4-month-old newborn with progressive food intolerance and non-bilious emesis

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Hypertrophic pyloric stenosis
Increased *single layer* muscular wall thickness >3mm
Hypertrophic pyloric stenosis

- Idiopathic thickening of the gastric pyloric musculature, resulting in progressive gastric outlet obstruction
- M:F – 4:1
- Occurs between first week to 3 months of age
- Presents with *non-bilious* projectile vomiting (ddx from duodenal atresia), sudden food intolerance with failure to thrive
- U/S is imaging modality of choice, though fluoroscopy may be able to identify additional GI tract abnormalities, such as malrotation
Findings

Pylorus musculature is hypoechoic with hyperechoic mucosa

Muscle thickness of single muscular wall on transverse: >3mm (most accurate)

Muscle longitudinal length: >15-17mm

MNEMONIC: PI-LORIC STENOSIS
- PI = 3.14

Pyloric volume >1.5cc

Pyloric transverse diameter > 13mm

Antral nipple, cervix, and target signs

L = liver, A = Antrum, P = pylorus, D = duodenum
Additional concerns

- Be aware of tangential views and contractions which may produce pseudo-thickening.
- Dynamic evaluation is critical as a wide-open pylorus with normal passage of contents excludes HPS, even if muscle appears thickened.
- Tx of choice is surgical pyloromyotomy. F/u u/s may be performed if emesis continues
  - Thickening may persist up to 5 months post-op
  - Anterior normalizes first, posterior last
  - Upper GI may be performed to exclude duodenal leak, incomplete pyloromyotomy, or GERD
References

Hypertrophic pyloric stenosis: tips and tricks for ultrasound diagnosis

Silvia Costa Dias · Sophie Swinson · Helena Torrão · Ligia Gonçalves · Svitlana Kurochka · Carlos Pina Vaz · Vasco Mendes

Infantile Hypertrophic Pyloric Stenosis

Infantile hypertrophic pyloric stenosis is a common condition affecting young infants; despite its frequency, it has been recognized only for a little over a century, and its etiology remains unknown. Nevertheless, understanding of the condition and of effective treatment have undergone a remarkable evolution in the 20th century, reducing the mortality rate from over 50% to nearly 0%. The lesion is