RAMA UNIVERSITY

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FACULTY OF NURSING

PYLORIC STENOSIS

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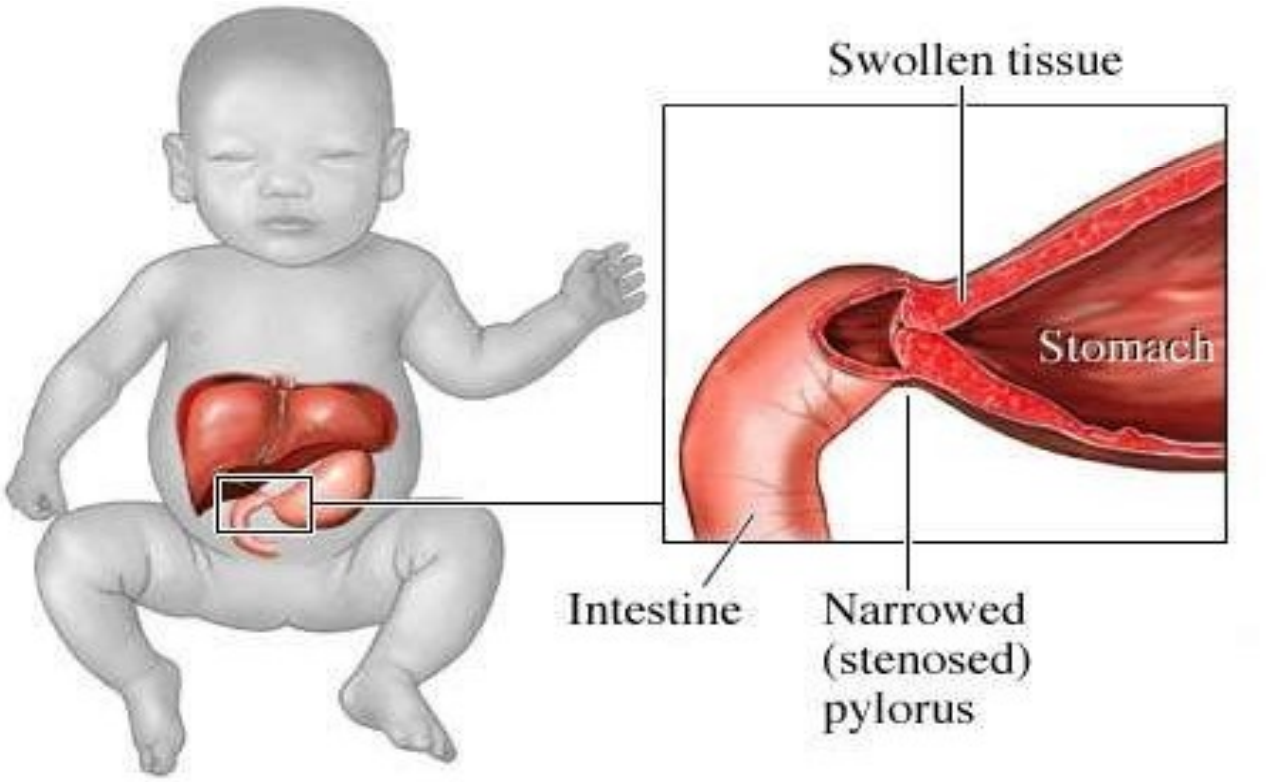
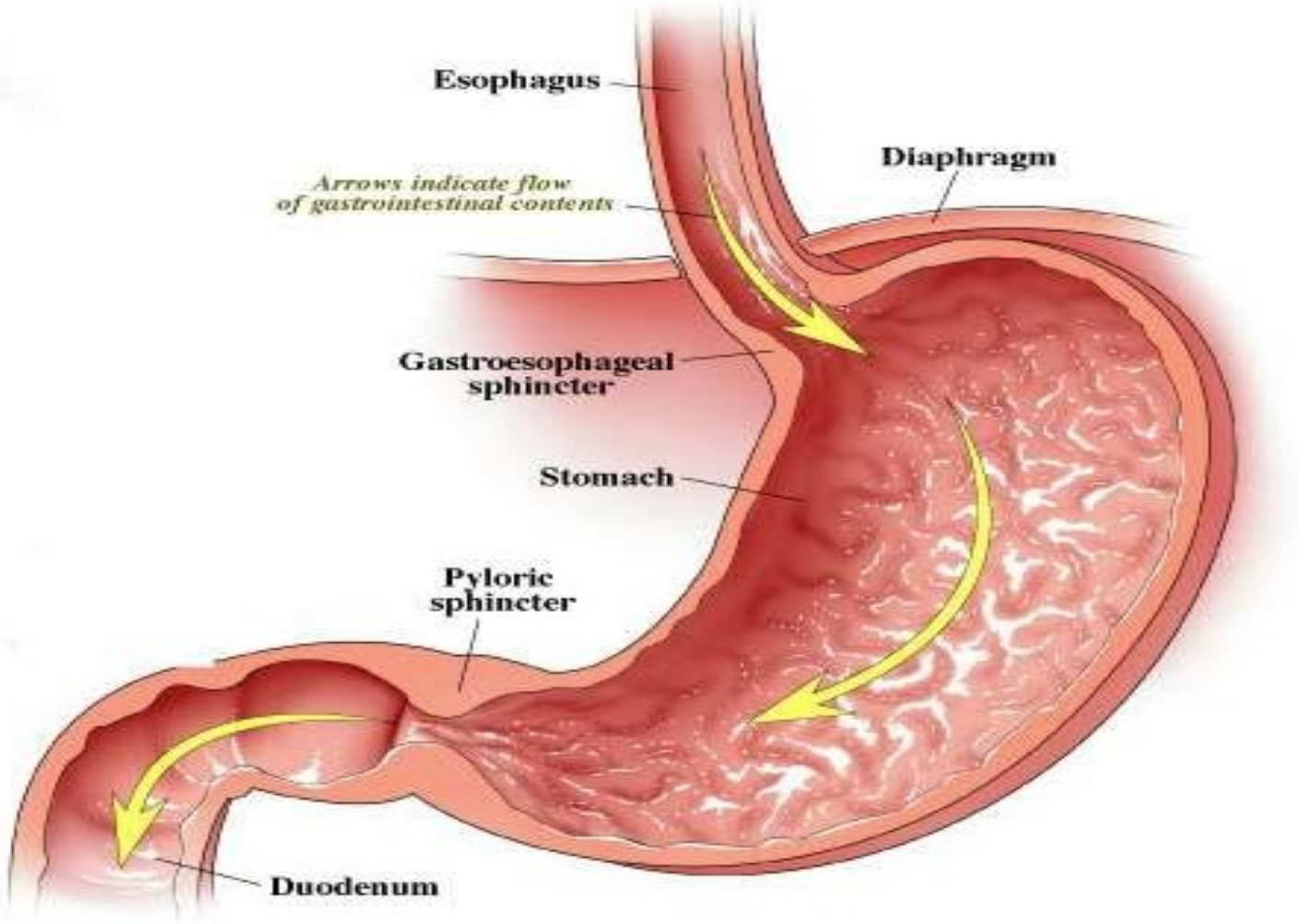
INTRODUCTION



- Pyloric stenosis or pylorostenosis is narrowing (stenosis) of the opening from the stomach to the first part of the small intestine known as the duodenum.

- The pylorus, meaning "gate".


Esophagus
Diaphragm
Arrows indicate flow
of gastrointestinal contents
Gastroesophageal
sphincter
Stomach
Pyloric
sphincter
Duodenum

- Due to enlargement (hypertrophy) of the muscle surrounding this opening which spasms when the stomach empties.

- This condition causes severe projectile non-bilious vomiting.

- It most often occurs in the first few months of life.

- It more specifically labelled as infantile hypertrophic pyloric stenosis.

- The thickened pylorus is felt classically as an olive-shaped mass in the middle upper part or right upper quadrant of the infant's abdomen.

- Pyloric stenosis also occurs in adults, where the cause is usually a narrowed pylorus due to scarring from chronic peptic ulceration.

DEFINITION

- Pyloric stenosis is defined as “narrowing (stenosis) of the outlet of the stomach so that food cannot pass easily from it into the duodenum, pyloric stenosis results in feeding problems and projectile vomiting.”

INCIDENCE

- 3/1000 live birth
- Male: Female = 4:1
- Commonly in the first born male child
- Most common cause for laparotomy before 1 year.
- Age 3weeks to 3 months.
- Child of those parents who affected with pyloric stenosis.
- It affect more commonly child than the adult.

CAUSES AND RISK FACTORS

- Idiopathic

- Nitric oxide syntheses deficiency

- Nerve cell theory (ganglion cell theory)

- **Sex:** Pyloric stenosis is seen more often in boys — especially firstborn children — than in girls.

- **Race:** Pyloric stenosis is more common in Caucasians of northern European ancestry, less common in African-Americans and rare in Asians.

- **Premature birth:** Pyloric stenosis is more common in babies born prematurely than in full-term babies.

- **Family history:** Studies found higher rates of this disorder among certain families. Pyloric stenosis develops in about 20 percent of male descendants and 10 percent of female descendants of mothers who had the condition.

- **Smoking during pregnancy:** This behavior can nearly double the risk of pyloric stenosis.

- **Early antibiotic use:** Babies given certain antibiotics in the first weeks of life - erythromycin to treat whooping cough, for example - have an increased risk of pyloric stenosis. In addition, babies born to mothers who took certain antibiotics in late pregnancy also may have an increased risk of pyloric stenosis.

- **Bottle-feeding:** Some studies suggest that bottle-feeding rather than breast-feeding can increase the risk of pyloric stenosis.

- **In adult it can occur due to history of peptic ulcer in pylorus region and hypertrophic changes in muscle layer of pylorus.**

PATHOPHYSIOLOGY

The gastric outlet obstruction due to the hypertrophic pylorus impairs emptying of gastric contents into the duodenum.

As a consequence, all ingested food and gastric secretions can only exit via vomiting, which can be of a projectile nature.

Persistent vomiting results in loss of stomach acid (hydrochloric acid).

The chloride loss results in a low blood chloride level which impairs the kidney's ability to excrete bicarbonate. This is the significant factor that prevents correction of the alkalosis.

The vomited material does not contain bile because the pyloric obstruction prevents entry of duodenal contents (containing bile) into the stomach.

A secondary hyperaldosteronism develops due to the decreased blood volume.

The high aldosterone levels causes the kidneys to avidly retain Na^+ (to correct the intravascular volume depletion), and excrete increased amounts of K^+ into the urine (resulting in a low blood level of potassium).

The body's compensatory response to the metabolic alkalosis is hypoventilation resulting in an elevated arterial pCO_2

CLINICAL MANIFESTATIONS

- Signs of pyloric stenosis usually appear within three to five weeks after birth.

- Pyloric stenosis is rare in babies older than age 3 months. Signs and symptoms include:

- **Vomiting after feeding.** The baby may vomit forcefully, ejecting breast milk or formula up to several feet away (projectile vomiting). Vomiting might be mild at first and gradually become more severe as the pylorus opening narrows. The vomit may sometimes contain blood.

- **Persistent hunger.** Babies who have pyloric stenosis often want to eat soon after vomiting.

- **Stomach contractions.** Notice wave-like contractions (peristalsis) that ripple across baby's upper abdomen soon after feeding, but before vomiting. This is caused by stomach muscles trying to force food through the narrowed pylorus.

- **Dehydration.** Baby might cry without tears or become lethargic. You might find yourself changing fewer wet diapers or diapers that aren't as wet as you expect.

- **Changes in bowel movements.** Since pyloric stenosis prevents food from reaching the intestines, babies with this condition might be constipated.

- **Weight problems.** Pyloric stenosis can keep a baby from gaining weight, and sometimes can cause weight loss.

- Olive shaped mass “pyloric tumor” at angle between right rectus muscle and liver.

MANAGEMENT

- Infantile pyloric stenosis is typically managed with surgery; very few cases are mild enough to be treated medically.
- The danger of pyloric stenosis comes from the dehydration and electrolyte disturbance rather than the underlying problem itself.

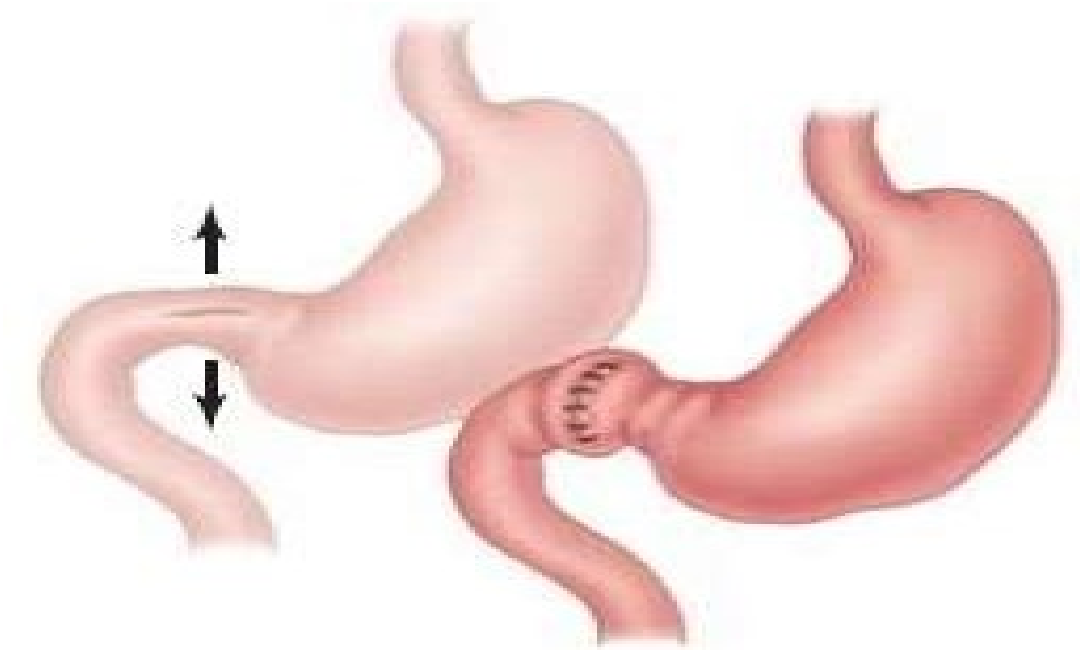
- Therefore, the baby must be initially stabilized by correcting the dehydration and the abnormally high blood pH seen in combination with low chloride levels with IV fluids. This can usually be accomplished in about 24–48 hours.

- Intravenous and oral atropine may be used to treat pyloric stenosis. It has a success rate of 85-89% compared to nearly 100% for pyloromyotomy, however it requires prolonged hospitalization, skilled nursing and careful follow up during treatment.
- It might be an alternative to surgery in children who have contraindications for anaesthesia or surgery, or in children whose parents do not want surgery.

SURGICAL MANAGEMNT

- Laparoscopic pyloromyotomy

- Fred-Ramstedt's Pyloromyotomy



NURSING MANAGEMENT

- Consider thermoregulation at all times,
- Before transport to theatre, transfer infant to incubator set at neutral thermal environment (NTE) temperature.
- Ensure incubator will be plugged in and pre-warmed for the infant to be transferred into in recovery.
- After return to the ward, ensure temperature is stable prior to transferring to open cot.

- Monitor temperature hourly until stable.
- Routine post anaesthetic observations.
- Monitor wound and report abnormalities to surgeon.
- Observe for bleeding, redness, swelling, ooze from incision site.
- Maintain adequate fluid balance chart.
- Monitor IV site.
- Ensure adequate pain relief; use pain assessment tool.

COMPLICATIONS

- Wound infection
- Incisional hernia
- Persistent vomiting
- Stagnation gastritis
- Mucosal perforation
- Shock

PROGNOSIS

- As long as pyloric stenosis is diagnosed quickly, the prognosis (expected outcome) is excellent. In most cases, surgery cures the condition and relieves all symptoms.
- Most infants recover fully, without complications, and are not at increased risk for future problems related to pyloric stenosis.

THANK YOU