The Constipated Child

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Despite decades of research…

Constipation remains common and challenging

- Paediatric patients
- Families
- Health care providers

Annually accounts for 3% paediatric visits,

25% paediatric gastroenterology referrals

- Increasing
- US total cost $6.9 billion

Majority 'functional', 5-10% organic causes

Significant amount of distress and anxiety

Definition

- Latin "constipare" – to crowd together
- No uniform definition
- Constipation characterized by
  - Infrequent bowel movements
  - Firm consistency
  - Large stool size
  - Pain or discomfort with defecation
  - Delayed intestinal transit time
  - Retentive posturing or stool withholding behaviour
    - Tip toeing holding onto furniture, leg stiffening or crossing, hiding in a corner when passing stools, squatting
- Diagnosis usually not a challenge

Organic causes

Neurogenic constipation
- Hirschprung's, spinal dysraphisms, tumor, CP, chronic intestinal pseudo-obstruction

Anal lesions
- Fissure, anterior location, stenosis, atresia

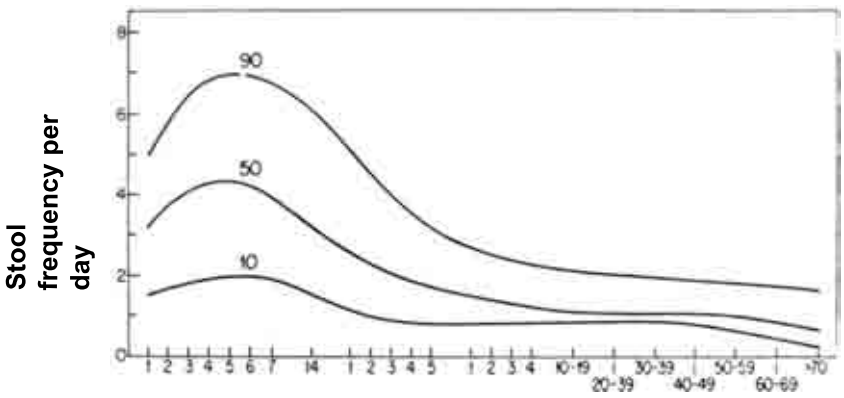
Endocrine and metabolic disorders
- Hypothyroidism, renal acidosis, DI, ↑Ca, CF

Neuromuscular disorders
- Muscular dystrophy

Abnormal abdominal musculature
- Prune Belly syndrome, Downs, Gastroschisis

Drugs
- Methylphenidate, morphine, codine, antacids, phenytoin

Normal Stool Frequency



Differentiate

- Infant dyschezia
- Nonretentive fecal incontinence

Infant dyschezia

- Young healthy infants
- 10 minutes straining and crying before successful defecation
- Complex defecation process a learned practice
  - Immature
  - Failure to coordinate abdominal muscle contraction with pelvic floor relaxation
- Reassurance

Nonretentive fecal incontinence

- Repeated socially inappropriate stool passage in the absence of fecal retention or predisposing medical condition
- > 4 years
- No evidence constipation
- Educating family, rigorous toilet training, caution against intensive use stool softners

Why all the unhappiness?

- Colonic distention
- Abdominal discomfort
- Gas formation
- Painful defecation
- Enterocolitis and sepsis

Deleterious effects growth, development and general well being

- Chao et al 12w treatment 2426 children
  - ↑z-scores H/A, W/H, BMI/age
  - Chronic constipation retard growth, long term medication beneficial
- Boccia et al functional dyspepsia improved with improving bowel habits

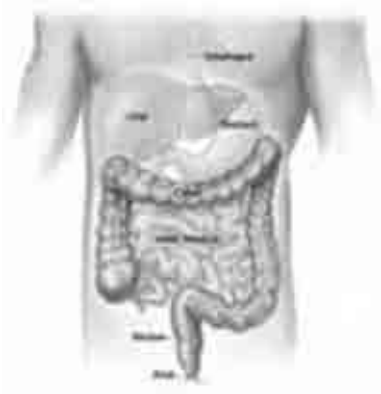
Psychosocial consequences

- 84% overflow incontinence
- Significant lower QOL
- Parental perception of QOL significantly worse – negative impact family
- Bongers et al higher frequency fecal incontinence lower emotional and social functioning

Prompt recognition and intervention imperative to prevent negative biopsychosocial effects

Pathophysiology

Colon unique structure fecal material terminal ileum to anus

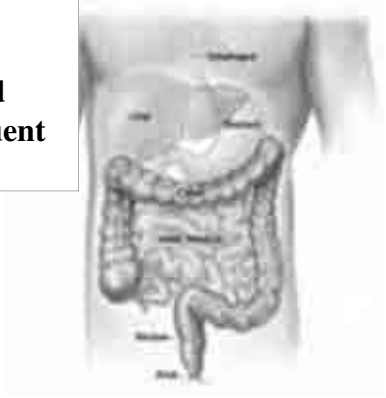


Pathophysiology

Colon unique structure fecal material terminal ileum to anus

Right colon

•Mixing, fermentation and salvage ileal effluent – desiccates stool



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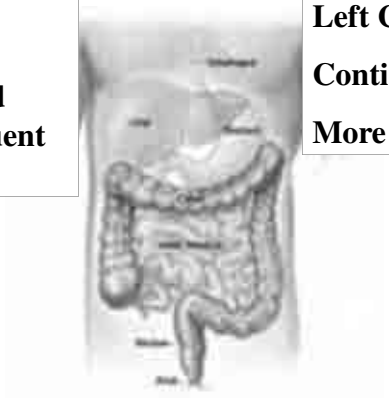

Left Colon

Continue desiccation

More rapid transport

Pathophysiology

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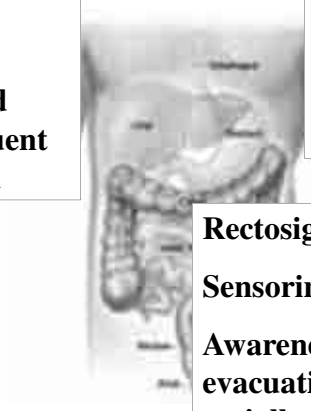

Left Colon

Continue desiccation

More rapid transport

Rectosigmoid colon

Sensorimotor function

Awareness, retention and evacuation of stool at a socially appropriate time

Pathophysiology

Colon unique structure fecal material terminal ileum to anus

Right colon

•Mixing
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salva
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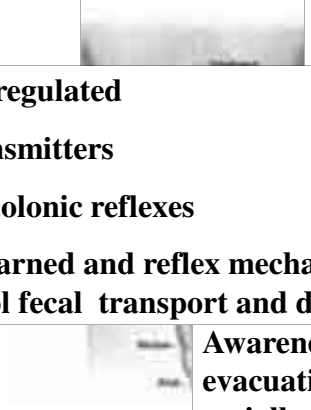
Functions regulated

•Neurotransmitters

•Intrinsic colonic reflexes

•Myriad learned and reflex mechanisms that control fecal transport and defecation



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desiccation

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Awareness, retention and evacuation of stool at a socially appropriate time

Pathophysiology

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Left Colon

PROBLEM ANY COMPONENT: CONSTIPATION

Awareness, retention and evacuation of stool at a socially appropriate time

How do we get to the core of the problem?

- History
- Physical examination
- Special investigations

History

- General health, presenting signs and symptoms
- Time first bowel movement after birth
- Age of onset, consistency, stool frequency and size, painful defecation, presence blood in stool, retentive posturing
- Soiling frequency, day/night time
- Social and emotional factors
- Typical times of presentation
  - Infant introducing solids and weaning breast milk
  - Toddler time of toilet training
  - School-aged child refuse to use bathrooms at school

- Fecal incontinence
  - Intermittent or several times a day, small smear to full bowel movement
  - Mistaken diarrhoea
  - Social embarrassment, low self-esteem, depression, social withdrawal
- Abdominal pain, distension, urinary tract symptoms, fever, nausea, vomiting, appetite, weight loss, abnormal neuromuscular development
- Psychological and behavioral problems
- Dietary history, amount of fluids and fiber in diet
- Other medication, OTC
- Previous treatment
- Stool diary - reliability

Physical examination

- Complete to rule out any underlying disorder
- Weight and height
- Careful neurological exam, spine
- Abdominal examination: fecal mass
- Perianal region soiling, fissures, skin irritation, haemarhoids, signs sexual abuse
- PR perianal sensation, anal wink, anal tone, size rectal vault, volume and consistency of stool in rectum, voluntary contraction and relaxation anap sphincter, masses

RED FLAGS

- Onset < 12m
- Delayed passage meconium
- Not stool withholding
- No soiling
- Intermittent diarrhoea and explosive stools
- Failure to thrive
- Empty rectal ampulla
- Tight anal sphincter

RED FLAGS

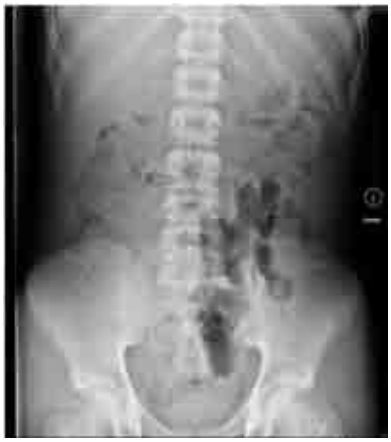
- Gushing of the stool with the rectal exam
- Abnormal neurological exam
- Pigmentary abnormalities
- Heme positive stools
- Presence of extraintestinal symptoms
- Bladder disease
- No response to conventional treatment

Laboratory investigations

- Not indicated initially unless history or examination suggests organic disease
- Evaluation undertaken
  - Systemic symptoms arise
  - Symptoms are refractory to appropriate medical and dietary therapy
- Initial evaluation
  - TFT, S-Ca, celiac screening or other applicable tests as indicated

Abdominal Radiographs

- Complement clinical history and examination (obese pt, rectal examination refused)
- Presence absence retained stool, extent, lower spine



Barium enema

- Not indicated for routine evaluation
- Hirschprung's disease transition zone
- Suspected strictured areas postoperatively or in inflammatory bowel disease

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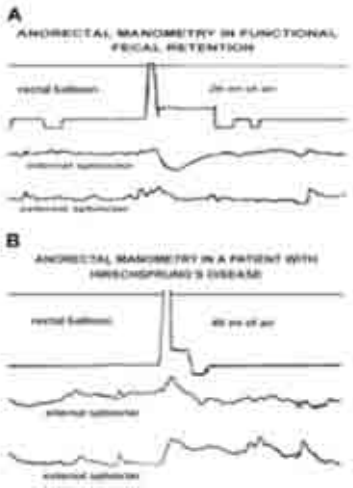
Radionuclide scintigraphy

- Evaluate transit time and identify location of dysmotility
- Categorize children with chronic ideopathic constipation as
  - Functional fecal retention
  - Slow colonic transit time

Anorectal manometry

- Measure levels sensory recognition
- Ability internal anal sphincter to relax (RAIR) – Hirschprung's disease



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How do we get them to smile again?

Treatment

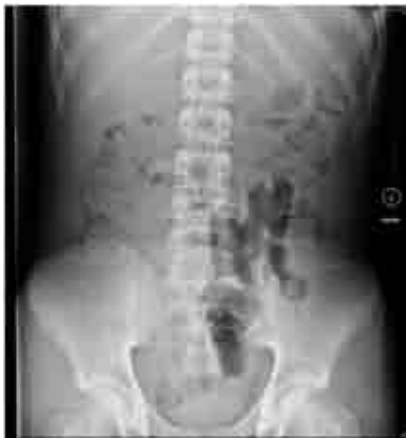
- Education
- Disimpaction
- Maintenance therapy
- Behavioral modification
- Discontinuation of treatment

Education

- Both parents and child
- Explain pathophysiology, hard stools painful and difficult to pass, association, stool withholding, rock hard stools, vicious cycle, chronic retention and encopresis
- Constipation present long before encopresis
- Not parent's fault or disturbance in psychological behavior
- Guilt
- Realistic expectations
- Detailed plan
- Ongoing support

Disimpaction

- Vital before initiation maintenance therapy
- Oral
  - Mineral oil 15-30ml/year of age up to 240ml
  - PEG 1.5g/kg/day
    - Golytely 25ml/kg/hr
    - Pegicol/movicol 1.5g/kg/day (2-6 sachets/day) for 3 days
- Phosphate enemas, glycerine suppository



Maintenance therapy

- Goal of therapy: Daily soft painless stools preventing the reaccumulation of feces
- Medication
  - Osmotic laxatives – lactulose or Polyethylene glycol 3350
  - Mineral oil – lubricant and hydroxy fatty acids
  - Stimulant laxatives
- Behavioral modification
- Dietary measures

Behavioral modification

- Recondition to normal bowel habits by regular toilet use
- Gastrocolic reflex
  - encourage child to sit on toilet 5 minutes following meals
  - Strongest after breakfast, colonic activity optimal first 2 hours after awakening
  - Same time each day – conditioned reflex
  - Positive reinforcement star charts
- Active lifestyle

Diet

- High-fiber diet or fiber supplementation first-line therapy chronic functional constipation
- 0.5g/kg/d up to 35g/d or ‘age+5g/d’
- Referral to dietician worthwhile
- Adequate fluid intake

Discontinuation of therapy

- Long term treatment
- At least 6 months to establish regular bowel pattern
- Incremental reduction of treatment
- Regular follow up and support

Conclusion

- Common paediatric affliction
- Significant morbidity and emotional distress
- Recognition and effective treatment imperative