INTESTINAL OBSTRUCTION

① Malrotation

mc: failure of 90° CCW cecum from RUQ to RLQ

- duodenal obstruction → bilious vomit (bc volvulus/Ladd bands)
- Abdominal pain
- Diarrhea → constipation
- failure to thrive
- bloody stool

dx: - Xray ↗ mc: normal
↘ • small bowel: R & colon: L.
• ✗ distal bowel gas
• whirled ◎
• thick wall: chronic volvulus
- UGI contrast ✶

tx: - correct fluid, pH
- if shock: ab, inotropics
- if volvulus: urgent SX: Ladd's
  - ✗ Ladd's bands
  - widen mesentric base
  - position bowel
  ± Appendectomy

outcome:
- recurrance
- infarction
- obstruction (Adhesions)

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② Intestinal Atresia

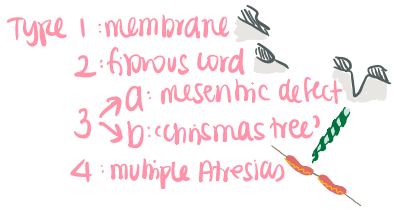
Duodenal w/ Down syndrome
Jejunal ileo colic w/ gastroschisis
colon w/ Hirschsprung disease

dx:
- Antenatal: US (polyhydramnios, "double bubble" duodenal & xray ↗)
- Postnatal:
- Bile vomit, meconium delay, distension
- Xray (meconium cyst: peritoneal calcification, dilated loop)
- contrast enema (micro colon)

tx:
D → duodeno-duodenostomy
(mc) IJ → resection + Anastomosis
↳ 1ary Anastomosis (R. hemicolectomy + ileo-transverse Anastomosis)
↳ Defunctioning colostomy + staged Anastomosis (gradually)

outcome:
- other anomaly
- length of residual bowel

Type 1: membrane
2: fibrous cord
3 ↘ a: mesentric defect
↘ b: "christmas tree"
4: multiple Atresias



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③ Necrotizing Enterocolitis (NEC) 7-10 days

- premature, formula fed, splanchic hypoperfusion ↑
- mc site: terminal ileum, colon
- sepsis/ischemia signs
- bilious vomit
- GI bleeding
- peritonism
- Abdominal wall erythema
- Abdominal mass

Bells classification:
I: initial mx
II: conservative
III: Sx

dx: Xray supine AP
- PV gas
- pneumatosis intestinalis ('soup bubble')
- pneumoperitoneum football sign
- ground glass appearance

mx: - NPO
- restore: pH, temp, glucose, fluid, Hct
- O_2
- Abs
- Analgesia
- Sx ↳ resect
  ↳ stoma only
  ↳ clip & drop
  ↳ drain (PPD)

monitor: serial radiography

Sx indications:
- pneumoperitoneum (Bells III)
- failure to progress
- obstruction
- palpable mass
- fixed bowel
- ↑ erythema

outcome:
- recurrance
- short gut syndrome
- stricture

④ Meconium Ileus w/CF (90%)

simple:
- distension
- bilious vomit 
- x pass meconium
- doughy palpable bowel loops

complicated:
- perforation (pseudocyst)
- Atresia
- volvulus

dx: - xray ("Neuhauser's/"soap bubble", calcification, ↑fluid levels)
- contrast enema (micro colon)
- US (cyst)
- CF: sweat Cl test/gene/immunoreactive trypsinogen ↑ >60

tx:
- water sol contrast enema
- SX → calm + stoma +Appendectomy
  ↳ resect + stoma/Anastomosis
- N-acetylcysteine
- abs
- pancreatic enzyme
- CF tx

meconium plug syndrome } ddx: - mechanical ileus - Hirschsprung's
↓(w/CF)
dx: contrast enema
tx: water sol ↑

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⑤ Hirschsprung Disease

RET gene mutation

w/ Down syndrome

- failure of migration of neural crest
- loss of NCAM
- immunologic attack

↕ short segment
↕ long segment

- absence of ganglion cells
- ↓ peristalsis
- enterocolitis
- distension
- Bilious vomiting 

tx: - decompress bowel (rectal washout/anal stimulation)
- if enterocolitis: ↑, abs, stomas
- SX: long pull through ∓ colostomy
  ↳ ganglionic loop to pelvis, anastomose w/anus
  ↳ Soave's: best technique

outcome:
- leak/stricture
- enterocolitis
- obstruction (adhesions)
- perianal excoriation

dx: - xray
- contrast enema (transitional zone)
- submucosal rectal biopsy ✓✓ diagnostic
  absence of ganglion cells suction
- DRE: Saria sign (expulsion of feces)
- Anorectal manometry
  normal: @ rectal distension → recto-anal ⊖ reflex
  Hirschsprung's: @ rectal distension → ✗ recto-anal ⊖ reflex & overreactivity of sphincter

⑥ Anorectal malformations ♂>

terminal hindgut outside sphincter mechanism

W/ Down syndrome, cat-eye syndrome

most: connection b/w distal rectum & GUT

- mc ♂: recto-bulbar urethral fistula
- mc ♀: recto-vestibular fistula

dx: - P/E!
- xray (lateral) - sacral ratio
- U/S
- echo {r/o VACTERL}

mx: - NPO, NG tube
- fluids
- abs

↑& ↓ puborectalis sling

High ARM	Low ARM
- flat perineum (bc probs ↑ in pelvis)	- Bucket handle
- rectourethral fistula (passage of meconium from urethra)	- opening in perineum
- short sacrum	- Ant. displaced anus
- ↓ sphincter M. contraction	- perineal fistula
- Bifid scrotum/ sphincter close to scrotum	
↳ ↓ continence	↳ ↑ constipation

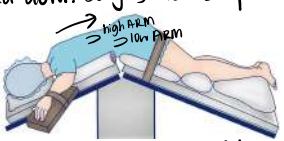
tx:

(3 step) high: colostomy (open, 1) + reconstruction (2) SX (close, 3) ← Emergency
{post. sagittal Anorectoplasty (SARP)}

(1 step) low: reconstruction SX

definitive single stage SX: (low ARM)
- perineal fistula
- Rectum 1cm from skin
- vestibular fistula

Head down so gas moves up



↳ jackknife position

↳ check site of the anal sphincter by muscle stimulation!!

Good Luck :)

Rama Rayyan