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Double Bubble Trouble: Misdirection in the Diagnosis of Pyloric Stenosis

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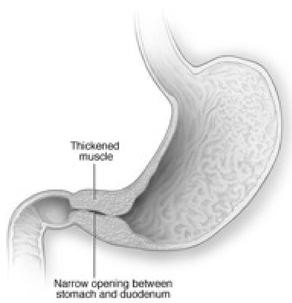
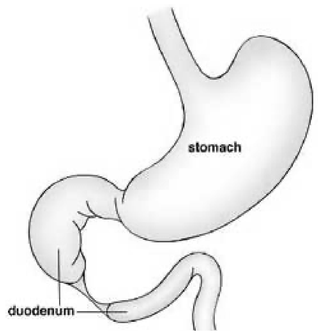
Introduction

Pyloric Stenosis[1,2]



- <6 months
- Projectile vomiting
- Nonbilious emesis
- PE: palpable “olive” mass
- Ultrasound → gold standard
- Imaging: elongated pylorus with narrowed lumen
- Pyloromyotomy

Duodenal Atresia[3]



- Within 24-36 hours
- Projectile vomiting
- Bilious > nonbilious emesis
- PE: Abdominal distention
- Antenatal ultrasound, postnatal X-ray
- Imaging: double-bubble sign
- Duodenoduodenostomy

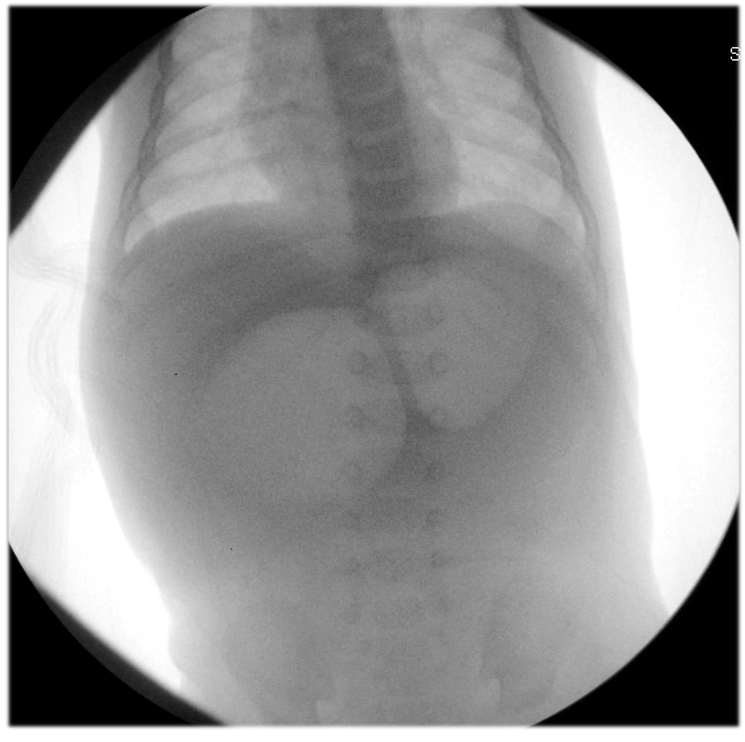
Case Presentation

HPI

- A two-month-old term male infant, born without complications, presents to the ED with nonbilious, projectile vomiting occurring within 2 hours after feedings.
- Multiple ED visits over past month for similar symptoms with prior negative ultrasound findings.
- Trial of different feeding formulas and anti-reflux medication → no resolution or improvement of symptoms.
- PE Abd: +BS, soft, non distended, no palpable masses

Diagnostic Workup for our Patient

Lab Workup	Results
Basic Metabolic Panel	Hypochloremic, hypokalemic metabolic alkalosis
Urinalysis	Increased ketones, proteinuria
Ultrasound	Pyloric mural thickness: 1.1 mm → normal Pyloric length: 17 mm → normal



Impression: “double bubble sign indictive of duodenal atresia”

Discussion

- This case demonstrates a presentation of pyloric stenosis with negative sonographic features and an uncharacteristic ”double-bubble” sign.
- A similar case reported in the literature showed a “double bubble” sign on prenatal ultrasound leading to a misdiagnosis of duodenal obstruction/atresia. However, repeated imaging demonstrated the sign only during times of gastric rest and were more suggestive of pyloric stenosis during gastric peristalsis.[4]
- This may have contributed to our patient's puzzling imaging findings and suggests further study to better understand gastric motility in the imaging of pyloric stenosis may be helpful.
- Although this patient had negative findings on sonographic imaging, ultrasound remains highly sensitive in this population.[5]
- Further studies should explore the effects of digestive movement on radiographic results as well as limitations of ultrasound use in the diagnosis of pyloric stenosis.

References

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4. Yoshizato T, Satoh S, Taguchi T, Suita S, Nakano H. Intermittent 'double bubble' sign in a case of congenital pyloric atresia. Fetal Diagn Ther. 2002 Nov-Dec;17(6):334-8. doi: 10.1159/000065380. PMID: 12393961.
5. van den Bunder FAIM, Derikx JPM, Kiblawi R, van Rijn RR, Dingemann J. Diagnostic accuracy of palpation and ultrasonography for diagnosing infantile hypertrophic pyloric stenosis: A systematic review and meta-analysis. *The British Journal of Radiology*. 2022;95(1139). doi:10.1259/bjr.20211251