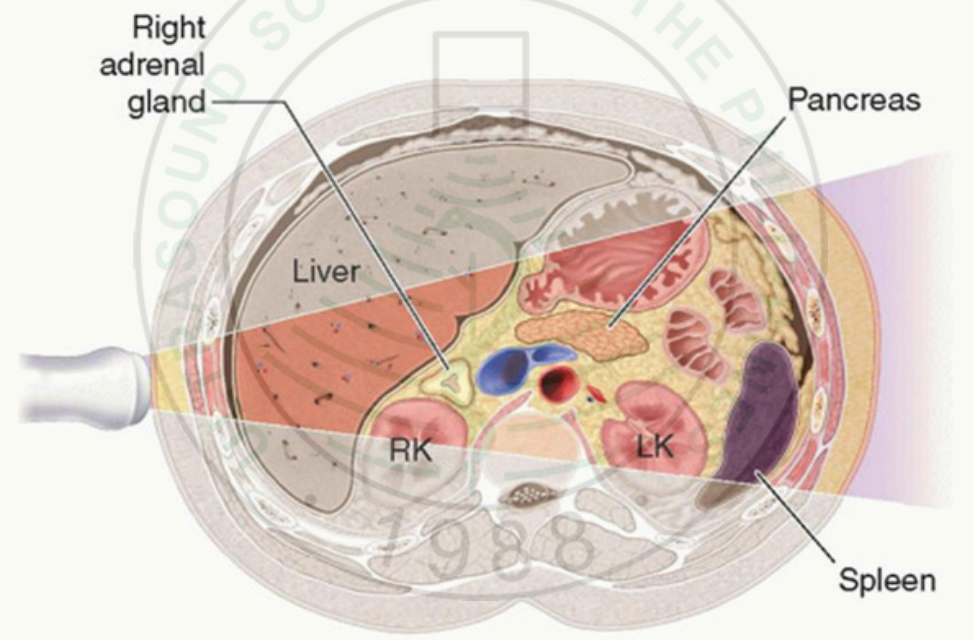




CASE #6: ADRENAL ULTRASOUND

RIGHT ADRENAL

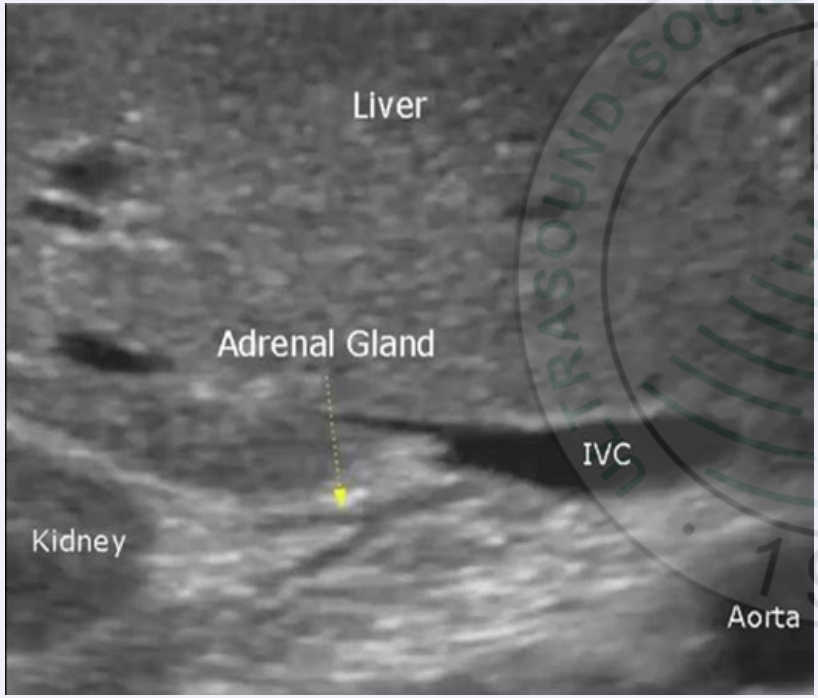
- Medial -R crus of the diaphragm, R inferior phrenic artery
- Lateral –bare area of RLL
- Anterior –IVC
- Posterior –R kidney

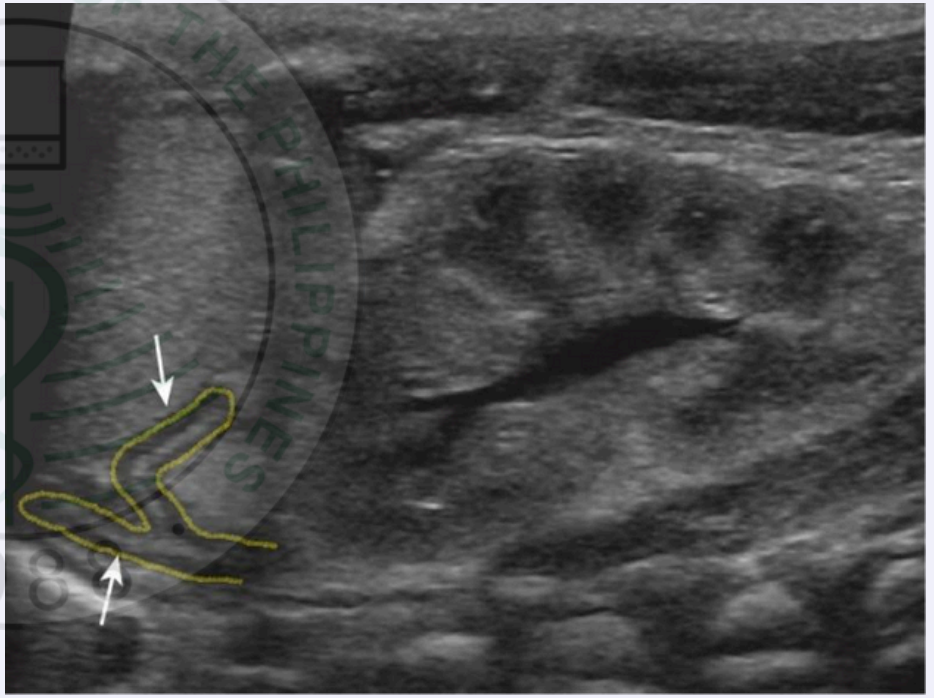


LEFT ADRENAL

- Medial –L crus of the diaphragm, left inferior phrenic artery
- Lateral –Spleen
- Anterior –Splenic artery, pancreas, stomach, lesser sac
- Posterior –L kidney

CASE #6: ADRENAL ULTRASOUND



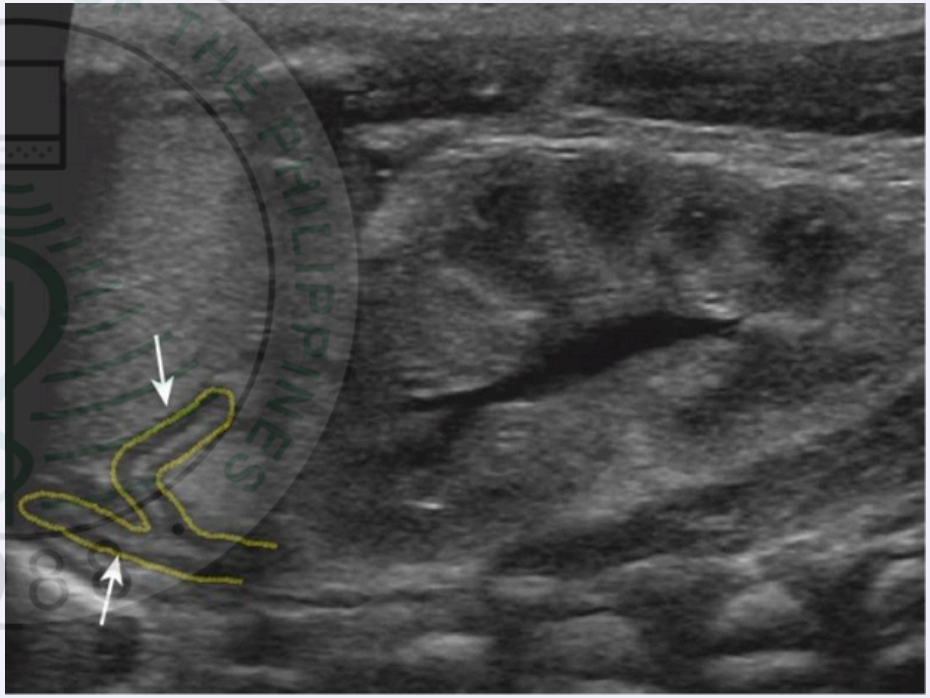


CASE #6: ADRENAL ULTRASOUND

Imaging

- Prominent hypoechoic fetal
- adrenal cortex
- Smooth or slightly undulating surface

  Normal limbwidth<4mm



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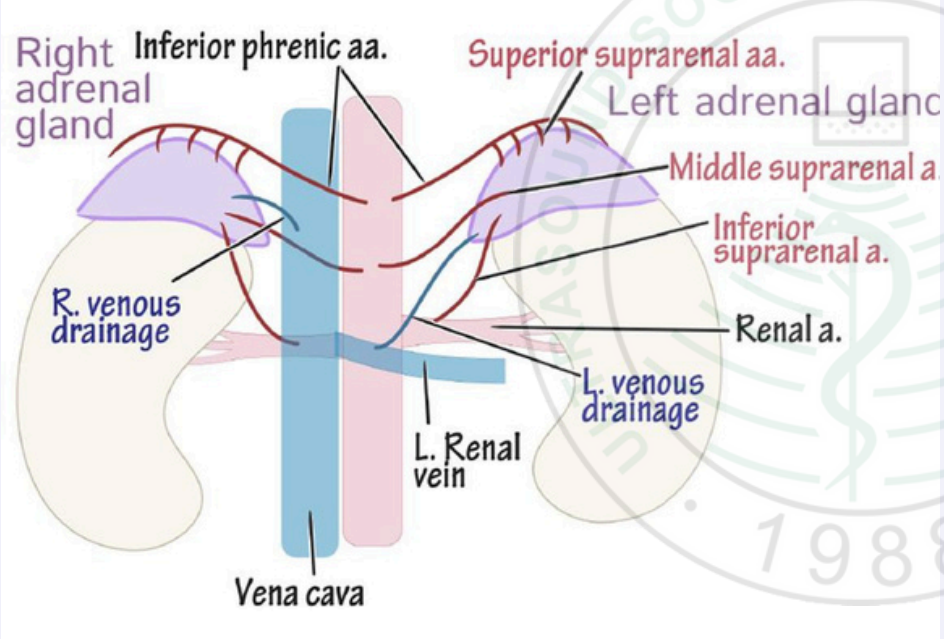
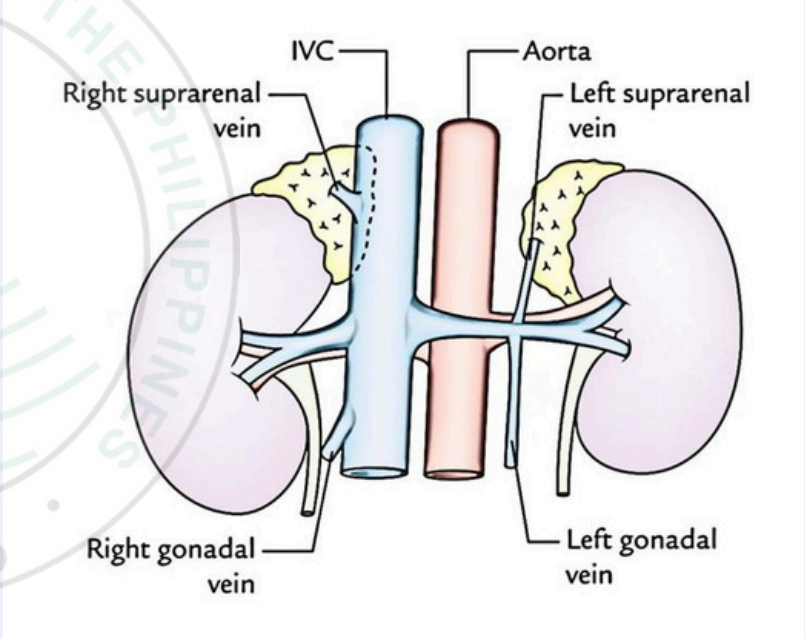
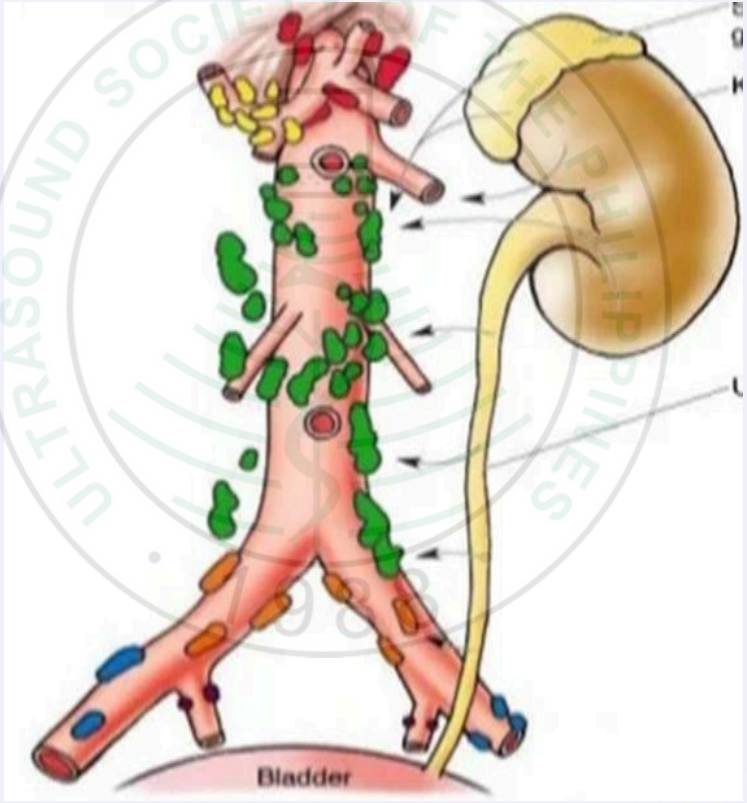




CASE #6: ADRENAL ULTRASOUND



CASE #6: ADRENAL ULTRASOUND

Pathologies

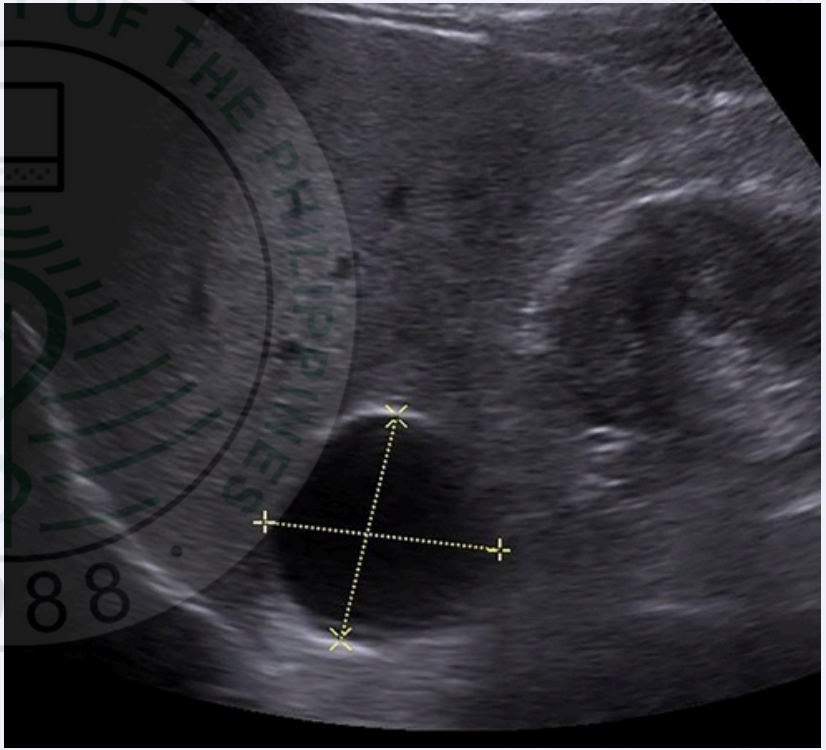
- Cyst
- Hemorrhage
- Neoplasm

CASE #6: ADRENAL ULTRASOUND

Pathologies

Cyst

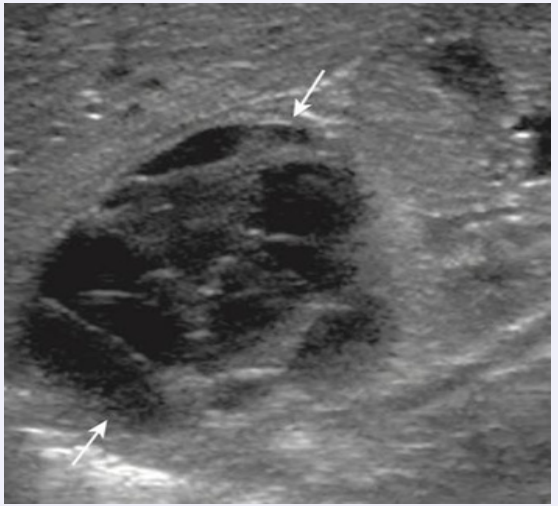
- True cysts, pseudocyst (hemorrhage), parasitic cysts
- MCDK, Beckwith-Wiedemann syndrome
- May be hormonally-active
- Cystic neoplasm



CASE #6: ADRENAL ULTRASOUND

Pathologies

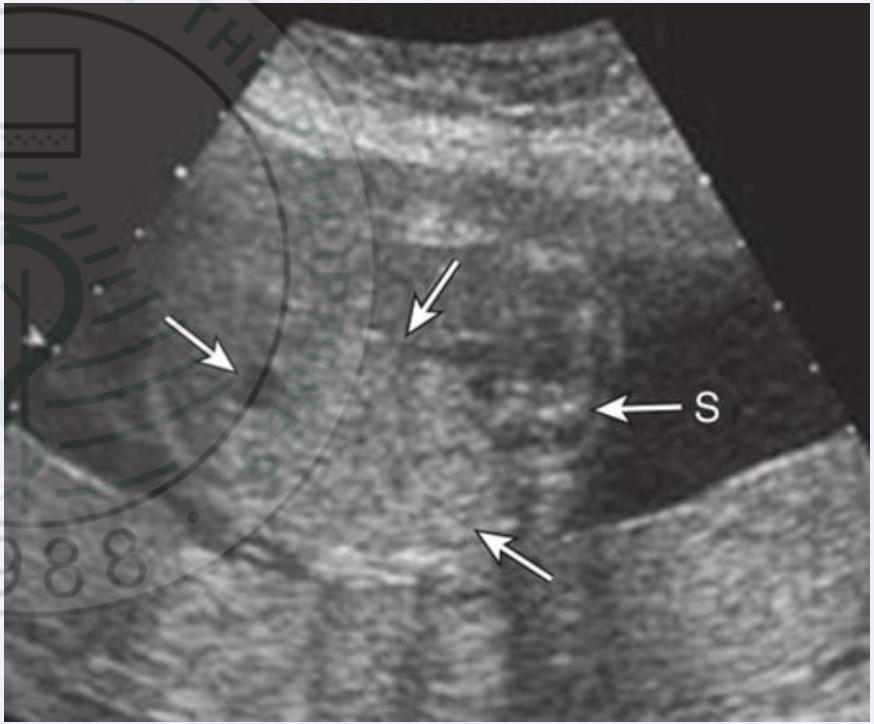
- **Hemorrhage**
  - MCmass-like adrenal abnormality in neonates Right (70%), left (20%), bilateral (10%) Periods of perinatal stress, GDM



CASE #6: ADRENAL ULTRASOUND

Pathologies

- **Neuroblastoma**
  - MCadrenalneoplasm in fetuses and neonates R preponderance
  - Should be considered when suprarenal mass is detected Cystic, solid, or complex
  - Maydemonstrate increased vascularity



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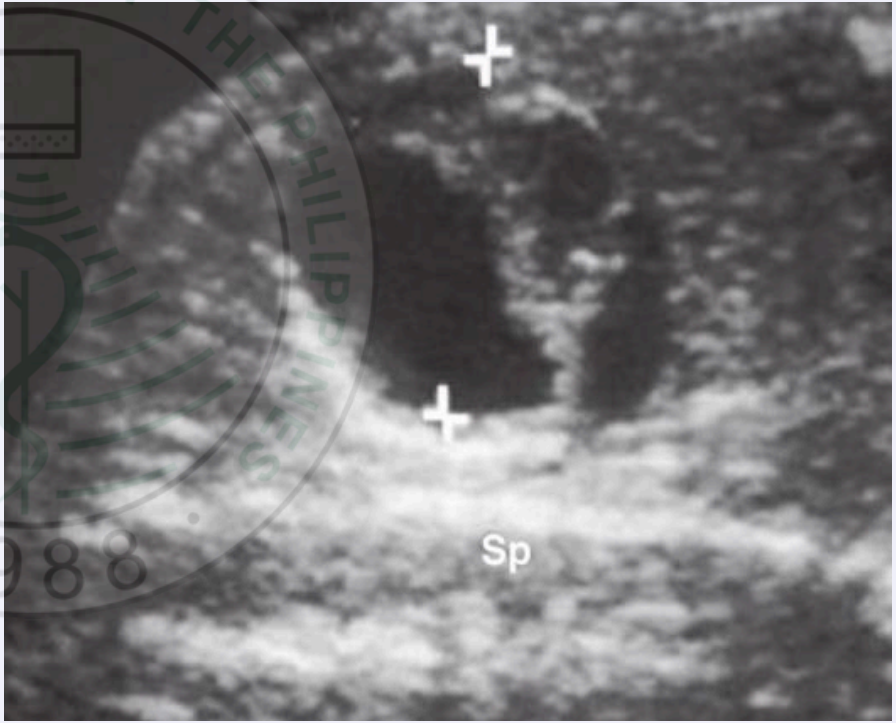

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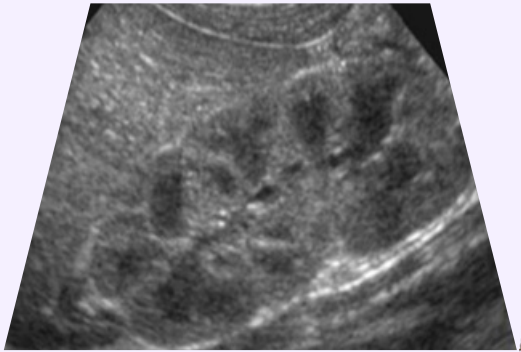

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