

# Failure to Pass Meconium

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RAD 4001

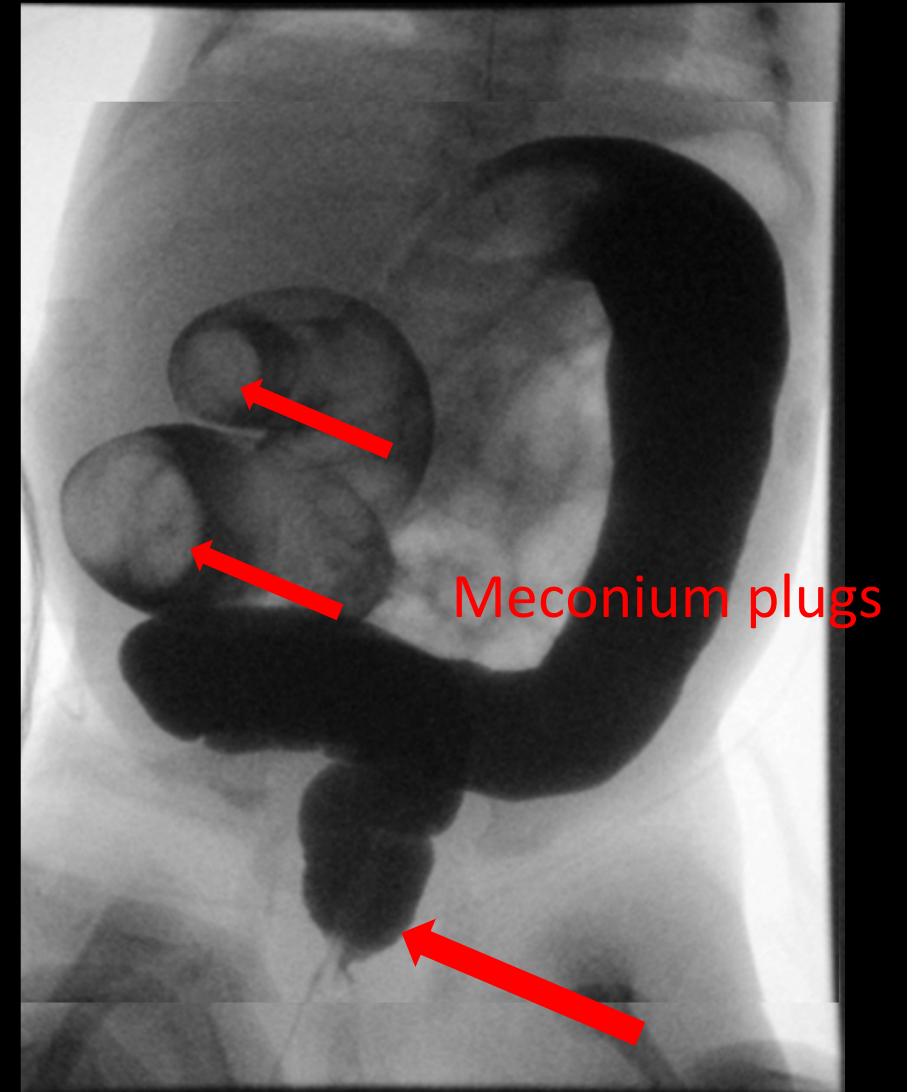
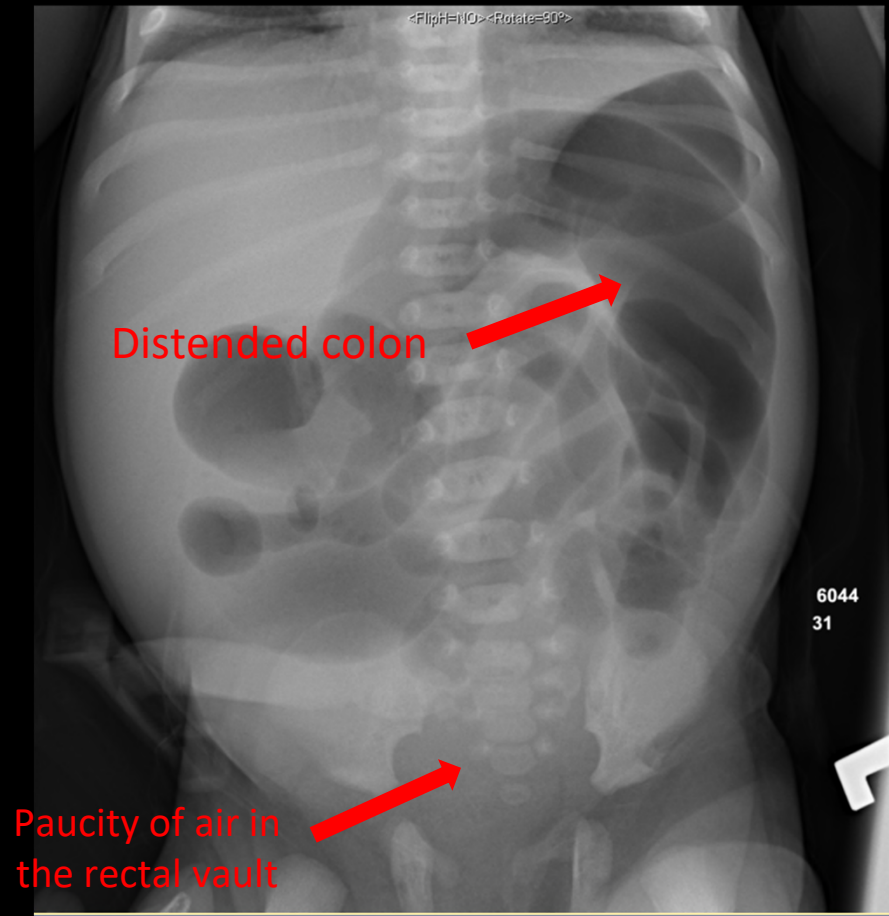
Reviewed by: Manickam Kumaravel, MD



# Clinical History

- 36-hour-old girl born at 37w5d to a G1P0 mother with adequate prenatal care
- APGAR 7 at 1 minute, 9 at 5 minutes, resuscitation was routine
- Failure to pass meconium at 36 hours
- Frequent spit ups with feeds
- Distended abdomen with hyperactive bowel sounds, otherwise benign exam

# KUB and Barium Enema



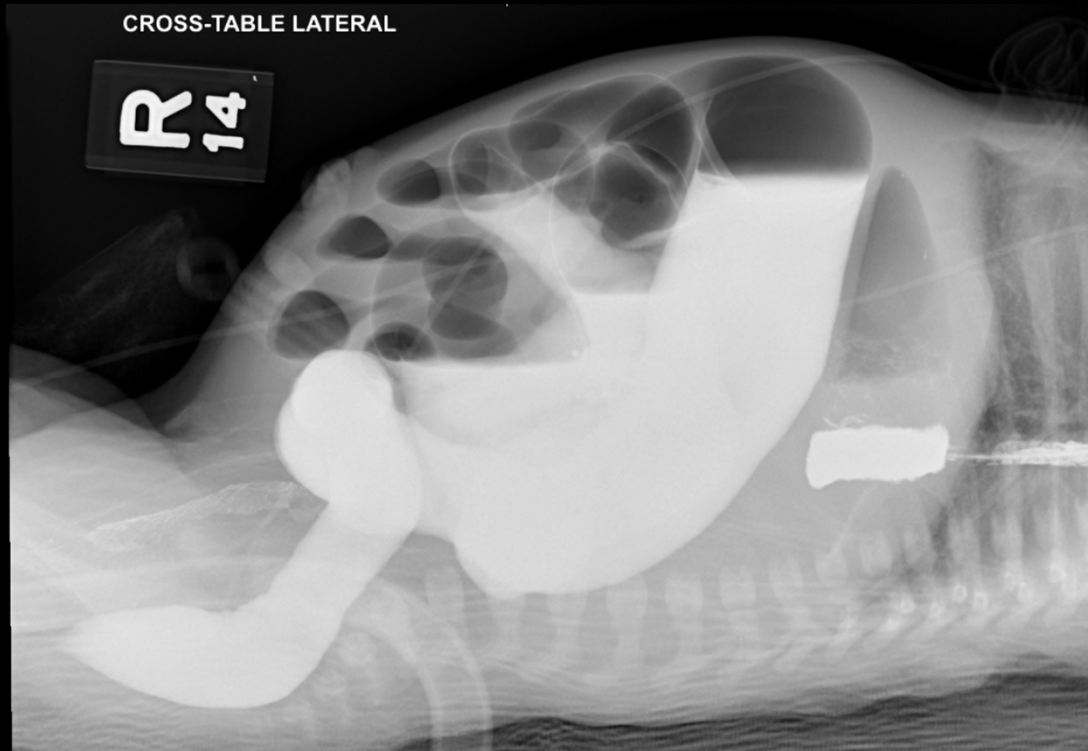
# Initial Findings and Impression

- KUB: Distended loops of bowel with relative absence of rectal bowel gas
- Barium Enema: Distended colon with extensive filling defects favored to represent meconium, inability to reflux contrast into the distal ileum
- Upper GI series added on, but it was noncontributory due to delayed gastric emptying and an inability to visualize the duodenum
- Per surgical team “Child passed stool after rectal stimulation, flow was normal velocity not concerning for Hirschsprung’s”

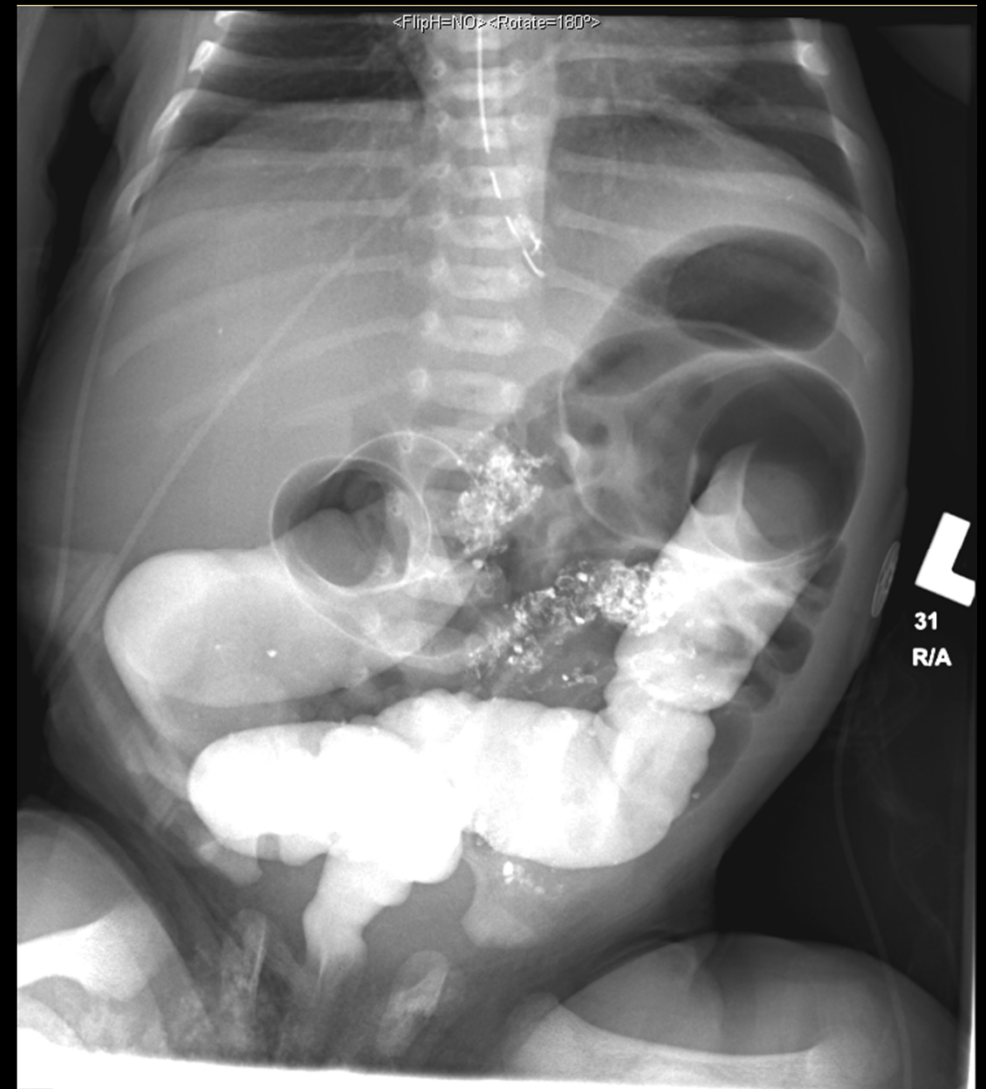
# Differential Diagnosis

- Meconium Plug Syndrome
- Hirschsprung Disease
- Meconium Ileus

# Contrast Follow Up- 9 hr

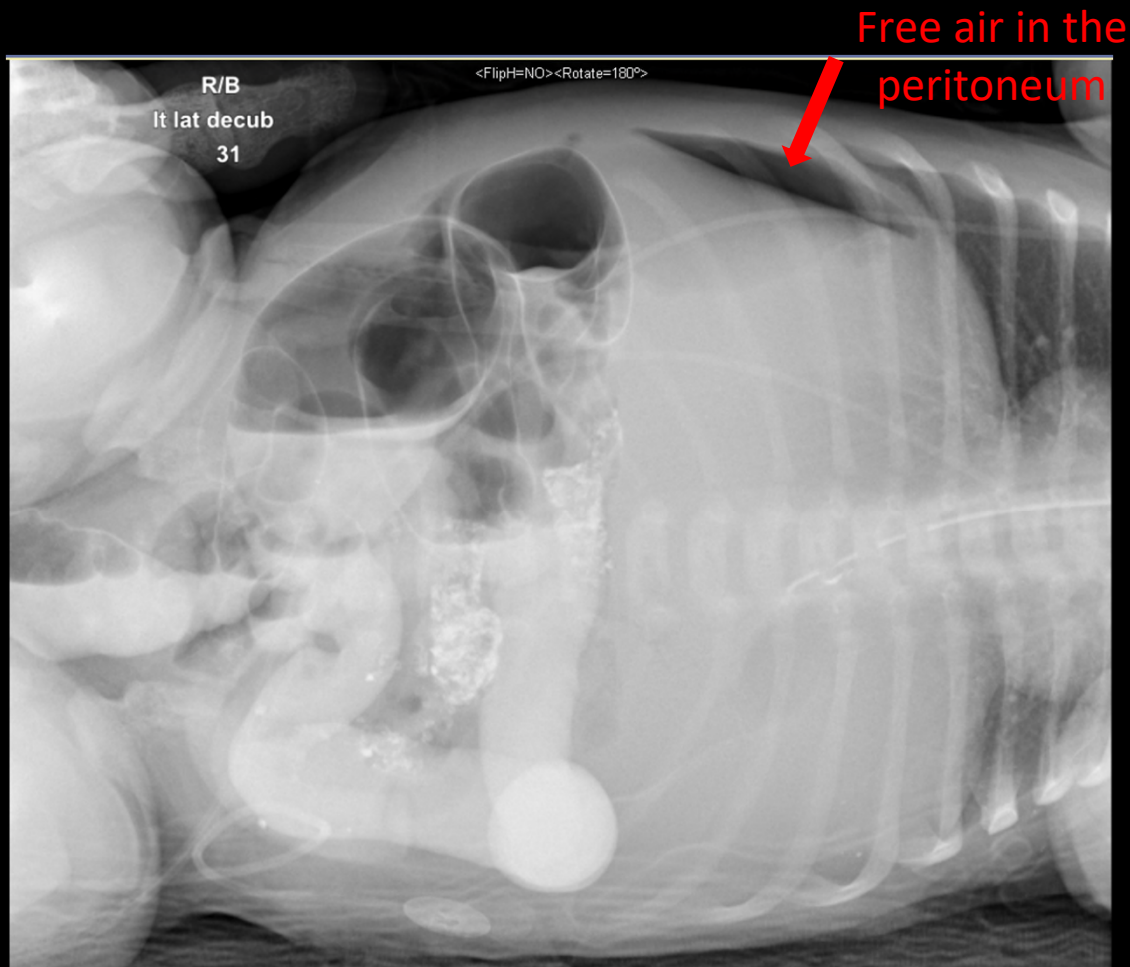


# Contrast Follow Up- 20 hr





# Free intraperitoneal Air



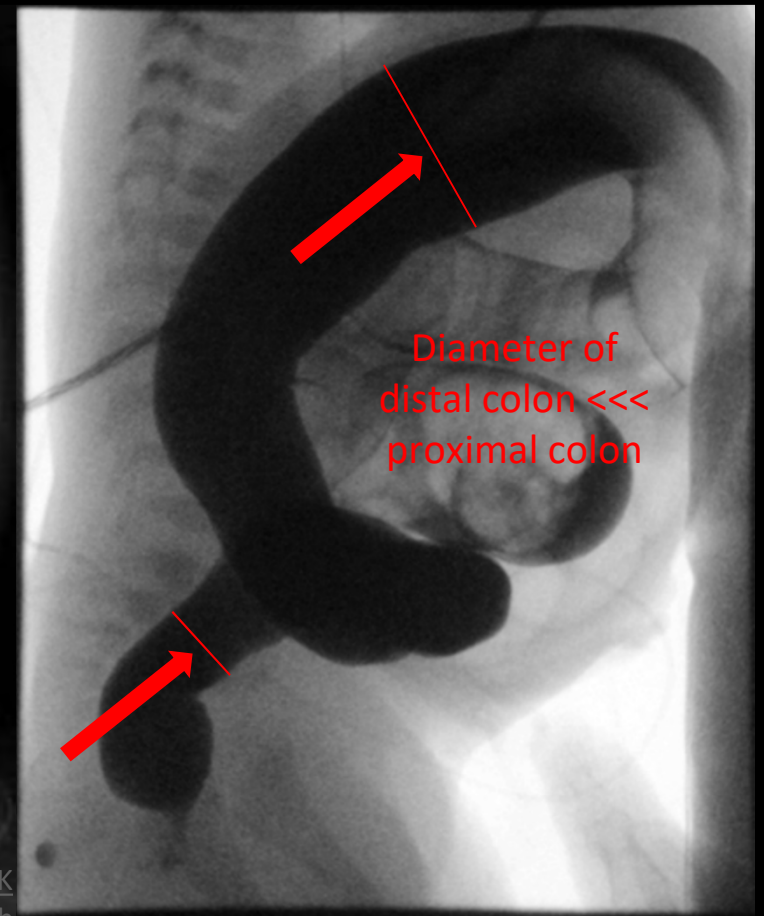
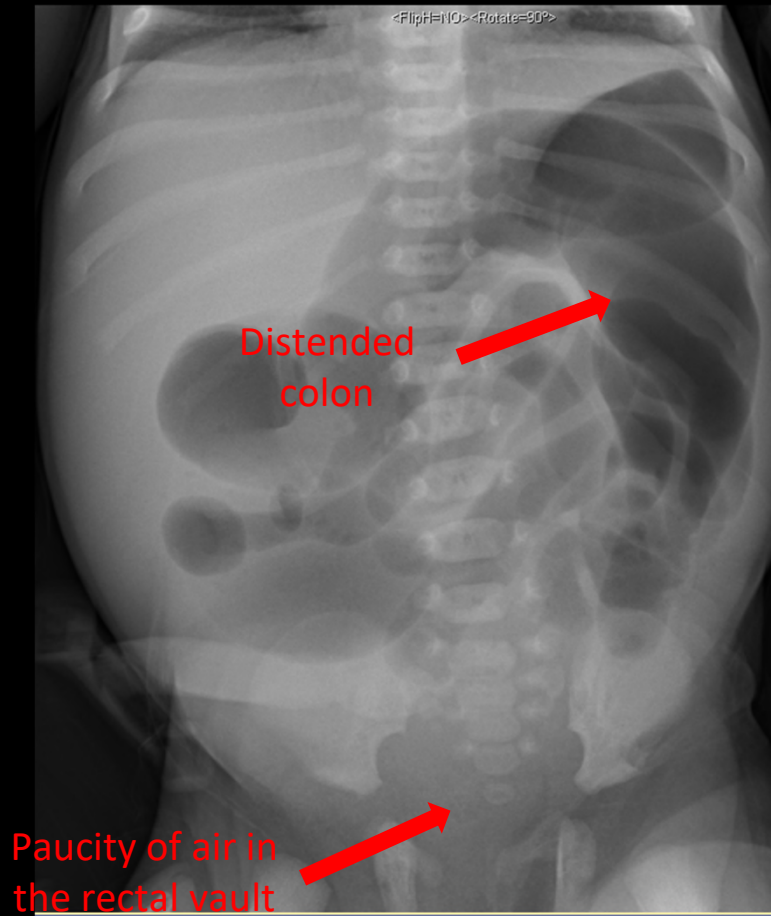
- Free intraperitoneal air seen on cross-table lateral view, confirmed on left lateral decubitus view
- Clinically correlated to distended and tender abdomen
- Patient taken to OR emergently
- In OR, cecum was noted to be perforated, and 4 cm of bowel, including the ileocecal valve was resected, and ileostomy placed.



# Discussion- Hirschsprung or not?

- During surgery, suction rectal biopsy was performed, showing absence of ganglionic cells in the submucosal plexus, hypertrophy of submucosal bundles, and negative calretinin immunohistochemical stain, diagnostic for **Hirschsprung Disease**
- Hirschsprung Disease:
  - Aganglionic distal colon presenting with:
    - ✓ Failure to pass meconium within 48 hours of birth
    - ✓ Symptoms of intestinal obstruction
    - ✗ “Squirt sign” with rectal stimulation

# Review of Initial Imaging- Findings Concerning for Hirschsprung



# Hirschsprung Disease

- Initial imaging and exam were interpreted as less suggestive of Hirschsprung Disease due to presence of meconium plug syndrome and normal velocity stool with rectal stimulation
- However, both of these exams are limited
  - 15% of infants with meconium plug syndrome also have Hirschsprung Disease
  - 32% percent who had inconclusive findings on contrast enema were ultimately diagnosed with HD

# Treatment

- Due to perforation and emergent ileotomy and ileostomy, this patient will receive a two stage surgical treatment, with the second stage being ileostomy take down and resection of aganglionic colon
- Resection of ileocecal valve increases risk of small intestine bacterial overgrowth, which presents as bloating, diarrhea, and malabsorption. Patient will need to be clinically monitored for this complication

# ACR appropriateness Criteria

<b>Variant 1:</b>		<b>Bilious vomiting in neonate up to 1 week old.</b>	
<b>Radiologic Procedure</b>	<b>Rating</b>	<b>Comments</b>	<b>RRL*</b>
X-ray abdomen	9	An initial radiograph will help determine further workup strategy.	⊕⊕
X-ray upper GI series	8		⊕⊕⊕
X-ray contrast enema	7	Consider this procedure when abdominal radiograph suggests distal bowel obstruction.	⊕⊕⊕⊕
US abdomen (UGI tract)	4		O
<b>Rating Scale:</b> 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			<b>*Relative Radiation Level</b>

- Abdominal x-ray 1 view: \$670
- Abdominal x-ray 2 view: \$771
- Upper GI series: \$1573
- Colon barium enema: \$1667

# Take Home Points

- Barium enema can be a useful tool during evaluation of failure to pass meconium, but *cannot be used to rule out Hirschsprung Disease if clinical suspicion is high, rectal biopsy should be performed*
- It is important *to minimize invasive interventions* in all patients, and to monitor patients after all invasive procedures, including imaging
- Average clinical presentations may be less dramatic than the classical pathognomonic examples taught during training

# References

- [https://www.uptodate.com/contents/congenital-aganglionic-megacolon-hirschsprung-disease?search=hirschsprung&source=search\\_result&selectedTitle=1~73&usage\\_type=default&display\\_rank=1#H2513409901](https://www.uptodate.com/contents/congenital-aganglionic-megacolon-hirschsprung-disease?search=hirschsprung&source=search_result&selectedTitle=1~73&usage_type=default&display_rank=1#H2513409901)
- <https://www.iffgd.org/other-disorders/short-bowel-syndrome/managing-secondary-effects.html?showall=1>
- <https://acsearch.acr.org/docs/69445/Narrative/>
- <https://www.memorialhermann.org/patients-caregivers/memorial-hermann-charge-master/>





Questions?