Neonatal Stomas
Why, How and Where

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- Conditions requiring stomas
- Duration of need for stoma
- Specific concerns of stoma

Why

- Gastrointestinal (GI)
- Genitourinary

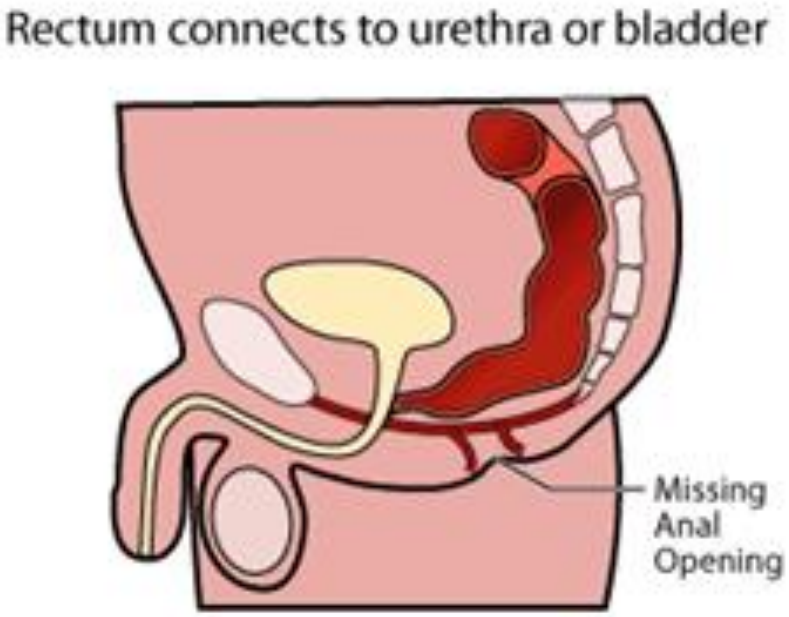
Congenital and Neonatal GI Indications

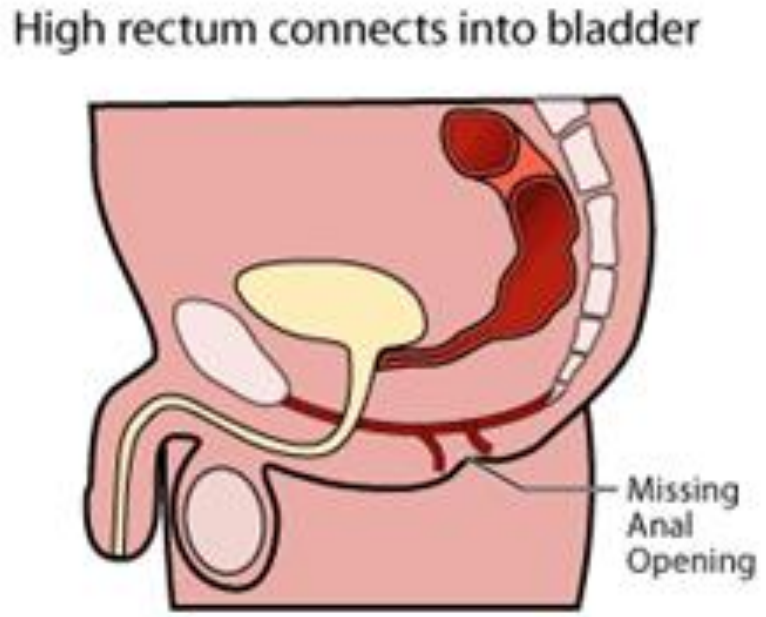
- Anorectal malformation
- Necrotising enterocolitis
- Hirschsprung disease
- Malrotation with volvulus
- Meconium ileus
- Intestinal atresia

Anorectal malformation

- 1 in 4000 births
- Management depends on level of ARM
  - Broad spectrum
- Primary anoplasty for low
- Stoma and delayed reconstruction for high
  - Recto-urethral fistula most common in boys
  - Recto-vestibular fistula most common in girls

Anorectal malformation - Male





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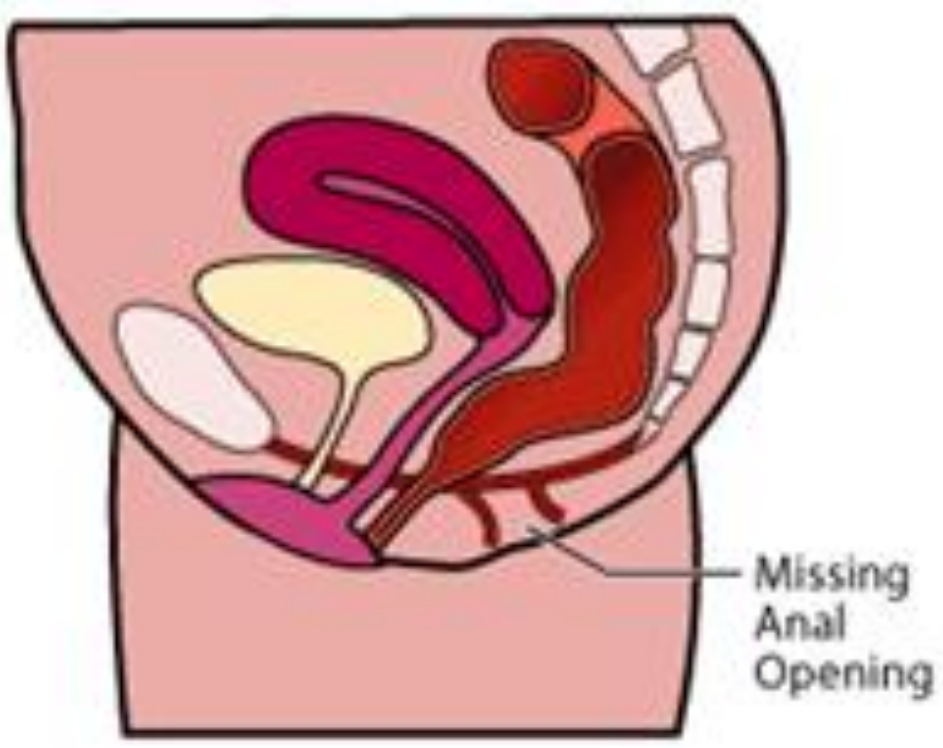
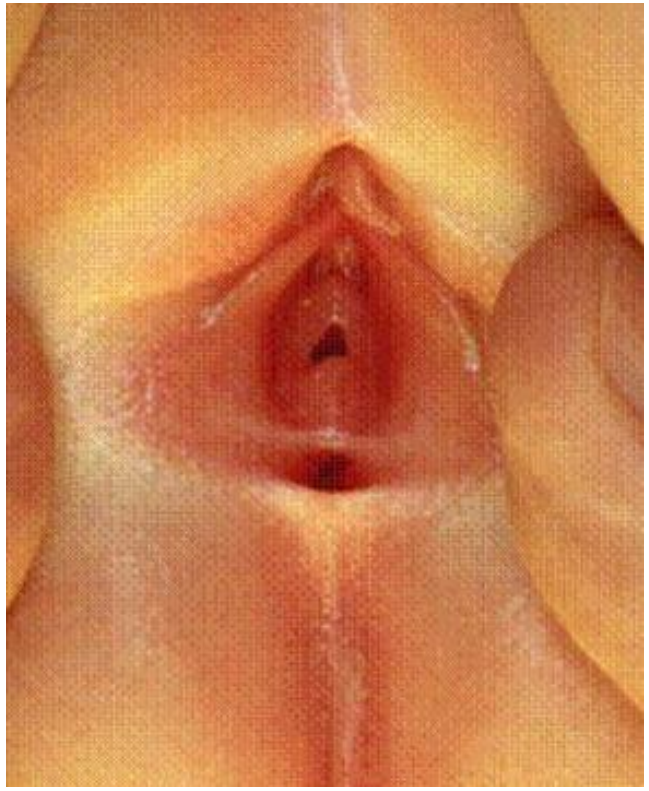
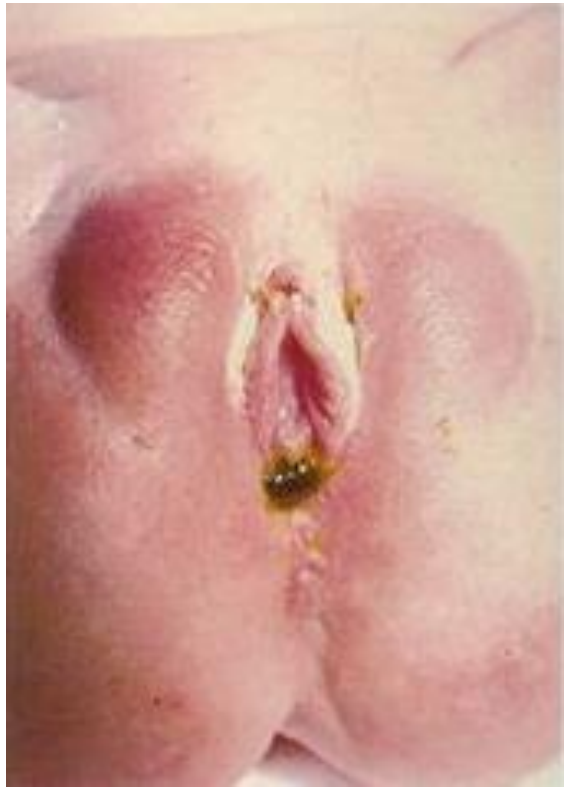
Recto vestibular fistula – Female







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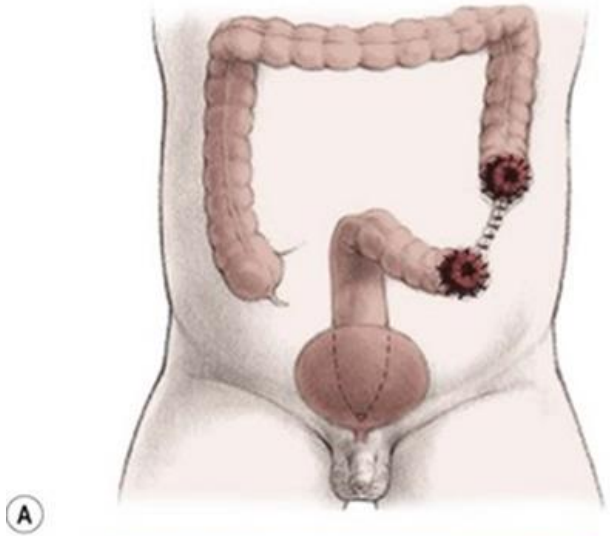
Surgical Management

- Alberto Pena

- 3 stage procedure
  - Split sigmoid colostomy – at birth
  - Posterior sagittal anorectoplasty – PSARP
    - Approx 3-6 months post birth
  - Stoma closure – 3 months post PSARP

Split proximal sigmoid colostomy



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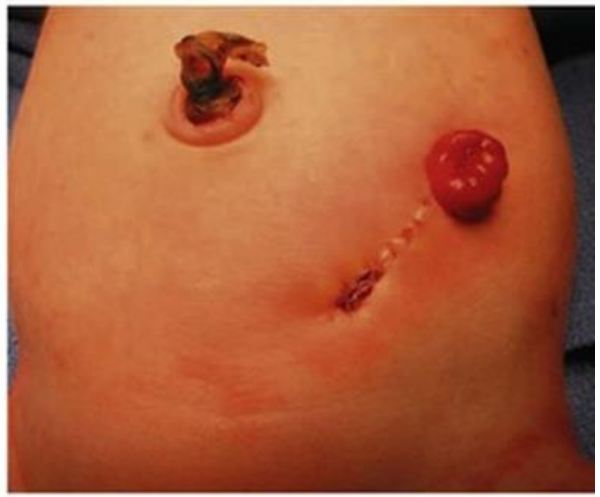

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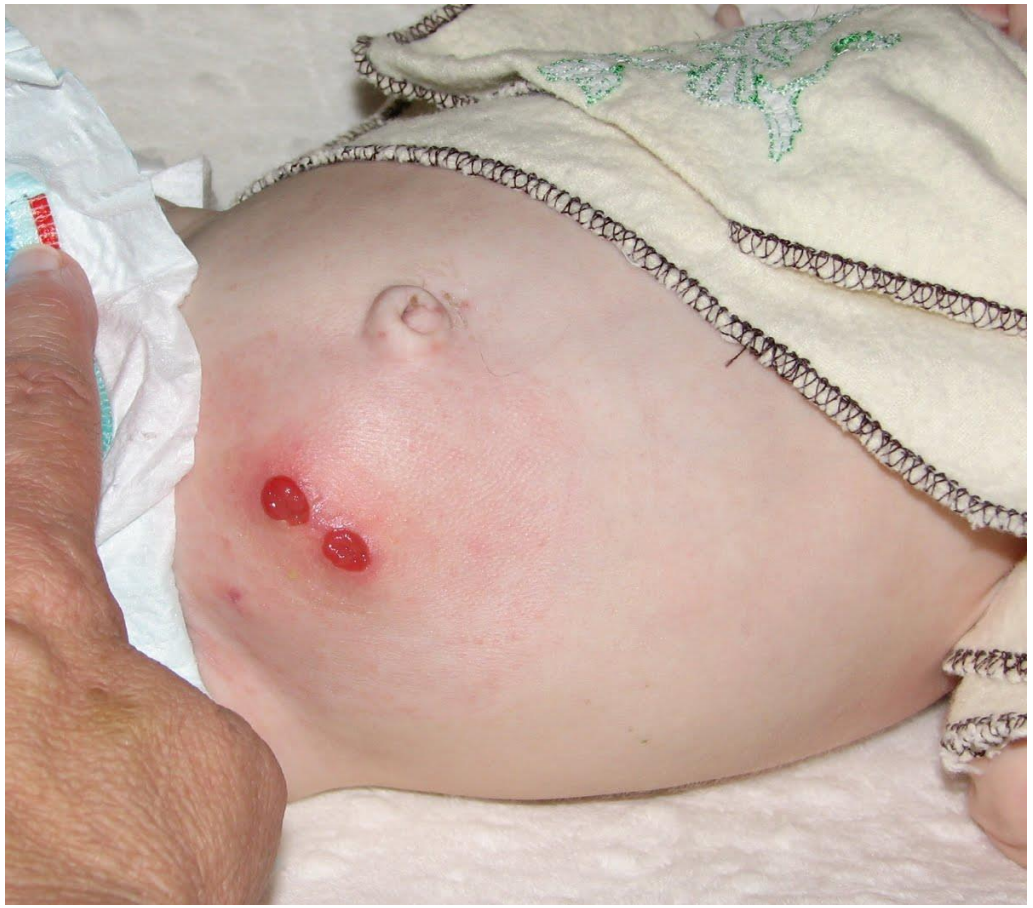
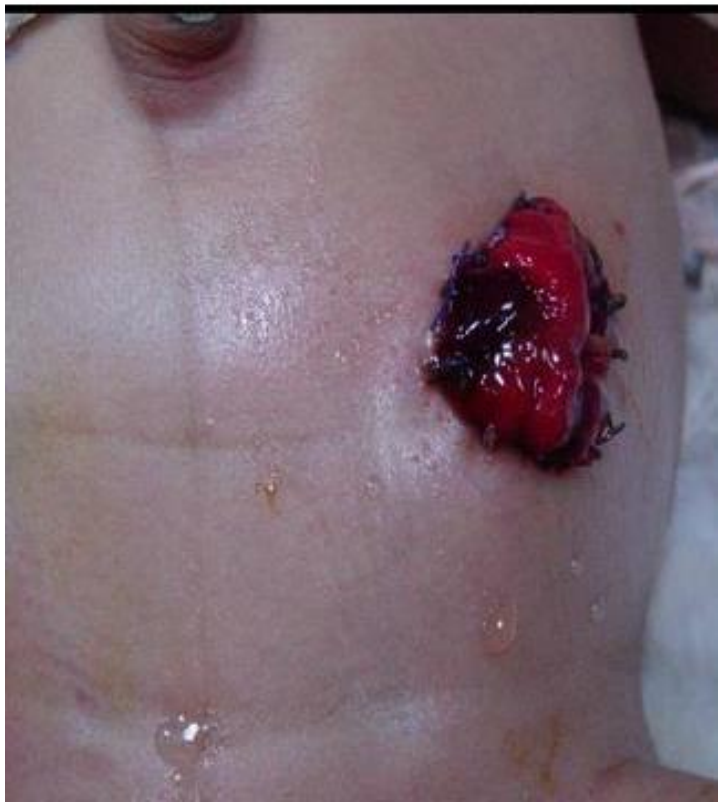
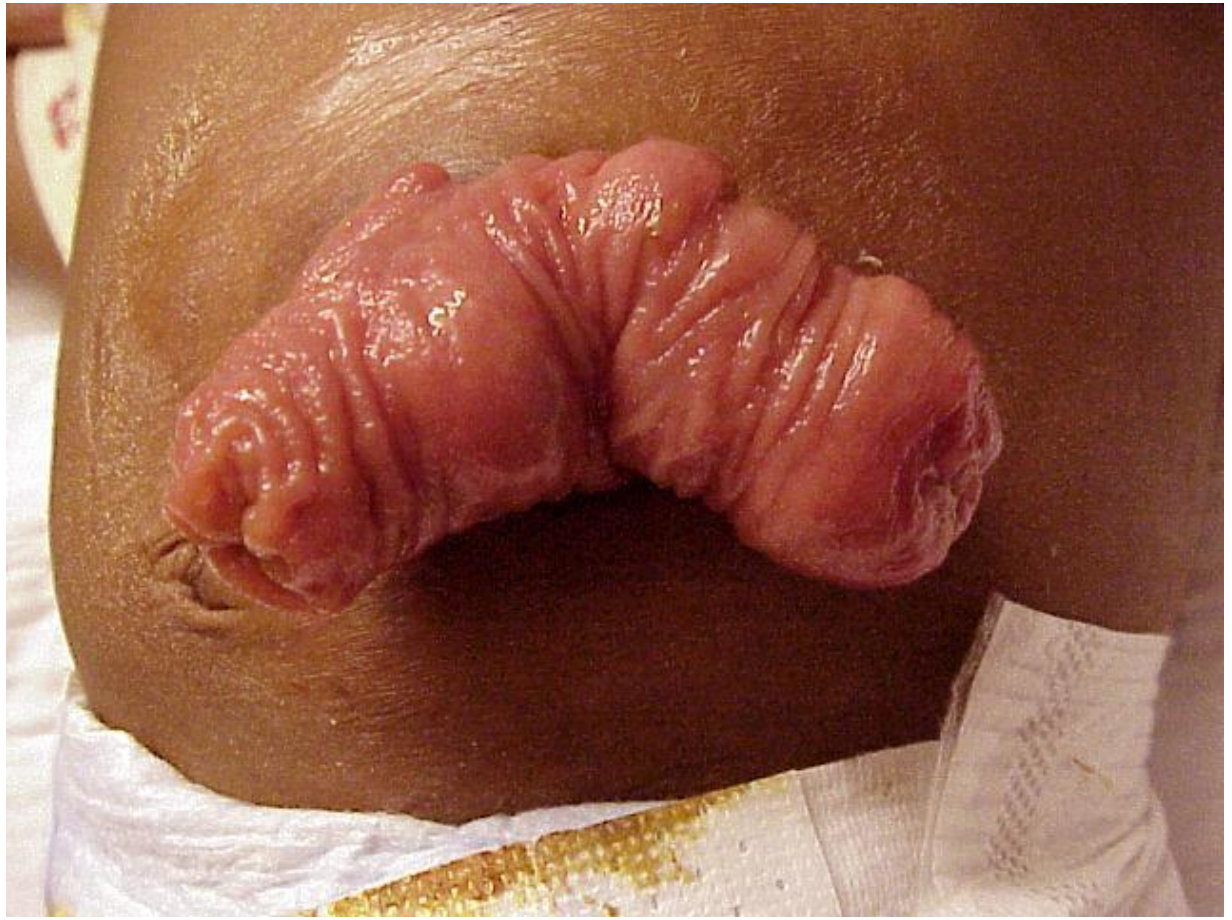


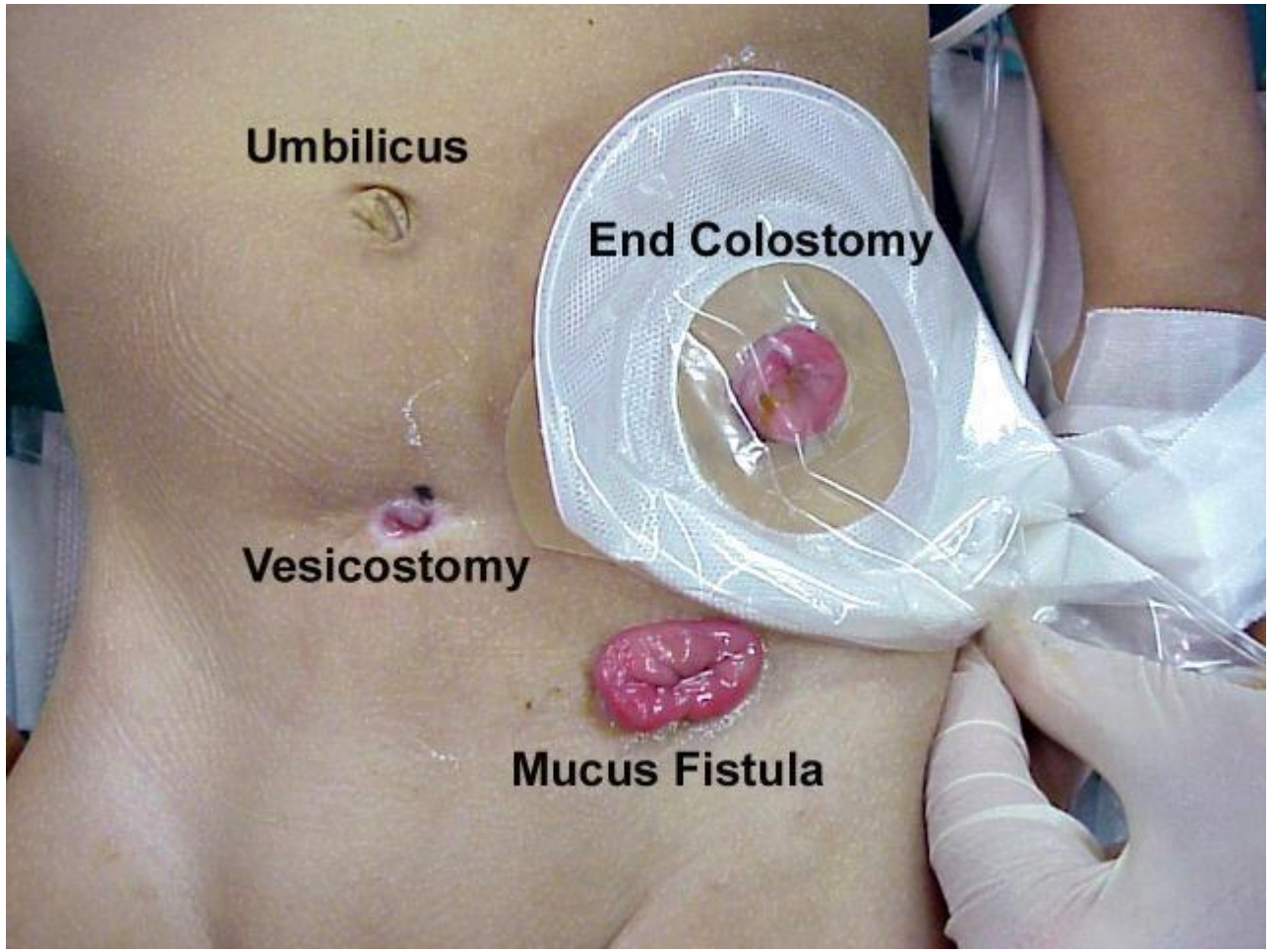
Loop sigmoid colostomy



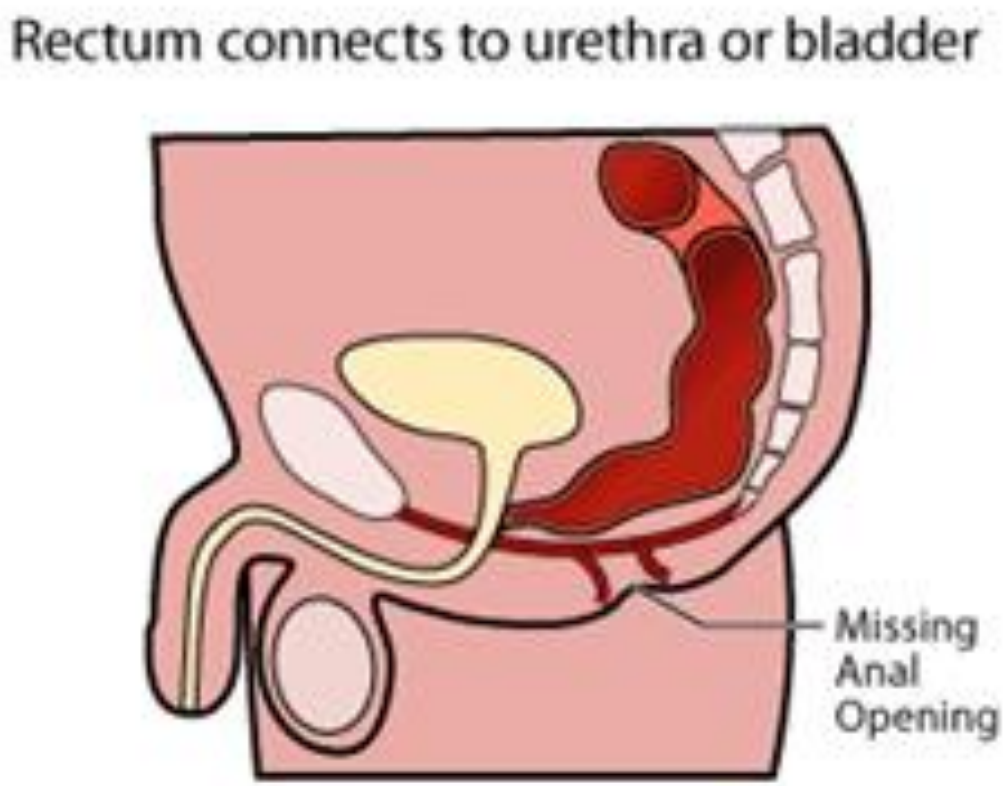
Prolapsed loop ileostomy



Complex ARM with neurogenic bladder



Distal loopogram



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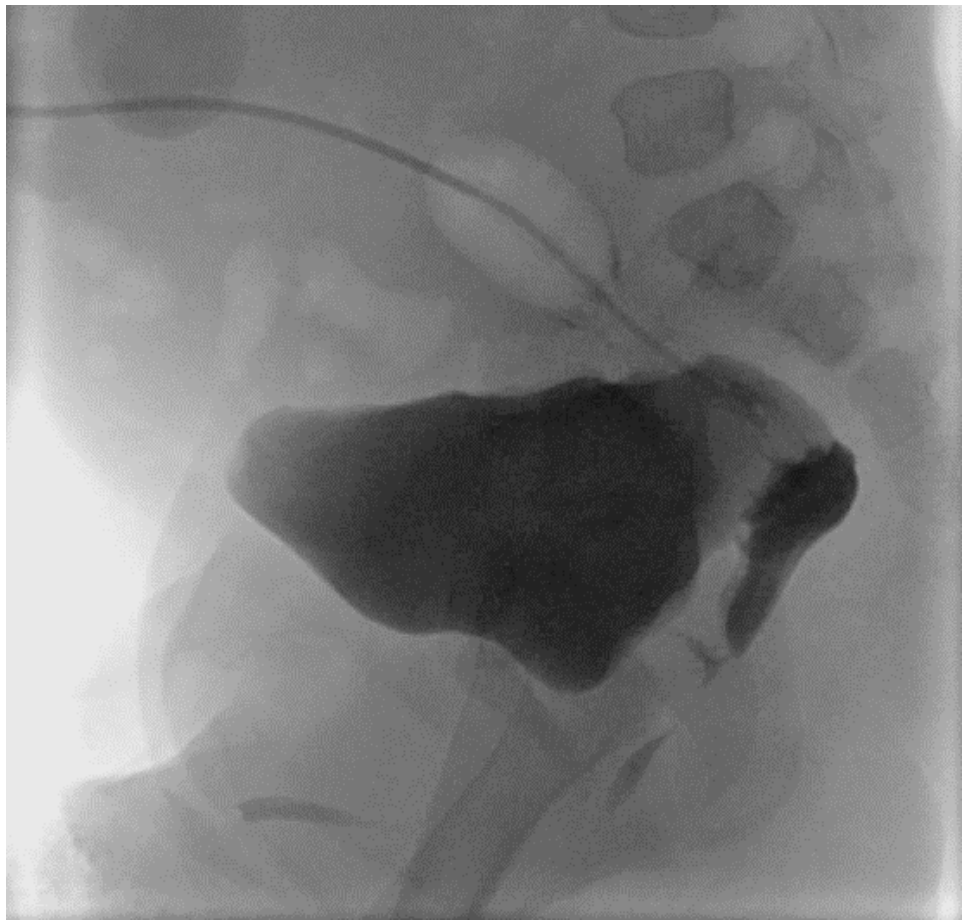
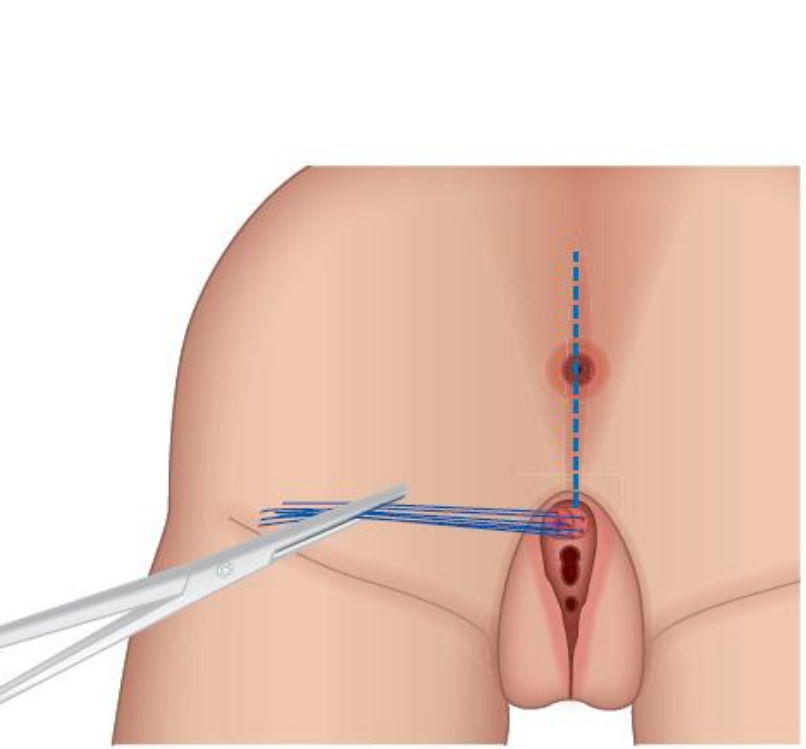
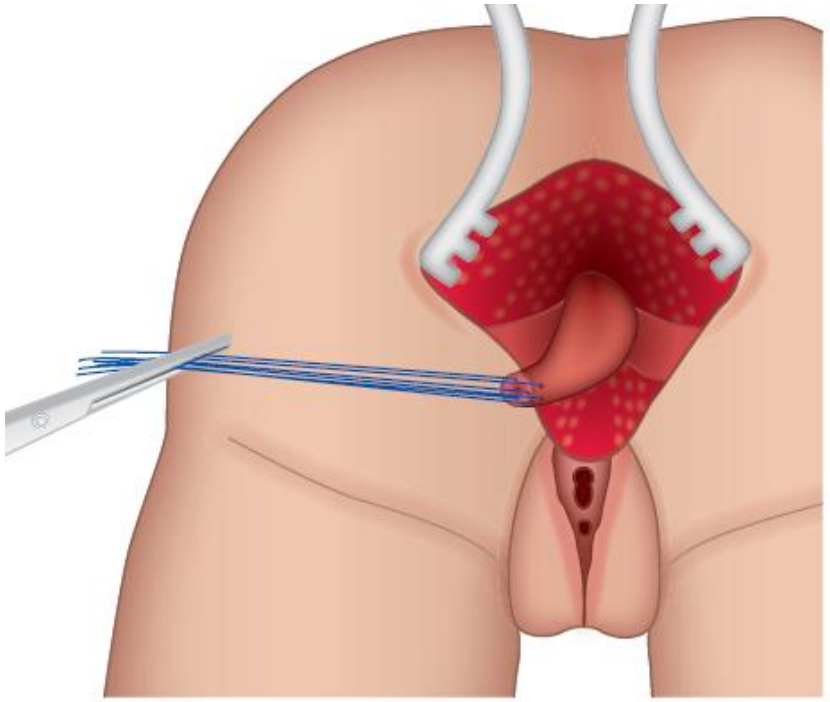
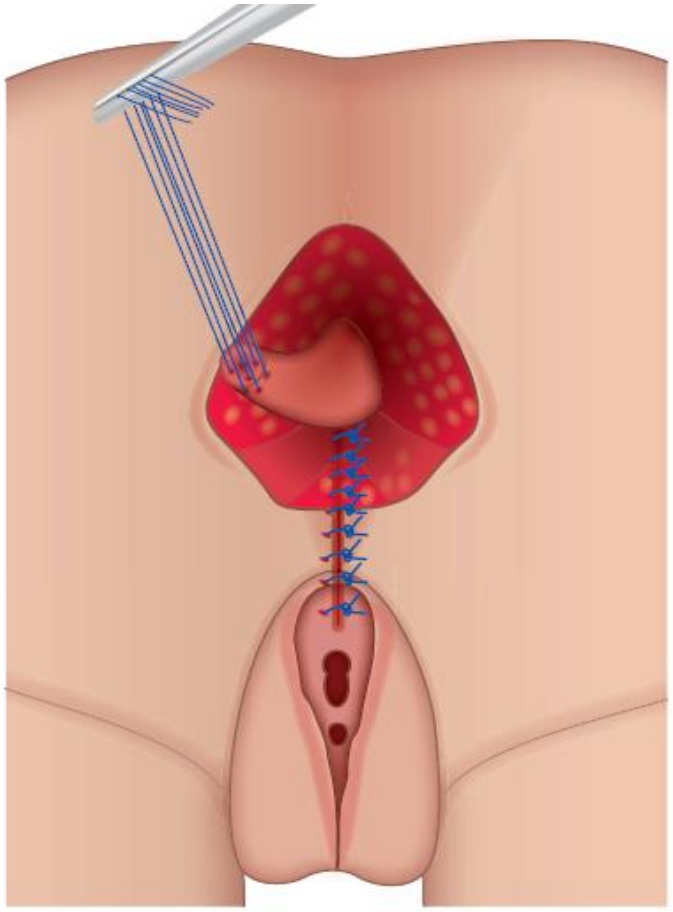


Posterior sagittal anorectoplasty - female







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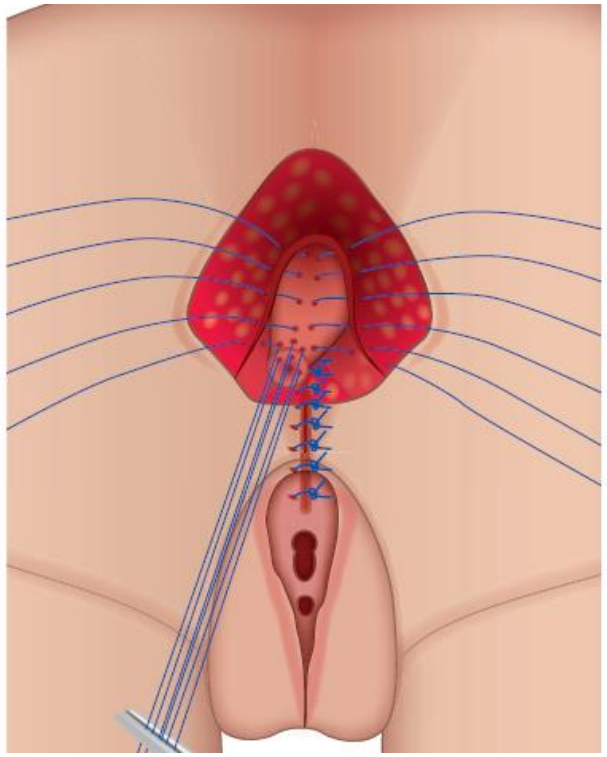
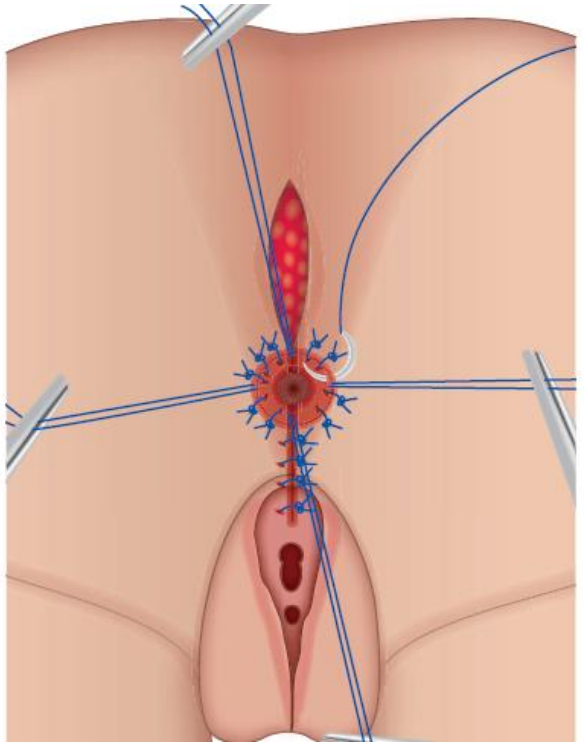
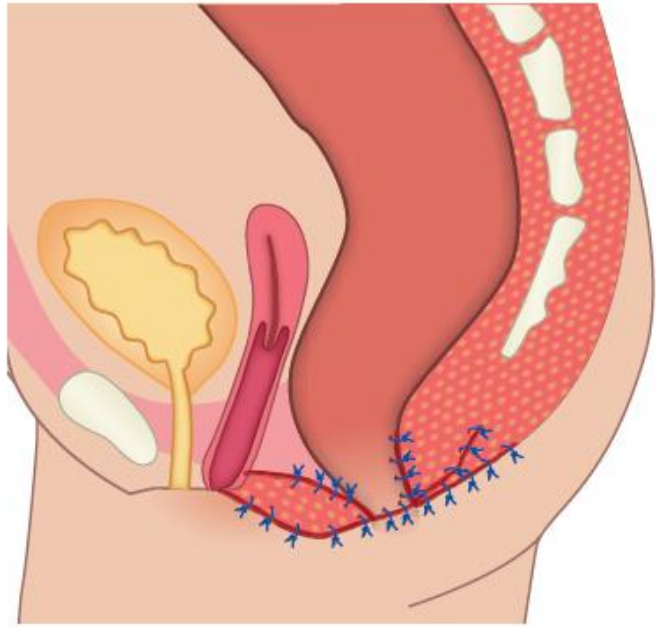
Posterior sagittal anorectoplasty - female







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Stoma closure

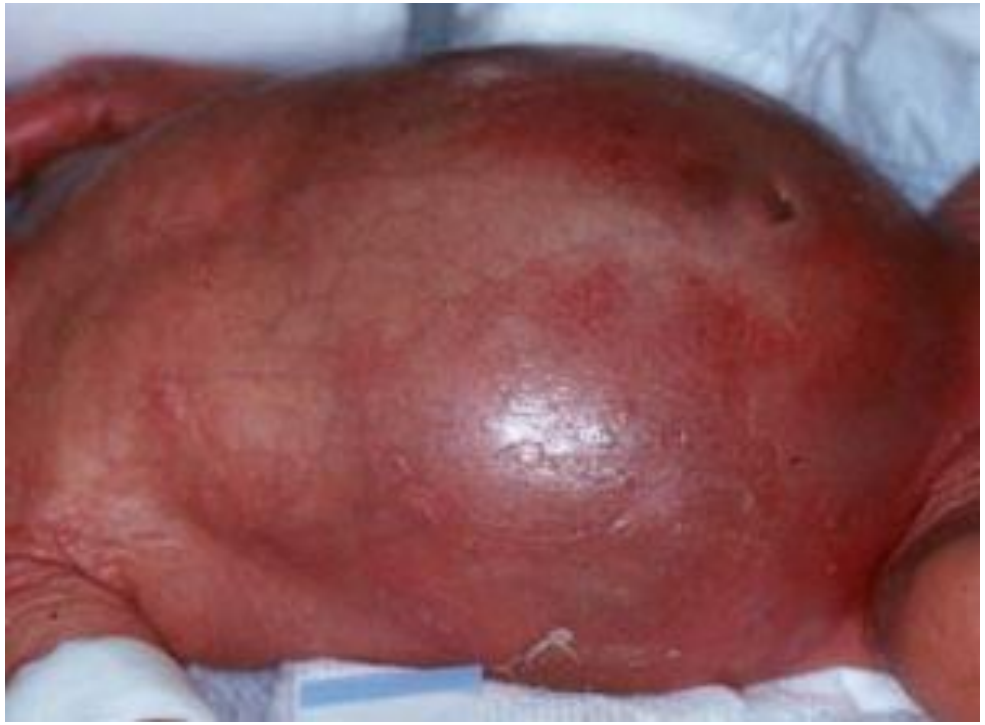
- Dilatation of neoanus 2 weeks after repair
- Dilatation 1-2 day, increasing size till achieve adequate calibre
- Stoma closed approx. 3 months later

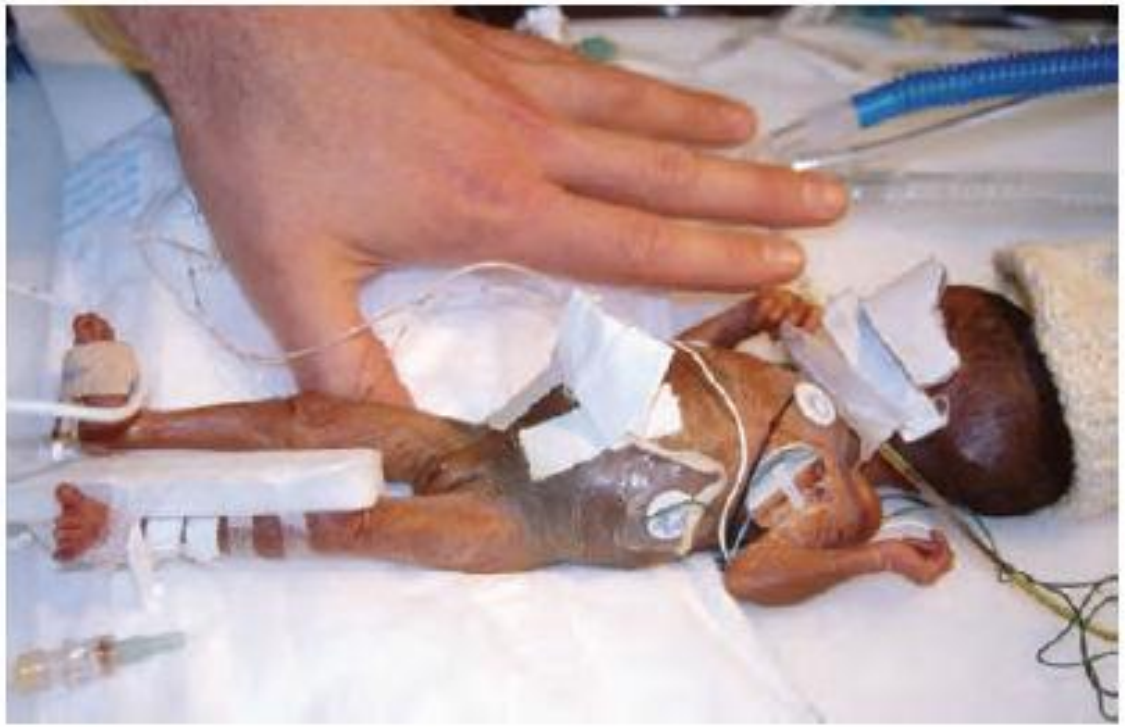
- Total duration of stoma 6 months – 1 year
- Generally uncomplicated post closure
- Perianal Skin excoriation – barrier cream

Necrotising Enterocolitis – NEC

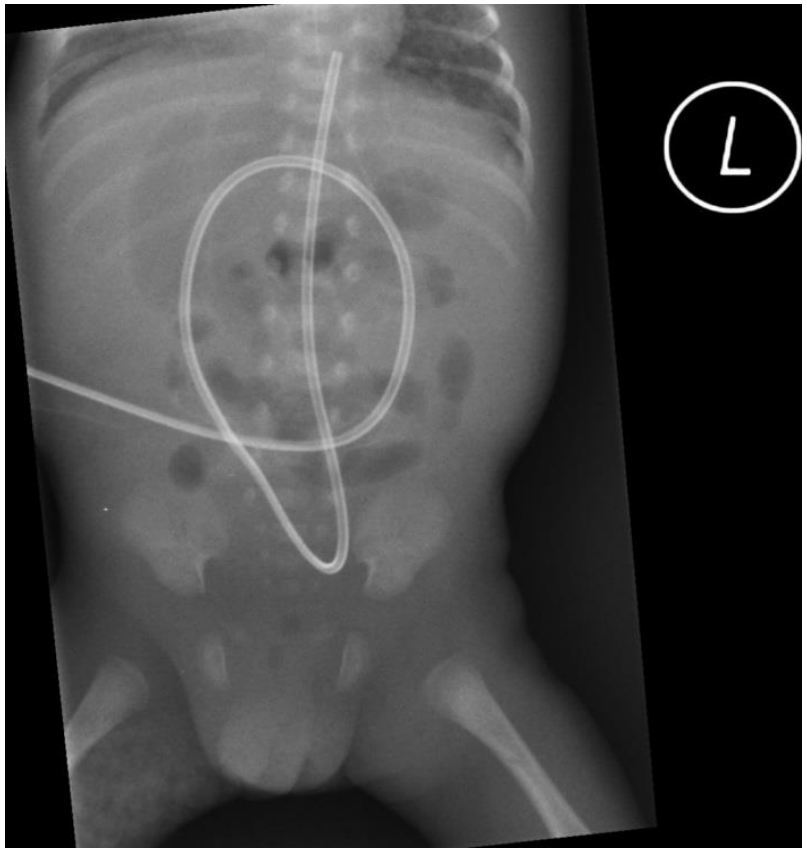
- 90% in preterm 10% in term babies
- 2-14% of all babies admitted to Neonatal Unit
- Multifactorial pathogenesis
  - Inflammation and coagulative necrosis
- 20-40% require surgery
  - Up to 50% mortality reported in those requiring surgery
- Worst outcome extremely low weight preterm babies

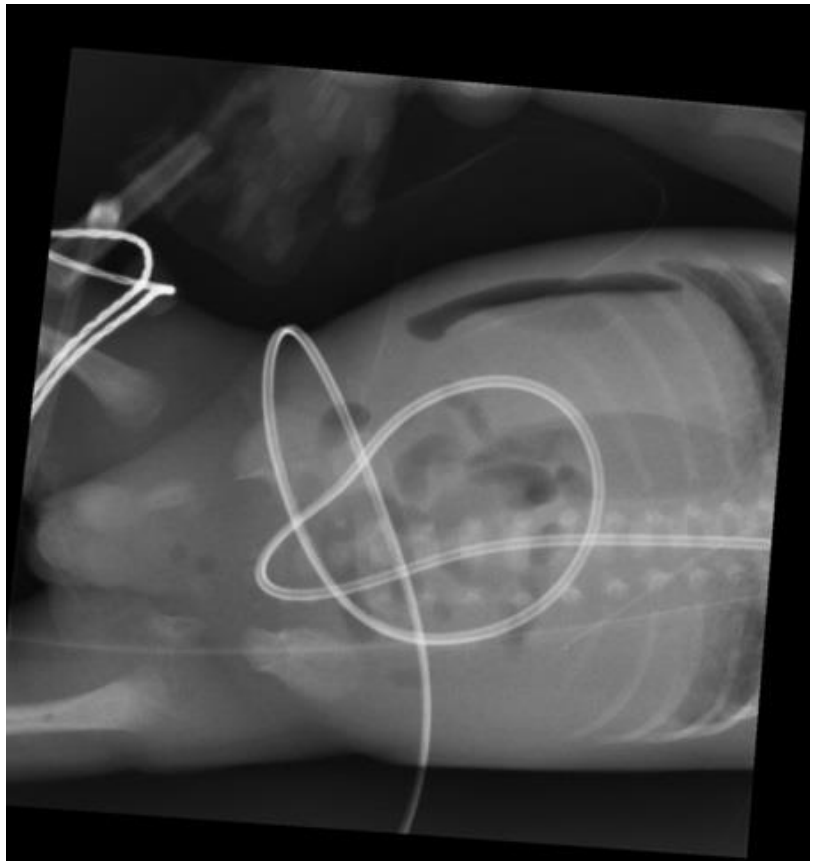
Clinical Signs – NEC





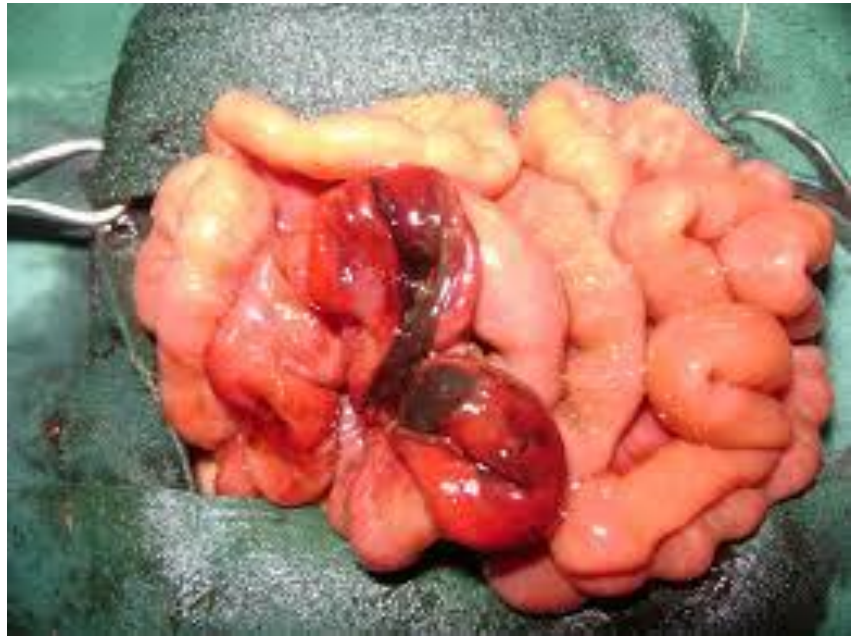
Radiological signs

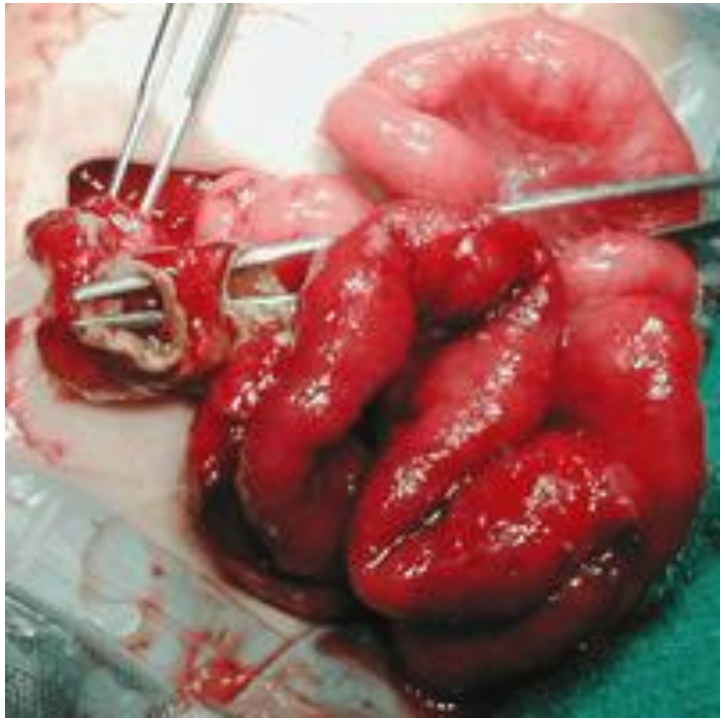


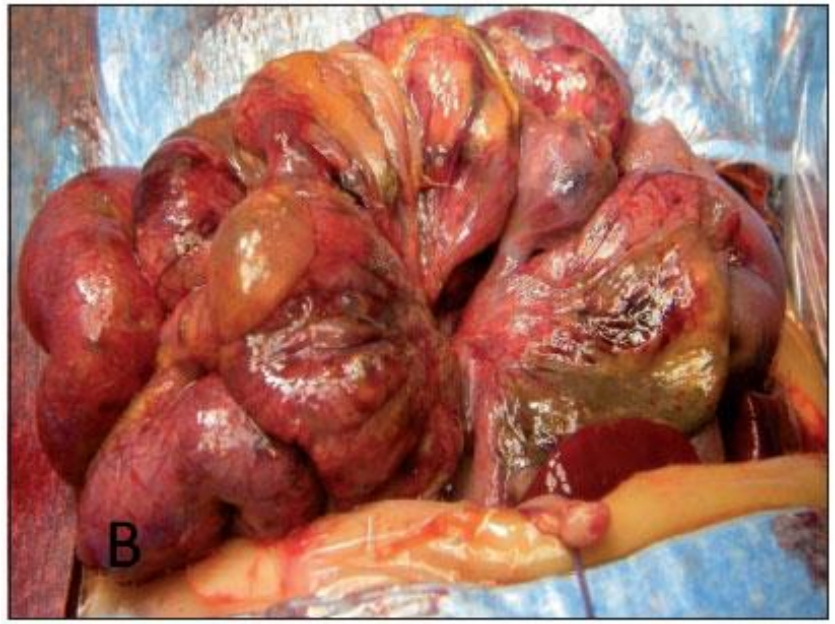


Necrotising Enterocolitis

- Surgery indicated for:
  - Worsening clinical condition despite maximal supportive therapy
  - Perforation
- Laparotomy
  - Assess extent of disease – may be total gut necrosis
  - Resection anastomosis – if appropriate
  - Resection and stomas
  - ‘Clip and drop’



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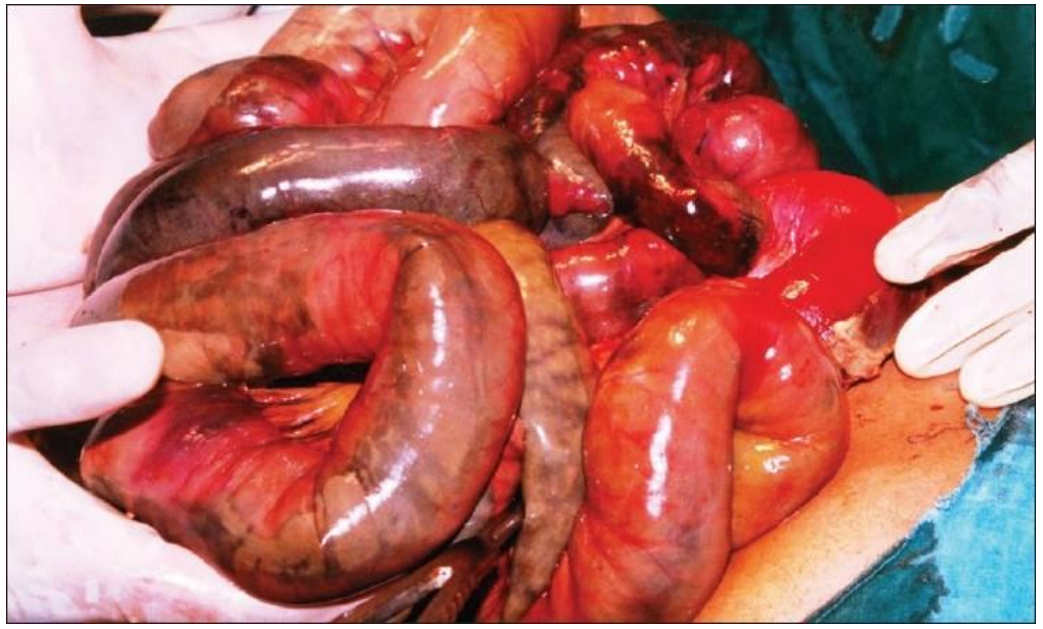
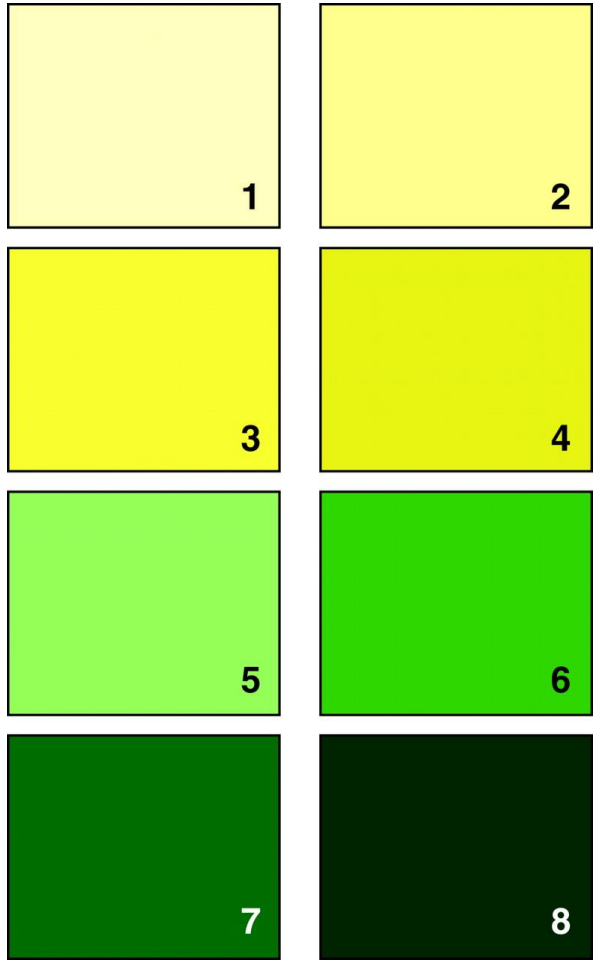


Malrotation of midgut

- 1 in 6000 babies present as an emergency
  - 0.5% of autopsies show degree of malrotation
- SURGICAL EMERGENCY
- Bilious vomiting in neonate
- Upper GI contrast to diagnose – only if stable
- Emergency laparotomy to devolve bowel
- Total gut necrosis – life threatening



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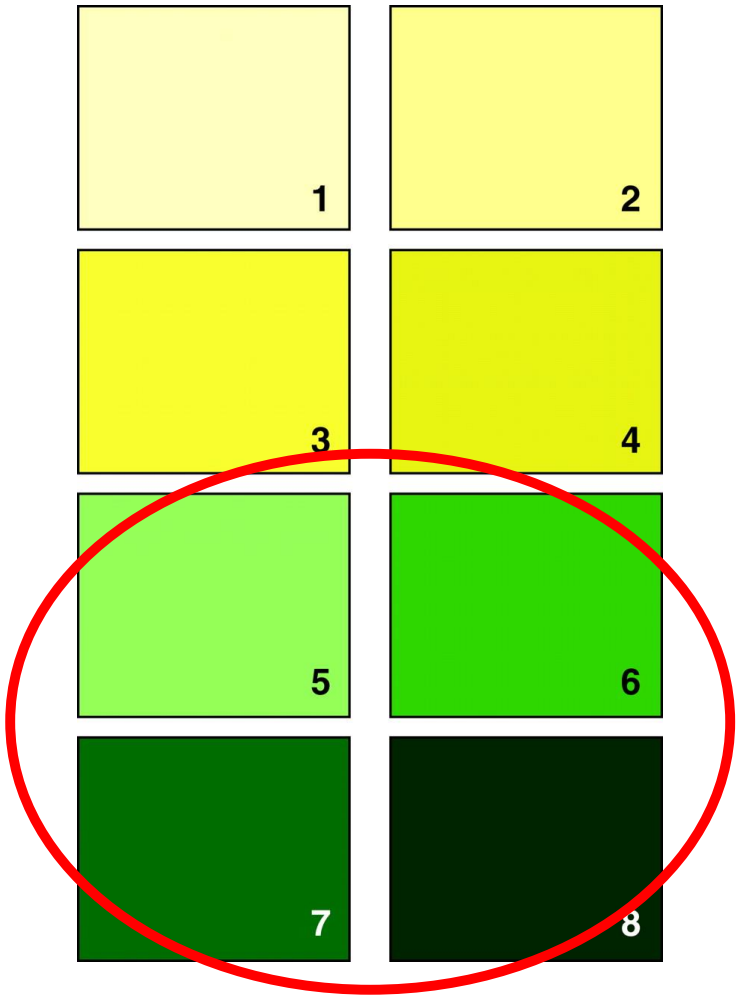
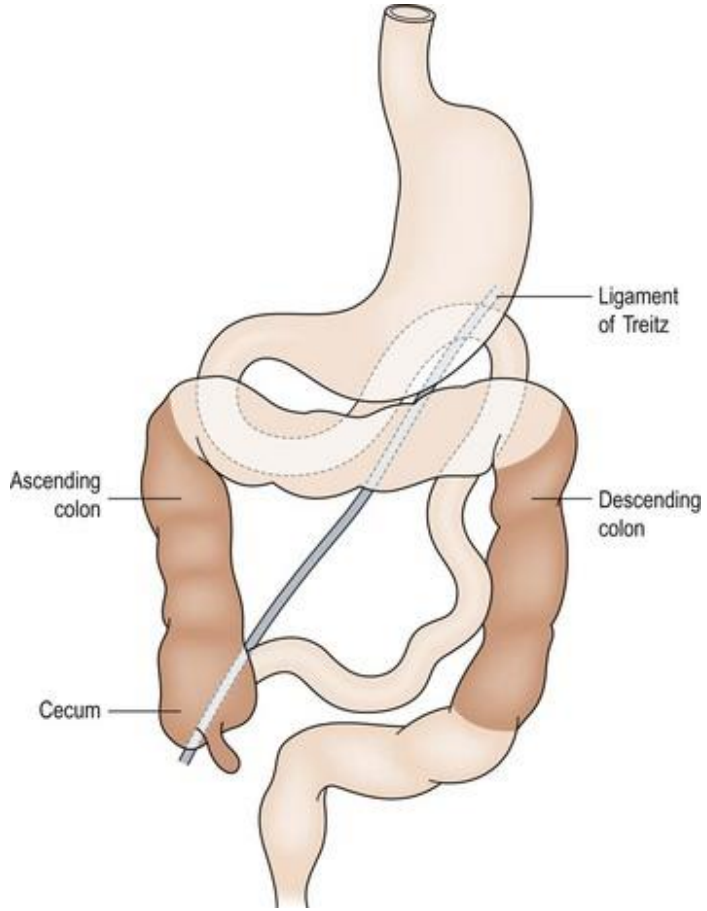
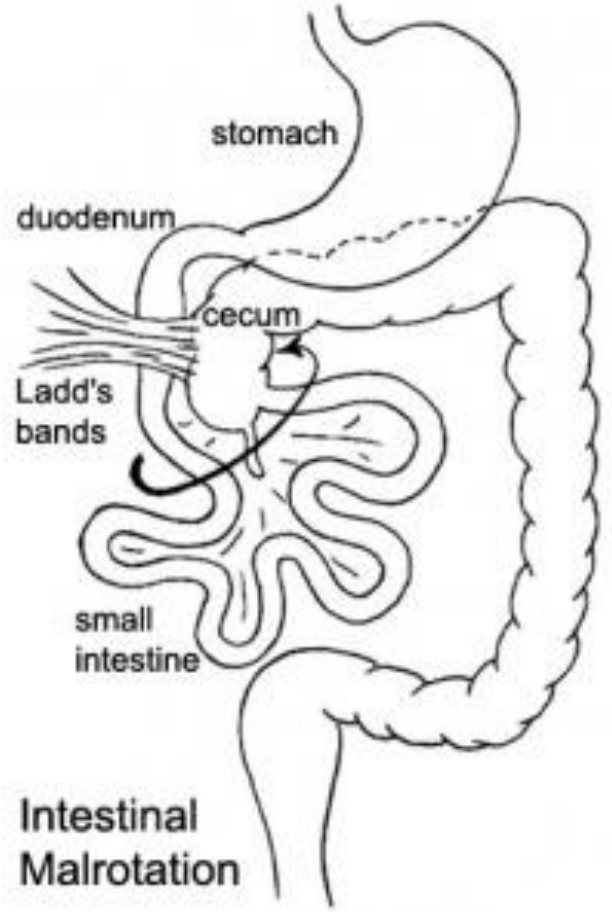
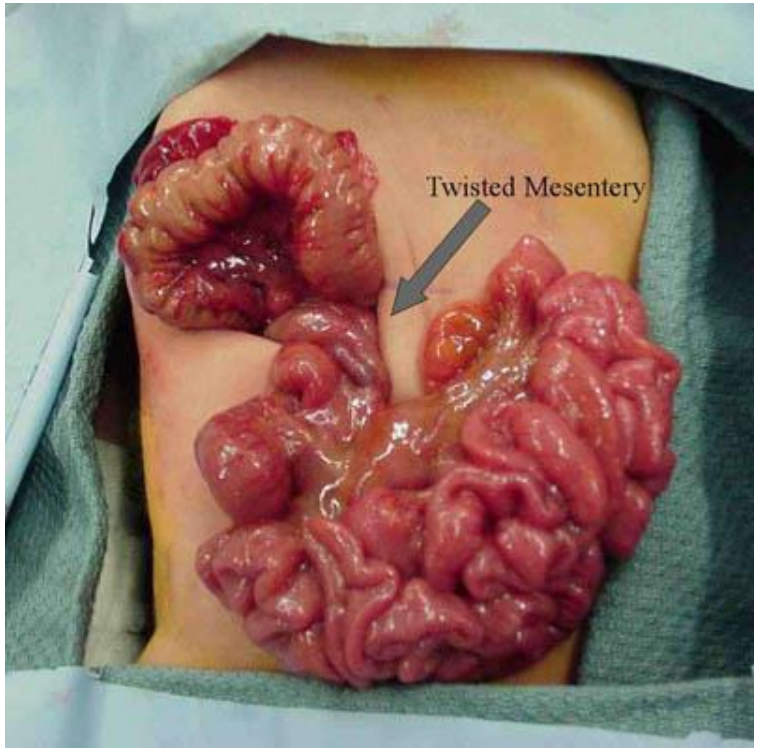


Normal Rotation

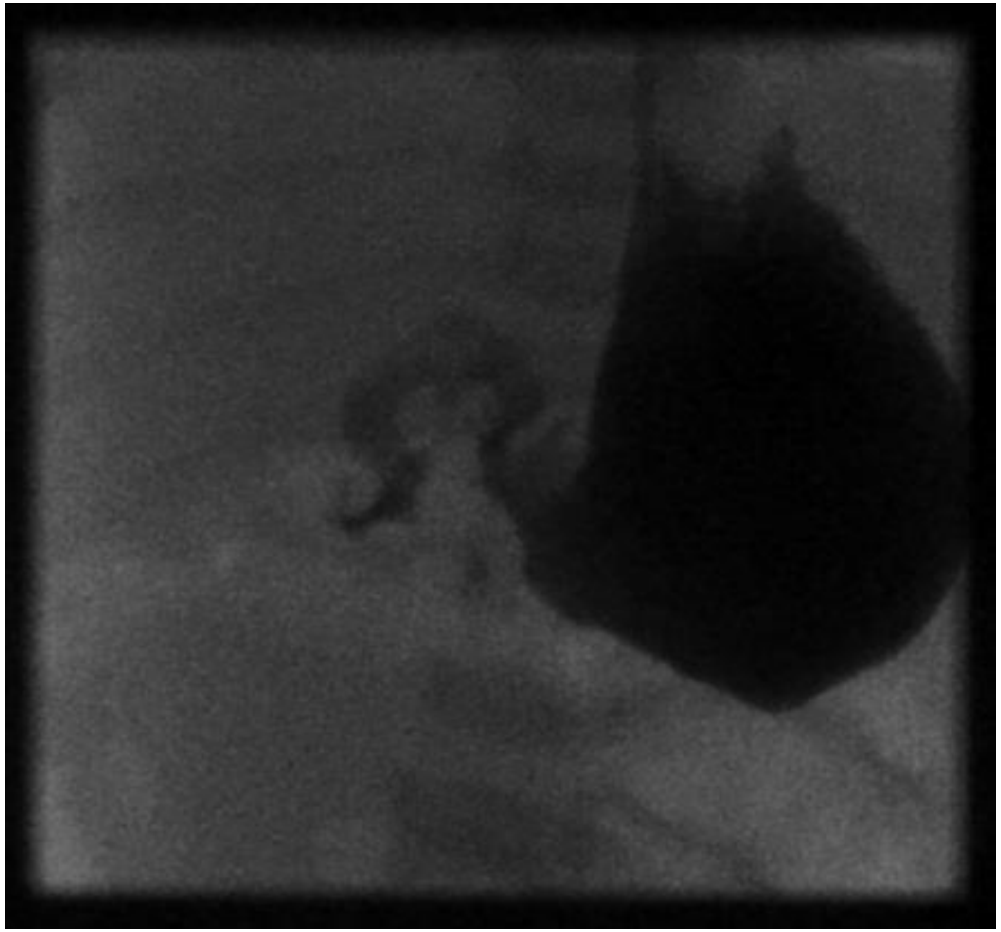


Malrotation

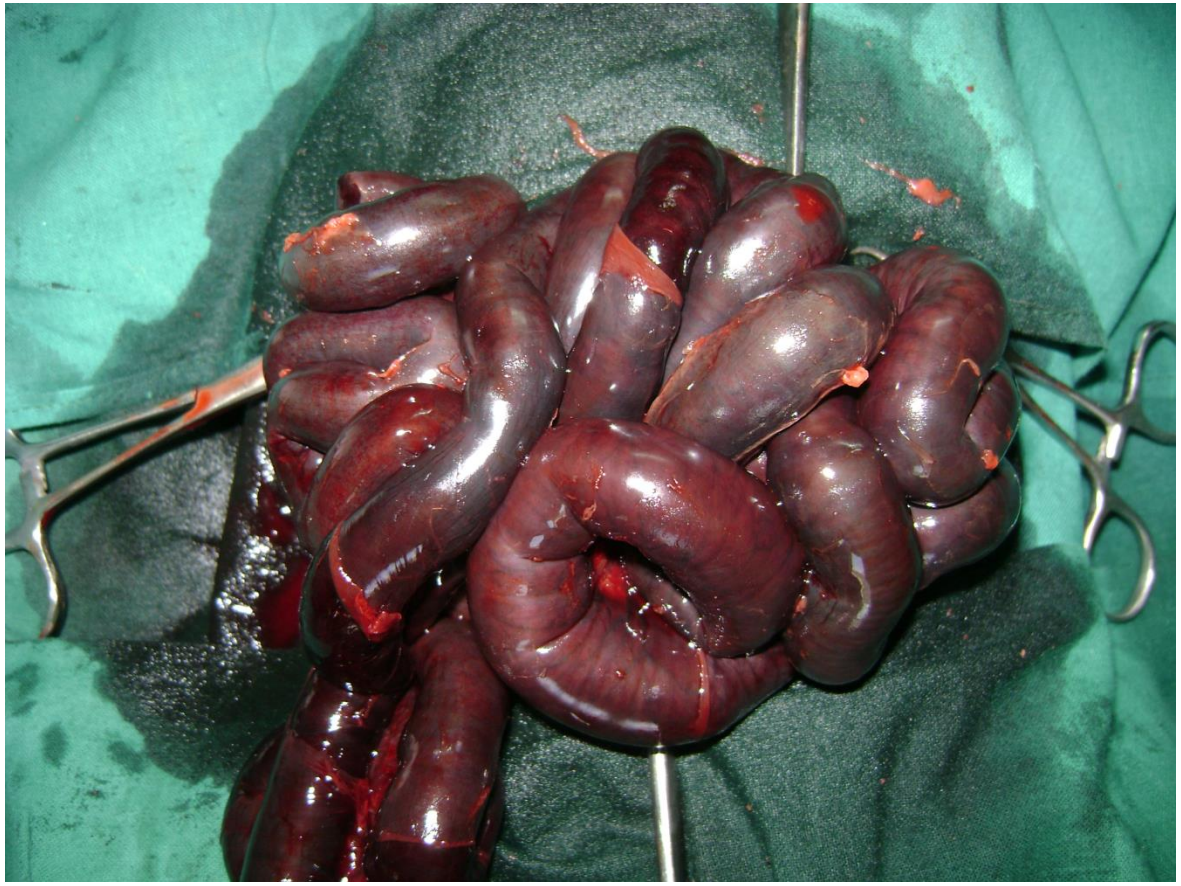




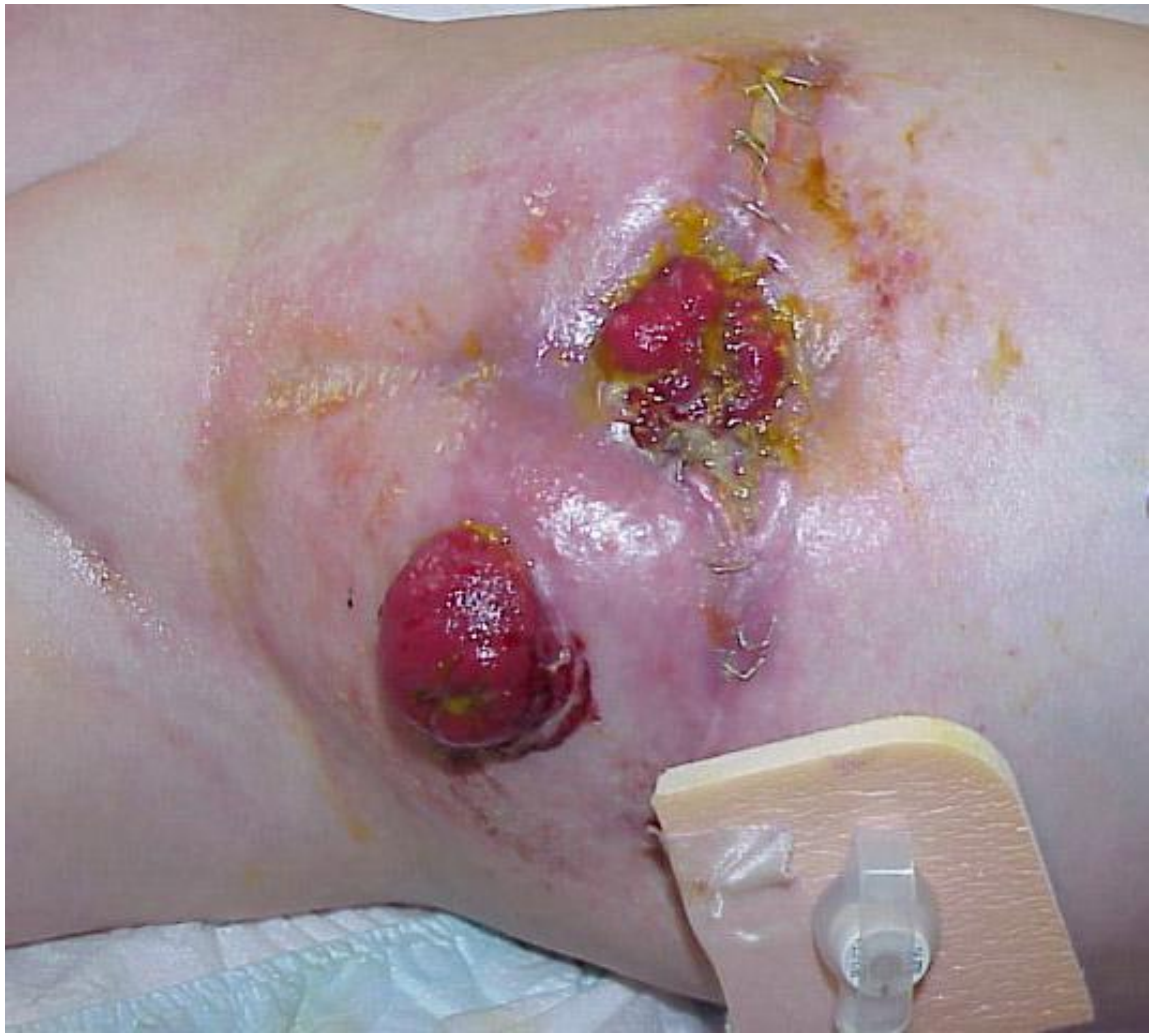
Contrast study



Malrotation + volvulus – Total Gut Necrosis



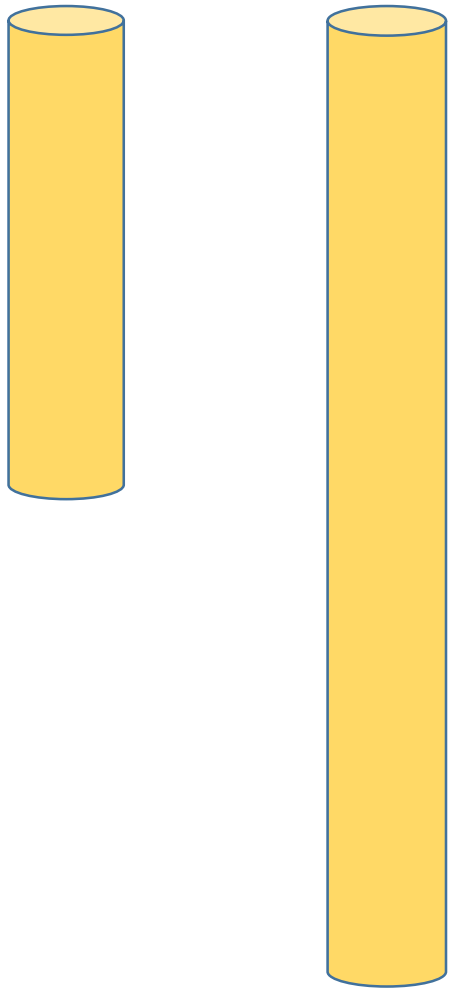
Where is the stoma?



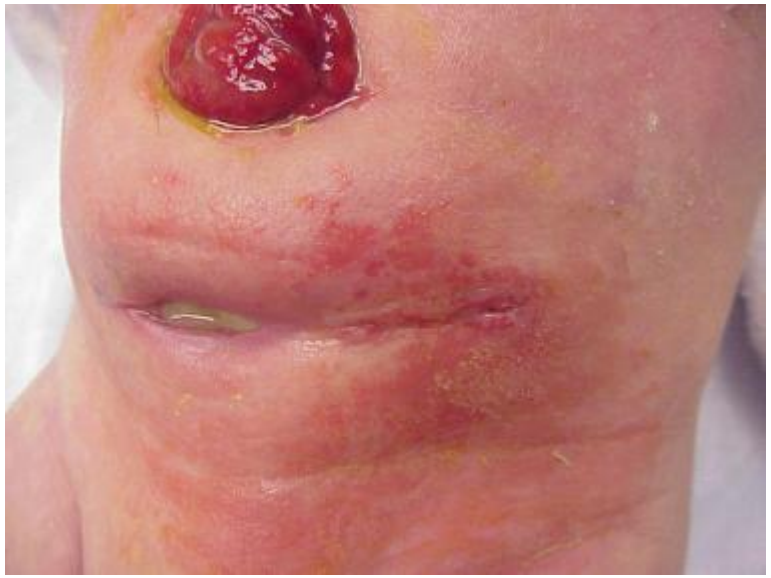
Vital to know anatomy

- If proximal stoma – jejunostomy
  - LESS absorptive capacity
  - LESS ability to tolerate feeds
  - Damaged but recovering bowel
  - Risk of high stoma output

- DO NOT tolerate high stoma output
  - 20-30mL/Kg/day
  - Monitor effluent for fats and reducing substances
  - Monitor growth – weight gain



Stoma in the wound?



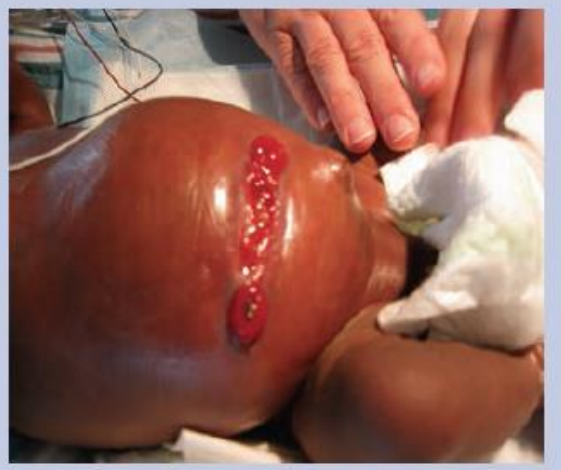


Figure 3A. 10/6/11

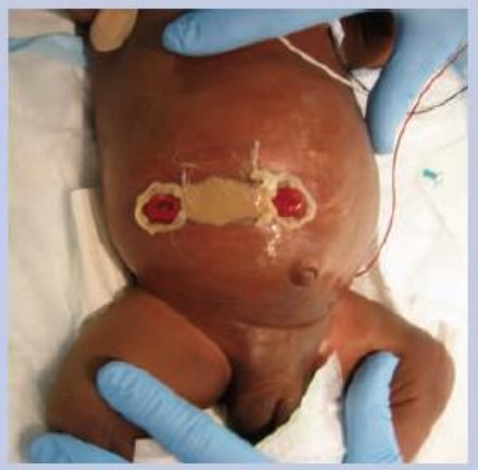


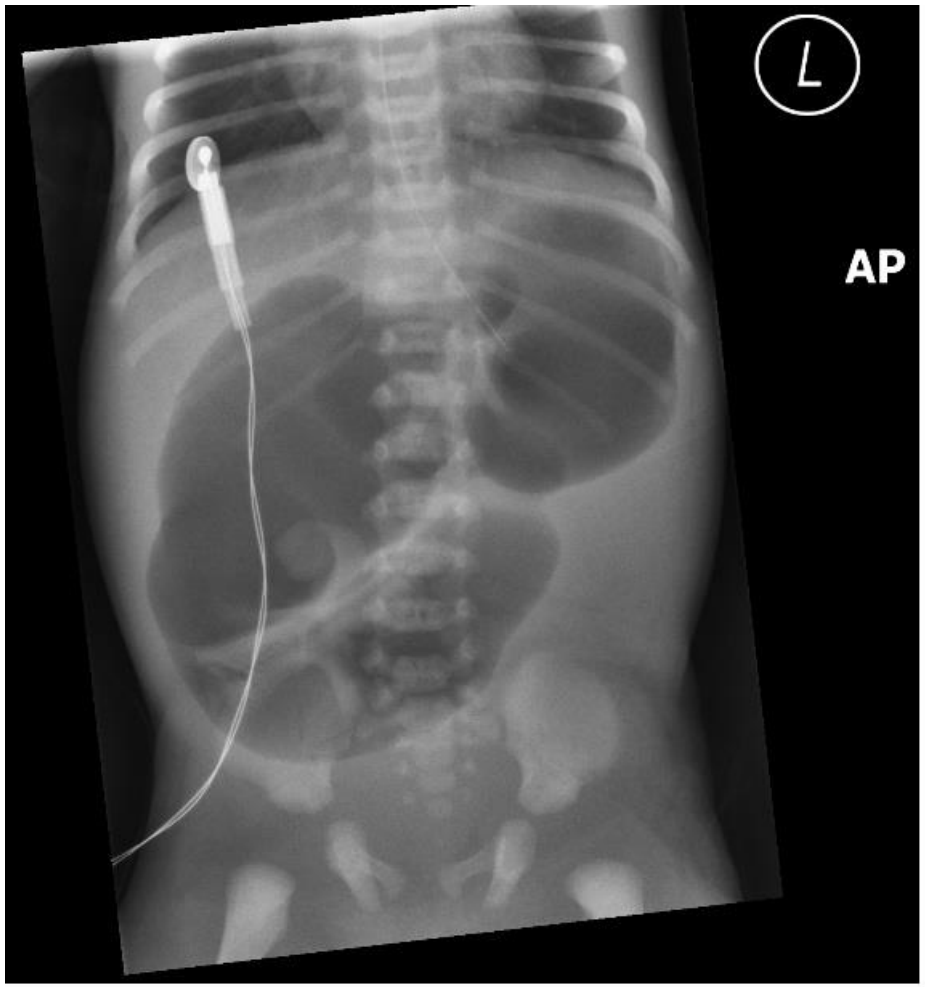
Figure 3B. 10/6/11

Figure 3C. 10/6/11

Small bowel atresia

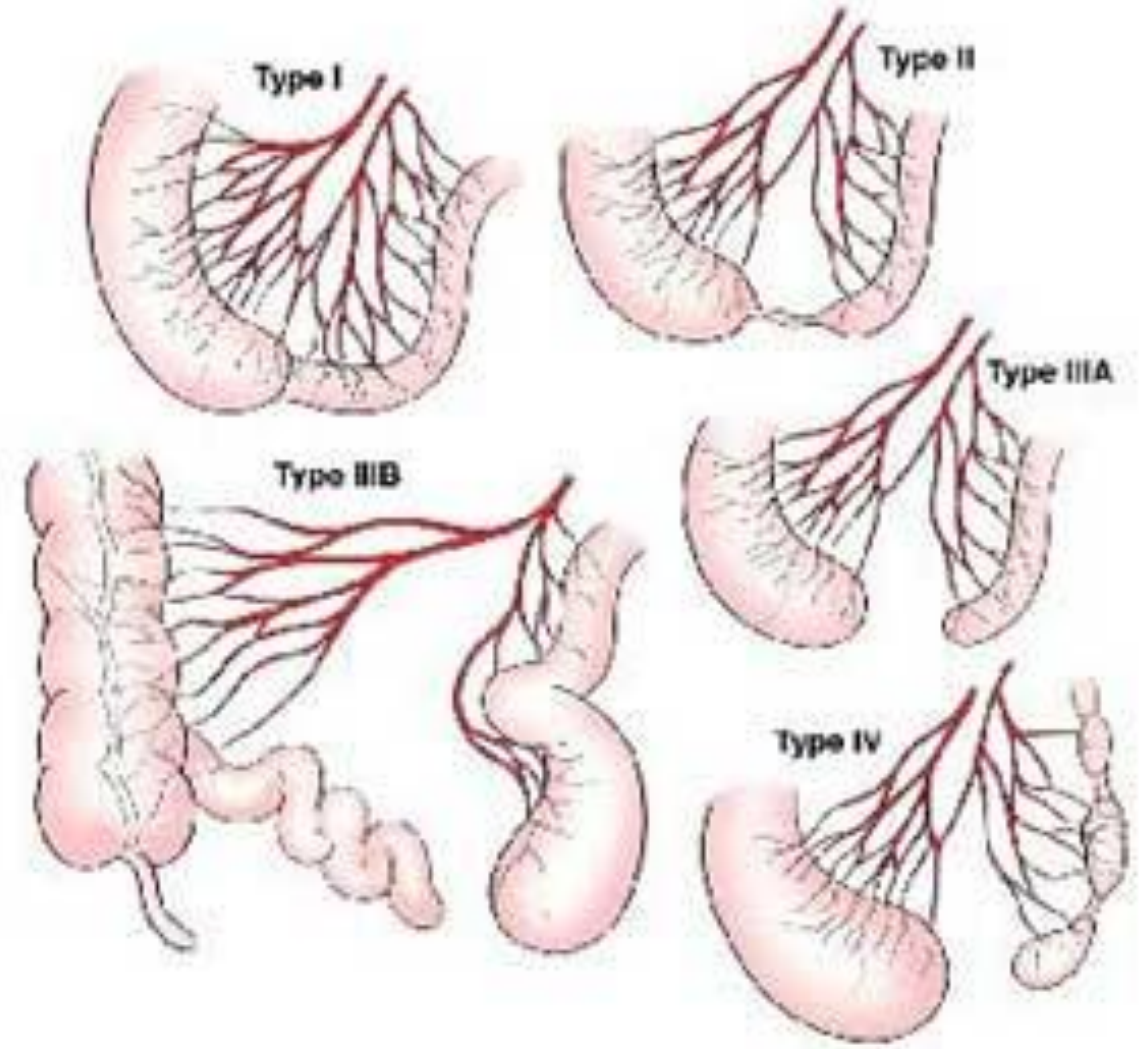
- 1 in 5000 births
- Aetiology – antenatal vascular compromise
- May be in jejunum or ileum
- May have short bowel
- Resection and anastomosis
  - May be multiple
  - May require tapering
  - May be end to end or end to side depending on discrepancy
- May require stoma

Abdominal X-ray – intestinal atresia



Types of small bowel atresia

- Stenosis – 11%
- Type 1 – 23%
- Type 2 – 10%
- Type 3 – 35%
- Type 4 – 21%



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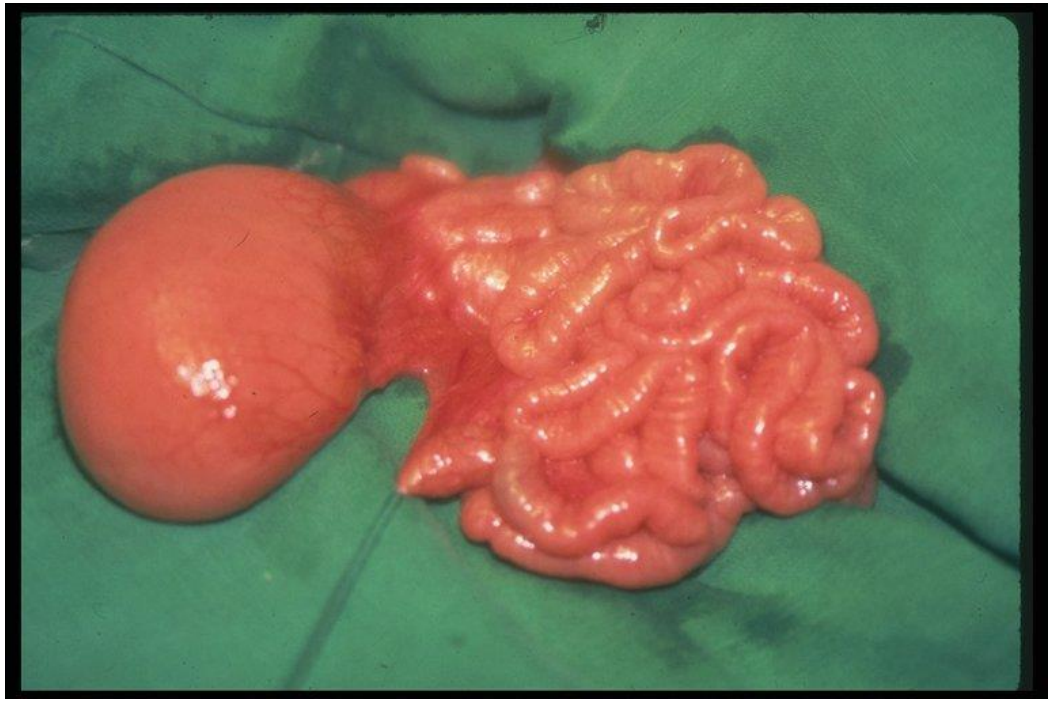
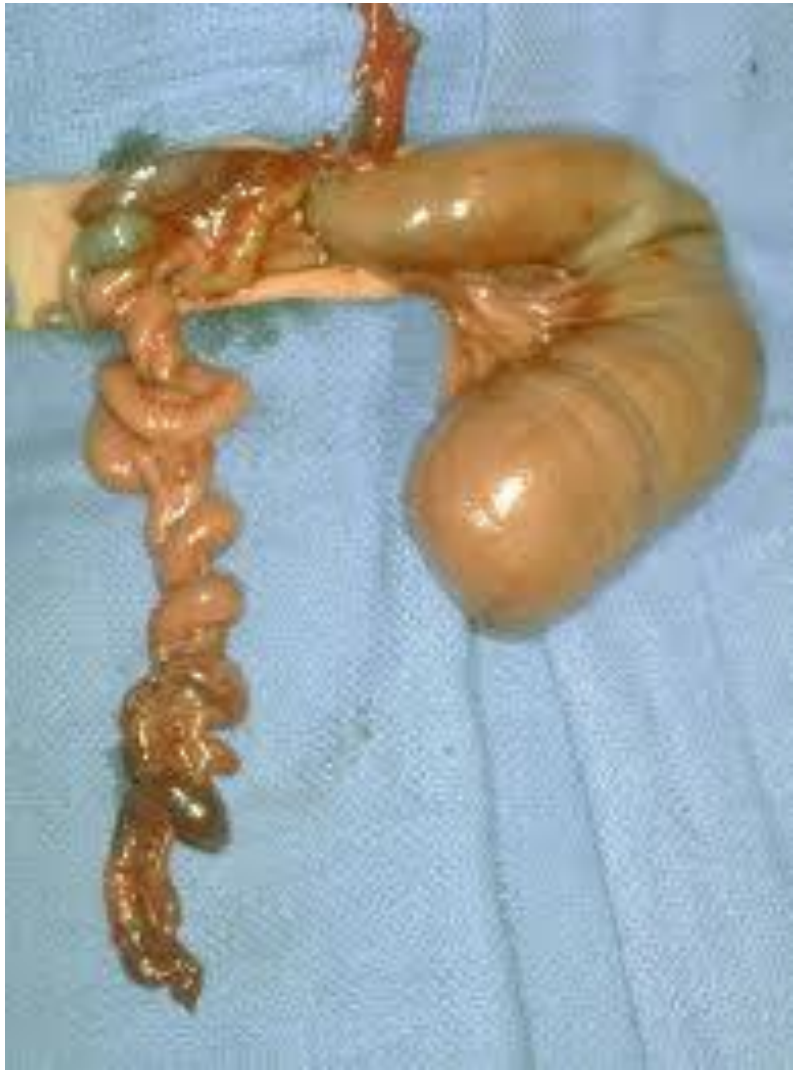


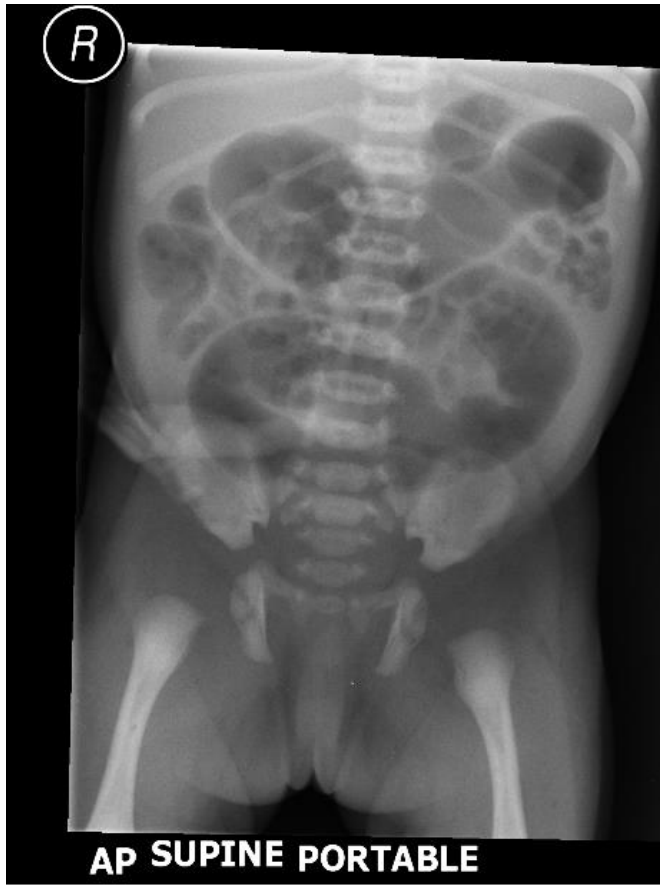
Type 3B

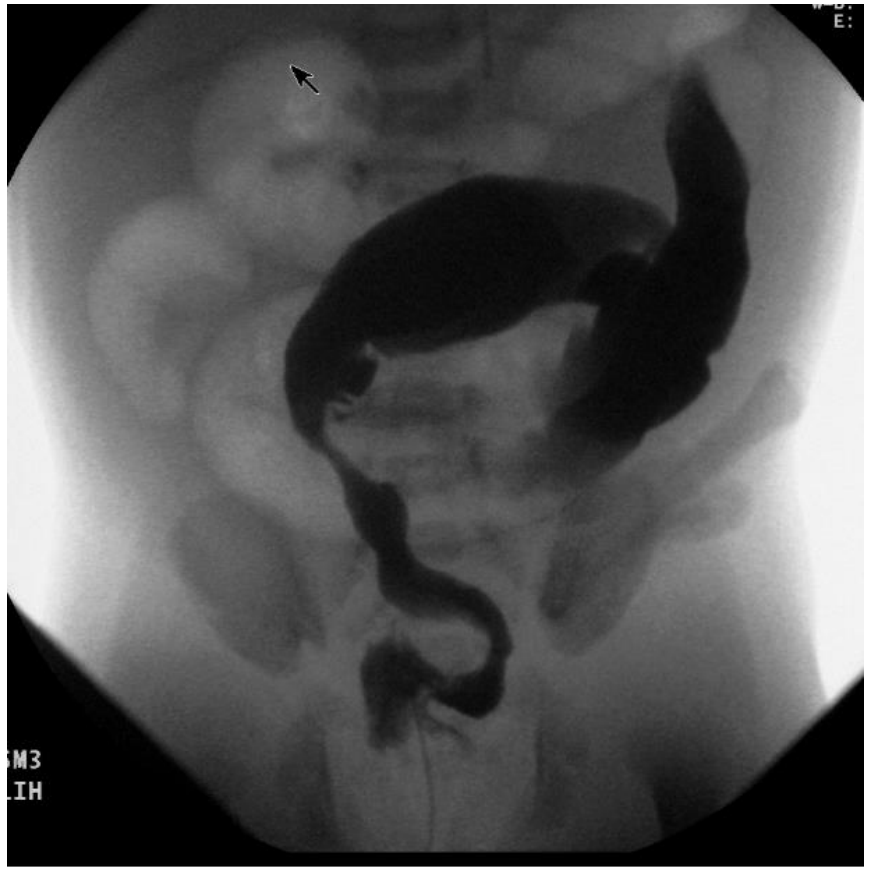


Hirschsprung Disease

- 1 in 5000 births
- M:F 4:1
- Associated with Trisomy 21
- Delayed passage of meconium >48hours
- Abdominal distension
- Vomiting – may be bilious
- Diagnosis – rectal biopsy
  - Aganglionosis, thickened nerve trunks, increased acetylcholinesterase

Hirschsprung Disease





Hirschsprung Disease

- Variable failure of neural crest cell migration
  - Rectosigmoid – 75%
  - Long (colonic) segment – 15%
  - Total colonic – 5-7%
  - Total interstinal – <5%
- Spastic bowel – failure to relax
- Requires decompression – rectal washouts
- Definitive surgery – pullthrough of ganglionic bowel

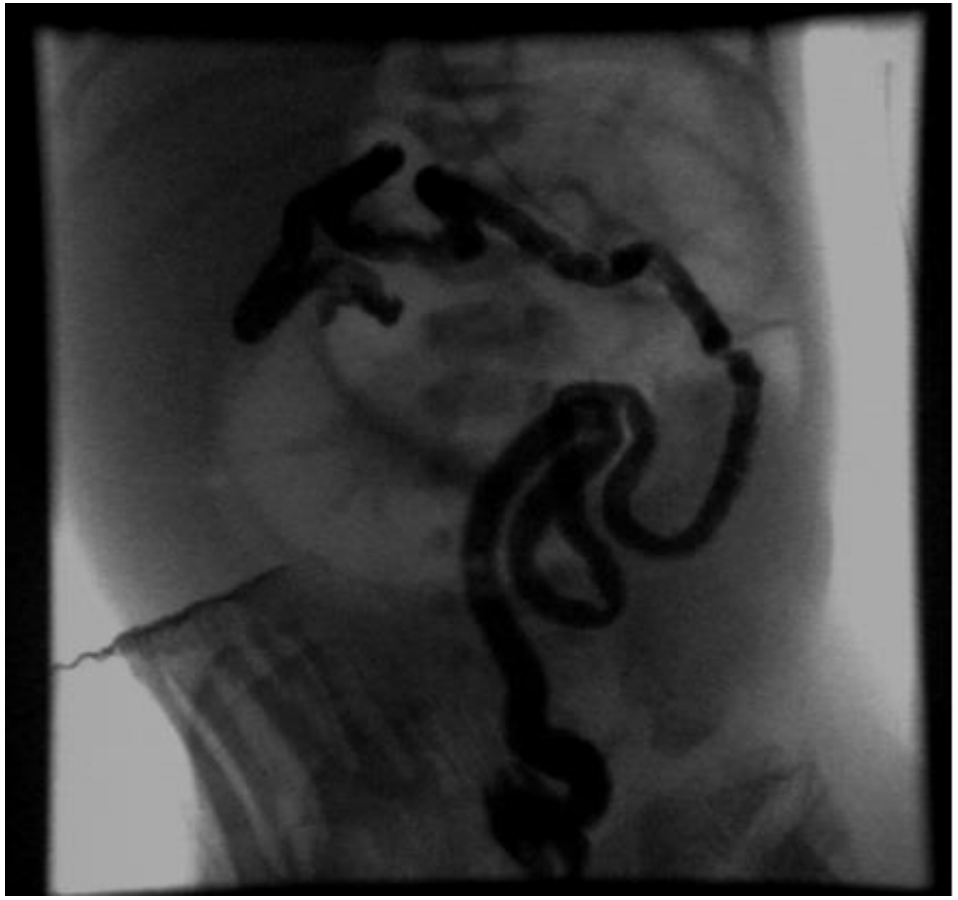
Need for stoma in Hirschsprung disease

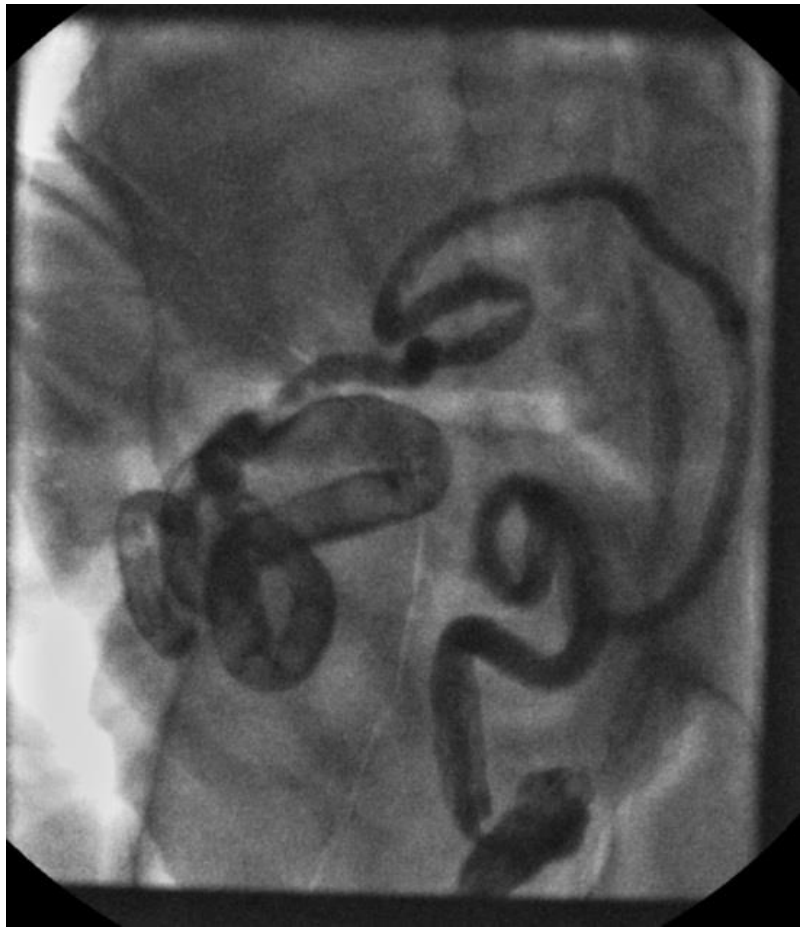
- Failure to decompress with rectal washouts
- Associated comorbidities
- ‘long segment’ – ‘levelling stoma’
  - Colostomy
  - Ileostomy
  - Jejunostomy
- Generally not needed

Meconium Ileus

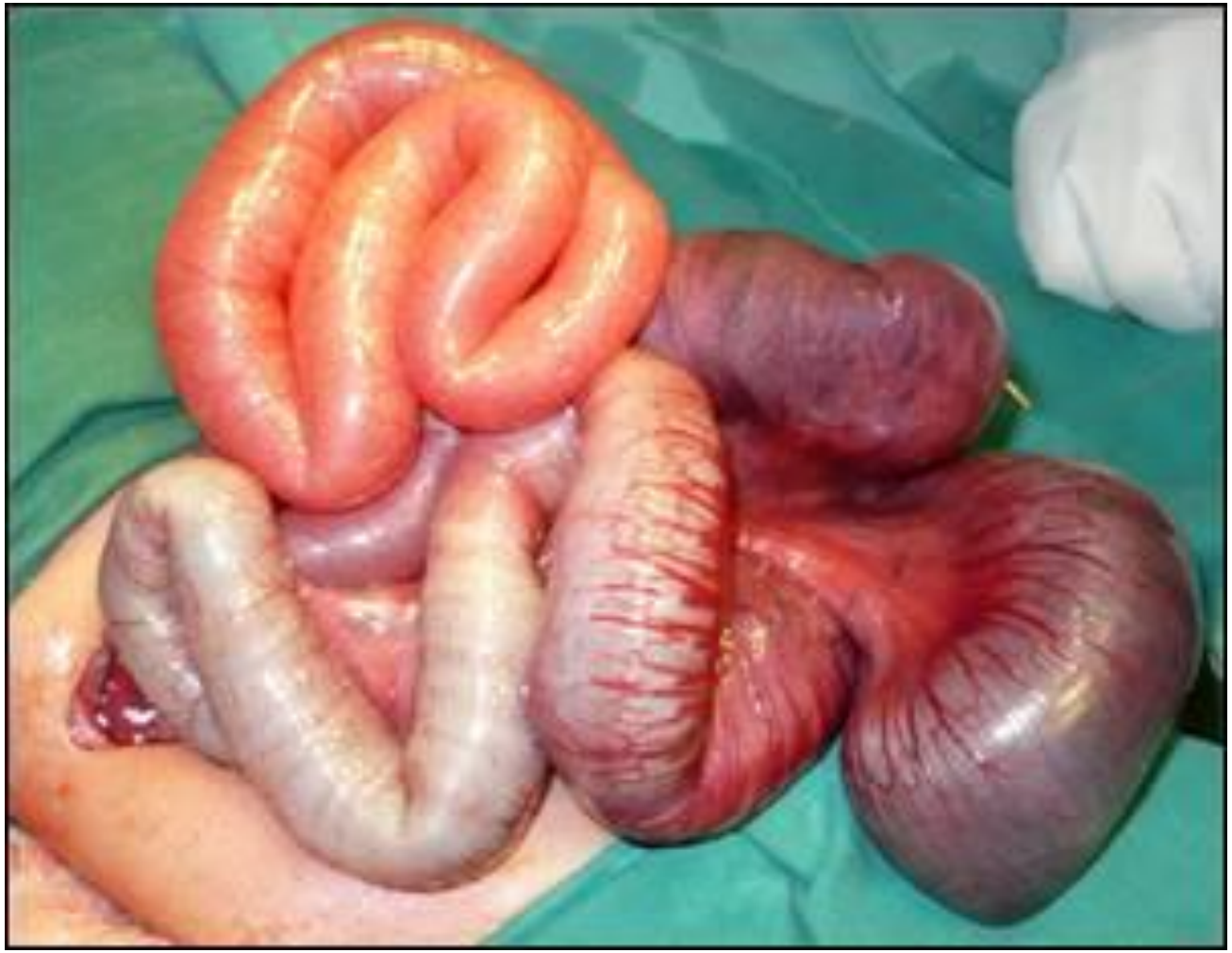
- CF – 1 in 2500 births
- ~16% of babies with CF
- Inspissated sticky meconium
  - Distal small bowel obstruction
  - May be complicated
- Microcolon on contrast enema
  - may be therapeutic
- Contrast enema
- Laparotomy and washout of bowel +/- stoma

Microcolon in Meconium ileus





Need for ileostomy



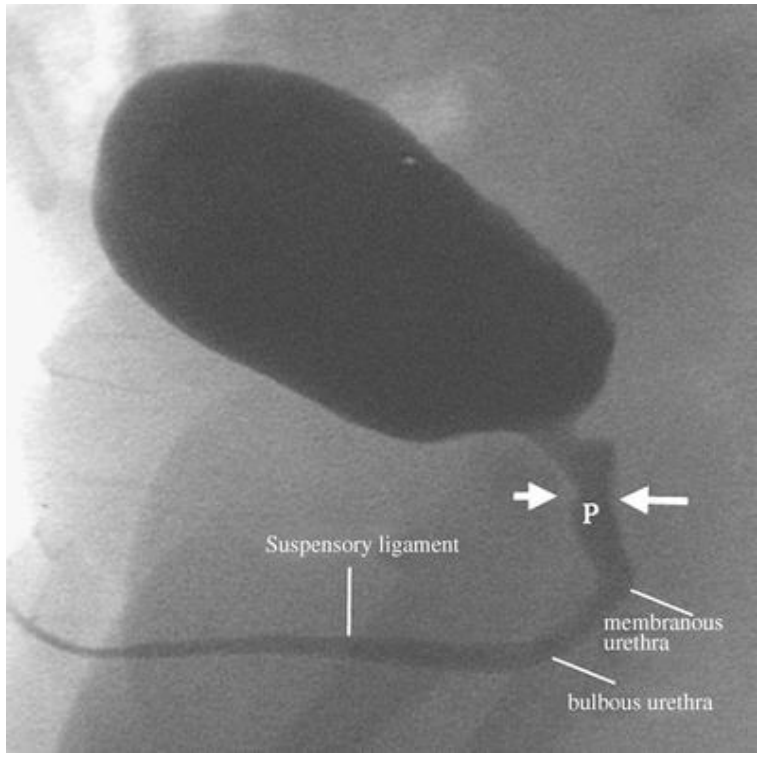
Congenital Genitourinary Causes

- Posterior urethral valves
- ‘Prune Belly’ or Eagle-Barrett syndrome
- Cloacal Exstrophy
- Neuropathic bladder
  - Spina bifida

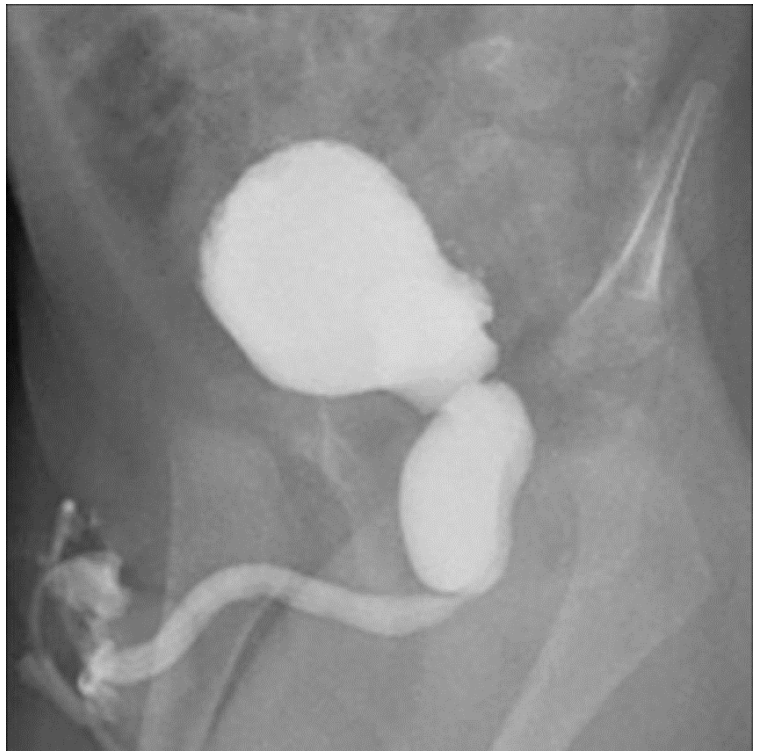
Posterior urethral valves

- Congenital obstruction of posterior urethra by ‘valve’
- Generally picked up antenatally
  - Dilated kidneys, ureters and bladder
- Neonatal cystoscopy to divide valves
- Associated with chronic renal failure
- May rarely need vesicostomy:
  - Low birthweight baby – unable to cystocope
  - Thick walled bladder which does not empty

Normal


P
Suspensory ligament
membranous urethra
bulbous urethra

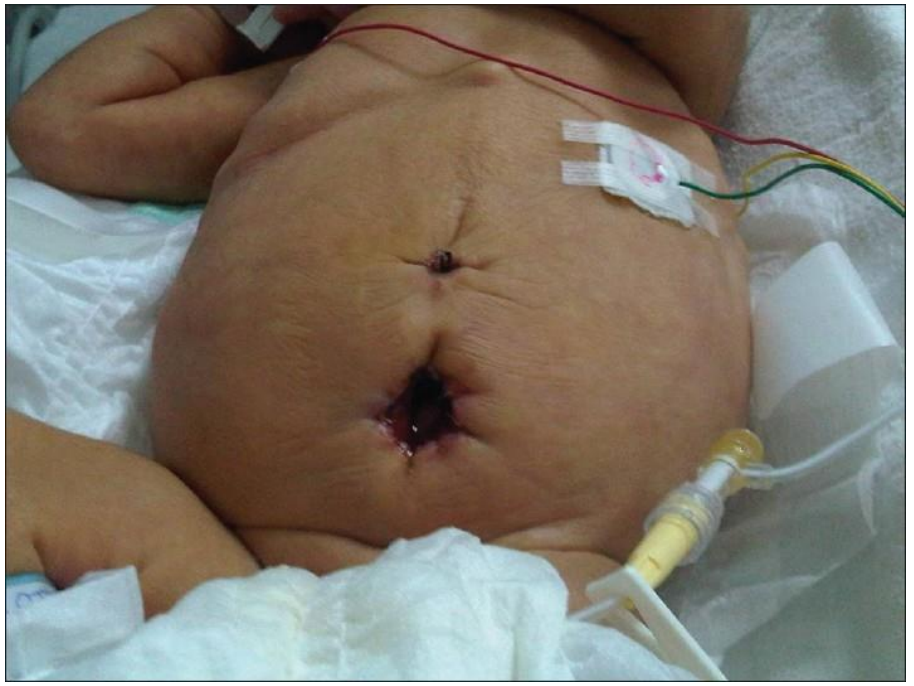
PUV



Prune Belly / Eagle-Barrett syndrome

- 1 in 40,000 births, majority boys
- Absent or weak abdominal wall muscles
- Dilated and obstructed renal tract
  - Kidneys
  - Ureters
  - Urethra
- If urethral obstruction
  - Dilate urethra
  - Vesicostomy
- Associated renal impairment

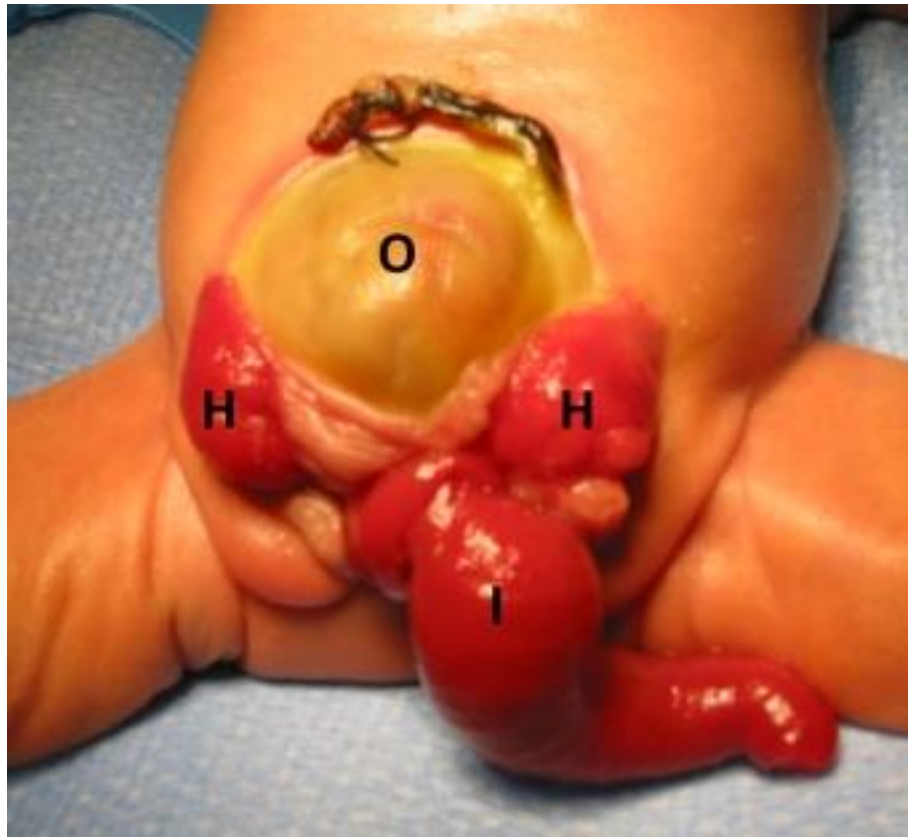
Prune belly - vesicostomy



Vesicostomy drains into nappy

Cloacal Exstrophy

- Very rare – 1 in 300000 births
- Male and female
- Require:
  - Closure of abdomen
  - Closure of bladder
  - Closure of pelvis
  - Reconstruction of genitalia
  - Ileostomy



Stoma complications

- Similar to adults
- Mechanical
  - Prolapse
  - Retraction
  - Stenosis (narrowing)
- Effluent
  - Skin excoriation
  - Skin breakdown
- Appliance issues

Summary

- Wide and complex neonatal reasons for stomas
- Vital to understand anatomy
- Vital to understand effluent
- Complications similar to adults

Questions?