



Hypertrophic pyloric stenosis (HPS) is the **most common cause of gastric outlet obstruction** in infancy from **2-12 weeks CGA**. HPS is **rare before 2 weeks** of age in a term infant as **pyloric musculature hypertrophies** until gastric outlet obstruction occurs. This obstruction causes the classic symptoms and lab findings of HPS.

## PRESENTATION

- Usually well before symptom onset (median 6 weeks)
- Non-bloody, non-bilious, **projectile vomiting after feeds**
- Appears **hungry** post-feed
- Dehydration and weight loss
- Distended abdomen
- Visible **peristaltic waves**

Although rare, if there is a palpable thickened mass in RUQ (the "olive"), this is pathognomonic of HPS.

## RISK FACTORS

- 2-5 weeks at symptom onset
- Male gender
- First born
- Formula feeding
- In utero / neonatal macrolide exposure
- Parental history of HPS
- C section delivery
- Certain Genetic syndromes:
  - Cornelia de Lange Syndrome, Smith-Lemli-Opitz Syndrome, Apert Syndrome, Down Syndrome, and Trisomy 18 Syndrome

## Differential Dx of Infantile Non-Bilious Emesis

- Hypertrophic pyloric stenosis
- GER/GERD
- Duodenal stenosis (proximal to Ampulla of Vater)
- Gastroenteritis
- Cow's milk protein intolerance
- Inborn errors of metabolism
- Liver disease
- Gastric, antral, or pyloric atresia
- Pyloric or antral membrane
- Gastric volvulus
- Overfeeding

## INVESTIGATIONS

- Abdominal ultrasound: positive if muscle thickness >3mm and length ≥15mm
- Upper GI study if US unavailable → "string sign"
- Observed feeding trial if imaging is inconclusive
- Metabolic panel with electrolyte assessment
- Bilirubin if jaundiced

## PATHOPHYSIOLOGY

- Impaired neuronal nitric oxide synthase synthesis may be impaired in HPS → disrupted smooth muscle relaxation in myenteric plexus → pyloric hypertrophy
- Gastric hyperacidity may also play a role in causing HPS, although the exact etiology is unknown.

## ELECTROLYTE ABNORMALITIES IN HPS

↓ Chloride

↓ Potassium

Metabolic Alkalosis

## SIGNS OF HYPOVOLEMIC SHOCK:

Severe dehydration:

- Altered mental status
- Impaired end-organ perfusion
- Decreased blood pressure



**ALTHOUGH UNCOMMON IN HPS, RAPID FLUID RESUSITATION IS REQUIRED IF THESE SIGNS ARE PRESENT.**

## MANAGEMENT

- Correct any metabolic or electrolyte abnormalities
- Assess hydration status and correct fluid deficit
  - Electrolyte imbalance and dehydration must be corrected prior to anesthetic
- Laparoscopic pyloromyotomy is the standard approach: surgery is only definitive treatment
- Can resume oral feeds within a few hours of surgery, often with some regurgitation but an excellent long-term prognosis when identified early.

