# AMSER Case of the Month
# October 2025

# 59 days old Male with projectile vomiting

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AMSER

# Patient Presentation

**HPI:** 59 days old Male presenting with projectile vomiting for the past 3 days.

**Developmental & Birth History:** History of prematurity (29 weeks) and long NICU stay due to lung prematurity with exposure to cocaine and alcohol during pregnancy

# Patient Presentation:

**Vital Signs:** Temp 98.2F, Pulse 147, Resp 34, BP: 107/67, SPO2: 97%

**Physical Exam:** Mild palpable lump along the epigastric region with no other abnormal physical examination findings

# What Imaging Should We Order?

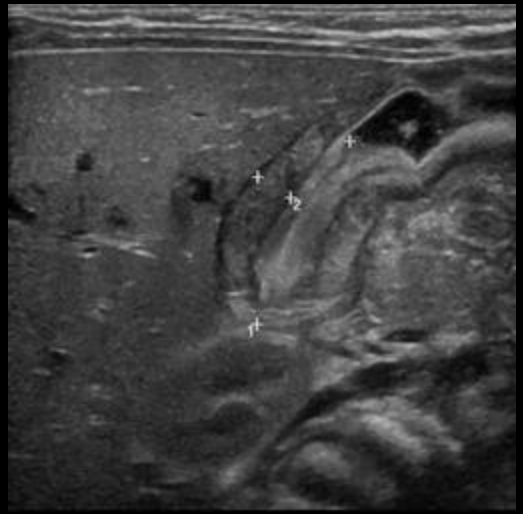
# Select the applicable ACR Appropriateness Criteria

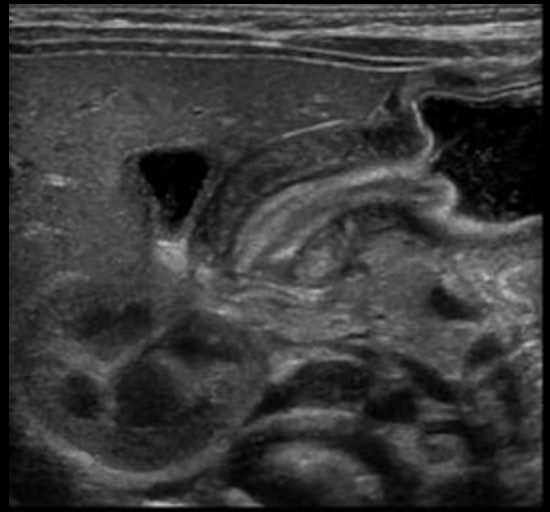
**Variant 7:** **Infant older than 2 weeks and up to 3 months old. New onset nonbilious vomiting (suspected hypertrophic pyloric stenosis). Initial imaging.**

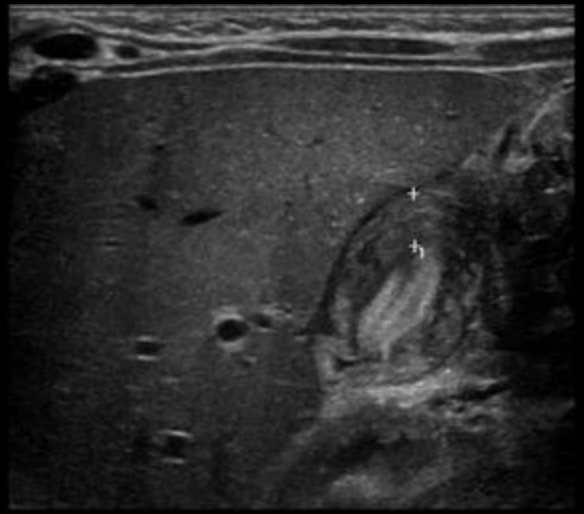
| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| US abdomen (UGI tract) | Usually Appropriate | 0 |
| Fluoroscopy upper GI series | May Be Appropriate | ☢☢☢ |
| Radiography abdomen | Usually Not Appropriate | ☢☢ |
| Fluoroscopy contrast enema | Usually Not Appropriate | ☢☢☢☢ |
| Nuclear medicine gastroesophageal reflux scan | Usually Not Appropriate | ☢☢☢ |

This imaging modality was ordered by the physician

# Findings (unlabeled)

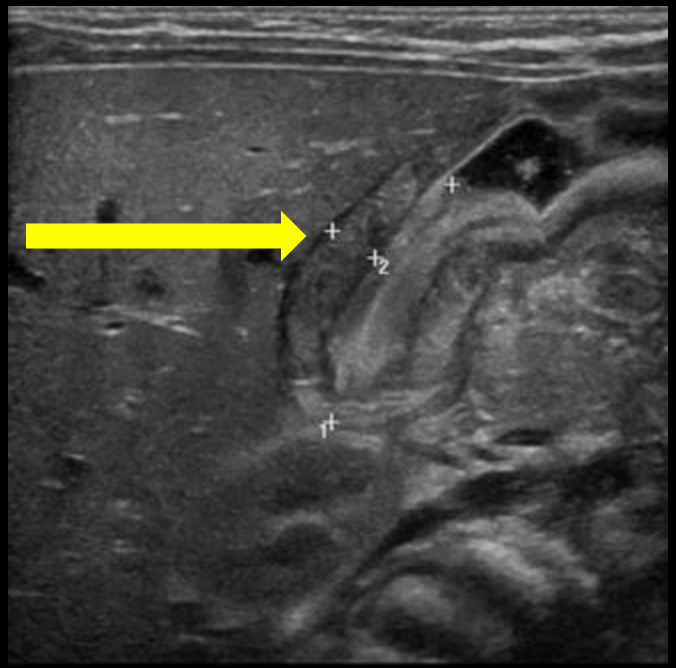






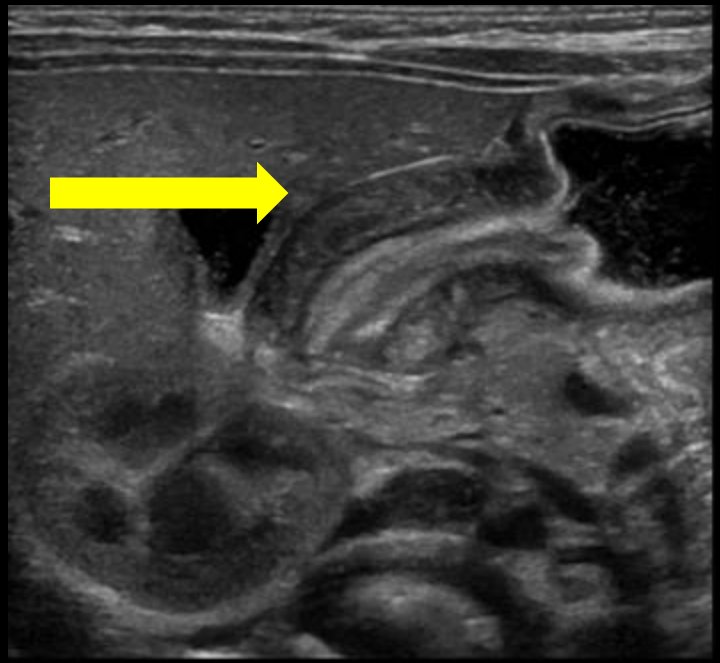
# Findings: (labeled)

The pyloric length measures 20 mm and pyloric muscle thickness measures 4 mm. Passage of gastric content was not seen on dynamic exam

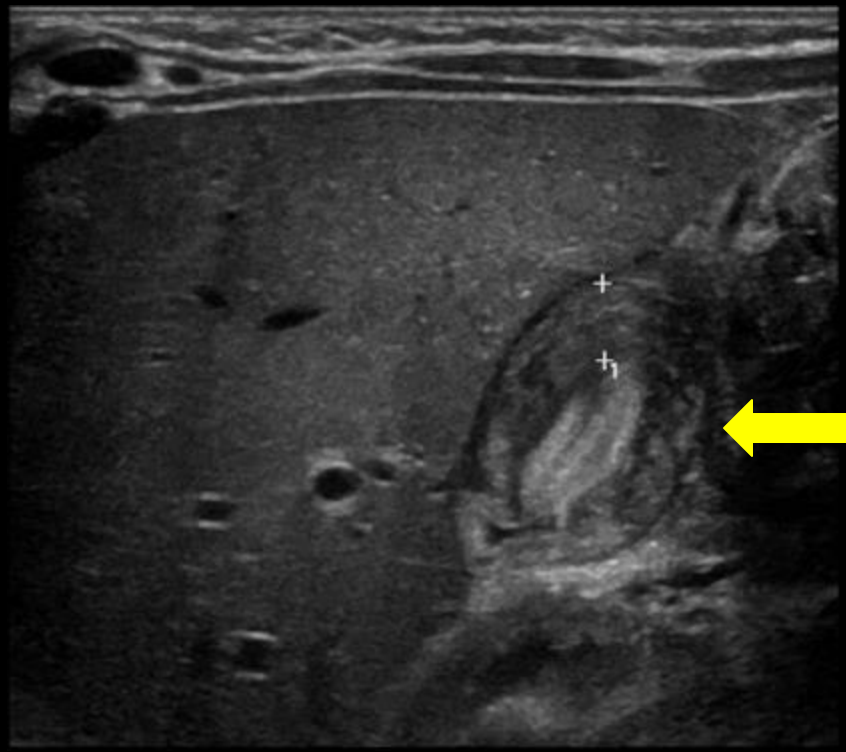


# Findings: (labeled)

"Cervix Sign": projection of thickened pylorus into the antrum representing a cervix



# Findings: (labeled)



"Target Sign": Enlarged low-echogenic muscle around the bright echogenic mucosa

# Final Dx:

Hypertrophic Pyloric Stenosis

# Case Discussion:

**Definition:** Thickening of the pyloric sphincter leading to obstruction and postprandial nonbilious vomiting. It is the most common cause of gastric outlet obstruction in infants.[1]

**Epidemiology:** incidence rate of 2-5 per 1000 live births, more commonly in males (5:1). Patient typically present by 5 weeks of age.[1,2]

**Etiology:** Exposure to nicotine during pregnancy, preterm delivery, small weight for gestational age, cesarean section, Macrolide Antibiotics, first newborn.[3]

# Case Discussion:

**Clinical Features:**

- Projectile nonbilious vomiting after each feed
- Continuous hunger after each feed
- Failure to thrive
- Dehydration and poor weight gain
- Hypochloremic Hypokalemic Metabolic Alkalosis
- On physical examination, a palpable “olive like mass” can sometimes be felt

# Case Discussion:

**Imaging Findings:**

- **Ultrasound** is the imaging modality of choice with 97% sensitivity and 100% specificity.[4]
  - **Diagnostic Measurements Requirements: Mnemonic Number Pi (3.14).**[5]
  - Diameter of a single muscular wall thickness greater than 3 mm (most accurate).[5]
  - Pyloric length of greater than 14 mm.[5]
- ***Cervix Sign:*** projection of thickened pylorus into the antrum representing a cervix.[6]
- ***Target Sign:*** Enlarged low-echogenic muscle around the bright echogenic mucosa.[6]

# Case Discussion:

**Treatment:**

- **Initial:**
  - Start NPO
  - Initiate IV fluids
  - Replete electrolytes (mainly potassium)

- **Definitive:**
  - Pyloromyotomy is the main treatment option.[7]
  - A longitudinal incision in the muscular layer to widen the lumen
  - Can be done both laparoscopic or open with similar effectiveness and safety.[7]

# References:


1) Piotto L, Gent R, Taranath A, Bibbo G, Goh DW. Ultrasound diagnosis of hypertrophic pyloric stenosis - Time to change the criteria. *Australas J Ultrasound Med*. 2022;25(3):116-126. Published 2022 Jun 10. doi:10.1002/ajum.12305
2) Cruz-Centeno N, Fraser JA, Stewart S, et al. Hypertrophic Pyloric Stenosis Protocol: A Single Center Study. *Am Surg*. 2023;89(12):5697-5701. doi:10.1177/00031348231175126
3) Krogh C, Gørtz S, Wohlfahrt J, Biggar RJ, Melbye M, Fischer TK. Pre- and perinatal risk factors for pyloric stenosis and their influence on the male predominance. *Am J Epidemiol*. 2012;176(1):24-31. doi:10.1093/aje/kwr493
4) Godbole P, Sprigg A, Dickson JA, Lin PC. Ultrasound compared with clinical examination in infantile hypertrophic pyloric stenosis. *Arch Dis Child*. 1996;75(4):335-337. doi:10.1136/adc.75.4.335
5) Blumhagen JD, Maclin L, Krauter D, Rosenbaum DM, Weinberger E. Sonographic diagnosis of hypertrophic pyloric stenosis. *AJR Am J Roentgenol*. 1988;150(6):1367-1370. doi:10.2214/ajr.150.6.1367
6) Haller JO, Cohen HL. Hypertrophic pyloric stenosis: diagnosis using US. *Radiology*. 1986;161(2):335-339. doi:10.1148/radiology.161.2.3532185
7) Ramji J, Joshi RS. Laparoscopic pyloromyotomy for congenital hypertrophic pyloric stenosis: Our experience with twenty cases. *Afr J Paediatr Surg*. 2021;18(1):14-17. doi:10.4103/ajps.AJPS_119_20