Dietary & Lifestyle Management of Fecal Incontinence
Clinical Associations with Fecal Incontinence
## Identify Risk Factors and Relevant Comorbid Conditions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratios (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrhea</td>
<td>53 (6.1, 471)</td>
</tr>
<tr>
<td>IBS</td>
<td>4.8 (1.6, 14)</td>
</tr>
<tr>
<td>Cholecystectomy</td>
<td>4.2 (1.2, 15)</td>
</tr>
<tr>
<td>Current smoker</td>
<td>4.7 (1.4, 15)</td>
</tr>
<tr>
<td>Rectocele</td>
<td>4.9 (1.3, 19)</td>
</tr>
<tr>
<td>Stress urinary incontinence</td>
<td>3.1 (1.4, 6.5)</td>
</tr>
<tr>
<td>Obstetric risk factors (grade 1)</td>
<td>0.8 (0.4, 1.9)</td>
</tr>
<tr>
<td>Obstetric risk factors (grade 2)</td>
<td>1.1 (0.4, 3.6)</td>
</tr>
<tr>
<td>Obstetric risk factors (grade 3)</td>
<td>1.9 (0.7, 5.2)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>53 (6.1, 471)</td>
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</table>

Diet & Fecal Incontinence

- Of 242 elderly reporting FI > once in the past year, 67% used self-care practices such as diet modification or food avoidance to manage their symptoms.

- Amongst 336 overweight women, FI was independently associated with low fiber intake, higher depressive symptoms, and increased urinary tract symptoms.

- In interviews of 10 women with FI, participants reported that they did not receive adequate therapeutic advice from their physicians about the effect of diet on FI or how to modify their diet.

Bliss et al. J Gerontol Nurs. 2005;31:35-44
Hansen et al. J Wound Ostomy Continence Nurs. 2006;33:52-62
Diet & Fecal Incontinence

- 188 participants (>18 yo, independently living) with FI >twice in 2 weeks completed an 8 question survey

Diet & Fecal Incontinence

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Vegetables, spicy foods, fruits, fatty or greasy foods, caffeine-containing foods, and dairy products
Diet & Fecal Incontinence

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Why Might Diet Cause Fecal Incontinence
Pathophysiology of Fiber Effects in the GI Tract

Fiber

- Fermentation
  - SCFAs (butyrate, propionate, acetate)
  - Gas Production (CH4, H2, CO2)

- Microbiome changes
- Luminal pH ↓
- Effects on inflammation & permeability
- Pain, bloating, flatulence
- Increased Biomass
- Acceleration of transit time
- ↑ Osmotic Load
- Stool Bulking

Eswaran, Chey et al. *Am J Gastroenterol* 2013
Normal Intestinal Gas Production and Elimination

Gas diffusion from and to blood

Swallowing

Whole Foods

Eructation

Stomach and small bowel

Colon

Bacterial fermentation

Carbohydrates

CO₂, Methane, SCFAs

SCFAs: Butyrate affects nerves and motility in the colon

Bottom line: Carbohydrates are fermented to short chain fatty acids (SCFAs). SCFAs like butyrate play a critical role in normal colon function & health

Effect of starch infusion on the number of high pressure colon contractions

10 HVs underwent intracolonic infusion of 15g wheat starch or saline
No effect on motility index or tone

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No effect on motility index or tone

Bottom line: Wheat starch (fermented) but not saline induced high pressure contractions in the colon

Dietary & Lifestyle Management of Fecal Incontinence
Behavioral Techniques for Fecal Incontinence

• Avoid rushing to the toilet
  – Increases abdominal wall contraction which increases chance of fecal incontinence
  – Reduces focus on pelvic floor
  – Stop and perform Kegel exercise and proceed to toilet

• Clean, squeeze, reclean
  – After bowel movement, clean anus, perform 2-3 Kegel exercises, then re-clean
  – If stool present, may have avoided fecal incontinence

• Delay bowel movement after biofeedback therapy
  – Start with brief periods, then increase; improves confidence

• Wean off laxatives and antidiarrheals
Dietary Interventions for Fecal Incontinence

• Diet\(^1\)
  
  – Evaluate fiber intake\(^1\)
  
  – If stools are frequent and/or loose, evaluate intake of fermentable, poorly absorbed carbohydrates\(^1\)
    
    • Consider evaluation for lactose maldigestion or fructose malabsorption
  
  – Evaluate relationship between caffeine intake\(^1\) and symptoms

The Effect of Fiber is Variable

• Some evidence suggests that fiber (psyllium, gum arabic) may reduce fecal incontinence\(^1\)

• Approach fiber supplementation with caution
  
  – Fiber supplements can potentially worsen diarrhea by increasing colonic fermentation of unabsorbable fiber\(^2\)

Supplementation With Dietary Fiber May Improve Fecal Incontinence

Group 1 = Usual diet + 25 g Metamucil (7.1 g psyllium) per day
Group 2 = Usual diet + 25 g gum arabic per day
Group 3 = Usual diet + 0.25 g pectin (placebo)

\[ P = .002 \text{ (baseline vs fiber supplementation period) for groups 1 and 2} \]

\[ N = 39 \]

Stool Characteristics

• Stool consistency, volume, and presence of irritants in the stool may contribute to fecal incontinence
  – Large-volume liquid stools require intact sensation and unimpaired sphincter function to be retained

• Stool characteristics may be influenced by:
  – Diet
  – Infection
  – Co-morbidities
    • Inflammatory bowel disease
    • Irritable bowel syndrome
    • Diabetes
    • SIBO
  – Medications

Assess Diet, Medications, and Lifestyle

Dietary components that may elicit or exacerbate fecal incontinence

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber</td>
<td>Fiber supplements, whole-grain cereals or bread, whole-wheat based cereals</td>
</tr>
<tr>
<td>Certain fruits and vegetables</td>
<td>Rhubarb, figs, prunes, plums, beans, cabbage, sprouts</td>
</tr>
<tr>
<td>Spices</td>
<td>Chili powder</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Especially stouts, beers, or ales</td>
</tr>
<tr>
<td>Lactose/fructose</td>
<td>Milk, other high-lactose or high-fructose foods</td>
</tr>
<tr>
<td>Caffeine</td>
<td>Coffee, tea, sodas</td>
</tr>
<tr>
<td>Vitamin and mineral supplements</td>
<td>Excessive vitamin C, magnesium, phosphorus, and/or calcium</td>
</tr>
<tr>
<td>Olestra fat substitute</td>
<td>Can cause loose stools</td>
</tr>
</tbody>
</table>

What are FODMAPs?

- Fermentable oligo-, di-, monosaccharides and polyols
- Fruits with fructose exceeding glucose
  - Apples, pears, watermelon
- Fructan containing vegetables
  - Onions, leeks, asparagus, artichokes
- Wheat based products
  - Bread, pasta, cereal, cake, biscuits
- Sorbitol and lactose containing foods
- Raffinose containing foods
  - Legumes, lentils, cabbage, brussel sprouts

Eswaran & Chey, GI Cl North Am 2011;40:141
Gibson & Shepherd. J Gastro Hepatol 2010;25:252
FODMAPs: Mechanism of Action

Small intestine

Luminal distension
Altered motility

Large intestine

Pain, bloating, distension, wind, constipation +/- diarrhea

↑ water delivery

↑ gas production

(Courtesy of Sue Shepherd, Ong, 2010, Barrett, 2009)
Impact of FODMAP Diet on Breath Hydrogen Production and Symptoms

• Design
  – Single-blind crossover study in 15 healthy and 15 IBS patients
  – 2-day consumption of high-FODMAP diet (50 g/d) or low-FODMAP diet (9 g/d)

• Results
  – Higher levels of breath hydrogen produced with high FODMAP diet
  – Gastrointestinal symptoms and lethargy induced by high FODMAP diet in IBS but not control patients

HFD=high-FODMAP diet; LFD=low-FODMAP diet
Daily Symptom Scores on low-FODMAP vs. Control Diet

Proportion of patients (%)

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Control</th>
<th>Intervention</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>bloating</td>
<td>30</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>abdominal pain</td>
<td>55</td>
<td>65</td>
<td>*</td>
</tr>
<tr>
<td>flatulence</td>
<td>35</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>borborymi</td>
<td>40</td>
<td>50</td>
<td>*</td>
</tr>
<tr>
<td>urgency</td>
<td>25</td>
<td>35</td>
<td>*</td>
</tr>
<tr>
<td>diarrhea</td>
<td>40</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>constipation</td>
<td>20</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>tiredness</td>
<td>15</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>overall symptoms</td>
<td>80</td>
<td>90</td>
<td>*</td>
</tr>
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</table>

A Low-FODMAP Diet Reduces Symptoms in IBS

30 IBS pts & 8 HVs: 1 week baseline followed by 21 days of low-fodmap diet or typical Australian diet before crossing over to other diet

Significant benefits for overall IBS symptoms, bloating, pain, & wind (p<0.001)

Benefits for King’s Stool Chart only for IBS-D (p<0.04)

Other Nonpharmacologic Treatments of Fecal Incontinence

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Mechanism of Action</th>
<th>Side Effects</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incontinence pads</td>
<td>Provides skin protection; prevents soiling; conduct moisture away from skin</td>
<td>Skin irritation</td>
<td>Disposable provides better skin protection than nondisposable</td>
</tr>
<tr>
<td>Enemas or Suppositories</td>
<td>Evacuates rectum, decreasing likelihood of FI</td>
<td>Inconvenient; side effects from specific preparations</td>
<td></td>
</tr>
</tbody>
</table>
Summary

• Diarrhea and IBS are strongly associated with FI

• FI patients often associate their problems with food and alter their diets to improve their symptoms

• Fiber may provide benefits to some patients with FI

• FODMAPs may decrease stool consistency and increase stool frequency, particularly in IBS patients
  – Low FODMAP diets have not been evaluated for FI

• Behavior modification can also be helpful for some FI patients