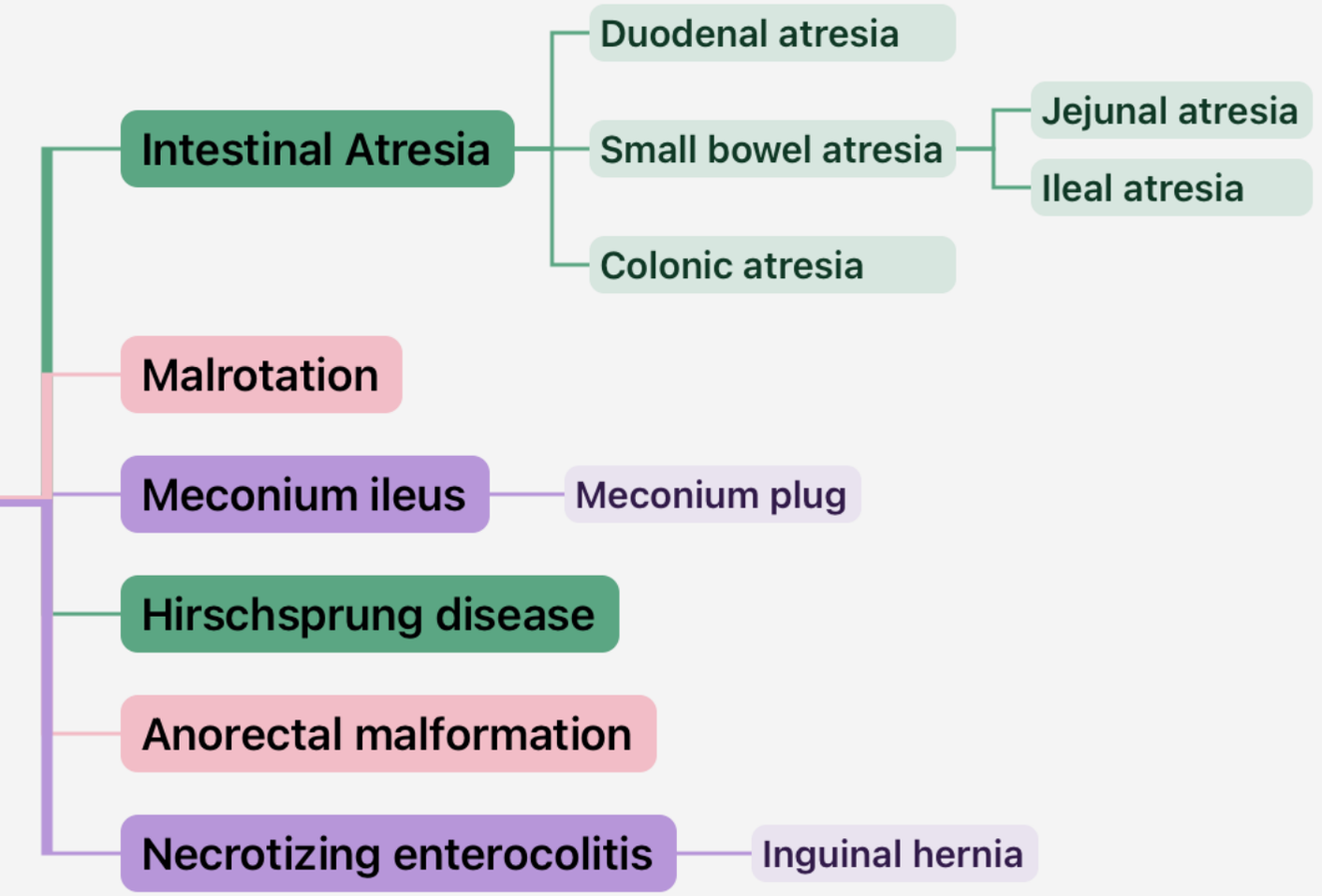
بسم الله الرحمن الرحيم

٩٧% شامل سلايدات د . عبير

Intestinal Obstruction

ارجعوا للصور



Duodenal atresia

Happens embryonically due to failure of canalization

- Epidemiology
  - I per 500 & I0,000 live births
  - M>F
  - Associated anomalies in 45-65% of cases
    - Trisomy 21 (half of the cases) — The most common
    - 25-30% cardiac malformations
    - 25-30% GI anomalies
  - Approximately 45% of babies are premature, and about one-third exhibit growth retardation
- Types
  - Incomplete obstruction — Type I
    - Fenestrated web
    - Most involve the third and/or fourth part of the duodenum
  - Complete obstruction
    - Type II — 2 ends connected with fibrous cord
    - Type III — Complete separation

85% of obstructions located distal to the ampulla

- Diagnosis
  - Antenatally:
    - Polyhydramnios — 32-81% with complete obstruction
    - Double bubble sign — Up to 44%
  - Postnatally:
    - Bilious emesis within the first hours of life in an otherwise stable neonate +/- upper abdominal distension — Classic presentation
    - On exam: — Abdomen is scaphoid
- Management
  - Start with
    - Resuscitation with correction of fluid balance and electrolyte abnormalities
    - NPO
    - IV access
    - NG for gastric decompression
    - Echocardiography prior to any operation
  - Surgery (Duodenoduodenostomy)
    - Not an urgent operation — Unless malroation with concurrent volvulus cannot be excluded
    - Open or MIS
    - Long-term survival 90%
    - Complications
      - Early postop — Mortality
        - Low (3-5%)
        - Related to associated congenital abnormalities
      - Long-term
        - Delayed gastric emptying
        - Severe GERD
        - Duodenogastric reflux
        - Gastritis
        - Peptic ulcer
        - Bleeding
        - Megaduodenum
        - Blind-loop syndrome
        - Intestinal obstruction related to adhesions

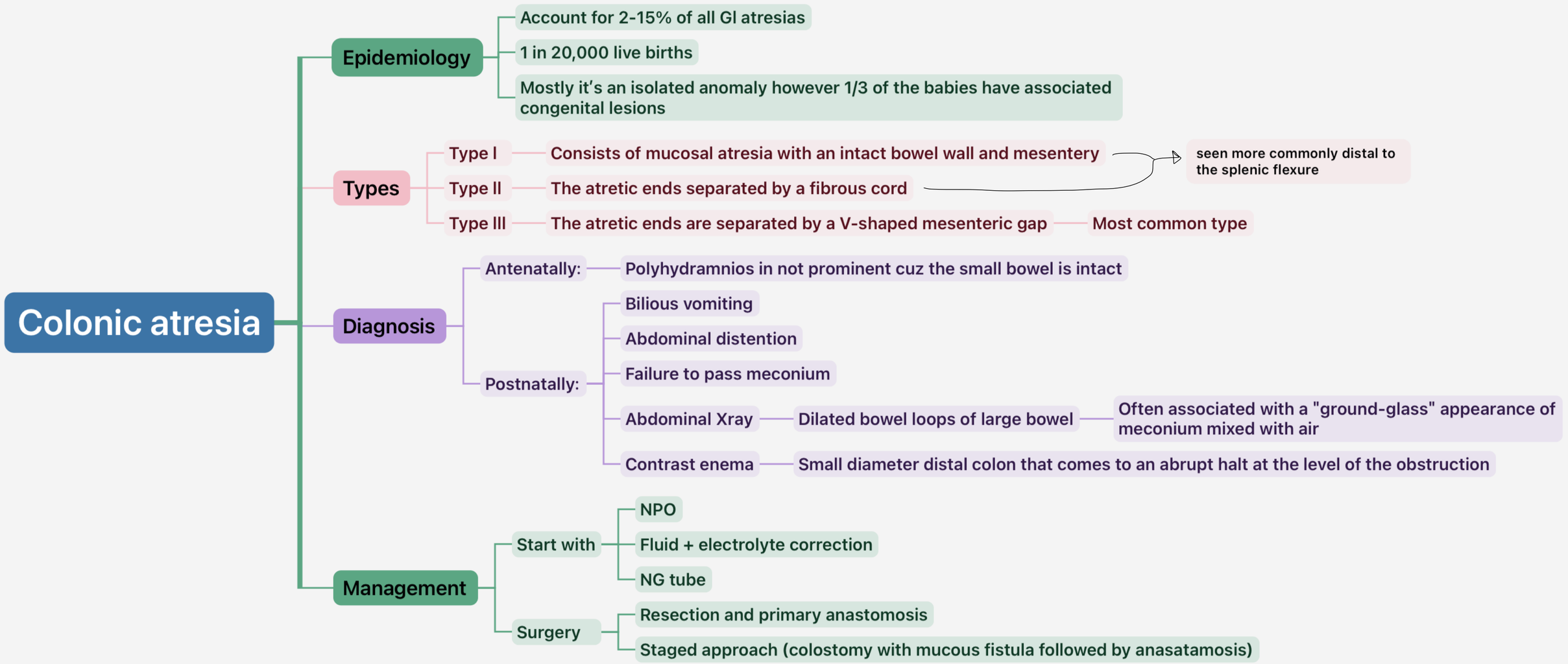
هذا القرآن حين يقرر المسلم أن يقرأه بتجرد فإنه لا يمكن أن يخرج منه بمثل ما دخل عليه، هذا القرآن يقلب شخصيتك، ومعاييرك، وموازينك، وحميتك، وغيرتك، وصيغة علاقتك بالعالم

[إبراهيم السكران]

Small bowel (Jejunal & ileal) Atresia

Intrauterine ischemic insult to the midgut

- Epidemiology
  - 1 in 3000-5000 live births
  - M=F
  - Majority of cases are sporadic
  - 1/3 of infants are premature
- Types
  - Type 0 — Stenosis (no atresia)
  - Type I — Membrane or web
  - Type II — Fibrous cord joins two blind ends of bowel
  - Type III
    - IIIa — Gap between ends with a V -shaped mesenteric defect
    - IIIb — Large defect in the mesentery, significant intestinal loss and distal intestine winds round a single, fragile vascular pedicle (“apple-peel” or “Christmas tree” atresia)
  - Type IV — Multiple atresia (“string of sausages” appearance)
- Diagnosis
  - Antenatally:
    - Polyhydramnios — More prominent with proximal atresia
    - Dilated bowel loops
    - Echogenic bowel
  - Postnatally:
    - Bilious vomiting
    - Abdominal distention — Depend on the level of the obstruction
    - Might pass minimal amount of meconium
    - Abdominal Xray
    - Lower contrast study/ contrast enema — It helps with the diagnosis and rule out other differential diagnosis (like HD and meconium ileus/ plug)
- Management
  - Start with
    - Resuscitation with correction of fluid balance and electrolyte abnormalities
    - NPO
    - IV access
    - NG for gastric decompression
  - Surgery
    - Deliver all bowel and rule out other atresia
    - Assess the viability and length of remaining bowel
    - Resection and anastomosis


Colonic atresia
Epidemiology
Account for 2-15% of all GI atresias
1 in 20,000 live births
Mostly it's an isolated anomaly however 1/3 of the babies have associated congenital lesions
Types
Type I
Consists of mucosal atresia with an intact bowel wall and mesentery
seen more commonly distal to the splenic flexure
Type II
The atretic ends separated by a fibrous cord
Type III
The atretic ends are separated by a V-shaped mesenteric gap
Most common type
Diagnosis
Antenatally:
Polyhydramnios in not prominent cuz the small bowel is intact
Postnatally:
Bilious vomiting
Abdominal distention
Failure to pass meconium
Abdominal Xray
Dilated bowel loops of large bowel
Often associated with a "ground-glass" appearance of meconium mixed with air
Contrast enema
Small diameter distal colon that comes to an abrupt halt at the level of the obstruction
Management
Start with
NPO
Fluid + electrolyte correction
NG tube
Surgery
Resection and primary anastomosis
Staged approach (colostomy with mucous fistula followed by anasatamosis)

Malrotation

- Epidemiology
  - 1 in 6000 live births
- Embryology
  - Midgut maturation involves for stages:
    - 1) Herniation
    - 2) Rotation
    - 3) Retraction
    - 4) Fixation
  - In total rotates 217 degree counter clock wise around the SMA axis

Any abnormality in any step will cause malrotation

- Diagnosis
  - Presentation:
    - Classic malrotation with midgut volvulus often develops in a previously healthy term neonate
    - Up to 75% present during the first month of life and 15% will present within the first year
    - Sudden onset of bilious vomiting is the cardinal sign of neonatal intestinal obstruction and malrotation with volvulus
      - must be the presumed diagnosis until proven otherwise
  - Upper contrast study
    - The gold standard study
  - Colon Doppler US
- Management
  - Start with
    - Resuscitation
    - Gastric decompression
    - Broad spectrum Abx
  - Surgery
    - Open or lap
    - Six key elements in operative correction of malrotation
      - Entry into abdomen cavity and evisceration (open)
      - Counterclockwise detorsion of the bowel (acute cases)
      - Division of Ladd cecal bands
      - Broadening of the small intestine mesentery
      - Incidental appendectomy
      - Placement of small bowel along the right lateral gutter and colon along the left lateral gutter

إنّ أحقّ ما توهب له الأعمار
كتاب الله!

Anorectal malformation

- Epidemiology
  - 1 in 4000-5000
  - Sightly more common in males
  - The estimated risk for a couple having a second child with an anorectal malformation is approximately 1%
- Types
  - Male
    - Rectoperineal fistula
    - Rectourethral bulbar fistula
    - Rectourethral prostatic fistula
    - Rectobladderneck fistula
    - Imperforate anus without fistula
    - Rectal atresia/ rectal stenosis
  - Female
    - Rectoperineal fistula
    - Rectovestibular fistula
    - Cloaca
    - Complex malformations
    - Imperforate anus without fistula
    - Rectal atresia/ rectal stenosis
- Diagnosis
  - Presentation:
    - Imperforate anus either with fistula (to GU tract) or without fistula (5%, Down syndrome)
  - Clinical examination is the most important step and you can diagnose most cases (except with rectal atresia type/ normal looking anus)
- Management
  - Start with
    - Resuscitation
    - NG tube for gastric decompression & to rule out EA
    - NPO + IV fluids
    - Antibiotic prophylaxis
    - Watchful waiting (for 12-24 hrs)
    - RULE OUT VACTERL ASSOCIATION
  - Surgery
    - Slide 35 + 37 (approach)
    - Outcome
      - Fecal and urinary Incontinence
        - high in high anorectal malformation, associated sacral and spinal abnormality
      - Constipation
        - In low type malformation
      - Recurrent fistula

Hirschsprung disease

Absence of ganglion cells in the myenteric and submucosal plexuses of the intestine

Epidemiology

- 1 in 5000 live births
- 80% of children have a "transition zone" in the rectum or rectosigmoid colon
  - 10% have more proximal colonic involvement
  - 5-10% have total colonic aganglionosis with variable involvement of the distal small intestine
- Near total intestinal aganglionosis is rarely encountered

Association

- Associated syndromes: Trisomy 21, congenital central hypoventilation syndrome, Goldberg-Shprintzen syndrome, Smith-Lemli-Opitz syndrome, neurofibromatosis, and neuroblastoma, MEN2, Neurocristopathy (e.g Waardenberg-Shah syndrome)
- Associated with:
  - Heart disease
  - Malrotation
  - UT Anomalies
  - CNS anomalies
- Genetic: Most common is the RET proto-oncogene (esp familial and long-segment involvement), other like SOXI0, EDNRB, GDNF , EDN3, ECEI, NTN, SIP.

Diagnosis

- Prenatal diagnosis of HD is rare
- Presentation:
  - Abdominal distension
  - Bilious vomiting
  - Feeding intolerance
  - Delayed passage of meconium beyond the first 24 hours is present in approximately 90%
  - 10% of neonates with HD present with Hirschsprung-associated enterocolitis (HAEC)
  - Patients presenting later in childhood have severe chronic constipation
- Abdominal Xray
- Lower contrast study/ enema
- Anorectal manometry — Absent of anorectal inhibitory reflex
- Rectal biopsy (suction or strip) — The gold standered
  - No ganglion cells in mucosa/ submucosa
  - Abnormal acetylcholine staining
  - Absent calretenin

Management

- Initial — Resuscitation
- Rectal washouts
- Colostomy — If:
  - Unstable baby
  - Failure of washouts
  - Enterocolitis
- Antibiotics (enterocolitis)
- Definitive management: — Pull-through procedure — Resect aganglionic segment & pull through a segment that has ganglionic cells
- Long-term outcome:
  - Obstructive symptoms
    - Mechanical obstruction
    - Recurrent or acquired aganglionosis
    - Disordered motility in the residual colon or small bowel
    - Internal sphincter achalasia
    - Functional megacolon caused by stool-holding behaviour
  - Fecal soiling
    - Abnormal sphincter function
    - Abnormal sensation
    - Pseudo-incontinence
  - Enterocolitis — Clostridium difficile or rotavirus and other — More common in younger children
  - Hirschsprung associated inflammatory bowel disease
    - Unknown etiology
    - Risk factors: long-segment disease and trisomy 21

ألق بقلبك في رحاب كتاب الله، واعقد معه عهدًا للوفاء، ورتب معه أجزاءً لا تتخلف عنها البتة، وليكن لك وردٌ ثابت في التدبر والتأمل، وأحلف لا أستثني أنك واجدٌ كل شيء!

Meconium ileus

Most commonly in ileocecal valve

- Info
  - One of the most common causes of intestinal obstruction in the newborn
    - accounting for 9-33% of IO
  - Extremely viscid, protein-rich, inspissated meconium causing an intraluminal obstruction in the distal ileum usually at the ileocecal valve)
  - It is often the earliest clinical manifestation of cystic fibrosis
    - CR: AR disease due to mutations in the CF transmembrane regulator (CFTR) gene, located at chromosome 7q31
    - Most common mutation is F508del
- Diagnosis
  - Antenatally:
    - US:
      - Hyperechoic
      - Intra-abdominal mass (inspissated meconium)
      - Dilated bowel
      - Nonvisualization of the gallbladder
    - Presence of family history
  - Clinical presentation
    - Usually healthy immediately after birth
    - within 1-2 days, they develop abdominal distension and bilious emesis
    - Normal meconium will not be passed
    - Eventually, dilated loops of bowel become visible on exam and have a “doughy” character that indent on palpation
    - The rectum and anus are often narrow, a finding that may be misinterpreted as anal stenosis
    - Infants with complicated MI present with symptoms within 24 hours of birth or even immediately after birth as a result of in utero perforation or bowel compromis
    - A palpable mass suggests pseudocyst formation, which results from in utero bowel perforation
    - Signs of peritonitis: — distension, tenderness, abdominal wall edema and erythema +/- of sepsis
- Management
  - If:
    - Simple MI
      - Conservative — Water-soluble contrast enema — Success rate 2/3 cases
      - If failed: — Enterotomy and irrigation (N-acetylcysteine or normal saline) followed by enterotomy closure OR enterostomy tube or ileostomy formation
    - Complicated MI — Resection of ischemic bowel + diverting stoma or primary anastomosis
  - Postop care:
    - Nutrition
    - N-acetylcysteine (10%) enterally (5-10 mL)
    - Enteral pancreatic enzymes (e.g. Creon®, Pancrease®)
    - Antiobiotics
    - Involvement of CF team (Resp/ GI/ Genecisit/ Social worker)
- Complication of MI & CF
  - Respiratory problems
  - GERD
  - Biliary tract disease
  - Dital intestinal obstruction syndrome (DIOS)
  - Appendicitis
  - Fibrosing colonopathy
  - Intussusception — 1% of children with CF with the average age of onset of 9.5 years

Necrotizing enterocolitis

- Epidemiology
  - Disease of premature neonates
  - NEC affects about 10% of VLBW
  - Incidence is inversely proportional to birth weight
  - The overall mortality of NEC probably approaches 30%
    - Lower birth weight and younger gestational age correlate with higher risk of death
- Diagnosis
  - Presentation
    - Feeding intolerance
    - Vomiting or high gastric residuals
    - Abdominal distention
    - Bleeding per rectum
      - Late sign
  - On exam:
    - Abdominal distention
      - +/- palpable bowel loops
    - Skin discoloration
    - Signs of peritonitis
  - Lab:
    - High WBC
    - CRP
    - Hyponatremia
    - Thrombocytopenia
    - High lactate
    - Metabolic acidosis
  - Modified Bell Classification for NEC
    - Slide 57
  - Abd Xray
    - Pneumatosis intestinalis
      - The classic finding
  - US
- Management
  - Supportive
    - Bowel rest
    - Gastric decompression
    - IVF
    - IV antibiotic
    - parenteral nutrition
    - Cardiopulmonary support if needed
  - Surgery
    - Absolute indication in cases with pneumoperitoneum
    - Options:
      - Laparotomy with resection/ anastomosis
      - laparotomy with resection/ stoma formation
      - Peritoneal drainage (VLBW)
  - Outcome
    - 10% Recurrence
    - 30% Mortality
      - Inversely proportional to birth weight and gestational age
        - Medical NEC carries a mortality of 20%
        - Surgical NEC mortality is 35-50%
    - Intestinal failure
      - The leading cause of pediatric intestinal failure, resulting in more than 1/3 of IF patients
    - Stoma complications
    - Intestinal strictures
    - Neurodevelopmental delay, intellectual delay, moderate-to-severe developmental delay with speech and motor impairment

وإني محدثك حديث محبٍ ناصح
ومخبرك أني جرّبت كل اللذاتِ فما وجدت
أروع ولا أدهش ولا أعذب ولا أجمل ولا ألذ
في حياتي كلها من حفظ القرآن..

يا صديقي:
حين يجري على لسانك دون عناء
ويصحبك في طريقك
وتقوم به في آناء ليلك ونهارك
فتلك حكايات لا شبيه لها في زمانك
فدونك الحياة✨