Surgical Management of Constipation, Fecal Incontinence, and Rectal Prolapse

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Objectives

- Discuss the role of the surgeon in treatment of common pelvic floor disorders
- Describe surgical evaluation of the patient with these complaints
- Provide overview of surgical treatment options for
  - Constipation
  - Fecal incontinence
  - Rectal prolapse

Epidemiology and Etiologies

- Estimated 1 in 4 women will have at least one pelvic floor abnormality
  - Likely an underestimate
- Not as well studied in male populations
- Etiologies/associations
  - Pregnancy/childbirth
  - Chronic straining
  - Inflammatory processes/radiation
  - Spinal trauma or surgery
  - Anorectal, pelvic or gynecologic trauma/surgery
  - Neurologic disorders
  - Psychiatric disorders

Wide Range of Symptoms

- Constipation
- Tenesmus
- Abdominal pain
- Bloating
- Bowel frequency/urgency

- Stool leakage
- Stool accidents
- Pelvic pain
- Anorectal pain
- Prolapsing or bulging tissue

Role of the Surgeon for GI Functional Disorders

- Correct anatomic or mechanical pathology that interferes with function, when possible
- Implant devices that enhance function
- Bypass such pathology when other options exhausted
- Know the capabilities and limitations of the surgical options available
- Counsel patients on options and likely outcomes
  - Surgery may mean trading one set of issues for another
  - May not resolve all symptoms

Evaluation

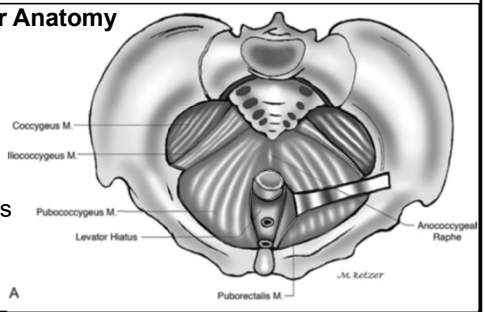
- Aims
  - Rule out and/or identify other causes of bowel dysfunction
  - Delineate mechanism underlying the symptoms
- History and physical examination
- Colonoscopy
- Testing to investigate function and anatomy (as applicable)
  - Transit studies
  - Manometry
  - MRI or fluorodefecography
  - Ultrasound

Pelvic Floor Anatomy

Rectum

Levator ani

Puborectalis



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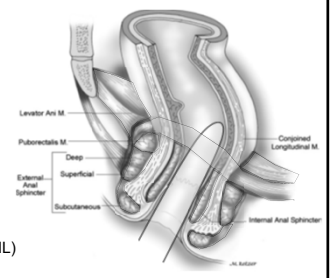
Anorectal Exam

- Stenosis
- Sphincter tone
  - Resting tone – IAS (autonomic)
  - Squeeze tone – EAS (somatic)
- Levator tone and tenderness
- Valsalva "as if trying to have a BM"
  - Sphincter relaxation?
  - Puborectalis relaxation?
  - Paradoxic contraction?
  - Perineal descent (up to 3.5 cm WNL)
  - Rectocele? Prolapse?



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Surgical Approach to Constipation

What is the Mechanism?

- Slow transit/colonic inertia
- Outlet dysfunction/obstructed defecation syndrome (ODS)
- Rule out fixed mechanical obstruction
  - Imaging
  - Colonoscopy

Transit Evaluation – Sitzmark Study

- Capsule with 20-25 markers, x-ray day 5 or 7
- Abstain from laxatives/stool softeners
- Abnormal: >20% retained markers
- Distribution of markers
  - Mostly on the right/seen throughout
    - Slow transit
    - Doesn't preclude outlet dysfunction
  - Rectosigmoid predominant
    - Preserved transit
    - Outlet dysfunction

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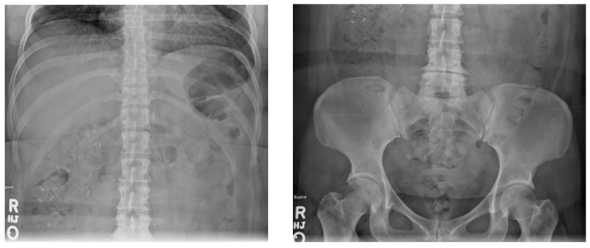
Sitz Marker Study – Slow Transit



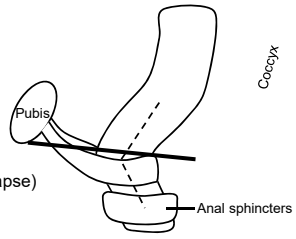
Sitz Marker Study – Outlet Dysfunction

Outlet Evaluation – Anorectal Manometry

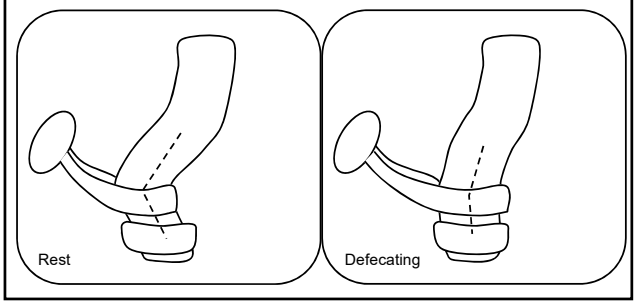
- Evaluates physiology of defecation with minimal insight into anatomy
- Parameters most relevant for surgical decision-making
  - RAIR (rectoanal inhibitory reflex) – if absent, context matters
    - Rectal distension normally causes internal sphincter relaxation
    - Megarectum – most adults
      - Chronic rectal distension and reduced sensation
    - Hirschsprung's disease – rare in even young adult patients
      - Congenital aganglionosis of myenteric and submucosal plexus
      - Requires full thickness biopsy for diagnosis
  - Balloon expulsion test
    - If unable to expel, indicates very poor outlet function

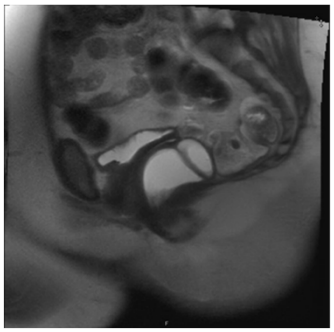
Outlet Evaluation – Defecography

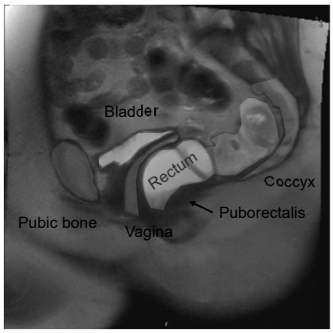
- Evaluates anatomy of defecation with minimal insight into physiology
- MRI vs fluoro
- Key elements reported
  - Anorectal angle (ARA) – reflects puborectalis sling function
  - Evacuation of contrast
  - Presence of intussusception (prolapse)
  - Degree of organ descent from pubococcygeal line (PCL)

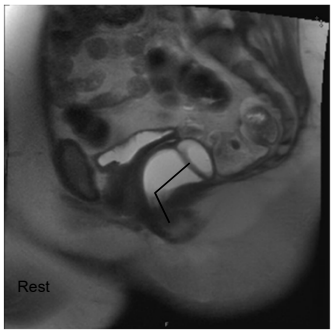


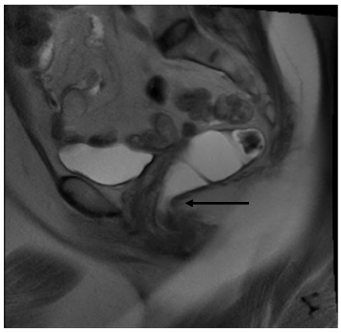
Outlet Evaluation – Defecography

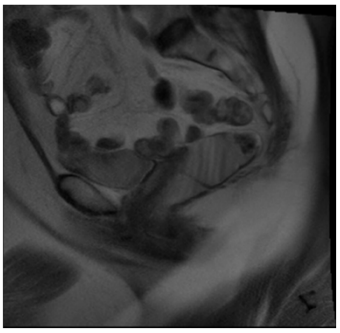


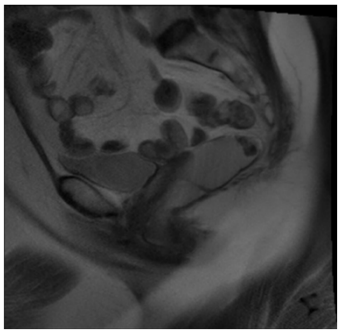


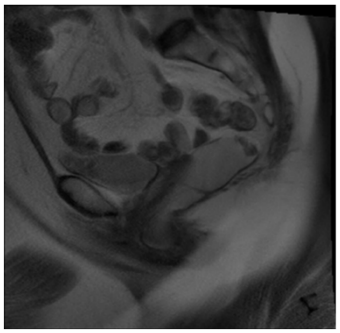


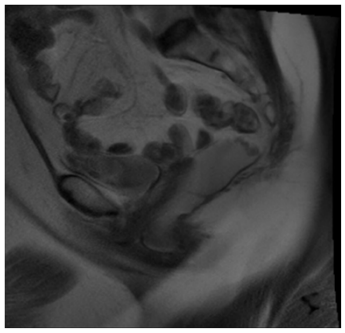


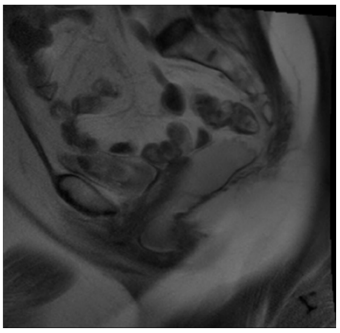


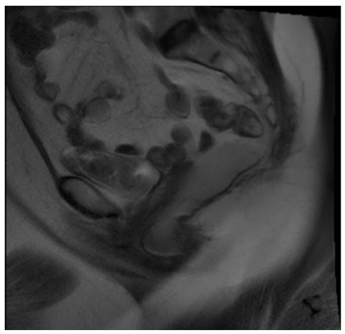


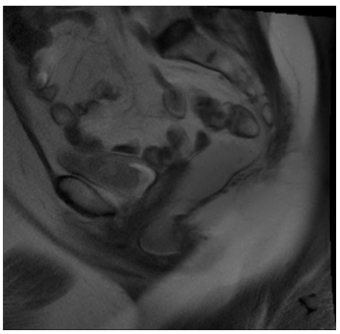


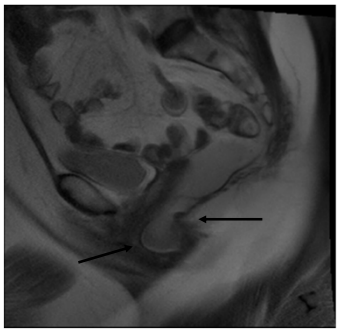


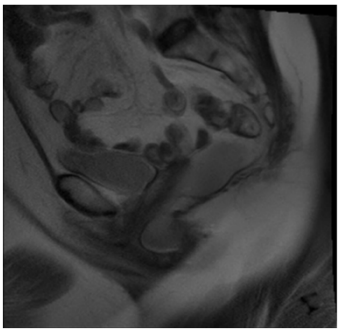


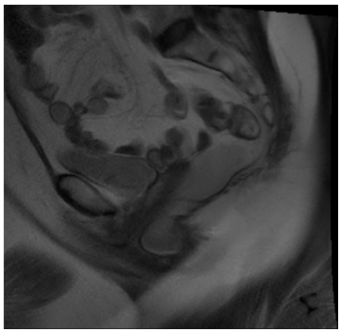


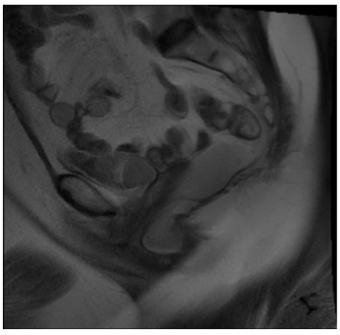


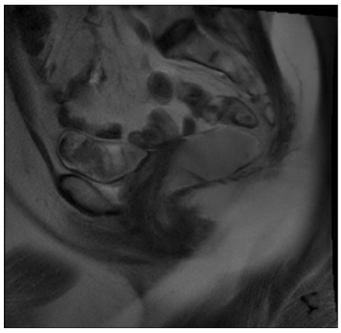


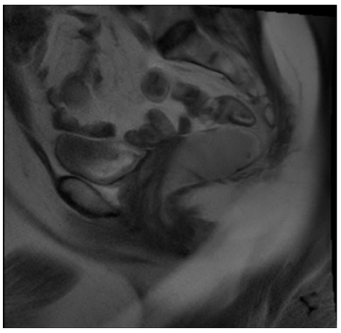


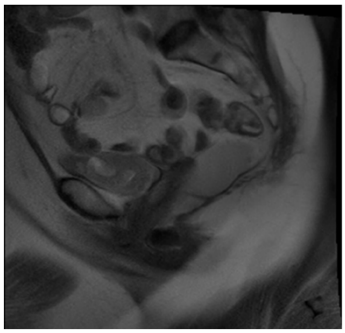


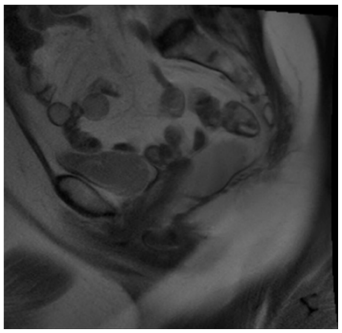


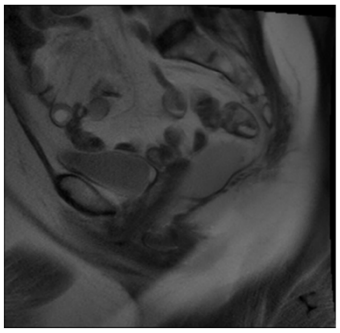


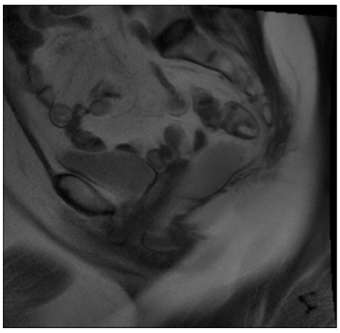


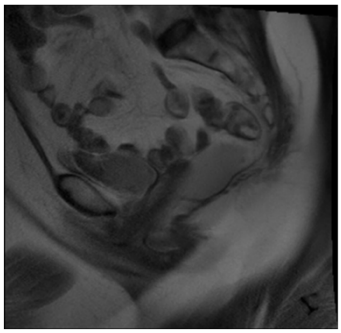


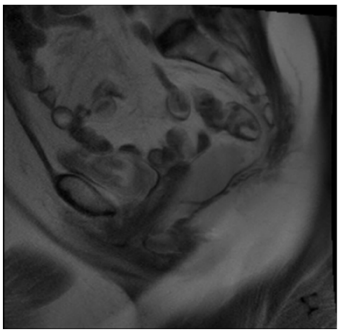


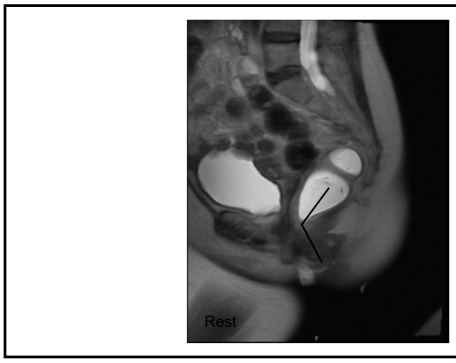








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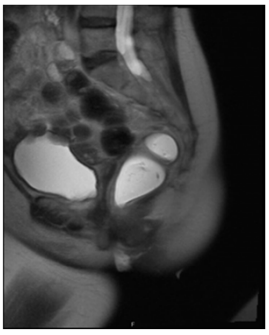
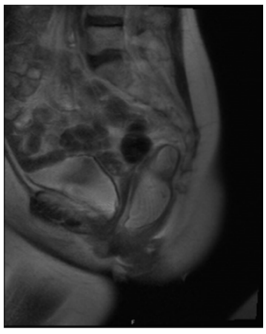
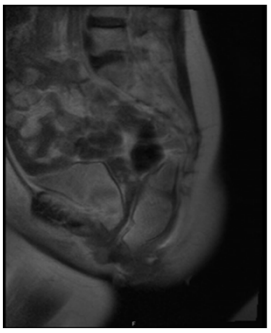
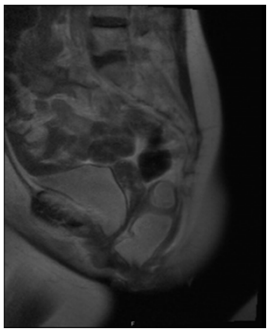
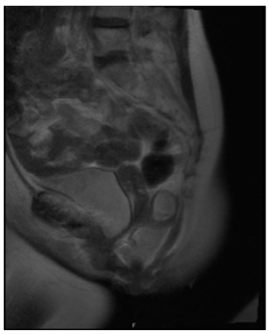
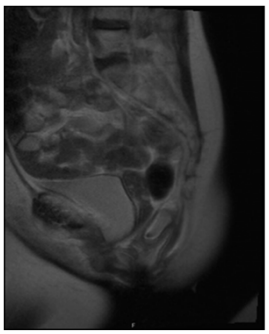


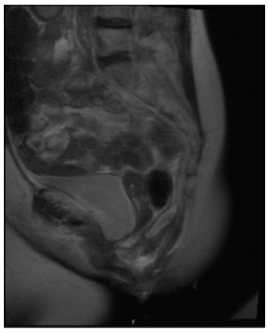


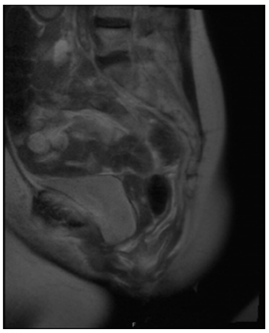


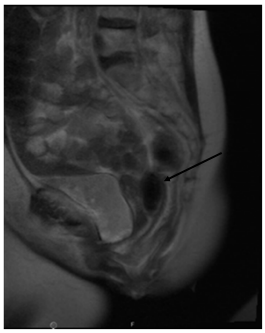


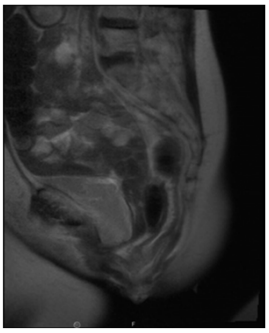


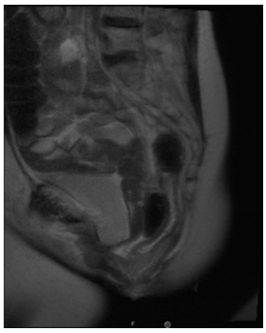


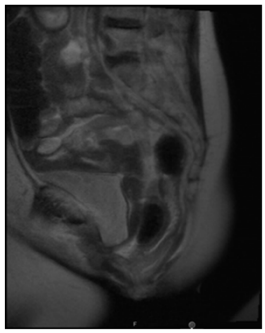


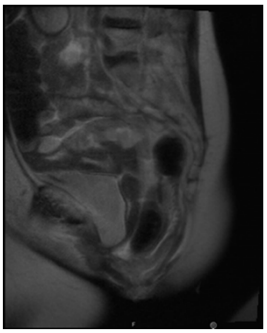


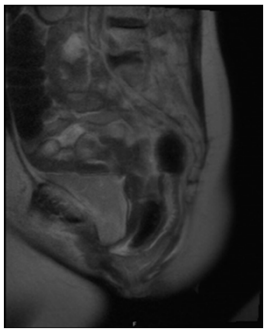


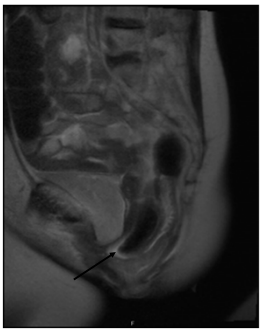












Surgical Options for Slow Transit Constipation

- Consider total abdominal colectomy
  - Ileorectal anastomosis
  - End ileostomy
- Higher complication rates than colectomy for other indications (24-43%)
  - Ileus, SBO, N/V, anastomotic leak
- High 30d readmission rates (66%) and ER utilization (72%)
- ~85% patient satisfaction, ~5% progress to permanent stoma

Dudekula A, et al. Aliment Pharmacol Ther 2015; 42:1281-93.
Knowles CH, et al. Colorectal Dis. 2017; 19 (Supp 3):17-36.

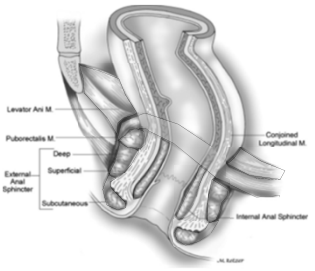
Treatment Options for Obstructed Defecation

- Stool bulking (fiber)
  - Laxatives and stool softeners do not address underlying mechanism
  - Bulky stool may activate RAIR
- Adequate hydration
- Positioning techniques
- Pelvic floor PT (at least 80% of patients have significant improvement)
- Surgery
  - If possible, address mechanism
  - If not possible, diversion

Surgical Approach to Fecal Incontinence

Requirements for Bowel Continence

- Mechanical barriers
  - Internal anal sphincter
  - External anal sphincter
  - Puborectalis
- Normal rectal compliance
- Intact innervation



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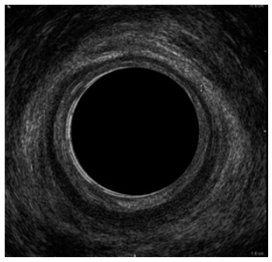
Nonoperative Management of Fecal Incontinence

- Manage stool consistency
  - Treatment of diarrhea if present
  - Fiber/bulking agents
- Continence plugs
- Pelvic floor PT
- Injectable hyaluronic acid-based bulking agent
  - Not well covered by insurance due to poor efficacy/durability
  - May be effective for mild symptoms
  - Duration of effect usually ~1 year

Ultrasound for Sphincter Assessment



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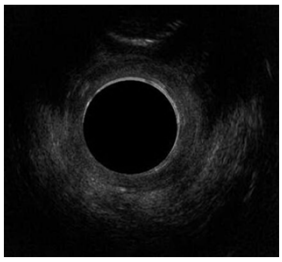
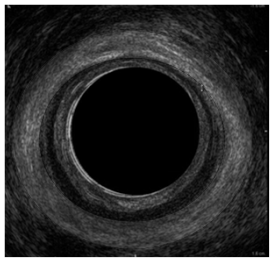
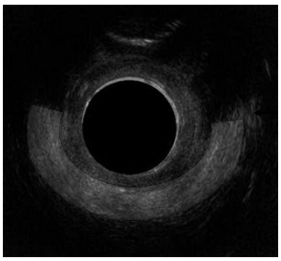


Anterior EAS defect

Ultrasound for Sphincter Assessment



Normal



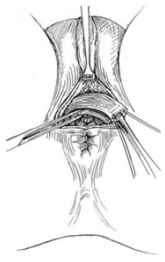
Anterior EAS defect

Sphincteroplasty

- Reapproximate sphincter defects, only <180°
- Short term results (<3 years)
  - ~65-79% good/excellent
  - ~20-27% poor
- Long term results (5-10 years)
  - ~46% good/excellent
  - ~20-54% poor
- Better results in younger patients close in time to injury

Altomare DF, et al. World J Gastroent. 2010; 16(42): 5267-5271.

Sphincteroplasty



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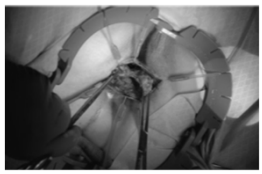
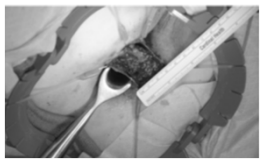
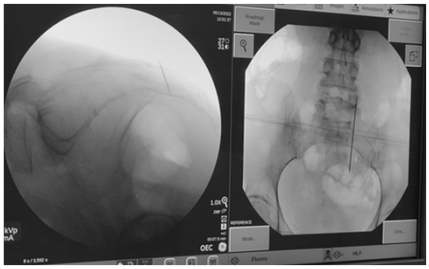
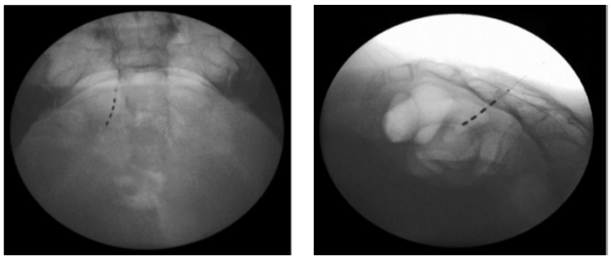




Sacral Nerve Stimulator (SNS)

- FDA approved in 2011 for fecal incontinence
- Tined electrode lead placed in S3 foramen
- Trial period with external generator of 1-2 weeks
  - Success = >50% reduction in episodes
- Successful trial → generator implant in gluteal fat





SNS Outcomes for Fecal Incontinence

- Primarily case series
- Response rate (at least 50% reduction in symptoms)
  - ~90% of patients who receive full implant[1]
  - ~60-70% of all patients who undergo pre-implant trial
  - ~38-50% "cure" rate
- Long-term outcomes
  - One series[2] (N=73) showed benefit persists without decrement at least 5 years
- 15-30% may undergo explantation/revision in <5 years
  - Complications
  - Loss of efficacy
  - Device malfunction/migration

[1]Thaha MA, et al. Cochrane Database of Systematic Reviews 2015; 8: 1-80.
[2]Hull T, et al. Dis Colon Rectum 2013; 56: 234-245.

Surgical Approach to Rectal Prolapse

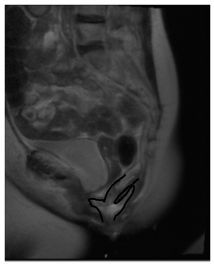
Rectal Prolapse?

- External vs internal?
- Mucosal vs full thickness?
- Perineal/pelvic floor descent vs organ prolapse alone?
- Other compartments involved (bladder, vagina)?
- "Prolapse" represents a spectrum of loss of appropriate pelvic organ support

(Images from ASCRS Member Resource Library)

Internal Rectal Prolapse or Mucosal Prolapse

- Nonoperative management
  - High fiber diet
  - Adequate hydration
  - Enemas/suppositories for ODS symptoms
- Pelvic floor PT/biofeedback
- Patients with internal prolapse should be carefully selected for surgery
- Mucosal prolapse → excise redundant mucosa



Full Thickness External Rectal Prolapse

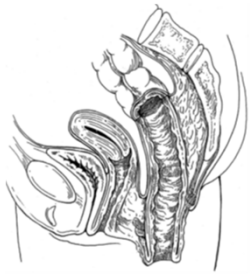
A patient with full thickness external prolapse risks developing or worsening incontinence if surgery is unnecessarily delayed!

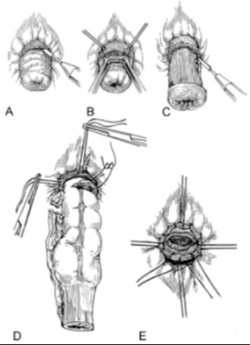
(Images from ASCRS Member Resource Library)

Operative Approaches for Rectal Prolapse

- Perineal
  - Higher short-term recurrence (up to 25-30% in 5 years)
  - Lower perioperative risk, less pain*
  - Involve excising and/or plicating redundant rectosigmoid tissue
  - Better for high risk surgical candidates or if extensive prior pelvic surgery
- Abdominal
  - ? lower recurrence vs perineal approaches (5-30% long term)
  - Higher perioperative risk, more pain*
  - Involve reestablishing proximal support/fixation of the rectum
  - Risk of persistent/worsened constipation

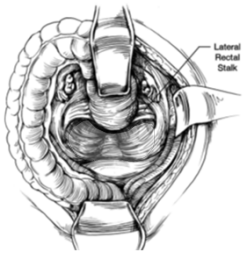
Perineal Proctectomy





(Images from ASCRS Member Resource Library)

Sutured Rectopexy (+/- Resection)



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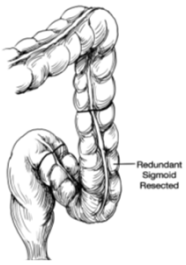
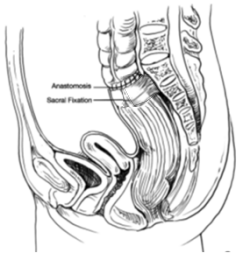
Sutured Rectopexy (+/- Resection)



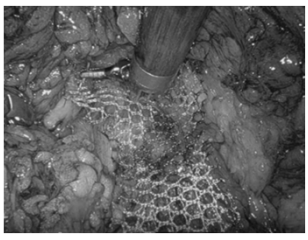


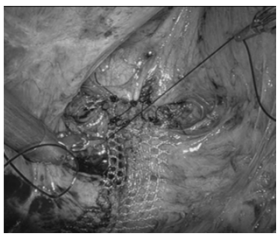
(Images from ASCRS Member Resource Library)

Ventral Mesh Rectopexy

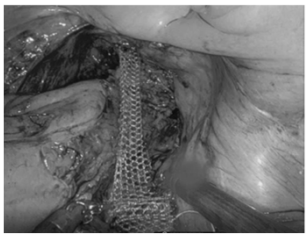
- Mesh sewn to anterior rectum and posterior vagina
- Less constipation (sometimes improved) vs posterior rectopexy
- Low recurrence rate (~5%)
- Mesh complications 0.7-2%

Ventral Mesh Rectopexy

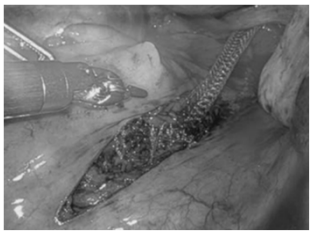




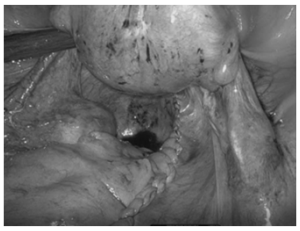
Ventral Mesh Rectopexy



Ventral Mesh Rectopexy




Ventral Mesh Rectopexy

When All Else Fails

- Diversion with ostomy is the last resort for severe refractory pelvic floor dysfunction.
- When is it indicated?
  - When all other reasonable options have been tried
  - The patient tells you they're ready

Summary

- Treatment for GI/pelvic floor dysfunction should be tailored to the underlying mechanism(s).
  - Understanding those is essential before considering surgery!
- Set clear expectations with the patient – beware of "chasing perfect."
  - Not all symptoms may respond or resolve after surgery.
- Surgery is a quality of life intervention for these disorders.
  - Patients often trade one set of issues for another.
- Surgeons and patients must weigh the risks and anticipated benefits of surgery together.