Benign Anorectal Disease

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Outline

• Anorectal anatomy
• Hemorrhoids
• Abscess
• Fistula
• Anal Fissure
• Rectal Prolapse
Anorectal Anatomy

- rectum 12-15cm
- dentate line - transition point between rectal columnar cells and anal squamous cells
- anal canal - dentate line to anal verge
- internal and external sphincters
Anorectal Anatomy

- blood supply
  - IMA → superior rectal artery
  - IIA → middle rectal artery
  - IIA → pudendal artery → inferior rectal artery
- venous drainage
  - superior rectal veins → IMV into portal system
  - middle and inferior rectal veins → pudendal vein → IIV
Hemorrhoids
Hemorrhoids

- cushions
  - left lateral
  - right anterior
  - right posterior
- valsalva → engorgement of hemorrhoids → occlusion of anal canal
Hemorrhoids

• maintains continence
• allows for dilation of anoderm without tearing
• discriminate between solid, liquid, gas
Hemorrhoids

- cushions
  - left lateral
  - right anterior
  - right posterior
- valsalva $\rightarrow$ engorgement of hemorrhoids $\rightarrow$ occlusion of anal canal to maintain continence
- allows for dilation of anoderm without tearing
- discriminate between solid, liquid, gas
Hemorrhoids

- straining/constipation → OVER-engorgement and bleeding
- age - decreased collagen content
Hemorrhoids

• internal
  • proximal to dentate line
  • insensate
  • bleeding or prolapse
Hemorrhoids

- **internal**
  - proximal to dentate line
  - insensate
  - bleeding or prolapse
- **external**
  - distal to dentate line
  - sensate
  - painful
Hemorrhoids

- internal
  - proximal to dentate line
  - insensate
  - bleeding or prolapse
- external
  - distal to dentate line
  - sensate
  - painful
- combined - cross dentate line
External Hemorrhoids

- acute thrombosis

- rupture of external hemorrhoidal plexus vein → tense hematoma

- pain increases or remains constant x 2-3 days then subsides as clot reabsorbs or overlying skin necrosis
External Hemorrhoids

• if within 72h → EXCISION of hemorrhoid

• if after 72h → sitz bath, stool softeners, topical anesthetics
Internal Hemorrhoids

• **classification**
  • grade I - bleeding and prolapse into anal canal
  • grade II - spontaneous reduction
  • grade III - manual reduction
  • grade IV - irreducible
Internal Hemorrhoids - treatment

• grades I-III → non-operative management

• grades III-IV, gangrenous → operative management

• uncomplicated grades II-III → fixation procedure
Internal Hemorrhoids - treatment

- grades I-III → non-operative management
  - rubber band ligation
  - infrared coagulation
  - sclerotherapy
- grades III-IV, gangrenous → operative management

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Internal Hemorrhoids - treatment

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  • closed hemorrhoidectomy
  • open hemorrhoidectomy
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  • rubber band ligation
  • infrared coagulation
  • sclerotherapy

• 80-100% effective

• superior to sclerotherapy with respect to prolapse, bleeding and recurrence

• should treat each complex individually - 2 per session

• complications
  • severe pain
  • external hemorrhoid thrombosis
  • bleeding 3-7d after procedure requiring intervention
  • pelvic sepsis - pain, fever, difficulty urinating → EUA, debridement of necrotic tissue, IV antibiotics
Internal Hemorrhoids - treatment

• grades I-III → non-operative management
  • rubber band ligation
  • infrared coagulation
  • sclerotherapy

• tungsten-halogen light coagulation
• less painful and less risk of hemorrhage than banding
• less effective
Internal Hemorrhoids - treatment

- grades I-III → non-operative management
  - rubber band ligation
  - infrared coagulation
  - sclerotherapy

- acutely bleeding grades I-II
- can treat all hemorrhoids at once, but may require multiple treatments
- complications - prostatic abscess, ED, pylephlebitis, sloughing ulcer, stricture
Internal Hemorrhoids - treatment

- grades III-IV, gangrenous → operative management
  - closed hemorrhoidectomy
  - open hemorrhoidectomy

- diamond-shaped incision
- identify internal sphincter muscle
- suture ligated with with 2-0 absorbable suture
- Gelfoam packing, pain control, sitz bath, stool softeners

- complications - wound infection, fistula, stricture, 90% success rate
Internal Hemorrhoids - treatment

• grades III-IV, gangrenous → operative management
  • closed hemorrhoidectomy
  • open hemorrhoidectomy - leave anoderm open, Europe
Internal Hemorrhoids - treatment

- uncomplicated grades II-III → fixation procedure
  - stapled hemorrhoidopexy
  - suture hemorrhoidopexy

- purse-string suture placement
  - 2cm proximal to the apex of hemorrhoid
  - 4cm above the dentate line then tightened
  - circular stapler and inspect for doughnut in tissue
  - avoid injury to vagina!

- maintains the vascular cushions
- less painful
- better wound healing

- high recurrence rate
Internal Hemorrhoids - treatment

- uncomplicated grades II-III → fixation procedure
  - stapled hemorrhoidopexy
  - suture hemorrhoidopexy

- horizontal sutures above dentate line and at apex of hemorrhoid
- excision of rectal mucosa between
- tie and allow adherence
- no special instruments required
Hemorrhoids – special cases

- pregnancy
  - constipation, lax sphincter, increased blood volume, straining, uterine pressure
  - often resolve spontaneously after delivery
  - conservative management
  - can intervene in acutely thromboses hemorrhoids if necessary
Hemorrhoids – special cases

- pregnancy

- IBD
  - avoid surgical management due to risk of non healing
  - high risk of major incontinence
  - 90% heal within 2 months with NOM
Hemorrhoids – special cases

- pregnancy

- IBD

- immunocompromised
  - must rule out infectious etiology via endoscopy, biopsy, cultures
  - safe if well-controlled disease but surgery should be avoided unless absolutely necessary
Hemorrhoids – special cases

- pregnancy
- IBD
- immunocompromised
- portal hypertension
  - same rate of hemorrhoids in patients with portal hypertension
  - anorectal varices can be ligated, staple anopexy, TIPS, mesocaval shunt, mesorenal shunt
  - avoid hemorrhoidectomy
Abscess
Abscess - causes

- cryptoglandular - blockage of anal crypts → infection of gland → suppuration → 40-60% go on to have fistula
- crohn’s disease
- trauma
- pelvic sepsis - diverticulitis, appendicitis
- atypical infections - TB
Abscess - types

- perianal
- intermuscular
- intersphincteric
- submucosal
- supraplevator
- ischiorectal
Abscess - types

- perianal
- intermuscular
- intersphincteric
- submucosal
- supralevator
- ischiorectal - horseshoe - deep postanal space to either or both sides
Abscess – presentation and evaluation

• anal pain
• tenderness
• erythema
• swelling
• systemic symptoms - fever, tachycardia, leukocytosis

• consider CT scan if concern for horseshoe abscess, supralevator abscess, or necrotizing soft tissue infection
Abscess - treatment

• incision and drainage

• consider packing or mushroom catheter if large

• consider OR if large or complicated

• antibiotics for DM, erythema or necrotizing infection

• horseshoe - do not unroof, but perform radial counter incisions with connecting penroses
Fistula
Fistula

• 40-60% abscess
• “chronic abscess”
Fistula - types
Fistula – Goodsall’s rule

• posterior $\rightarrow$ posterior midline internal opening via curved tract

• anterior $\rightarrow$ radial tract anterior opening

• exception - 3cm from anal verge anteriorly $\rightarrow$ posterior midline internal openings
Fistula – clinical presentation

• pain
• purulent/bloody drainage
• external opening

• if change in bowel function, multiple external fistula opening, internal opening other than dentate line, or multiple internal openings, then consider IBD, malignancy, HIV
Fistula – evaluation

- anoscopy versus EUA
- probe all openings with care to avoid iatrogenic fistulization
- hydrogen peroxide, endoanal US, fistulography, MRI
Fistula – goals of management

- complete drainage of abscess
- maintain sphincter function
- allow for healing of the fistula
- removal of internal opening
Fistula – treatment

• cutting
  • primary fistulotomy
• sphincter-sparing
  • seton placement
  • endorectal or dermal advancement flap
  • fibrin sealant
  • anal fistula plug
  • ligation of interphincteric fistula tract (LIFT)
Fistula – primary fistulotomy

- superficial, intersphincteric fistulas or low transsphincteric fistulas involving less than 1/3 external sphincter muscle

- unroof and marsupialize

- C/I - women with anterior fistula, immunocompromised patients, IBD to avoid incontinence
Fistula – seton

- high transphincteric fistulas, suprasphincteric fistula, anterior fistula, immunocompromised, IBD

- drainage - via braided suture or vessel loop

- cutting seton - high risk of incontinence
Fistula – fibrin

- fibrin seal
  - coagulation seal
  - low morbidity
  - no risk of incontinence
  - 14-40% success rate
- fibrin plug
  - porcine submucosal plug
  - 43-87% success rate
Fistula – LIFT

• ligation of intersphincteric fistula tract
Fistula – advancement flap
Fistulas
Anal Fissure
Anal fissure

- exquisitely painful ulcer or mucosal tear
- constipation 3x likelihood
- passage of hard stool, trauma
- increased resting tone (decreased vascular supply)
Anal fissure - presentation

- 90% posterior midline
- female 25% anterior midline - lateral blood supply
- atypical location or refractory fissures - must biopsy to rule out infection, granuloma, cancer
Anal Fissure - types

• acute
  • <6 week
  • superficial
  • flat edges
  • painful
  • non-pruritic
• chronic
  • >6 weeks
  • deep
  • sentinel pile and raised edges
  • less painful
  • pruritic
Anal Fissure – operative management

• goal
  • relief of spasm of internal anal sphincter

• complications of surgery
  • bleeding
  • infection
  • fecal incontinence - cochrane review that quality of life is still higher with incontinence compared to with fissure
Anal Fissure – non-operative management

- nitroglycerine ointment
  - nitric oxide dimer locally releases nitric oxide → binds cGMP → smooth muscle relaxation
  - SE - headaches

- CCB
  - smooth muscle relaxation
  - effective as nitroglycerine with less side effects

- phosphodiesterase inhibitor
  - cGMP degradation → smooth muscle relaxation

- botulinum toxin injection
  - acetylcholine release prevention → inhibits striated muscle contraction of external sphincter and internal sphincter; as effective as nitro with less side effects
Anal Fissure – operative management

- open sphincterotomy
- closed sphincterotomy
Anal Fissure – treatment

- acute → sitz bath, dietary fiber, stool softeners x 6 weeks
Anal Fissure – treatment

• acute → sitz bath, dietary fiber, stool softeners x 6 weeks
• refractory → add CCB, botox, nitroglycerine ointment
Anal Fissure – treatment

- acute → sitz bath, dietary fiber, stool softeners x 6 weeks
- refractory → add CCB, botox, nitroglycerine ointment
- chronic or recurrent → surgery
Rectal Prolapse
Rectal Prolapse

- epidemiology
  - 90% females
  - >50yo s/p vaginal childbirth
  - psychiatric patients
  - nursing home patients
  - young men 20-40yo
Rectal Prolapse

- full thickness
  - all layers of bowel wall
  - circular mucosal fold appearance
- partial thickness
  - mucosa only
  - radial folding
Rectal Prolapse – symptoms and evaluation

- rectal bleeding with defection
- mucoid discharge
- sensation of incomplete evacuation
- tenesmus
Rectal Prolapse – symptoms and evaluation

- rectal bleeding with defection
- mucoid discharge
- sensation of incomplete evacuation
- tenesmus

- exam
  - protruding rectum on valsalva
  - patulous anus
  - diminished resting tone and squeeze pressures on DRE

- colonoscopy - r/o other pathology
- manometry - assess sphincter
Rectal Prolapse – surgical approach

• perineal approach  
• transabdominal approach
Rectal Prolapse – surgical approach

- perineal approach
  - local anesthesia
  - less pain
  - earlier return of bowel function
  - quicker tolerance of regular diet and ambulation
  - higher recurrence rate

- transabdominal approach
  - general anesthesia
  - more pain
  - longer hospitalization
  - definitive treatment
Rectal Prolapse – perineal approach

- Delorme’s procedure aka mucosal sleeve resection
- Altemeier’s procedure aka perineal rectosigmoidectomy
Rectal Prolapse – perineal approach

- Delorme’s procedure aka mucosal sleeve resection
  - Excision of mucosa and submucosal layers
- Complications
  - Urinary retention
  - Bleeding
  - Leak
  - Stricture
  - Diarrhea
  - Recurrence - 6-26%

- Altemeier’s procedure aka perineal rectosigmoidectomy
Rectal Prolapse – perineal approach

• delorme’s procedure aka mucosal sleeve resection
  • excision of mucosa and submucosal layers
• complications
  • urinary retention
  • bleeding
  • leak
  • stricture
  • diarrhea
  • recurrence - 6-26%

• alteemeier’s procedure aka perineal rectosigmoidectomy
  • full-thickness excision and removal of redundant colon
• complications
  • bleeding
  • dehiscence
  • recurrence - if inadequate resection
Rectal Prolapse – delorme’s procedure

**FIGURE 1** Mucosal proctectomy (Delorme’s procedure). 
A, Submucosal infiltration with epinephrine solution. 
B, Circumferential mucosal incision. 
C, Dissection of mucosa away from muscular layer. 
D and E, Plicating stitch including cut edge of mucosa and muscular wall. 
F, Completed anastomosis. 
Rectal Prolapse – altemeier’s procedure
Rectal Prolapse - transabdominal approach

• abdominal rectopexy and sigmoidectomy
  • complete mobilization of rectum to levator complex
  • elevation of rectum and fixation to pre-sacral fascia
  • recurrence 0-9%
  • complications
    • LBO
    • SBO
    • leak
    • bleeding
• abdominal rectopexy alone
  • worse constipation

Figure 2: Antero - lateral view of Retro-rectal mesh
Summary

• Hemorrhoids
  • Internal - hemorrhoidectomy versus NOM
  • External - excision versus NOM
  • Past medical history
• Abscess
  • incision and drain
• Fistula
  • spare the sphincter
• Fissure
  • relax the sphincter
• Rectal Prolapse
  • perineal - high recurrence
  • transabdominal - higher complication rate
Thank you