Neonatal Intestinal Obstruction

*An essay submitted for partial fulfillment of master degree **in general surgery***

Presented by:

Mohamed Tarek Ibraheem Elkasry
(M.B; B.Ch.)

Supervised by:

Prof. Dr. Reda Abd El Tawab Khalil
Professor of General Surgery
Faculty of Medicine
Ain Shams University

Prof. Dr. Hesham Mohamed Abdelkader
Assistant Professor of Pediatric Surgery
Faculty of medicine
Ain Shams University

Prof. Dr. Tarek Yousef Ahmed
Assistant Professor of General Surgery
Faculty of medicine
Ain Shams University

Faculty of medicine
Ain Shams University
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Mohamed Tarek Ibraheem Elkasry

Contents

List of Abbreviations

CBD	:	Common Bile Duct
CF	:	Cystic Fibrosis
DA	:	Duodenal Atresia
EA	:	Esophageal Atresia
GI tract	:	Gastro-Intestinal tract
HD	:	Hirshsprung Disease
IHPS	:	Idiopathic Hypertrophic Pyloric Stenosis
IVC	:	Inferior vena cava
JA	:	Jeujenal Atresia
MI	:	Meconium Ileus
MR	:	Magnetic resonance
NEC	:	Necrotizing Entero-Colitis
TEF	:	Tracheo-Esophageal Fistula

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Keywords :

Duodenal Atresia

Esophageal Atresia

Gastro-Intestinal tract

Hirshsprung Disease

Idiopathic Hypertrophic Pyloric Stenosis

Imperforate anus

Inferior vena cava

Jeujenal Atresia

Malrotation

Meconium Ileus

Necrotizing Entero-Colitis

Tracheo-Esophageal Fistula

Abstract

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Supervised by:
Prof. Dr. Reda Abd El Tawab Khalil
Professor of General Surgery -Faculty of Medicine
Ain Shams University
Prof. Dr. Hesham Mohamed Abdelkader
Assistant Professor of Pediatric Surgery-Faculty of medicine
Ain Shams University
Prof. Dr. Tarek Yousef Ahmed
Assistant Professor of General Surgery-Faculty of medicine
Ain Shams University

Neonatal intestinal obstruction is the most common surgical emergency in the neonatal period. Bowel obstruction incidence is 1 in 2000 live births. The 4 cardinal signs of intestinal obstruction in newborns are (1) maternal polyhydramnios, (2) bilious emesis, (3) failure to pass meconium in the first day of life, and (4) abdominal distention. Any infant with bilious vomiting should be considered to have malrotation and midgut volvulus until proven otherwise**.**

Pyloric stenosis:

Is the commonest cause of gastric outlet obstruction. The repeated vomiting leads to dehydration and classical Ramstedt's pyloromyotomy Other rarer causes include pyloric web or atresia.

Duodenal atresia

Vomiting and upper abdominal fullness are consistent findings with duodenal atresia. An infant with duodenal atresia may present with bilious or nonbilious vomiting, depending on the location of the obstruction with respect to the ampulla of Vater. In 85% of patients with duodenal atresia, the obstruction lies distal to the ampulla, and these patients have bilious vomiting.

Jejunoileal atresia

Infants with jejunoileal atresia may present with abdominal distention, vomiting, and obstipation. A hugely dilated (thumb-sized) loop of intestine denotes intestinal obstruction (the so-called rule of thumb).

Malrotation with volvulus

The initial presentation of a newborn with volvulus of the midgut is often bilious vomiting.. As blood flow in the superior mesenteric pedicle is compromised, the bowel becomes ischemic and dilates, and the baby's abdomen becomes increasingly distended and firm Passage of frank blood per rectum may also occur. Prompt surgical intervention is required.

Meconium ileus and plug syndrome

Meconium ileus usually presents with abdominal distention and constipation. Patients who present with meconium ileus should be evaluated for cystic fibrosis. Meconium plug syndrome is a relatively benign condition, usually occurring in healthy-appearing term infants. Abdominal distention and failure to pass meconium within the first 24 hours of life are the presenting signs.

Hirschsprung's disease

The most common history associated with Hirschsprung disease of a term newborn is either failure to pass meconium in the first 24 hours of life or chronic constipation after discharge from the nursery.. Failure to recognize Hirschsprung disease early may eventuate in toxic megacolon and death.

Imperforate anus

Routine inspection of a newborn perineum should include notation of the position and patency of the anus. Anorectal malformations range from anterior displacement of the anal opening to a completely imperforate anus. Many infants with imperforate anus have an abnormal sacral progression, as well as a fistula between the rectum and the genitourinary tract, demonstrated by finding meconium in the urine.

Neonatal Necrotizing Enterocolitis

is one of the most common gastrointestinal emergencies observed in neonatal intensive care units. Intestinal stenosis or stricture occurs in approximately one third of medically treated infants surviving the acute phase of NNEC The mainstay of surgical treatment is resection with enterostomy, although resection and primary anastomosis is useful in selected cases. In addition, some neonates may benefit from peritoneal drainage, second-look procedures, or proximal diversion.

Introduction

Neonatal intestinal obstruction is the most common surgical emergency in the neonatal period ***(Vinocur et al., 2012).***

Bowel obstruction incidence is 1 in 2000 live births and is a common cause of admission to a neonatal surgical unit, accounting for up to one-third of all admissions. Morphologically, congenital defects related to continuity of the intestine can be divided into either atresia or stenosis. Together, they constitute one of the most common etiologies of neonatal intestinal obstruction ***(Britton JR and Britton HL,2005)***

The 4 main signs of neonatal intestinal obstruction in are (1) maternal polyhydramnios, (2) bilious vomiting, (3) failure to pass meconium in the first day of life, and (4) abdominal distention. ***(Juang D and snyder CL,2012).***

Bilious vomiting indicate an obstruction distal to the ampulla of Vater. Any infant with bilious vomiting should be considered to have malrotation and midgut volvulus until proven otherwise ***(Chen QJ, 2014)***

Early diagnosis depends mainly on the early detection of obstructive manifestations by the clinician and the accurate interpretation of radiological findings and other investigations, leading to definitive treatment, which should always be preceded by appropriate resuscitation. Recently the morbidity and mortality is very low and mainly determined by the coexistence of other major congenital anomalies (eg, cardiac), Newer treatments and future developments may reduce the residual mortality in such cases as ultrashort- bowel syndrome. ***(De Backer AI et al., 2009)***

Aim of the work

This work aims to diagnose neonates with intestinal obstruction depending on Antenatal diagnosis, clinical and radiological picture, and recent methods of management.

Anatomy and Embryology

Formation of the primitive gut tube

- The gut tube is formed from yolk sac lined with endoderm

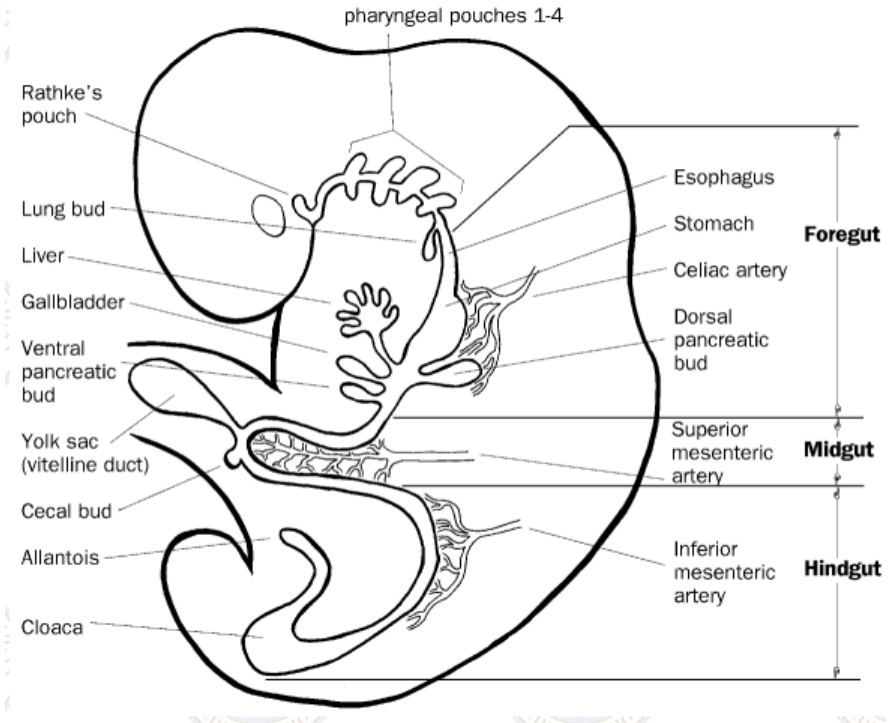

Fig. (1) Gut embryology

(Langman et al.,2011)

Germ layer parts:

Endoderm: mucosal epithelium, mucosal glands, and submucosal glands of the GI tract.

Mesoderm: lamina propria, muscularis mucosae, submucosal connective tissue and blood vessels, muscularis externa, and adventitia/serosa neural crest: neurons and nerves of the submucosal and myenteric plexus.