Approach to Pelvic Floor Dysfunction

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Disclosure

- Research grant funding Salix
- Advisory Board Ironwood / Forest
Normal Colonic Activity

Colonic Functions
- Absorption of water
- Propulsion of contents
- Storage of feces
- Expulsion of feces

Colonic Motor Activity
- Two main types
  - Propagated
  - Segmental

Role of Pelvic Floor Muscles

At rest
- Symphysis pubis
- Puborectalis
- External anal sphincter
- Rectum

With defecation
- Anorectal angle
- Coccyx
- Descent of pelvic floor

3 Primary Causes of Constipation

- Pelvic Floor Dysfunction
  - 13%-28%

- Slow Transit Constipation
  - 11%-13%

- Functional Constipation
  (CC and IBS-C)
  - 59%-71%


Secondary Causes of Constipation

- Lifestyle
  - Low intake, dehydration, low fiber

- Iatrogenic
  - Medications (calcium, narcotics, anticholinergics)
  - History of surgery

- Organic Disorders
  - Metabolic disorders (hypothyroidism)
  - Myopathies (amyloidosis)
  - Neurologic disorders (Parkinson’s)

- Psychogenic
  - Eating disorders
  - Axis disorders

- Anatomic
  - Stricture
  - Rectal prolapse
  - Cancer
Initial Evaluation of Constipation

- History and Physical
  - *MOST* important tool in diagnosis
  - rectal examination
- Early workup recommended if
  - Alarm symptoms
  - Risk factors for secondary constipation

- Alarm Symptoms
  - Unexplained weight loss
  - Anorexia
  - Bleeding
  - Family history of colon cancer
  - Family or personal history of IBD
  - Lack of improvement with therapy
  - Unexplained change in bowel pattern

- Risk factors for secondary constipation
  - Co-morbidities
  - Age >50
  - Medications
  - Gender
  - Abuse
  - Pelvic surgeries

Bristol Stool Form Scale

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>Separate hard lumps</td>
</tr>
<tr>
<td>Type 2</td>
<td>Sausage-like but lumpy</td>
</tr>
<tr>
<td>Type 3</td>
<td>Sausage-like but with cracks in the surface</td>
</tr>
<tr>
<td>Type 4</td>
<td>Smooth and soft</td>
</tr>
<tr>
<td>Type 5</td>
<td>Soft blobs with clear-cut edges</td>
</tr>
<tr>
<td>Type 6</td>
<td>Fluffy pieces with ragged edges, a mushy stool</td>
</tr>
<tr>
<td>Type 7</td>
<td>Watery, no solid pieces</td>
</tr>
</tbody>
</table>
**Focused History**

- **Assess stool** (Bristol Stool Form Scale)
- # Pregnancy, surgical history
- **Ask About**
  - duration of symptoms
  - number of stools daily/weekly
  - time on commode
  - straining
  - urge
  - complete evacuation
  - Pain with movements
  - fecal soiling
  - incontinence
  - effect of laxatives
  - pencil thin stools
  - manual maneuvers
  - use of enemas

**Anorectal Exam**

**Inspection**
- Integrity, moisture
- hemorrhoids
- anal fistula, fissure
- perineal descent

**Digital examination**
- anal spasm
- anal tone at rest, with squeeze
- knife-like pain vs. discomfort
- descent/ability to expel finger
  - puborectalis muscle spasm posteriorly?
  - assess anteriorly and posteriorly for rectocele
### Utility of Diagnostic Tests in Constipation

<table>
<thead>
<tr>
<th>Tests</th>
<th>Clinical Utility</th>
<th>Evidence</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood tests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thyroid function, serum calcium,</td>
<td>R/O systemic or</td>
<td>None</td>
<td>C</td>
</tr>
<tr>
<td>metabolic disorder</td>
<td>metabolic disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serum calcium, metabolic disorder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose, electrolytes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Imaging tests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plain abdominal X-ray</td>
<td>Widely available</td>
<td>Poor</td>
<td>C</td>
</tr>
<tr>
<td>Barium enema</td>
<td>Anatomy</td>
<td>Poor</td>
<td>C</td>
</tr>
<tr>
<td>Defecography</td>
<td>Anatomy</td>
<td>Good</td>
<td>B</td>
</tr>
<tr>
<td>Hirschsprung’s interobserver bias</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anorectal ultrasound</td>
<td>Visualizes internal anal sphincter and puborectalis muscles</td>
<td>Poor</td>
<td>C</td>
</tr>
<tr>
<td><strong>Endoscopy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible sigmoidoscopy and colonoscopy</td>
<td>Visualizes colon to exclude mucosal lesions</td>
<td>Poor</td>
<td>C</td>
</tr>
</tbody>
</table>


### Utility of Diagnostic Tests in Constipation (con’t.)

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<tr>
<th>Tests</th>
<th>Clinical Utility</th>
<th>Evidence</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic magnetic resonance imaging</td>
<td>Anatomy; Dynamic motility</td>
<td>Good</td>
<td>B1</td>
</tr>
<tr>
<td>Physiological colon transit study with radiopaque markers</td>
<td>Evaluates transit; inexpensive; widely available</td>
<td>Good</td>
<td>B1</td>
</tr>
<tr>
<td>Colonic transit study with scintigraphy</td>
<td>Provides evaluation of whole gut transit</td>
<td>Good</td>
<td>B1</td>
</tr>
<tr>
<td>Anorectal manometry with balloon expulsion</td>
<td>Dyssynergic; defecation; rectal sensitivity; compliance; Hirschsprung’s</td>
<td>Good</td>
<td>B1</td>
</tr>
<tr>
<td>Smart pill</td>
<td>Colon and whole gut transit measurement</td>
<td>Fair</td>
<td>B2</td>
</tr>
</tbody>
</table>

2 Primary Types of Pelvic Floor Dysfunction*

**Functional**
- Dyssynergy
- Inadequate descent
- Weak propulsive forces

**Mechanical**
- Anal fissure
- Mass
- Intussusception
- Rectal prolapse
- Pelvic floor laxity
- Large rectocele

*AKA Defecatory Disorder, Outlet Obstruction, Evacuation Disorder

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Epidemiology

Prevalence of functional PFD is unclear
- 25% of women age 40-59 show signs
- Females >> Males
- Increases with age in females, not males

Predisposing Factors: chronic constipation, excessive straining, child bearing, multiparous, psychological disorders, sexual/physical/psychological abuse

Defecation Disorders: Rome III

During repeated attempts to defecate the patient must have at least two of the following:

- Evidence of impaired evacuation, based on balloon expulsion test or imaging
- Inappropriate contraction of the pelvic floor muscles (i.e., anal sphincter or puborectalis) or less than 20% relaxation of the basal resting sphincter pressure by manometry, imaging
- Inadequate propulsive forces assessed by manometry or imaging


Pelvic Floor Dyssynergia

Inadequate reflex relaxation or paradoxical contraction of pelvic floor muscles with defecation

Dyssynergy: MR Dynamic Image

At rest

Squeeze

Anterior Rectocele and Excessive Descent

rectocele

perineal descent 4-5 cm
Intussusception and SRU

Anorectal intussusception

Solitary rectal ulcer

1 in 100,000
Median age 48 years, range 14-76
Men and women affected equally
Predisposing factors: constipation, straining

Organ/Rectal Prolapse

A Internal prolapse – intussusception
B Mucosal prolapse
C Full thickness prolapse
**Summary: Common diagnostic findings in evacuation disorders**

**Anorectal manometry with balloon expulsion**
- High average resting anal sphincter tone
- High anal sphincter pressure during valsalva
- Failure to expel balloon

**Defecography**
- Too little or excessive descent
- Incomplete rectal emptying
- Large rectocele
- Intussusception or mucosal/rectal prolapse

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_Bharucha AE, et al. Gastroenterol 2006_

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**Treatment**

**Bowel Management Techniques in Constipation**

**Basics:**
- Increase physical activity
- Avoid constipating drugs
- Hydrate
- Increase fiber to 25-30 gms daily

*High fiber may worsen constipation symptoms in PFD and slow transit. Add slowly, reevaluate.*
**Bowel Management Techniques**

1. Improve stool consistency

2. Maximize AM colonic stimuli - HAPC’s are triggered by waking, eating, caffeine, stimulant laxatives (qhs)

3. Respond to the urge

4. Sit up straight, elevate feet
   - 10 minute maximum

5. Slow, deep breathing

HAPC = high amplitude peristaltic contractions

Mayo Bowel Management Patient Education

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**Treatment of Pelvic Floor Disorders**

Biofeedback / pelvic floor retraining
- Education and Instrument-based behavioral training program
- 50%-91% success with symptomatic improvement
- Trainer/patient relationship
- Benefits can be sustained

Physical therapy to treat pelvic floor spasm, inadequate descent

Consult surgery for refractory disorders

Biofeedback in Dyssynergy and IBS

- Prospective study in patients with dyssynergic defecation (N=50) plus IBS-C (n=29)
  - Similar responses to biofeedback in dyssynergic and IBS-C groups (55% vs 67%, \( P >0.05 \))
    - IBS-C symptoms disappeared in 41% patients who had pre-treatment IBS-C symptoms
  - Assessment of pelvic floor function may be useful in select patients with IBS-C


Treatment Summary

- Range of non-pharmacologic, prescription and nonprescription treatments for constipation
- High degree of inter-patient variability
  - Treatment is tailored to subtype and to the individual patient
- Biofeedback/PT are treatment of choice for dyssynergy and other forms of PFD
**PFD Summary**

- A focused history and anorectal examination is key to the diagnosis
- Limit diagnostic testing
- Biofeedback and bowel management techniques can reduce symptoms in most patients

**Thank You!**
Symbiotic for Functional Constipation

• 14-day crossover trial of each:
  - Symbiotic: yogurt with 10^8 UFC/g of B animalis and fructooligosaccharide
  - Control: lacteous dessert without probiotics

Symbiotic significantly improved stool frequency, stool consistency, straining, and pain with defecation


Effect of Fiber on Constipation Subtypes

Patients were given 15-30mg/d of Plantago ovata seeds in 3 divided doses

Voderholzer WA et al. Am J Gastroenterol; 1997
### Therapies for Chronic Constipation: Level A Recommendations

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisacodyl</td>
<td>1 double-blind RCT with 1 open-label controlled trial</td>
</tr>
<tr>
<td>Lactulose</td>
<td>2 systematic reviews of RCTs showing benefits vs placebo</td>
</tr>
<tr>
<td>Lubiprostone</td>
<td>≥3 well-designed RCTs showing benefits vs placebo</td>
</tr>
<tr>
<td>PEG</td>
<td>≥3 RCTs showing benefits vs placebo</td>
</tr>
<tr>
<td>Psyllium</td>
<td>≥3 well-designed RCTs showing benefits vs placebo</td>
</tr>
<tr>
<td>Senna</td>
<td>≥3 well-designed RCTs showing benefits vs placebo</td>
</tr>
</tbody>
</table>


### Therapies for Chronic Constipation: Level B and C Recommendations

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL B</strong></td>
<td></td>
</tr>
<tr>
<td>Bran</td>
<td>2 controlled trials showed efficacy in reducing laxative use</td>
</tr>
<tr>
<td>Docusate sodium</td>
<td>1 double-blind RCT vs psyllium</td>
</tr>
<tr>
<td>Methylcellulose</td>
<td>1 controlled trial of medium quality</td>
</tr>
<tr>
<td>Polycarbophil</td>
<td>1 case series of medium quality</td>
</tr>
<tr>
<td>Sorbitol</td>
<td>1 double-blind RCT showing similar efficacy vs lactulose</td>
</tr>
<tr>
<td><strong>LEVEL C</strong></td>
<td></td>
</tr>
<tr>
<td>Milk of magnesia</td>
<td>No evidence of benefits from any studies; 1 adverse report of overuse</td>
</tr>
</tbody>
</table>

PEG for Chronic Constipation

- US multicenter RDBPC trial of PEG (17 g) vs placebo for 6 months

AEs between PEG and placebo were not different except for GI complaints ($P=.015$)

Lubiprostone for IBS-C:
Data from Two Phase 3 Trials

- 12-wk treatment period
- Overall responder = monthly responder ≥2-3 mo
- Monthly responder = at least moderate relief for 2-4 wk or significant relief >2-4 wk

Linaclotide for Chronic Constipation: Results from Two Phase 3 Clinical Trials

Linaclotide for Chronic Constipation: Results from Two Phase 3 Clinical Trials


Responder: >3 CSBM/wk and > 1 CSBM/wk for 9 out of 12 wks
• Diarrhea most common AE: 15.0% vs 5.0%

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• High degree of inter-patient variability
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