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Chronic Constipation

Moriane Joseph, FNP-BC, MSN, MPH
University of Miami Miller School of Medicine
University of Miami Hospital & Clinics/UHealth
Miami, FL

Disclosures

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Disclosures

Moriane Joseph, FNP-BC, MSN, MPH

No financial relationships to disclose.

Epidemiology of Chronic Constipation

- Prevalence of chronic constipation in North America vary between 2 to 27%; 24-50% in the older adult.
- An average of 15% has been reported in most clinical studies.
- Self-reported constipation in the United States and the United Kingdom is more prevalent in women, nonwhites, and those over age 60.
- When above factors have been adjusted for, constipation is more common in individuals with little daily physical activity, low income, and poor education.
- Surveys of physician visits for constipation have also found more visits by women, nonwhites, those with lower incomes, and patients with < 12 years of education.
- The prevalence of chronic constipation rises with age, most dramatically in patients 65 years of age or older (approximately 26% of men and 34% of women complain of constipation).
- In addition to age, risk factors for chronic constipation include female gender, physical inactivity, low education and income, concurrent medication use, and depression.

Definition: Chronic Constipation

(Chronic constipation aka chronic idiopathic constipation aka function constipation aka Rome IV Criteria emphasizes functional bowel disorders constitute a spectrum of GI disorders rather than isolated entities.

- Although characterized as distinct disorders based on diagnostic criteria, there is significant overlap and sometimes difficult to distinguish as distinct entities
- There can be transition from one functional bowel disorder to another or one predominant symptom to another as part of natural course of condition, response to therapy or both

Rome IV Criteria: Chronic Constipation

ROME IV CRITERIA:

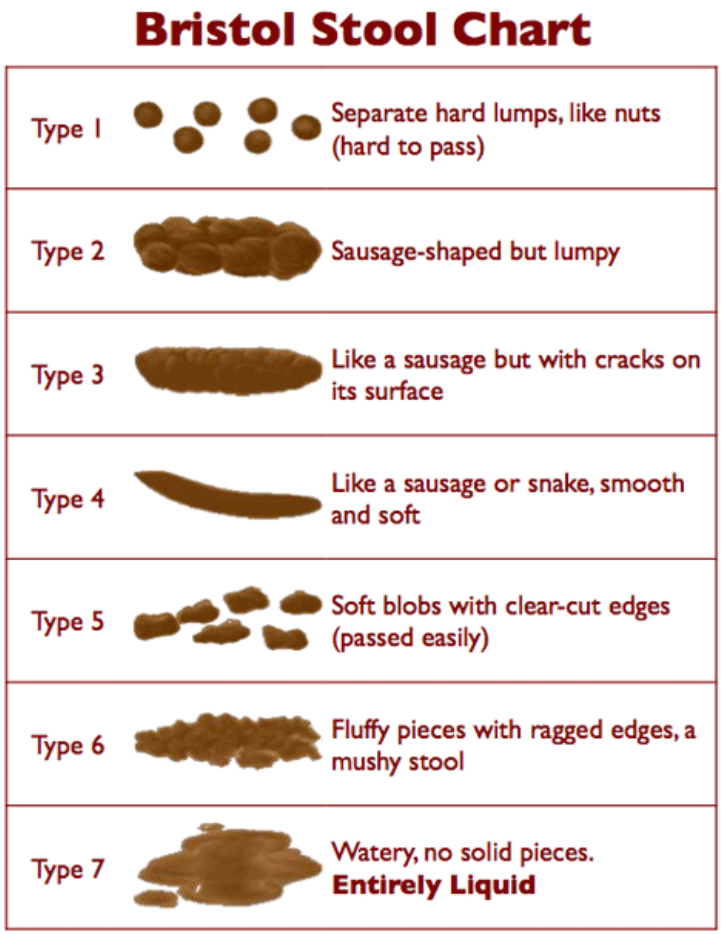
Must NOT meet IBS criteria

- Must include **two or more** of the following:**
- Straining during more than ¼ (25%) of defecations
- Lumpy or hard stools (Bristol Stool Form Scale 1-2) more than ¼ (25%) of defecations
- Sensation of incomplete evacuation more than ¼ (25%) of defecations
- Sensation of anorectal obstruction/blockage more than ¼ (25%) of defecations
- Manual maneuvers to facilitate > (25%) of defecations (e.g., digital evacuation, support of the pelvic floor)
- Fewer than three SBM per week
- Loose stools are rarely present without the use of laxatives
- Insufficient criteria for irritable bowel syndrome

Criteria should be present for at least 3 months with symptom onset at least 6 months prior to diagnosis

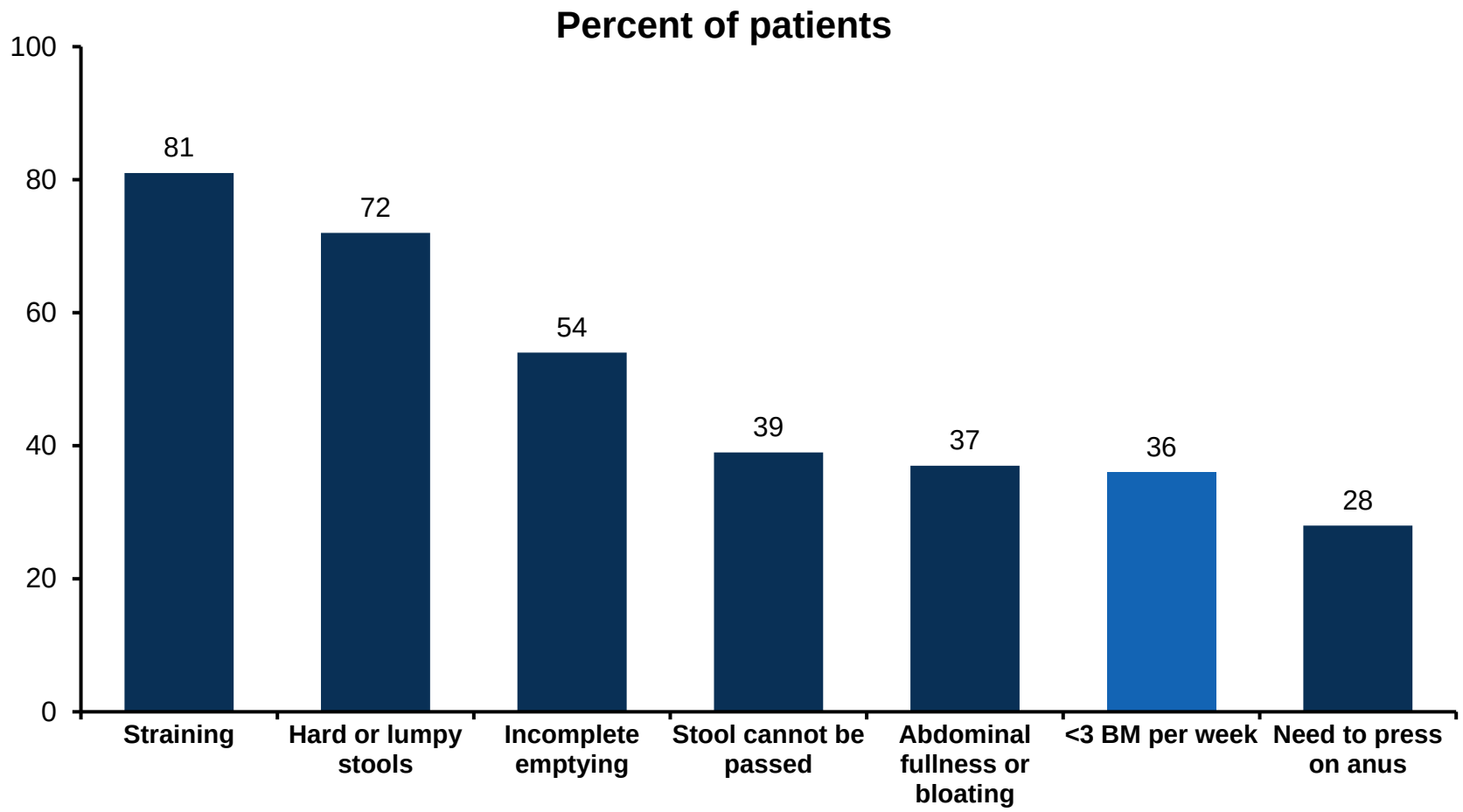
Longstreth et al. *Gastroenterology.* 2006. 130:1480-91; Lacy et al. *Gastroenterology.* 2016. 150: 1393-1407.

Bristol Stool Chart



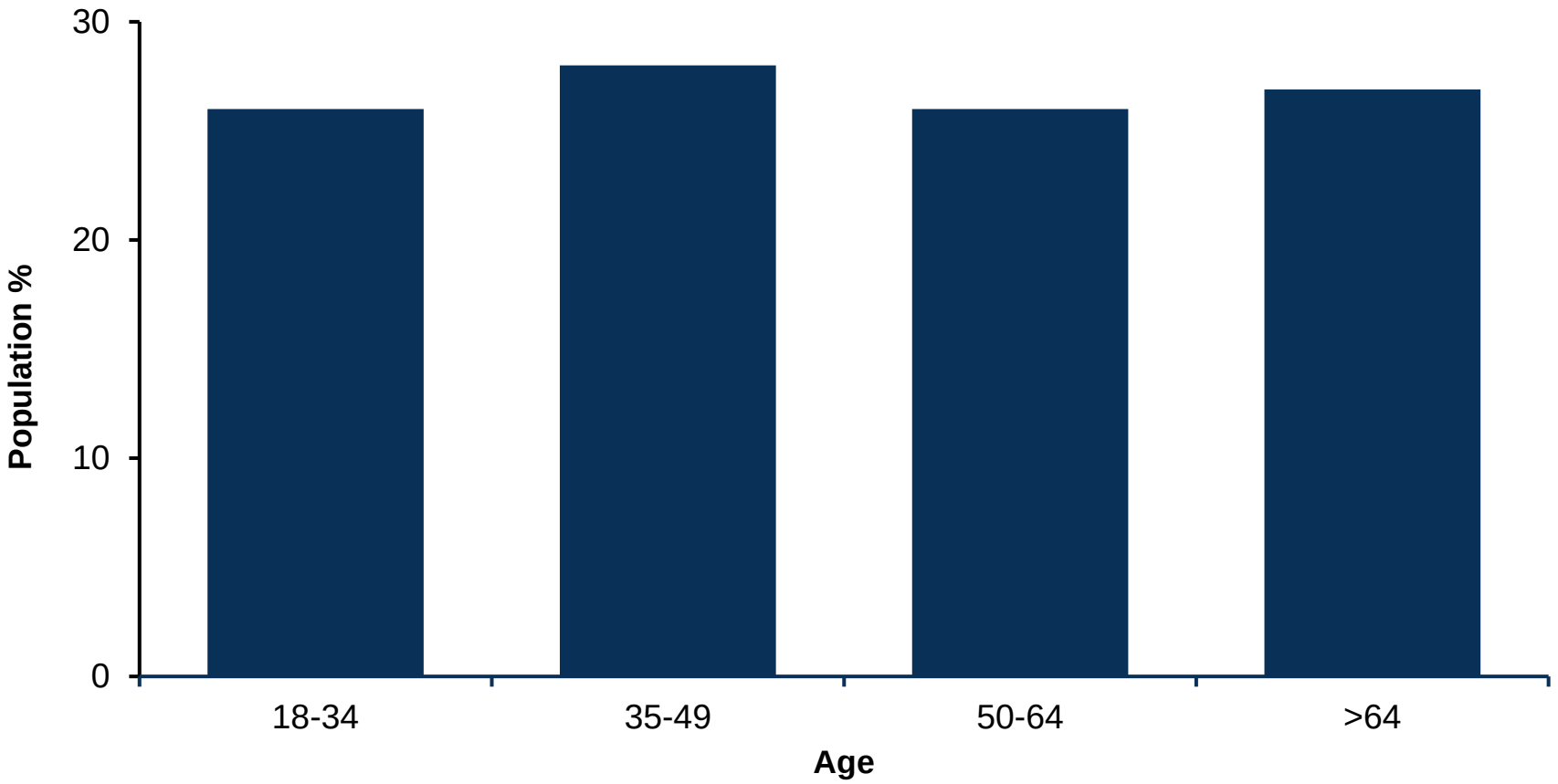
Heaton, K.W. & Lewis, S.J. ”Stool form scale as a useful guide to intestinal transit time.” *Scandinavian Journal of Gastroenterology.* 1997. vol.32, no.9, pp.920 - 924.

Most Commonly Reported Symptoms



Pare P et al. *Am J Gastroenterol.* 2001; 96: 3130.

Chronic Constipation Affects All Age Groups



N=1149

Paré P et al. *Am J Gastroenterol.* 2001; 96: 3130-3137.

Alarm Features

- Age ≥50 years, no previous colon cancer screening & presence of symptoms
- Recent change in bowel habit (new onset constipation, nocturnal pain or passage of stool)
- Positive fecal occult blood test
- Evidence of overt GI bleeding (ie melena or hematochezia)
- Family history of colorectal cancer, IBD or celiac disease
- Evidence of iron deficiency anemia
- “Unexplained” weight loss ≥10 pounds
- Severe, persistent constipation that is unresponsive to treatment
- Palpable abdominal mass or lymphadenopathy

Moshiree, B., & Rao, S. Up-to-Date Diagnosis and Management of IBS and Chronic Constipation in Primary Care. *The Journal of family practice.* 2021. 70(1 suppl [ii]), S2–S15. https://doi.org/10.12788/jfp.0135; S. Brandt LJ et al. *Am J Gastroenterol.* 2005; 100(Suppl. 1): S5.

Common Causes of Secondary Constipation

Medications

- Anticholinergics (diphenhydramine, oxybutynin)
- Antidepressants (TCAs)
- Antihistamines (cetirizine, fexofenadine, loratadine)
- Calcium channel blockers (amlodipine, diltiazem, verapamil)
- Diuretics (furosemide)
- Iron supplements (ferrous fumarate, ferrous sulfate)
- NSAIDs (aspirin, ibuprofen, naproxen)
- Opioids (hydrocodone, morphine, oxycodone)
- 5-HT3 antagonists (ondansetron); calcium containing antacids

Nat Rev: (Gastro&Hepatol). 2016;13: 295-305; Locke GR III et al. *Gastroenterology.* 2000; 119: 1766.

Common Causes of Secondary Constipation

Metabolic disorders

- Diabetes mellitus
- Hypercalcemia, hypokalemia, hypomagnesemia
- Hyperparathyroidism
- Hypothyroidism
- Neurologic disorders (amyloidosis, multiple sclerosis, Parkinson's disease, spinal cord injury)

Neuropathy

- Hirschsprung’s disease
- Amyloidosis

Myopathy

- Scleroderma (PSS)

Common Causes of Secondary Constipation

Mechanical Obstruction

- Anal fissures
- Colonic obstruction/neoplasm (colon cancer)
- Pseudo-obstruction
- Strictures

Miscellaneous conditions

- Diet
- Eating disorders
- Depression
- Immobility
- Paraneoplastic syndrome

Differential Diagnoses

- Chronic idiopathic constipation (functional constipation): infrequent but persistent difficulty in passing stool along with incomplete evacuation. There is no physiologic abnormality and this is not IBS
- Opiate-induced constipation (OIC): constipation onset related taking opiate medication
- Irritable bowel syndrome-constipation predominant :abdominal pain with change in bowel pattern. Can have abdominal pain with or without slow colonic transit or dyssynergia. Many have visceral hypersensitivity.
- Slow transit constipation: prolonged delay in stool transit throughout colon, lack of urge to defecate, abnormal transit study
- Overflow constipation (overflow diarrhea): severe constipation where there is a blockage, and stool leaks around blockage
- Outlet obstruction constipation: normal colonic transit but with sense of stool in rectal vault but difficulty with passage of stool per anus.
- Dyssynergic defecation/anismus: ineffective defecation due to failure to relax or inappropriate contraction of the puborectalis and external anal sphincter muscles; can have straining, incomplete evacuation and use of manual maneuvers, no coordination of abdominal/pelvic floor muscles
- Pelvic floor disorder/dysfunction: trauma related to vaginal tear/episiotomy, pelvis surgery, enterocele, rectocele, pelvic organ prolapse, mucosal vs rectal prolapse, rectal intussusception
- Secondary cause of constipation: Endocrine or metabolic disorders, neurologic disorders, myogenic disorders, and medication-induced.

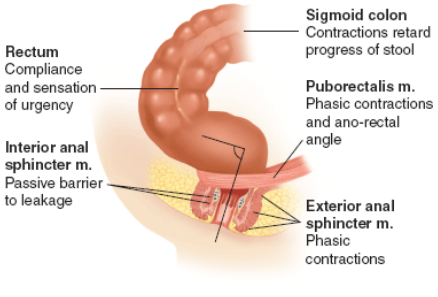
Simren, M., Palsson, O. S., & Whitehead, W. E. Update on Rome IV Criteria for Colorectal Disorders: Implications for Clinical Practice. *Current Gastroenterology Reports.* 2017. *19*(4), 15. doi:10.1007/s11894-017-0554-0.

Initial Clinic Evaluation

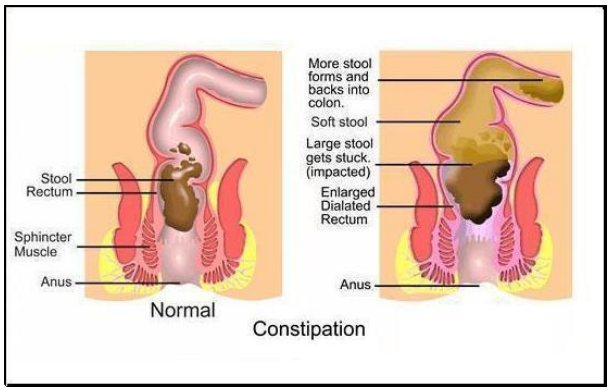
Clinic Evaluation

- Patient History (acute vs chronic symptoms)
- Bristol Stool Chart (hard/pellet stools, straining, incomplete evacuation, vaginal splinting, digit disimpaction
- Labs: Check CBC, CRP, TSH, celiac serologies
- Anorectal Anatomy: check for hard stool, palpable mass, anal fissures, hemorrhoids, anal sphincter tone, push/squeeze maneuver, puborectalis muscle contraction)

Puborectalis Muscle



Source: Rebecca G. Rogers, Vivian W. Sung, Cheryl B. Iglesia, Ranee Thakar: *Female Pelvic Medicine and Reconstructive Surgery: Clinical Practice and Surgical Atlas*: www.obgyn.mhmedical.com



Testing

Imaging

- Sitz mark study/KUB: to assess for slow transit vs outlet obstruction constipation
- KUB (right upper quadrant xray) – assess for fecal loading
- MR defecography: can detect structural abnormalities of the rectum; evaluates for outlet obstruction/anatomical issues (entero/rectoceles, mucosal vs rectal prolapse, rectal intussusception)

Endoscopic Evaluation

- Flexible sigmoidoscopy
- Colonoscopy (order if with alarm symptoms; rule out malignancy/inflammation)

Sitzmark Study (Abdominal KUB)

Test is abnormal if there are > 5 sitz markers remaining in colon

Testing

Specialized Testing

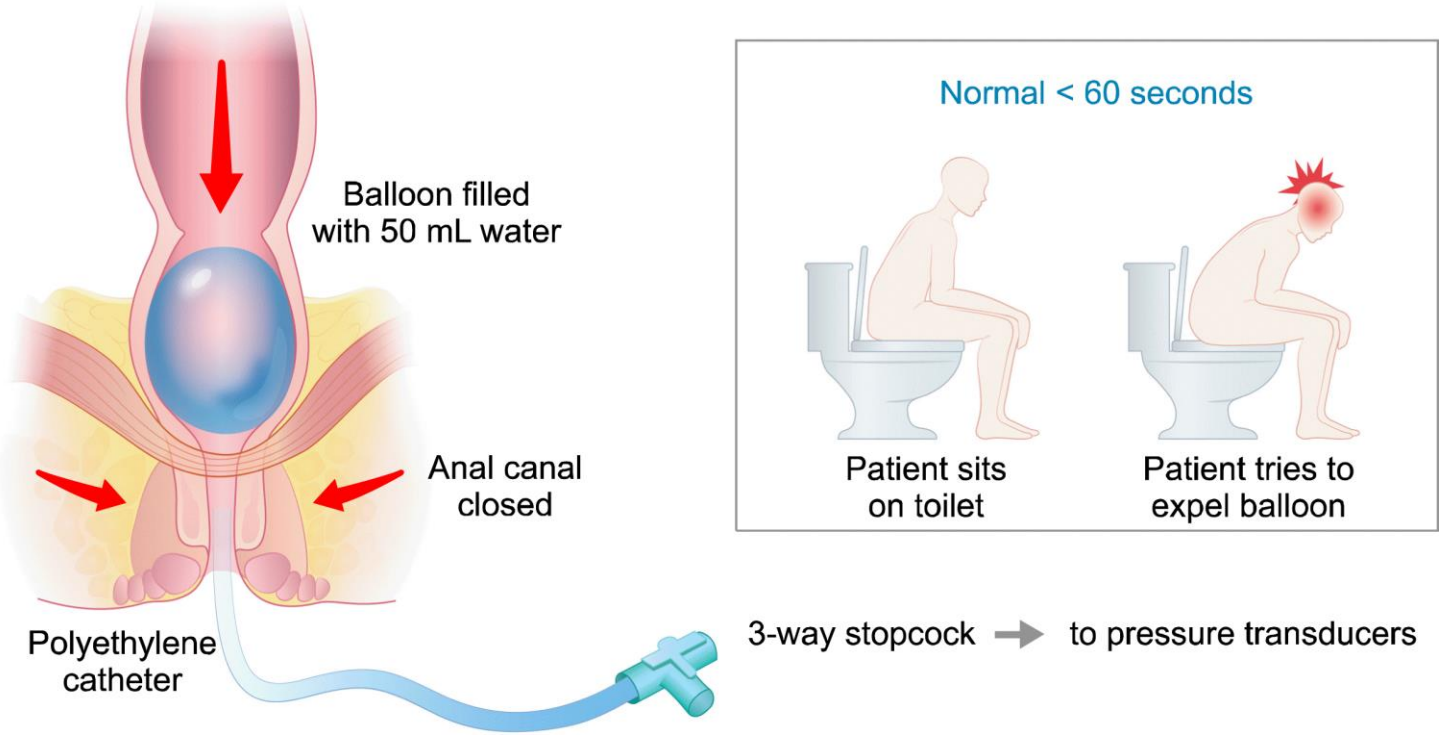
- Anorectal manometry: to assess anal tone (low, normal, or high anal tone), internal and external sphincter function, pelvic floor and associated nerves
- Balloon expulsion testing: detects defecatory disorders such as outlet obstruction vs anatomical issue
- Rectal Sensation Testing: evaluates sensory and rectal perception (rectal hypersensitivity vs hyposensitivity)
- Smart Pill Capsule Study: evaluation of bowel transit time (measures rate at which fecal mass moves through colon)

Rao SSC et al. *Am J Gastroenterol.* 2005; 100: 1605; Lembo A et al. *N Engl J Med.* 2003; 349: 1360.

Motility Testing: Anorectal Manometry

Assessment of high vs low anal tone via resting/squeeze/push maneuvers, notes if paradoxical contraction exists; also assess for rectal sensation with expansion of balloon with incremental increase of air for first sensation, urge to defecate vs discomfort

Balloon Expulsion Testing

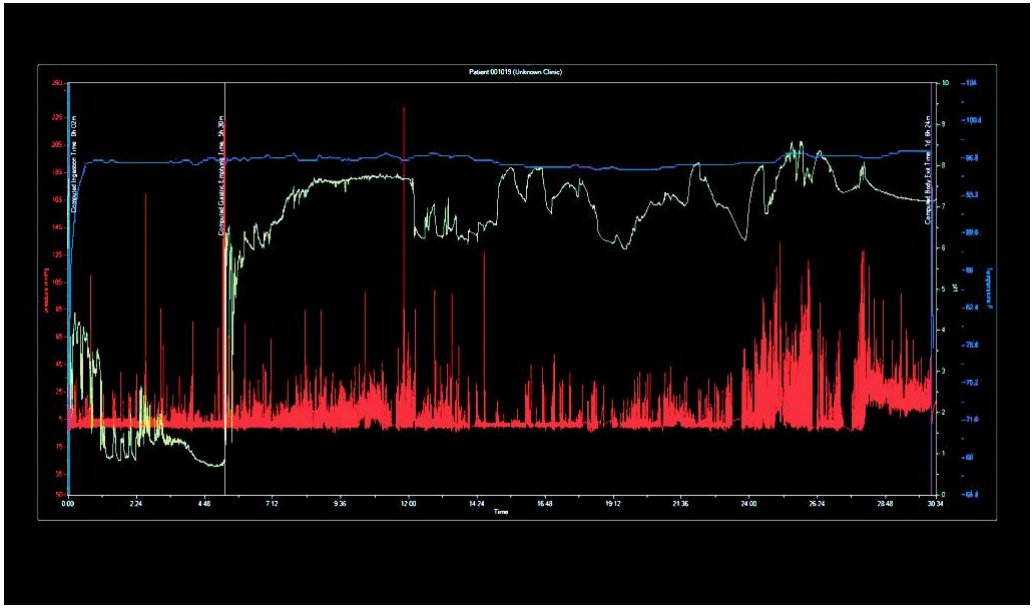


Normal test if can expel balloon in < 1 minute

Smart Pill Capsule Study

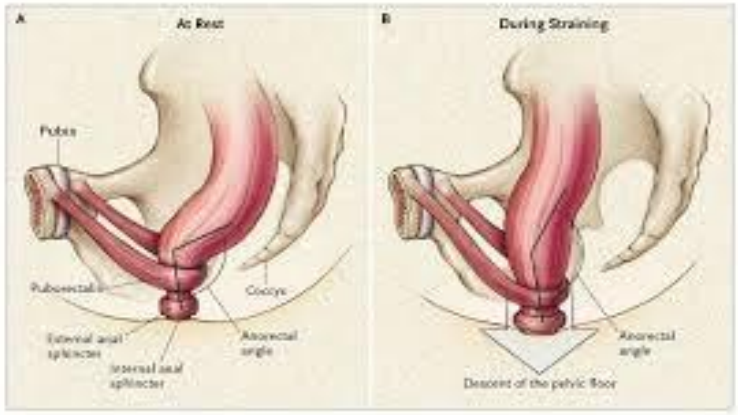
Motility GI Software

- Automatically processes data and displays test results:
  - Gastric residence time
  - Whole gut transit
  - Combined small/large bowel transit time
  - FDA approved for evaluation of slow transit constipation

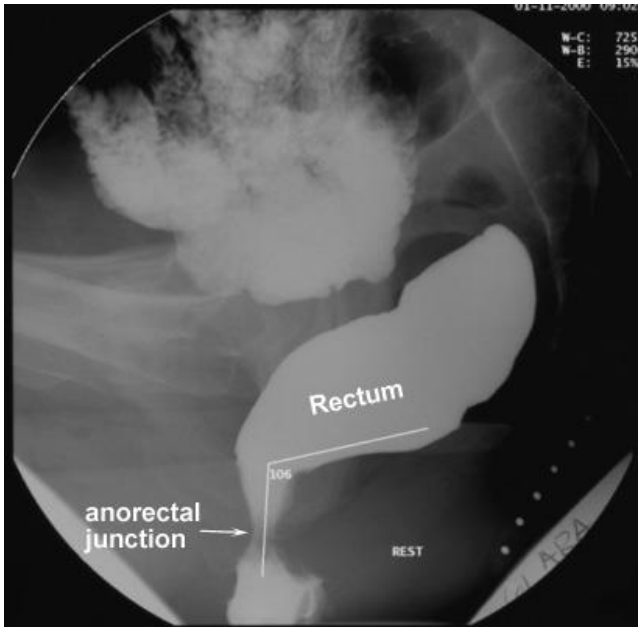


Imaging: MR Defecogram

Puborectalis Muscle



MR Defecography



Can assess for anatomical condition such as anterior rectoceles, cystoceles, enteroceles, pelvic organ prolapse or rectal intussusception

Primary Constipation (Chronic Constipation)

Patient Classification

- Patient history
- Assess after imaging, anorectal testing and colonic transit

Types of Constipation

- Normal transit constipation
- Slow transit constipation
- Overflow constipation (overflow diarrhea)
- Outlet obstruction constipation
- Pelvic floor defecation disorders
  - Dyssynergic defecation (anismus)
  - Rectocele, cystocele, enteroceles
  - Mucosal and rectal prolapse, rectal intussception

Gastroenterology. 2013;144: 2117; *Nat Rev(Gastro&Hepatol).* 2016;13: 295-305.

Normal Transit Constipation: Empiric Therapy

- Lifestyle:
- Increase hydration
- Increase physical activity
- Dietary modification-fiber, fruits/vegetables
- Routines

- OTC bowel agents
- Fiber supplements
- Stimulant laxatives:
  - Bisacodyl
  - Senna, cascara
- Stool softeners
  - Docusate sodium
- Osmotic laxatives:
  - PEG
  - Milk of Mg

Gastroenterol. 2013,144: 218.

Management Options

Non-Pharmacological Management

- Tried adding dietary and supplemental fiber to daily regimen with no change in bowel function
- Increased fluid intake
- Exercise/mobility: brisk walking/running 3 miles at least 3 days per week
- Uses “squatty potty” which has helped somewhat
- Anal biofeedback, pelvic floor physical therapy, rectal sensation retraining
- Colectomy (option of last resort)

Management Options

Pharmacological Strategies

- Surfactants: stool softeners (docusate sodium)
- Supplemental fiber; bulk forming laxatives (psyllium, methylcellulose, polycarbophil, wheat dextrin)
- Saline laxatives (Mg citrate, Mg sulfate, Milk of magnesium)
- Osmotic laxatives (polyethylene glycol, PEG)
- Stimulant laxatives (cathartics, senna or bisacodyl, casara sagrada)
- Synthetic disaccharides (lactulose) sugar alcohol (sorbitol)
- Suppositories (glycerin or bisacodyl), enemas (saline, tap water soapsuds enemas), mineral oil
- Herbal medication (cascara sagrada)

Sbahi H, Cash BD. Chronic Constipation: a review of current literature. *Curr Gastroenterol Rep*. 2015;17:47.

Management Options

Colon Secretagogues

• Lubiprostone	8 mcg, 16 mcg, or 24 mcg po daily or BID	(ClC2 agonist approved for OIC)
• Linaclotide	72 mcg, 145 mcg, or 290 mcg po daily	(GCC receptor agonists)
• Plecanatide	3 mg po daily	(GCC receptor agonists)
• Prucalopride	1 mg or 2 mg po daily	(5HT4 receptor agonists CIC)
• Tegaserod	3 mg or 6 mg po daily	(5HT4 receptor agonists, approved for IBS-C/CC)

Bile Acid Agents

- Elobixibat
- Chenodeoxycholate

Sbahi H, Cash BD. Chronic Constipation: a review of current literature. *Curr Gastroenterol Rep*. 2015;17:47.

References

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- Serra J., Pohl D., Azpiroz F., Chiarioni G., Ducrotte P., Gourcerol G., et al. European Society of Neurogastroenterology and Motility Guidelines on Functional Constipation in Adults. *Neurogastroenterol Motil.* 2020. 32:e13762.
- Sbahi H, Cash BD. Chronic Constipation: a review of current literature. *Curr Gastroenterol Rep*. 2015;17:47.
- Simren, M., Palsson, O., & Whitehead, W. Update on Rome IV Criteria for Colorectal Disorders: Implications for Clinical Practice. *Current Gastroenterology Reports*. 2017. 19(4), 15. doi:10.1007/s11894-017-0554-0.

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Angela Gieseler, PA-C
Saint Louis University
Saint Louis, MO

Disclosures

Angela Gieseler, PA-C

No financial relationships to disclose.

Dyssynergic Defecation

- Up to 50% of chronic constipation can be secondary to dyssynergia
  - 30% of these start in childhood, 30% start after pregnancy or injury, 40% unknown trigger/cause
- Unclear pathogenesis, is thought to be an acquired/learned behavioral problem but is probably multifactorial
  - Only 10-30% of patients improved myotomy of the anal sphincter
  - Botox injection of the anal sphincter did not show improvement
  - About 50% of patient with dyssynergia also had impaired rectal sensation
- High incidence of sexual and/or physical abuse
- There is a big overlap with IBS, some patients just present with abdominal pain as their main symptom
- Common to also have psychosocial issues
- Slow transit constipation may coexist in up 66% of patients with dyssynergic defecation
- 66% of patients with dyssynergic defecation use digital maneuvers to help with defecation but symptoms alone cannot differentiate between slow transit and dyssynergic defecation

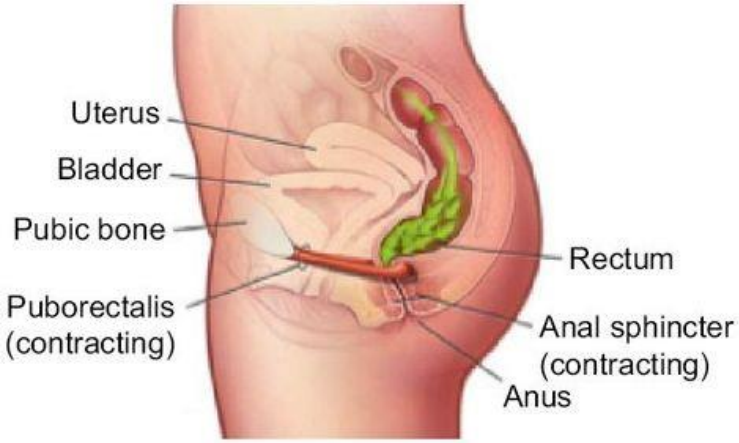
J Neurogastrointestinal Motil. 2016:22(3) 423-435.

Dyssynergic Defecation

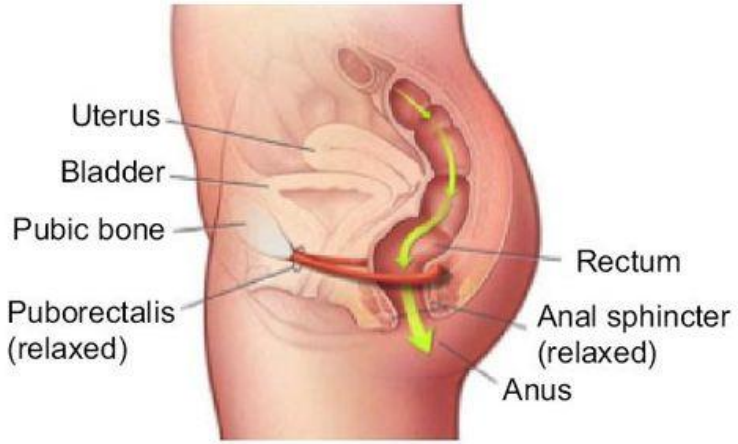
- Normal Defecation: puborectalis and external anal sphincter muscles need to relax at the same time as increased intraabdominal pressure
- In Dyssynergic Defecation, there is an inability to relax or an inappropriate contraction of the puborectalis and external anal sphincter muscles. This narrows the anorectal angle and increases pressures of the anal canal causing less effective defecation

"Pushing against a brick wall"

Dyssynergic Defecation



Normal BM



Pacehospital. (2021). Dyssynergic defecation, symptoms, causes and treatment. *https://www.pacehospital.com/dyssynergicdefecation.*

Dyssynergic Defecation

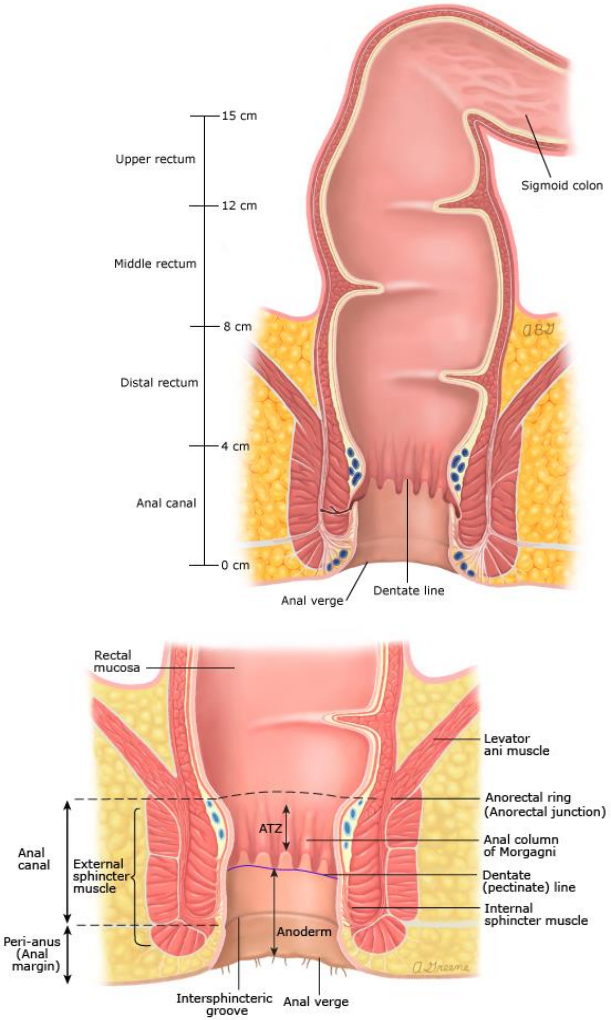
Evaluation

- Good history
- DRE has a sensitivity of 75% and a specificity of 87% for identifying dyssynergia, although it is underutilized
- Endoscopy to rule out masses, strictures, rectocele, hemorrhoids, anal fissures, inflammation, solitary ulcer syndrome, melancosis coli, intussusception
- ARM to diagnose and subtype dyssynergia. Can assess rectal sensation and reflexes
- Balloon Expulsion Test
  - During this test a 4cm long balloon filled with 50cc of warm water is inserted in the rectum, the patient is then instructed to expel the balloon and it is timed. Normal is to expel it in <1 minute.
- MR Defecography
- Colon transit study, Smart Pill

Am J Gastroenterol. 2008:103:820-822.

Digital Rectal Exam

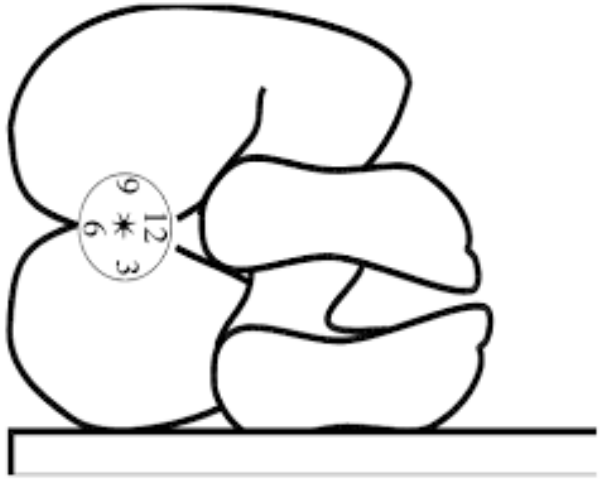
- Anal canal represents the distal 3.5-4cm of the GI tract
- It is separated into 2 halves, divided by the dentate line.
- The distal half is lined with anoderm, which receives somatic innervation (meaning it is sensitive to painful stimuli).
- Proximal to the dentate line, the anal canal is lined with columnar epithelium. This area receives autonomic innervation and is not sensitive to painful stimuli.



Stewart,D, Wenliang,C (Ed.). Approach to patients with anorectal complaints. 2020. *Up to date.*

Digital Rectal Exam

- Consent of the patient
  - Explain the examination in depth and gain consent
  - Make sure you have all the supplies needed in the room before you start the exam
  - Chaperone
- Position the patient
  - Left lateral position with knees bent to the chest (GI office), many colorectal surgeons have tables for prone jackknife position
  - Make sure to talk to the patient



Clinical Skills Resource Centre. University of Liverpool, UK. (2011).

Digital Rectal Exam

Inspection

- Separate the buttocks and examine the area
- Examine the anal opening for any asymmetry or gaping
- Integrity of the skin, lesions, anal warts, skin tags, hemorrhoids, fissures, fistula
  - Lesions not completely visible while separating the gluteal cheeks are anal lesions
  - Lesions completely visualized within in 5cm from the anal orifice are perianal lesions
  - Lesions more than 5cm from the anus are skin lesions
- Have the patient cough and inspect for prolapse, internal hemorrhoids
  - Rectal prolapse will appear as a mass with concentric rings of mucosa protrude through the anus
  - Remember external hemorrhoids are below the dentate line, appear as lumps, whereas internal hemorrhoids originate above the dentate line, often appear bluish and have bulging vessels. Internal hemorrhoids are typically not painful
  - Anal fissure tend to be posterior in the midline (back of the anus)

Tally N. How to do and interpret a rectal examination in gastroenterology. *Am J Gastroenterology.* 2008:103:820-822.

Digital Rectal Exam

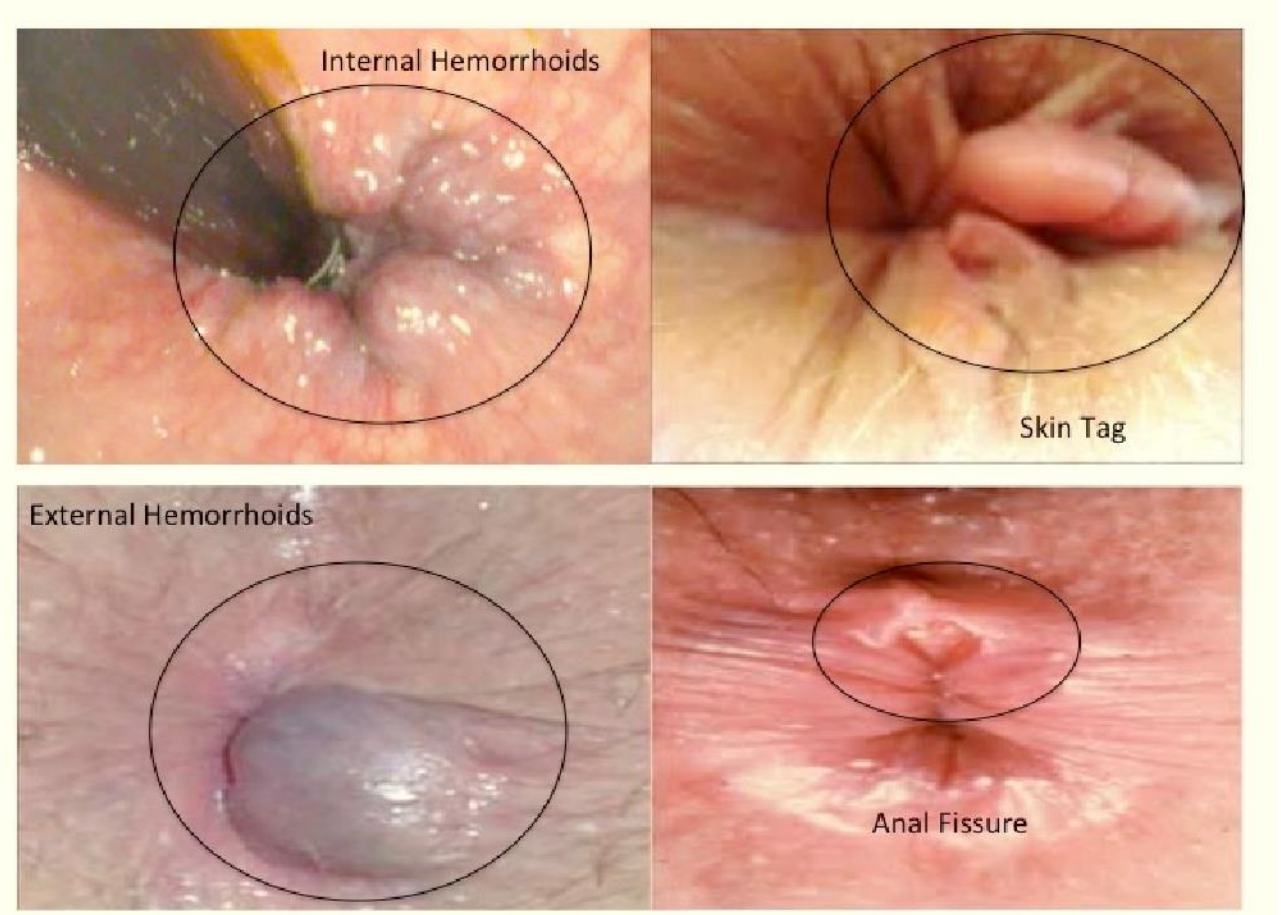


Figure 17. Internal hemorrhoid, external hemorrhoid, skin tag, and an anal fissure.

Digital Rectal Exam

Palpation

- Place well lubricated index finger over the anus, making sure to talk to the patient about every step in the exam
- Tell the patient to relax and breath, then slowly increase pressure of your finger and the anal sphincter will relax, then insert finger
- If the patient experiences pain, then stop the exam, suspect an anal fissure
- Continue to slowly insert your index finger as far as it with go following the sacral curve
- Assess the resting sphincter tone. Can be normal, increased or weak/decreased
- Have the patient squeeze and hold for as long as they can, up to 30 seconds, this is the squeeze pressure. Can be normal, increased or weak/decreased
- Palpate the rectal walls, rotate your finger the full 360 degrees to examine the rectal walls
  - The walls of the rectum should be smooth
- Advance your finger higher and slowly withdraw feeling the anterior wall for rectocele
- Note the size, location (eg 9 o'clock) and texture (smooth, irregular) of any rectal lumps
- Feel for any had stool in the rectum
- Note any tenderness
- When you remove your finger, assess for stool, blood

Tally N. How to do and interpret a rectal examination in gastroenterology. *Am J Gastroenterology.* 2008:103:820-822.

Digital Rectal Exam

Assessing the pelvic floor

- With your finger inserted, ask the patient to try to push your finger out as if to defecate
  - Normally, the anal sphincter and the puborectalis should relax and you should feel perineal descent (1-3.5cm) and with a hand over the patient's abdomen and should feel a strong abdominal push effort.
  - If the muscles seem to tighten, particularly if there is no perineal descent, this suggests pelvic floor dyssynergia/dyssynergic defecation
  - When the puborectalis muscle contracts it is perceived as a "lift" of the finger toward the umbilicus
  - If there is pain when pressing on the posterior rectal wall, this suggests puborectalis muscle tenderness which can be seen in dyssynergic defecation/pelvic floor dyssynergia
- Again, DRE has a sensitivity of 75% and a specificity of 87% for identifying dyssynergia

Tally N. How to do and interpret a rectal examination in gastroenterology. *Am J Gastroenterology.* 2008:103:820-822.

Dyssynergic Defecation

Diagnosis of dyssynergic defecation requires 3 components:

- Constipation symptoms
- Anorectal manometry
- Balloon expulsion test, colon transit study or defecography

Anorectal Manometry

- Measures anal sphincter function
- Rectoanal reflex activity
- Rectal sensation
- Changes in anal and rectal pressures during attempted defecation
  - When a patient bears down and attempts to defecate, there is a rise in rectal pressure which is coordinated with a relaxation of the of the external anal sphincter. This is under voluntary control and is a primarily learned response

J neurogastroenterol Motil. 2016: 22(3): 423-435. Diagnosis and Treatment of Dyssynergic Defecation.

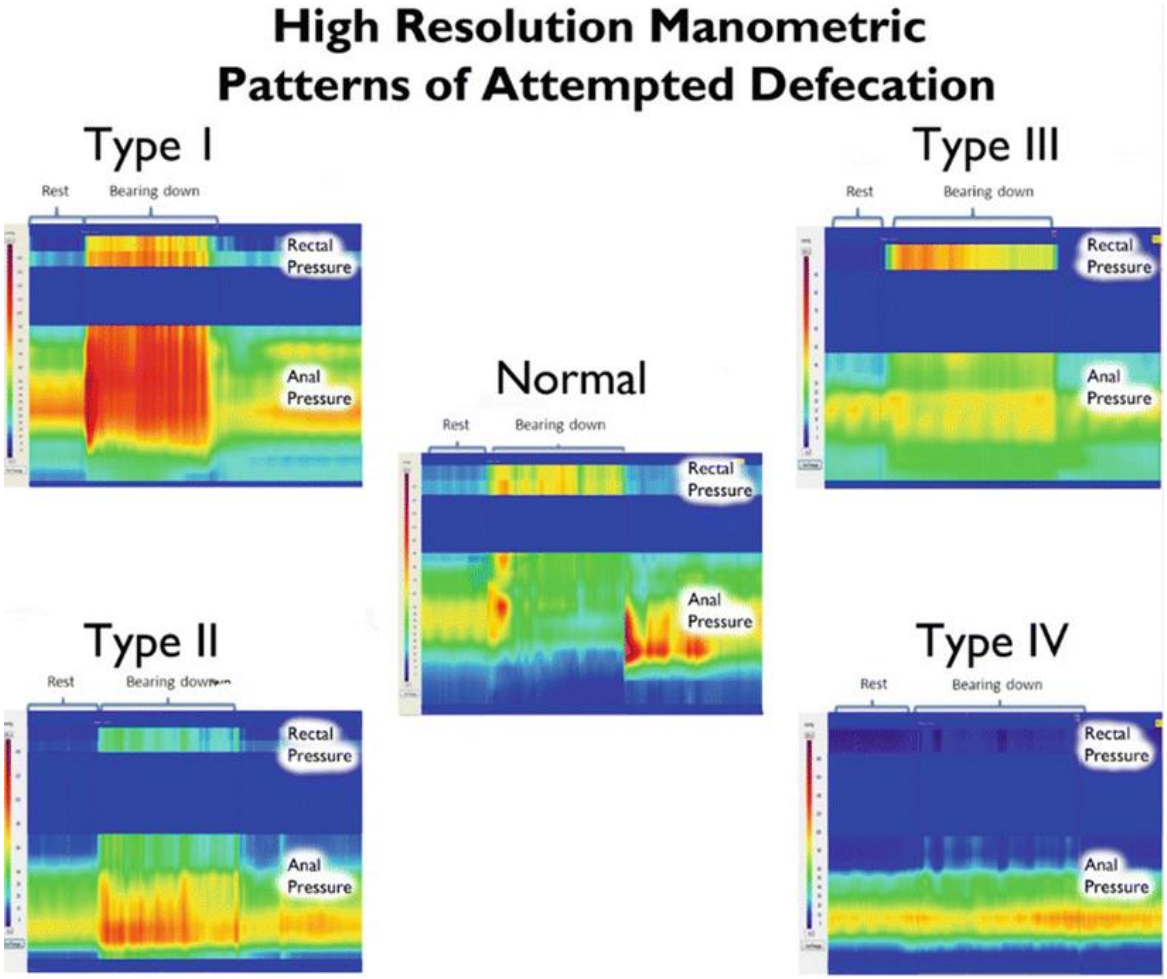
Dyssynergic Defecation

There are 4 subtypes of dyssynergic defection

- Type I — Paradoxical increase in anal sphincter pressure during attempted defecation with normal adequate pushing force
- Type II — Inadequate pushing force but paradoxical anal contraction
- Type III — Adequate push force, but absent or incomplete (<20%) sphincter relaxation
- Type IV — Inadequate rectal push effort and inadequate anal sphincter relaxation (<20%)

J neurogastroenterol Motil. 2016: 22(3): 423-435. Diagnosis and Treatment of Dyssynergic Defecation.

Motility Testing: Anorectal Manometry



Dyssynergic Defecation

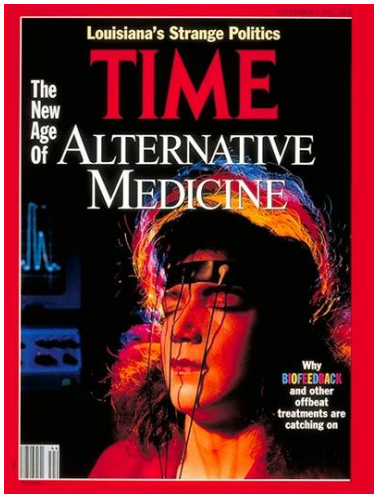
Biofeedback therapy

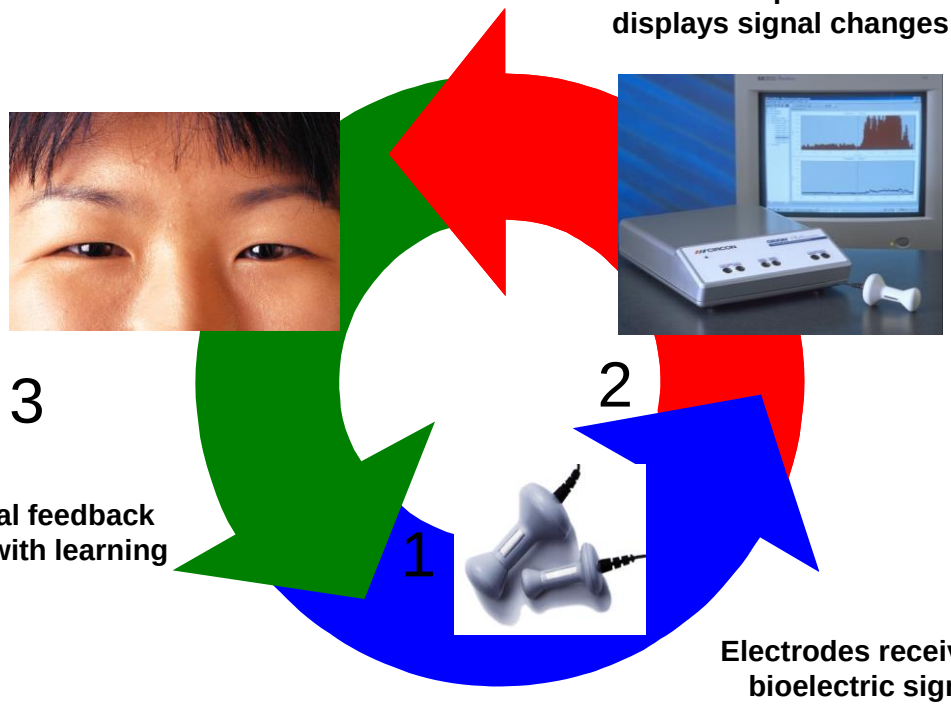
- This is the mainstay of treatment for dyssynergic defecation. Done by specially trained physical therapists.
- Goals
  - Correct the dyssynergia/incoordination of the abdominal and pelvic floor muscles during evacuation
  - Improve perception of rectal filling in patients with impaired rectal sensation
- With appropriately trained therapists, pelvic floor/biofeedback therapy is effective in 70-80% of patients and efficacy is maintained more than 2 years after treatment
- There are typically 3 phases,
  - Phase 1- evaluation/education
  - Phase 2- active phase of therapy. On average 4-6 sessions lasting 60 minutes each about 2 weeks apart are required.
  - Phase 3- reinforcement- at 6 weeks, 3 months, 6 months and 12 months
- A manometry probe with microtransducers or EMG biofeedback system are used. These provide a visual display of pressure activity throughout the anorectum. This provides instant feedback on a monitor to the patient.

Successful treatment depends on patient motivation and the skill of the therapist

J neurogastroenterol Motil. 2016: 22(3): 423-435. Diagnosis and Treatment of Dyssynergic Defecation.

The Biofeedback Process





Method that uses electronic instruments to accurately measure, process and "feed back" information in the form of auditory and/or visual feedback signals

(Schwartz. 1995)

Dyssynergic Defecation

Treatment

- Avoid constipating medications
- Adequate fiber (up to 25g a day)
- Adequate fluid intake
- Regular exercise
- Avoid postponing defecation
- Timed toilet training-attempt to defecate twice a day, usually 30 minutes after eating. Attempt to defecate and push at 50% maximum effort, strain no longer than 5 minutes
- Refrain from digital disimpaction of stools
- Pharmacological options
- Biofeedback therapy