CONSTIPATION

Emergency Essentials for Better Management

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Disclosures

- Abbott Nutrition, Speakers Bureau.
Objectives

- Define pediatric constipation.
- Understand the epidemiology of constipation and impaction
- Review the current emphasis on outpatient management
- Review the treatment for outpatient management of constipation and fecal obstipation or impaction

It is beyond the scope of the discussion to address all diagnostic and management areas (diet, lifestyle interventions, medications and surgery).
One beautiful clinic day:

- 2 year old male presenting with both his parents for significant concerns for constipation and desiring admission for bowel cleanout.
The story goes:

- **HPI**
  - Daily scibolous bowel movements until December 2015.
  - Started ½ capful Polyethylene Glycol 3350 (PEG3350) daily
  - Daily bowel movements
  - No bowel movement for the past 10 days
  - Interventions include:
    - “Aggressive management at home”:
      - Emergency department on 02/23/16: 2 ounces of magnesium citrate in the ER and instructed to give 2 ounces every 6 hours over the next day.
    - Glycerin suppository two or three times
    - 1 square of Ex-Lax.
**Additional history**

- **Stooling history**: He did stool within 24 hours of life with a normal stooling pattern 12 mos.

- **Associated symptoms**: NO nausea, vomiting, decreased appetite, fatigue, pallor, fever, weight loss, diarrhea, or fussiness.

- **Diet**: He drinks 27 ounces of whole milk daily. He is a very picky eater.

- **Risk factors**: None identified
Physical Exam

- Abdomen: soft, nontender, slight distension with some fullness in the lower abdomen
- Anus: Positive soiling, normal wink, no visible bleeding or fissure
- Rectum: positive palpable formed stool, normal tone
What do you think?
CLINICAL GUIDELINE

Evaluation and Treatment of Functional Constipation in Infants and Children: Evidence-Based Recommendations From ESPGHAN and NASPGHAN

M.M. Tabbers, C. DiLorenzo, M.Y. Berger, C. Faure, M.W. Langendam, S. Nurko, A. Staiano, Y. Vandenplas, and M.A. Benninga
What is constipation?

- No clear definition
- Definitions vary between parents and provider
- In general:
  - Hard stool
  - Difficulty in stool passage
  - Frequency: <3 bowel movements per week
- May be associated with:
  - Dyschezia
  - Overflow incontinence
What is constipation?

TABLE 2. Rome III diagnostic criteria for functional constipation

In the absence of organic pathology, ≥2 of the following must occur
For a child with a developmental age < 4 years:
1. ≤2 defecations per week
2. At least 1 episode of incontinence per week after the acquisition of toileting skills
3. History of excessive stool retention
4. History of painful or hard bowel movements
5. Presence of a large fecal mass in the rectum
6. History of large-diameter stools that may obstruct the toilet

Accompanying symptoms may include irritability, decreased appetite, and/or early satiety, which may disappear immediately following passage of a large stool.

For a child with a developmental age ≥ 4 years with insufficient criteria for irritable bowel syndrome:
1. ≤2 defecations in the toilet per week
2. At least 1 episode of fecal incontinence per week
3. History of retentive posturing or excessive volitional stool retention
4. History of painful or hard bowel movements
5. Presence of a large fecal mass in the rectum
6. History of large-diameter stools that may obstruct the toilet.

*Criteria fulfilled for at least 1 month. Adapted from Hyman et al (12).
†Criteria fulfilled at least once per week for at least 2 months before diagnosis. Adapted from Rasquin et al (13).
Epidemiology

- How common is it?
  - 5% of all primary care visits
  - 25% of all pediatric gastroenterology visits

- When does it begin?
  - 17%-40% begin within the first year of life

Pathophysiology

- Most common cause is stool with-holding:
  - Child tightens external anal sphincter
  - Stool is pushed back into rectal vault
  - Water is removed
  - Process continues
Complications of chronic constipation

- Abdominal and/or rectal pain
- Anal fissure
- Overflow incontinence
- Rectal prolapse
- Solitary rectal ulcer
- UTI or ureteral obstruction
- Enuresis
- Bacterial overgrowth
- Malabsorption
- Social difficulties
- Decreased appetite
Complications of chronic constipation

- Abdominal and/or rectal pain
- Anal fissure
- **Overflow incontinence**
- Rectal prolapse
- Solitary rectal ulcer
- UTI or ureteral obstruction
- Enuresis
- Bacterial overgrowth
- Malabsorption
- Social difficulties
- Decreased appetite
Overflow incontinence

- Fecal soiling due to overflow from the rectum
- Epidemiology
  - 3-6 times more common in males
  - 3% of all 4 year olds
  - 1.5% of all 10 year olds
- Child is rarely aware that he has soiled
- Key is determining if etiology is organic vs functional
Differential diagnoses of constipation

- Functional Constipation
  - Normal transit
  - Slow transit
  - Pelvic floor dysfunction
  - Irritable bowel syndrome

Functional Constipation

- Normal transit
- Slow transit
- Pelvic floor dysfunction
- Irritable bowel syndrome

Diagnosis

- Clinical History
  - Current bowel pattern
  - Neonatal stooling history
  - Onset
  - Precipitating factors
  - Systemic symptoms
  - Medications
  - Diet
  - Exposures
  - Past Medical History
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Separate hard lumps, like nuts</td>
</tr>
<tr>
<td>2</td>
<td>Sausage-like but lumpy</td>
</tr>
<tr>
<td>3</td>
<td>Like a sausage but with cracks in the surface</td>
</tr>
<tr>
<td>4</td>
<td>Like a sausage or snake, smooth and soft</td>
</tr>
<tr>
<td>5</td>
<td>Soft blobs with clear-cut edges</td>
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<tr>
<td>6</td>
<td>Fluffy pieces with ragged edges, a mushy stool</td>
</tr>
<tr>
<td>7</td>
<td>Watery, no solid pieces</td>
</tr>
</tbody>
</table>
Diagnosis

- Physical Examination (key points)
  - General examination
  - Rectal
    - Anal position / caliber
    - Anal wink
    - Signs of infection
  - Neurologic
    - Deep tendon reflexes
    - Sacral exam
    - Cremasteric reflex in males
Clinical alarm signs and symptoms

<table>
<thead>
<tr>
<th>TABLE 5. Alarm signs and symptoms in constipation</th>
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<tbody>
<tr>
<td>Constipation starting extremely early in life (&lt;1 mo)</td>
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<tr>
<td>Passage of meconium &gt;48 h</td>
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<td>Family history of HD</td>
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<tr>
<td>Ribbon stools</td>
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<tr>
<td>Blood in the stools in the absence of anal fissures</td>
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<td>Failure to thrive</td>
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<tr>
<td>Fever</td>
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<td>Bilious vomiting</td>
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<td>Abnormal thyroid gland</td>
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<tr>
<td>Severe abdominal distension</td>
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<tr>
<td>Perianal fistula</td>
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<tr>
<td>Abnormal position of anus</td>
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<tr>
<td>Absent anal or cremasteric reflex</td>
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<tr>
<td>Decreased lower extremity strength/tone/reflex</td>
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<tr>
<td>Tuft of hair on spine</td>
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<td>Sacral dimple</td>
</tr>
<tr>
<td>Gluteal cleft deviation</td>
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<tr>
<td>Extreme fear during anal inspection</td>
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<tr>
<td>Anal scars</td>
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</tbody>
</table>

HD = Hirschsprung disease.

Other diagnostic considerations

- Labs
- Radiographic imaging
  - KUB
  - Barium enema
  - Lumbosacral MRI*
  - Sitzmark studies*
- Anorectal manometry*
- Deep suction rectal biopsies*
- Motility studies*

*Pediatric gastroenterology referral
Treatment considerations

- 3 main phases of therapy
  - Cleanout: complete evacuation of stool
  - Maintenance: sustained evacuation of stool
  - Rescue therapy
- Weaning of medication
3 main phases of therapy

- **Cleanout:** complete evacuation of stool
  - Maintenance: sustained evacuation of stool
  - Rescue therapy

- Weaning of medication
Medications

- Osmotic laxatives
  - Polyethylene glycol 3350 (Miralax, Clearlax, etc)
  - Magnesium citrate
  - Golytely
- Stimulant laxatives
  - Senna
  - Bisacodyl (Dulcolax, Correctol, Fleet, etc)
- Enema, consider if rectal impaction (last resort)
  - Hyperosmotic enemas have been associated with significant morbidity and mortality
  - Normal saline enema, mineral oil enema, additives
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Clean out: to admit or not admit

- Current push is to avoid inpatient admissions for colonic cleanout
  - Efficacy of oral based regimens
  - Risk of nosocomial infection
  - Cost
- Primary Children’s protocol is currently in practice
  - Uniform care protocol
  - Avoid rectal disimpactions in OR unless clinical signs of overt obstruction
  - Goal is to approach the national average of 5% admission rate
Admission rates since inception

Rate of Constipation Admissions from ED by Month

- Admissions from PCH ED
- Goal (PHIS Mean)

*GI triage/consult process began (Aug 2015)*
PCH protocol goals

- Uniform care among providers
- One cleanout dose, distributed as “gift basket”
- Educational video
- One discharge document
- Agreement between ED and Pediatric Gastroenterology
Cleanout recommendations

- Polyethylene glycol 3350
- Senna
- Bisacodyl
Cleanout recommendations

- **Polyethylene glycol**
  - <5 yo: 4 capfuls of PEG3350 into 20oz liquid
  - 5-10 yo: 7 capfuls of PEG3350 into 32 oz liquid
  - >10 yo: 14 capfuls of PEG3350 into 64 oz liquid (>30kg)

- **Senna**
  - 2-6 yo: 5 mg /day
  - 6-12 yo: 10 mg /day
  - >12 yo: 15-20 mg /day

- **Bisacodyl**
  - 3-10 yo: 5 mg /day
  - >10 yo: 5-10 mg /day
Cleanout recommendations

- Enema
  - Consider if there is large, hard rectal stool present
  - Normal saline enema
    - 2.5 ml/kg with max about 133 ml/dose
    - PCH protocol, in ED: 20 ml/kg NS enema
    - Consider addition of 5% glycerin or bisacodyl
  - Mineral oil enema
    - 2-11 yo: 30-60 ml once daily
    - >11 yo: 60-150 ml once daily
Example cleanout:

- Enema, if needed, to evacuate distal contents
  - Normal saline enema +/- glycerin or bisacodyl x1
- Senna or oral bisacodyl (see previous doses)
- PEG 3350: 4-8 oz every 15 to 30 minutes until finished

- May need to continue a smaller dose of the medications for a couple days to achieve soft stool without any visible chunks.
Maintenance: key points

- Toilet time
- Diet
- Medications:
  - PEG 3350: titrate to effect to achieve 1-2 soft bowel movements daily
  - Other maintenance osmotics may include milk of magnesia, lactulose, sorbitol (1-4 ml/kg/day)
  - Consider addition of stimulant laxative
- This is a long term process and requires continuous adherence.
If the child has not had a bowel movement for 24-48 hrs then do the following:
- Senna or bisacodyl dose prior to bedtime
- Doubling PEG 3350 dose
- Addition of dose of Magnesium citrate
**Conclusion**

- Constipation is a very common problem in pediatrics and often starts before one year of age.
- Most commonly it is due to functional constipation.
- Warning symptoms or findings may include a tense abdomen, bilious emesis, weight loss, or systemic symptoms.
- Unless there are symptoms or significant obstruction, colonic cleanouts can be safely and effectively achieved as an outpatient.
- This is a long term treatment process requiring vigilant adherence.
Questions?
Anterior Displacement of the Anus

anterior ectopic anus: anal canal, surrounded by the internal anal sphincter, exits in the anterior perineal area
external anal sphincter remains separate in usual posterior location

anteriorly located anus: normal anus and both associated sphincters are located in the anterior perineum

mechanisms of constipation: sharp posterior angulation of anal canal
posterior rectal shelf

Anogenital index = \[
\frac{\text{vagino(scroto) - anal distance (in cm)}}{\text{vagino(scroto) - coccygeal distance (in cm)}}
\]

FIG. 1. The anogenital index in the female and in the male.

Normal anogenital index: $>0.34$ in females (mean = 0.39)
$>0.45$ in males (mean = 0.56)

Lower ratios suggest anterior displacement of the anus