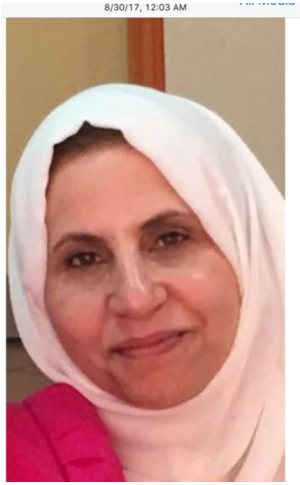

Common neonatal gastrointestinal emergencies

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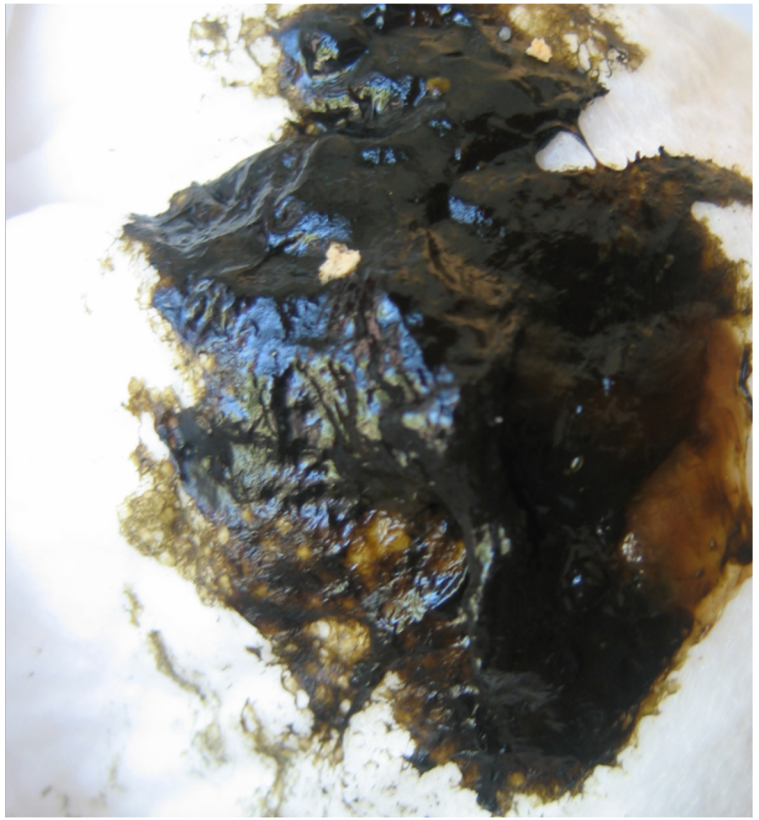
Learning Objectives

- Understand normal stooling Pattern in neonate
- Recognize the difference of stooling pattern between breast and formula fed infants
- Recognize the the manifestation of neonatal intestinal Obstruction
- Understand fetal manifestation of intestinal Obstruction
- Understand what are the differential diagnosis of lower neonatal intestinal obstruction
- Understand the initial Hospital management of lower neonatal intestinal obstruction
- Identify the most appropriate diagnostic methodology
- Understand the diagnostic methodology
- Identify types of treatment

What is meconium

Meconium is a collection of:

- ✓ GI secretions
- ✓ Bile salts, Bile acids,
- ✓ Debris that is shed from the intestinal mucosa
- ✓ waste products from ingested amniotic fluid



This stool is very thick and sticky.

Case 1

You were asked by nurse to examine a- 24 hour new born term female infant in normal nursery because she has not yet passed stool. that baby has been breast fed exclusively .

Of the following early passage of stool is associated with

- Birth by vaginal delivery
- First feeding consistent with breast milk
- Passage of meconium in utero
- Younger birth gestation age

Teaching Points

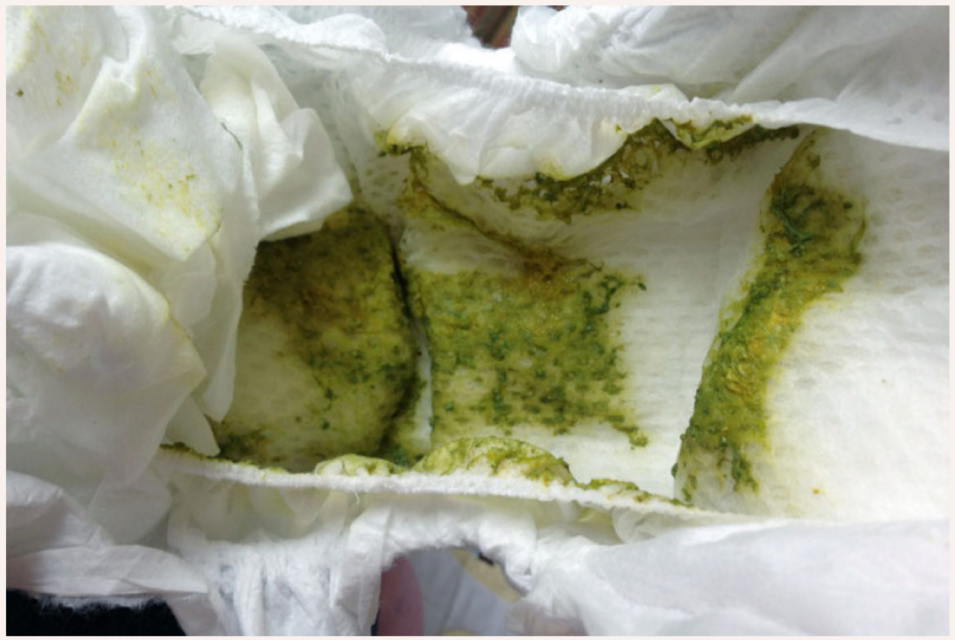
- 99% of term infant pass stool within first 48hr
- Newborns who have passed meconium in utero are significantly more likely to pass the first postnatal stool earlier than those newborns who did not pass meconium in utero (3 hours Vs 8 hours)

- The time of first bowel movement is independent of the mode of delivery, type of received milk (breast Vs formula milk)
- Preterm. Pass stool later than term infants

Case 1

Mach the stool color ,consistency and frequency in neonates receiving.
Breast milk Vs formula

- Large stools in first week
- **Breast milk**
- More frequent stool in the first week of life
- **Breast milk**
- More pronounced decreases in stool after 3 weeks age
- **Breast milk**



Case 1
The first few stools in newborn usually meconium

After a baby begins to drink milk, the infant stool color, frequency an consistency vary based on types of diet

Formula feeding infants

- Stool more likely to bee persistently green colored

Breast feeding infants

- Have typically have yellow colored- stool
- have more frequent and larger stools in the first week of life,
- After3 weeks of age have a more pronounced decrease in stool frequency compared to with formula fed infants

Case 1: At 48 hours of age the baby has not still had a bowel movement

What are symptom would like to ask?

- GI symptoms
  - Vomiting YES
  - Distension Yes
  - Jaundice Yes
- Constitutional symptoms
  - decrease feeding, activity, poor sucking, Fever NO
- ROS: cardiac, respiratory ,renal, skeletal, CNS, hematologic. NO
- Shock symptoms (pallor, mottled) NO
- Feeding history breast fed
- Family history (Mother G5,P), all healthy
  - **Family history of Cystic Fibrosis, Jujenal atresia , HD.** **NO**
- Others Prenatal. (Maternal age, MBG, illness as DM or HT , **fetal US**, drugs) , Social. Natal birth history(birth weigh, GA, mode of delivery, problems during delivery

The baby is Male, 39 week, BW 3,4 KG and born by NVD,

Case 1: Why Prenatal Fetal US is important

Possible findings	Diagnosis
- Polyhydramnios and no visualization of normally visible fluid-filled structures, such as the stomach or dilation of structures, such as the stomach and duodenum	• Esophageal atresia
. - Fetal Double-bubble sign	• Duodenal atresia
- Bowel wall thickness greater than 3 mm(echogenic bowel)	• Bowel obstruction
- Intraluminal and/or abdominal calcifications	• Meconium peritonitis and other causes
- other abnormalities	. VACTERL (vertebral defects, anal atresia, cardiac defects, tracheoesophageal fistula, renal anomalies, and limb abnormalities) association

Pre-ntal US
Intra abdominal calcification : Causes

- Meconium peritonitis (MP)

❖ Associated with :

- ✓ intestinal atresia,
- ✓ Cystic fibrosis is seen in only 8% to 13.5% of cases of fetal (FM)
- ✓ cytomegalovirus infection

- Enterolithiasis
  - Calcification in GI tract

❖ Associated with

- ✓ Recto urinary fistula as in imperforate anus or cloaca.
- ✓ Bowel obstruction such as jejunoileal atresia or total colonic Hirschsprung's disease (HD)

Prenatal US was negative for this baby

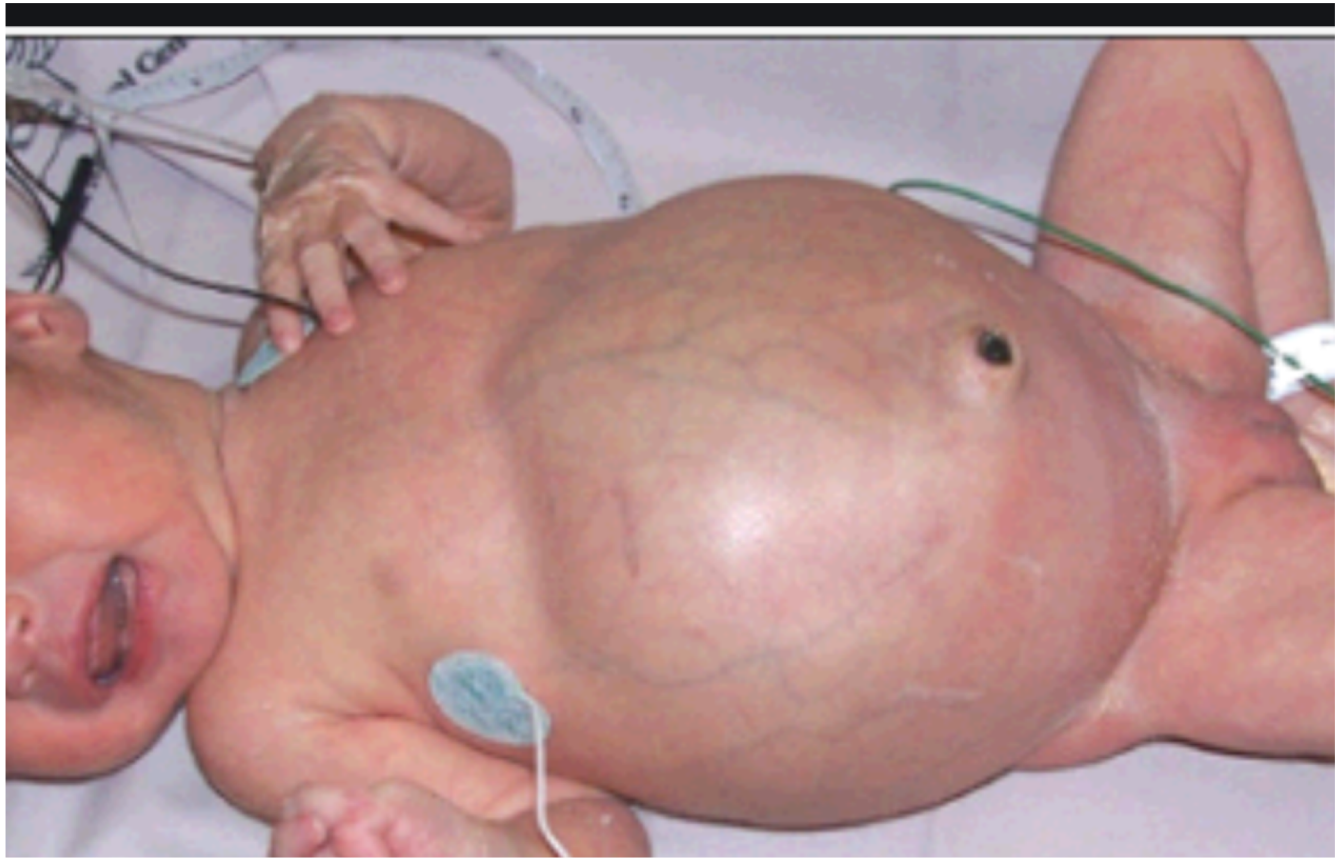
What are the signs you look at during examination

- General (LOC, color, posture, cry ,activity, Dysmorphic feature)
- Growth parameters
- Vital signes(Temp,HR,BP,RR,O2 Sat)
- H@N (ear, Mouth, eyes, Palat)
- Chest
- CVS (capillary refill, perfusion)
- Abdomen, bowel movement and **Anus** and genitalia (look for stool from urethra or vagina)
- Limbs
- Back @hips

Results

- Negative
- Negative
- Negative
- Negative
- Negative
- Negative
- Negative
- **Distended . No bowel movement, Anus in position and Patent.**
- Negative
- Negative

Clinical picture



How to Mange

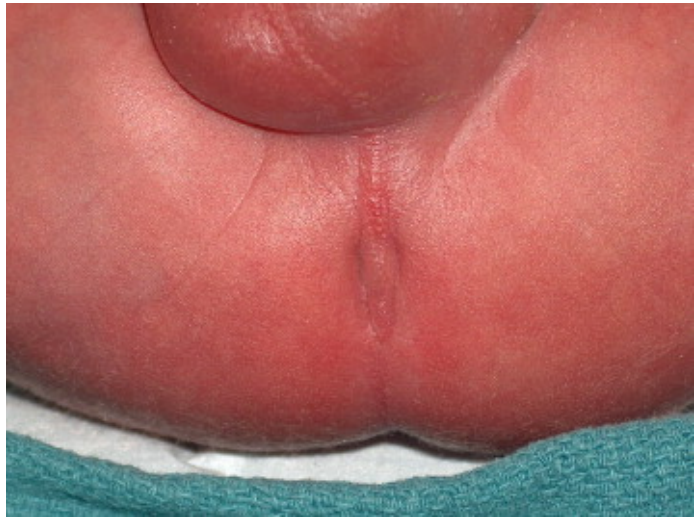
- NICU Admission
- Do initial Assessment
  - Cardio respiratory monitoring
  - NPO
  - NG
  - IV fluid
  - Base Line biochemical assessment (USE) Blood gas and Cr, if dehydrated, TSB if Jaundice
  - (Septic work up and Antibiotics). Gastrointestinal bacterial overgrowth

Does the baby need Investigation

- Yes
- Summarize findings
- Symptoms
  - No Bilious vomiting
  - Abdominal distention
  - Delay in passing meconium
  - Normal prenatal US
- Sign:
  - , distended Abdomen ,
  - normal anus
- Rectal examination

Case 1: What are the DDX

- Ano rectal malformation



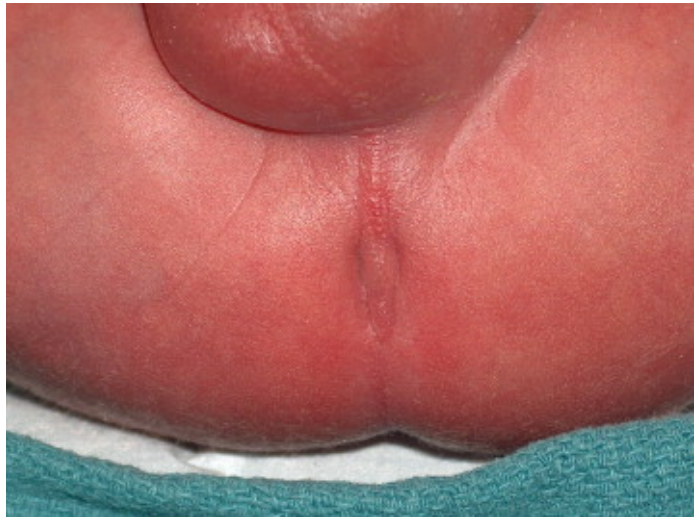
What is this condition

- Intestinal Obstruction
  - Mostly Lower

What are the DDX

Case 1: What are the DDX

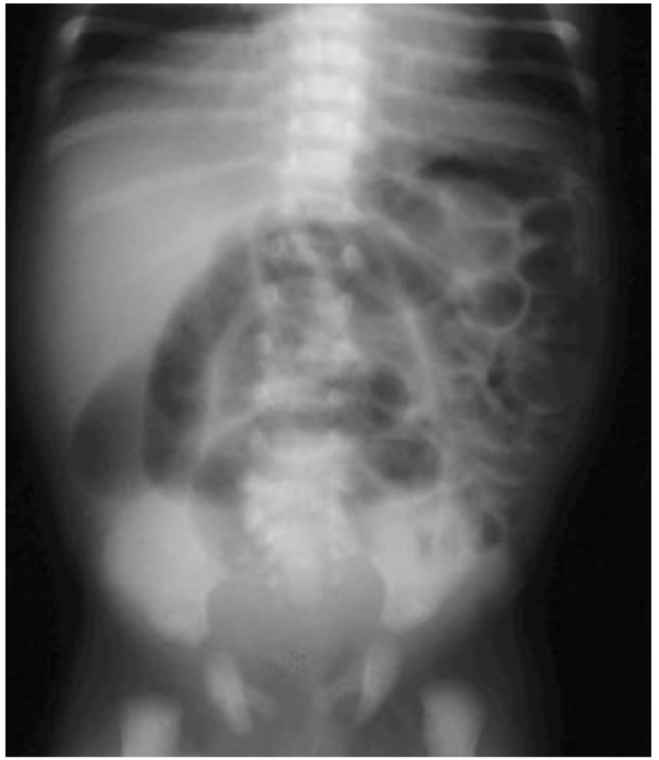
- Ano rectal malformation



Meconium Plug syndrome

- functional colonic obstruction
- is a transient disorder of the newborn colon
- characterized by delayed passage (>24-48 hr) of meconium and intestinal dilatation.
- The incidence is one in 1,000 births
- May be it is associated with Hirschsprung disease in 40% of cases and cystic fibrosis in 40% of cases.

[https://emedicine.medscape.com/article/410969-overview]

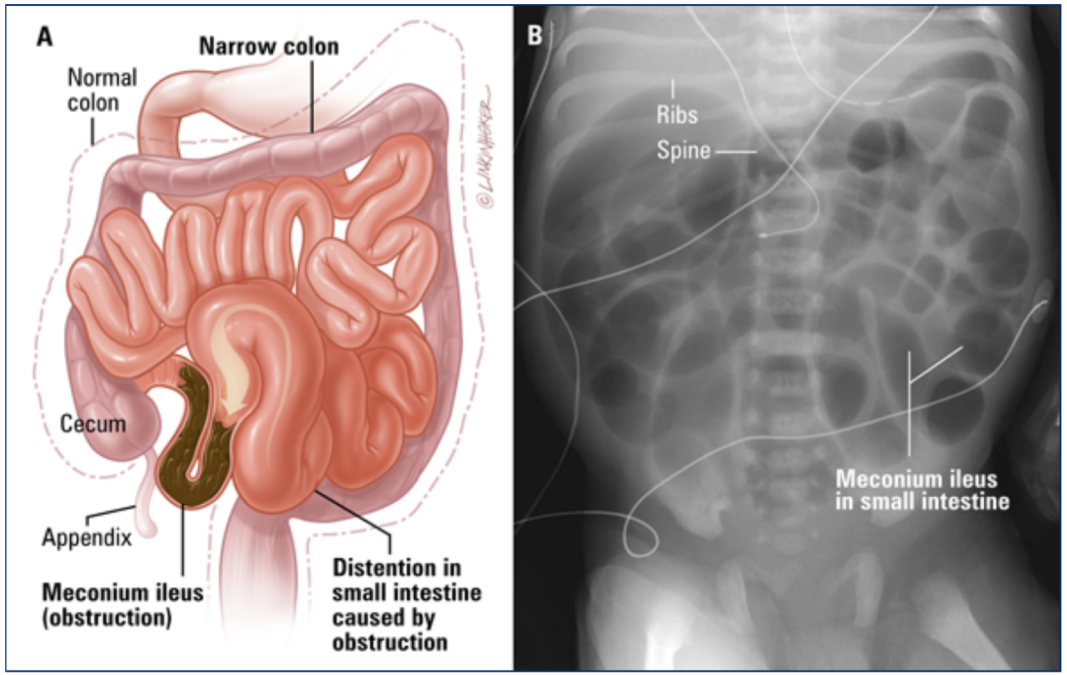


Supine frontal view of the abdomen in a newborn with meconium plug syndrome demonstrates multiple dilated loops of bowel but no rectal gas.

View Media Gallery

Case 1: What are the DDX

- Meconium ileus (MI)
  - meconium is thicker and stickier than normal.
- The most common cause is cystic fibrosis
- Around 20% of CF present with (MI)
- Most often at level of ileocecal valve in neonates
- Complication
  - Intestinal atresia
  - Volvulus
  - Meconium peritonitis
  - Perforation



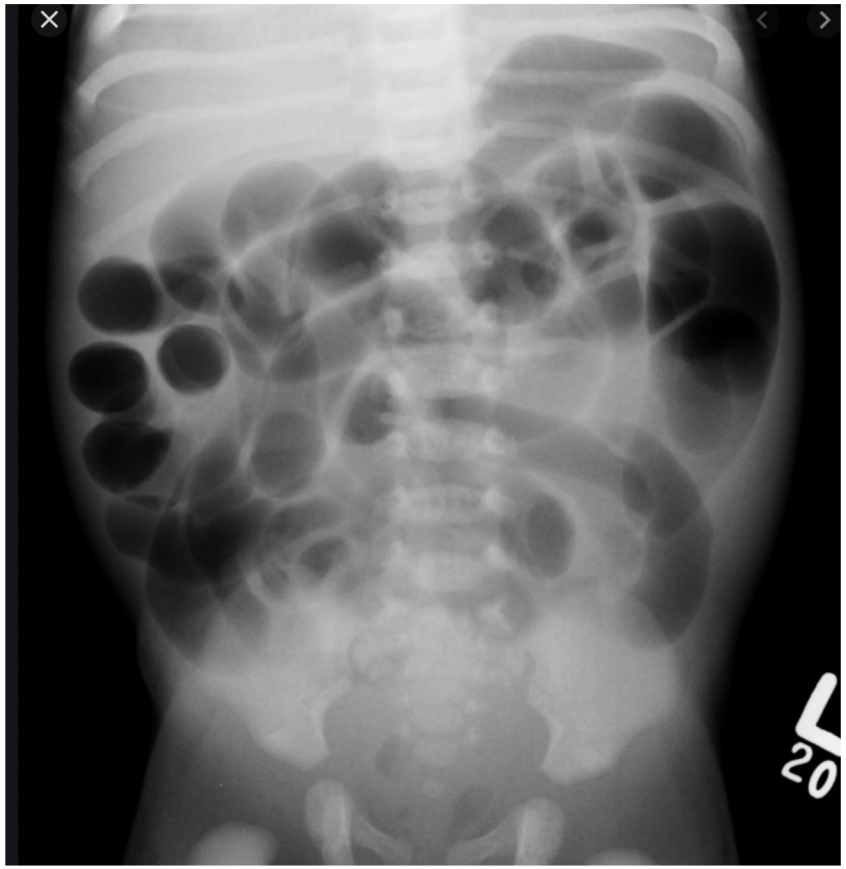
A. Illustration of intestine blocked by meconium. B. Abdominal x-ray of a newborn infant with meconium ileus showing dilated loops of bowel.

Case 1: What are the DDX

- Ano rectal malformation
- Meconium ileus
- Meconium plug

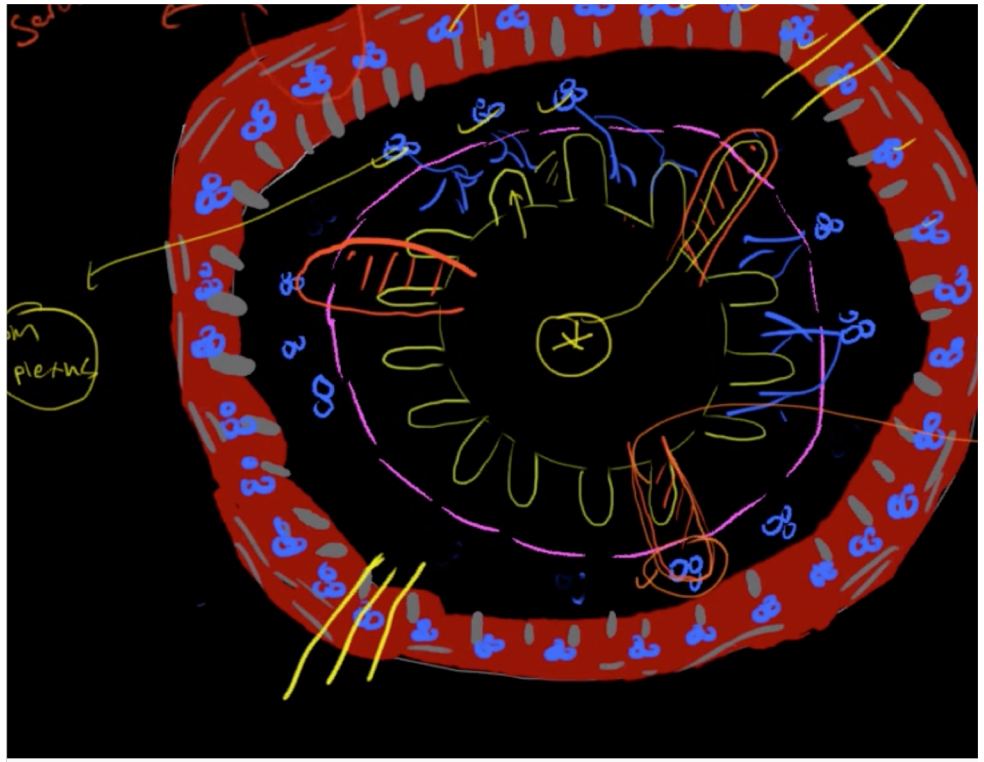
- Normal Anal exam (patency and position)
- Possible
- Negative family History of CF
- Possible

Case 1 What other DDX



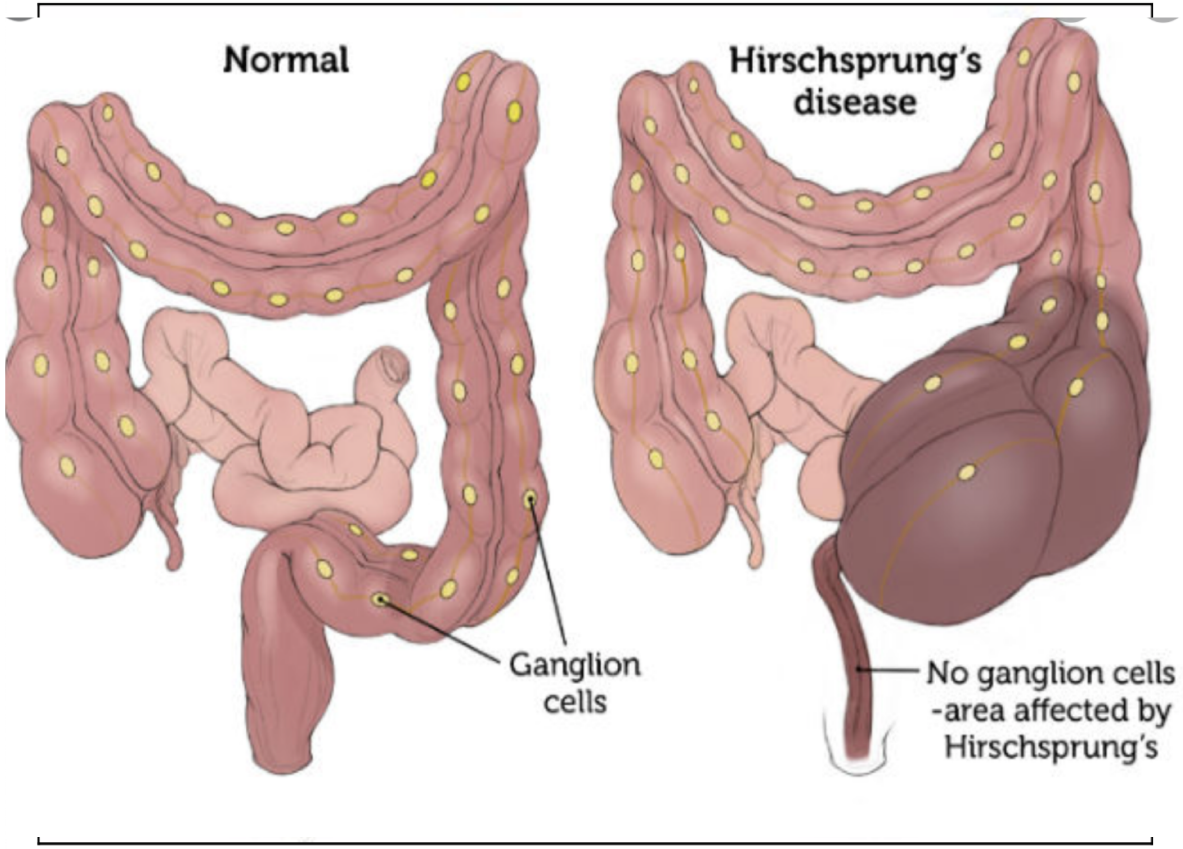
- Dilated Bowel

CASE 1 : DDX: Hirschsprung's disease (HD) What is the pathogenesis



- Agangliosis in distal intestine
- Absent submucosal (Meissner) plexus, the myenteric (Auerbach) plexus (between the longitudinal and circular muscle layers),

https://www.youtube.com/watch?v=Bf7e8_9zPTY



- 75% limited to rectum and sigmoid
- Translation zone will appear between normal and a ganglionic segment
- causes 15 to 20 percent of intestinal obstructions in newborns.
- Genetic factors may be involved

Types of Hirschsprung's disease

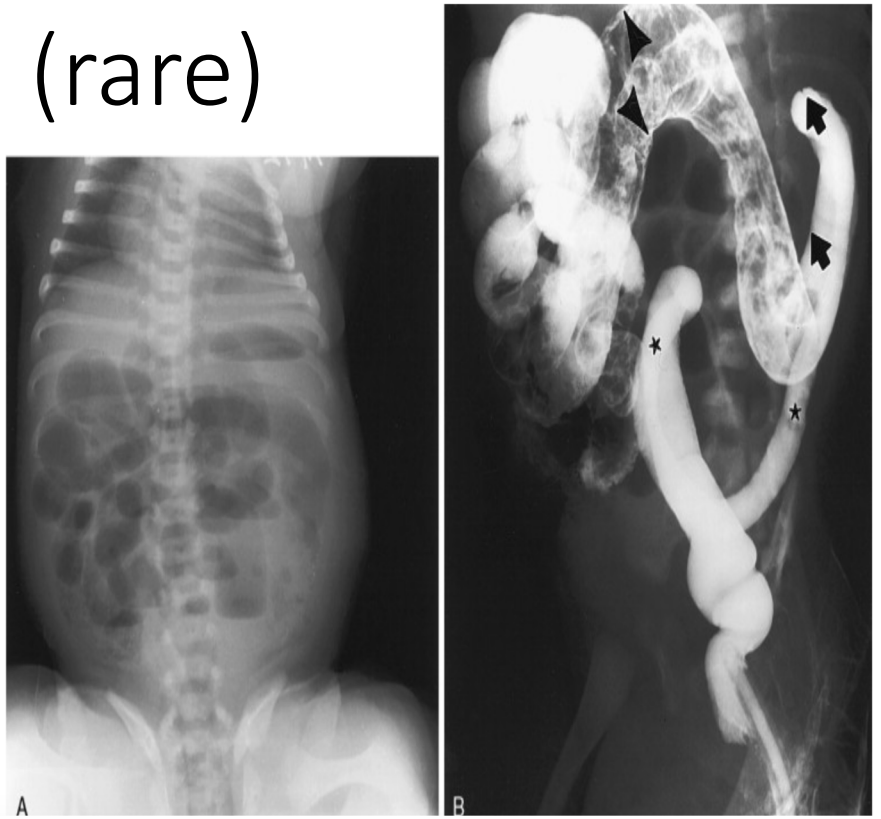
Hirschsprung's disease is categorized based on how much colon is affected. Your child's health care provider can tell you which type of Hirschsprung's disease y

- **Ultra short segment:** Nerves are missing from a very small portion of the rectum.
- **Short segment:** Nerves are missing from the rectum and a small portion of the colon.
- **Long segment:** Nerves are missing from the rectum and a larger portion of the colon.
- **Very long segment:** Nerves are missing from the entire colon and rectum and sometimes part of the small intestine.

Other DDX
Left small colon (dysfunctional) (rare)

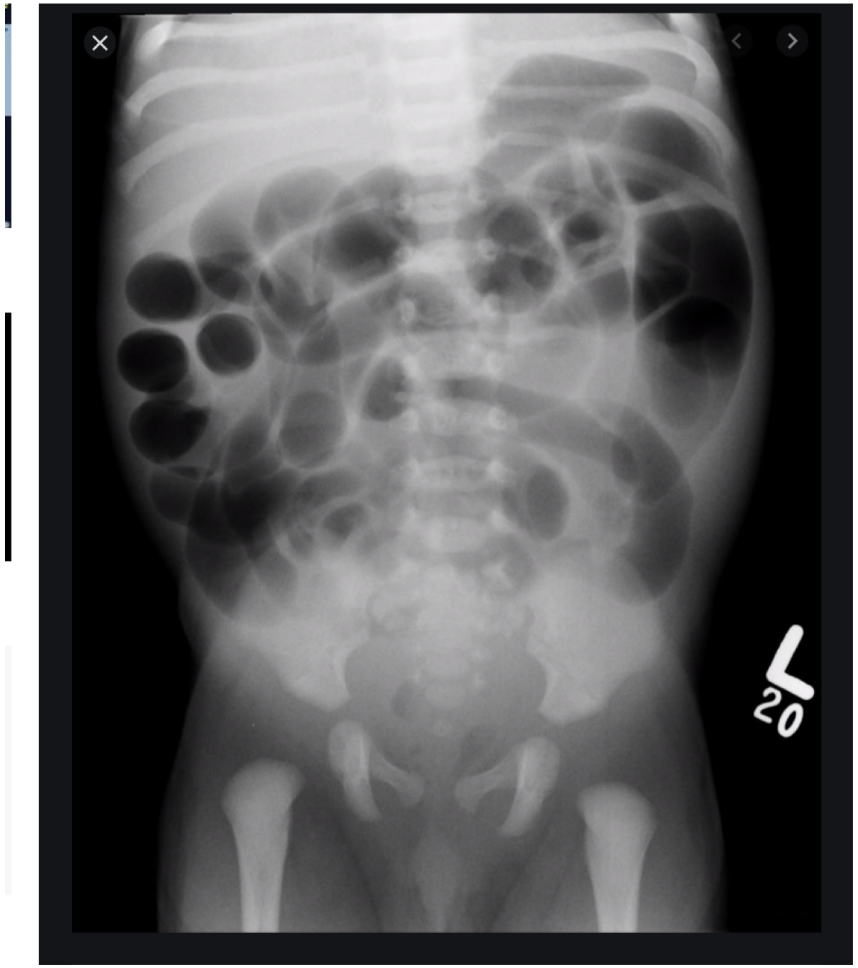
- transient and resolves 24 to 48 hours after birth
- History of maternal diabetes (40%)
- association with hypothyroidism, hypermagnesaemia
- Asses maternal use of psychotic medication that Dysmotility in the descending colon

The obstruction is typically partial and involves the descending colon distal to the splenic flexure.



Barium enema radiograph shows typical findings of the small left colon syndrome. Note the distal microcolon (*asterisks*), the splenic flexure transition (*arrows*), and the dilated transverse colon proximal to the point of obstruction (*arrowheads*).

Case 1: abdomen x ray showed



- Distended intestinal bowel, multiple fluid level

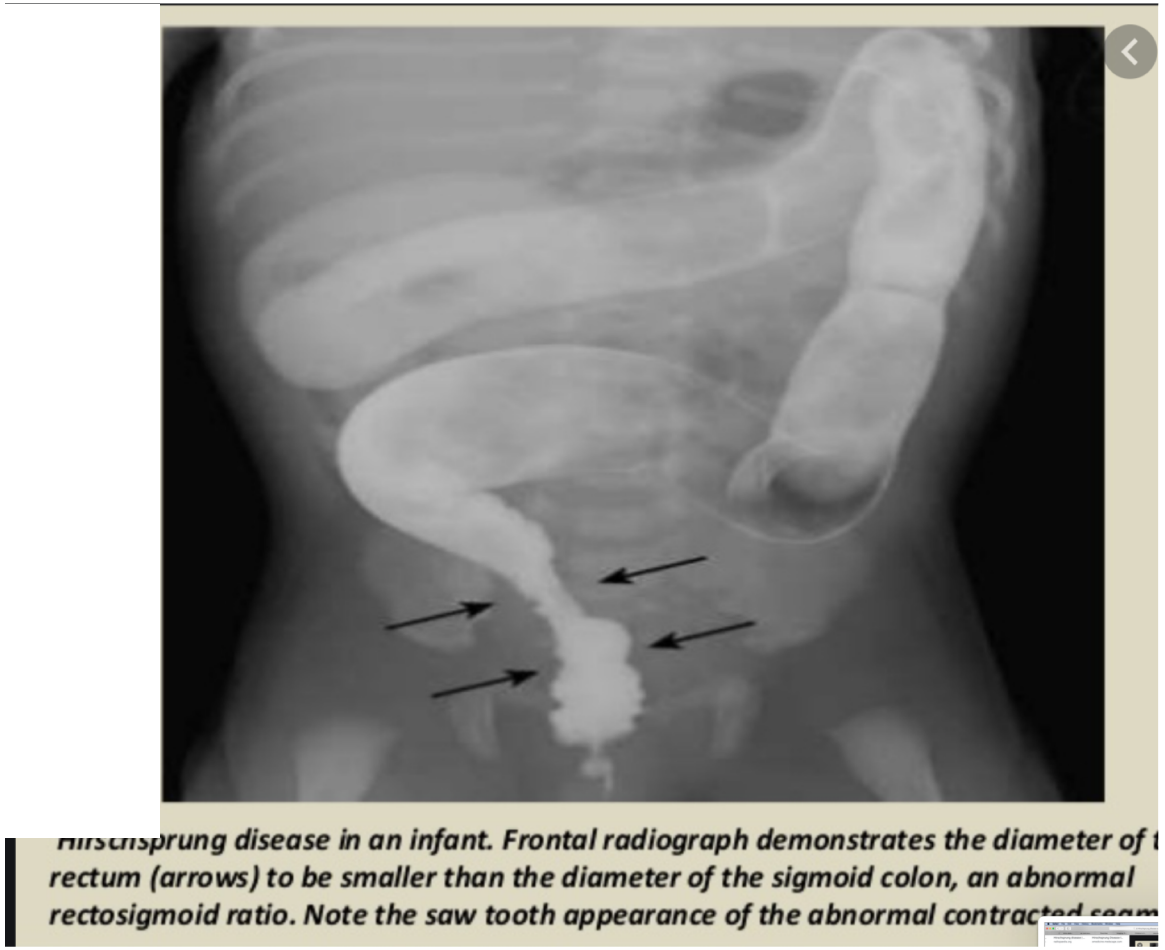
Case 1: What are the DDX

- Ano rectal malformation
- Meconium ileus
- Meconium plug
- HD
- Left small colon
- Hypothyroidism
- Acute Colonic Pseudoobstruction (Acute Megacolon, Ogilvie Syndrome

- Normal Anal exam (patency and position)
- Possible
- Negative family History of CF
- Possible
- Possible
- Possible
- Possible
- Possible

What Is the next Diagnostic studies

- Contrast enema

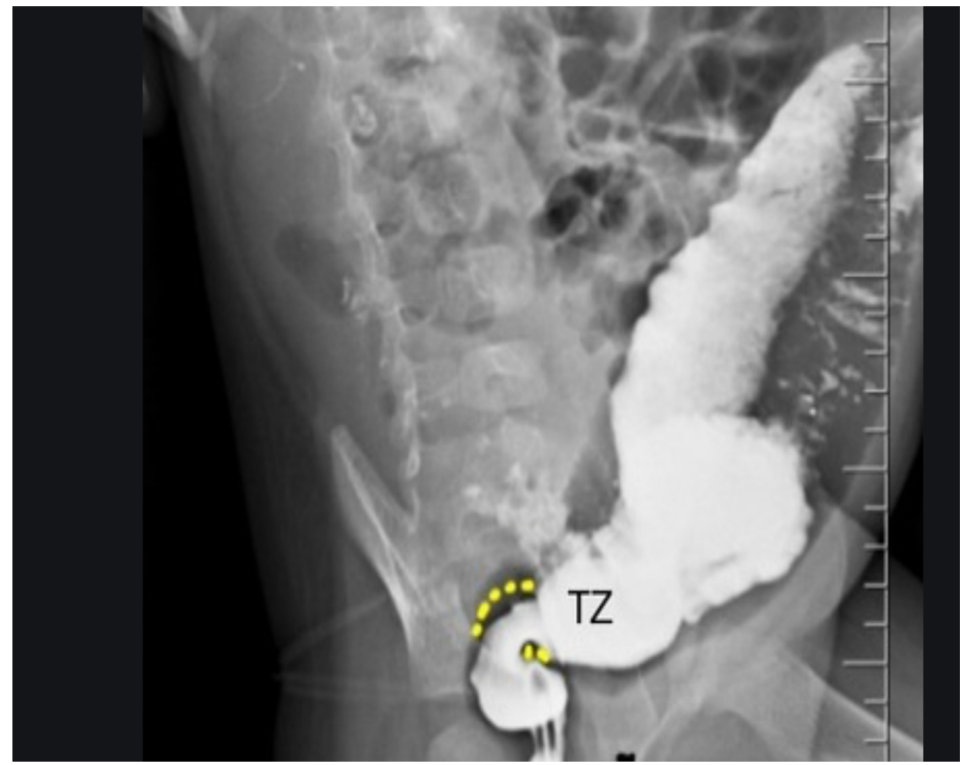


Hirschsprung disease in an infant. Frontal radiograph demonstrates the diameter of t rectum (arrows) to be smaller than the diameter of the sigmoid colon, an abnormal rectosigmoid ratio. Note the saw tooth appearance of the abnormal contracted segm

What Is the next Diagnostic studies

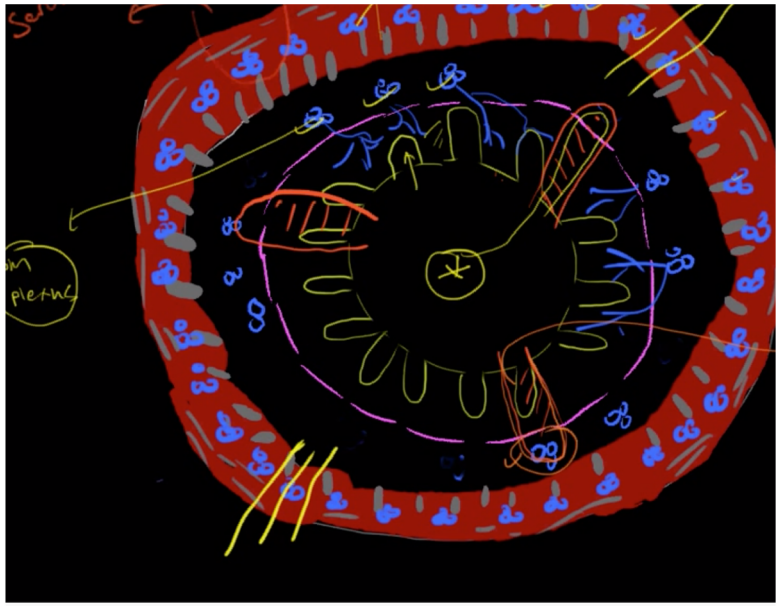
- Contrast enema

Hirschsprung disease in an infant. Frontal radiograph demonstrates the diameter of t rectum (arrows) to be smaller than the diameter of the sigmoid colon, an abnormal rectosigmoid ratio. Note the saw tooth appearance of the abnormal contracted seam



What is definitive DX

- Rectal biopsy



1- Suction biopsy (look at submucosa
ENS
Confirm absence the ganglion cells in the abnormal bowel segment

If Equivocal suction biopsy

2. Need full thickness Biopsy rectal wall biopsy

Cas1

- You discuss with the parents the management
- Of the following ,the most appropriate management of this child is

- Ano-rectal-manometry
- Dilatation of Anal sphincter
- Multiple hypertonic contrast enema
- Resection of ganglionic segment and pull through of the ganglionic Bowel to the anus

Case 1 : definite treatment

- Ano -rectal manometry
- Show absence of recto-inhibitory reflex (dilatation) but infant at this age does not need it
- Dilatation of Anal sphincter
- Not helpful in neonatal management
- Multiple hypertonic contrast enema
- Used if Meconium ileus or plug
- Surgical management
- Resection of dossed segment and pull through the normal segment to the anus