

## PERIANAL COMPLICATIONS OF CROHN'S DISEASE: FOCUS ON ANAL STENOSIS

### I. Introduction

- A. Crohn's disease affects any GI site from mouth to anus.
- B. 35-45% of patients manifest one or more perianal complications during course of illness.
- C. Overall incidence of perianal Crohn's disease 8.5-93%.
  1. Statistics vary depending on inclusion of skin tags & hemorrhoids, asymptomatic patients, misdiagnosed ulcerative colitis.
  2. Incidence increases with more distal involvement: 80% with colonic disease, near 100% with rectal disease
- D. Perianal disease may precede symptomatic intestinal disease in 5-19% of patients.
  1. Various studies report lag period ranges from 2 weeks to 12 years.
  2. Lag time is decreased in the presence of colonic versus ileal disease.
  3. One study of isolated perianal disease reports 86% fistulas, 43% abscesses, 26% fissures.
- E. Perianal complications
  1. Common: *fissure, ulceration, fistula, abscess, stenosis, skin tags, incontinence*
  2. Less common: *cancer, hemorrhoids*
- F. Course & Prognosis
  1. Perianal activity does not always parallel intestinal or extraintestinal activity.
  2. However, patients with quiescent intestinal disease may respond better to perianal surgery.
  3. Patients with perianal complications at early age, fistula as first manifestation of perianal disease, or rectal involvement may be at increased risk for ultimately requiring proctectomy or APR.
  4. Williamson, et al (1995): proctectomy required in 14% of patients with suppurative complications
  5. Michelassi, et al (2000): proctectomy required in 38% of patients with various complications
    - a) indications: active rectal disease, extensive fistular disease, incontinence, tight anal stenosis
    - b) rate of proctectomy in patients with rectal vs. rectal-sparing disease: 77.6% vs. 13.6%
    - c) rate of proctectomy in patients with multiple vs. single perianal complication: 23% vs. 10%

### II. Summary of Complications

#### A. ANAL FISSURES & ULCERATIONS

1. Definition: an anal fissure is a tear in the lining of the anal canal distal to the dentate line, most commonly occurring in the posterior midline.
2. Most common cause: local trauma to anal canal, usually from passage of hard stool.



- i) ASYMPTOMATIC: 33% remain asymptomatic, 38-53% spontaneously heal in 10 years
  - ii) MILD/MODERATE: metronidazole, topical anti-inflammatory agents, ciprofloxacin  
*Jakobovits, et al (1984): 8 patients w/ refractory fistulas tx w/ metronidazole-->50% reduction in number of openings, complete symptomatic resolution in 4 patients.*
  - iii) SEVERE/REFRACTORY: immunomodulators (6-MP, infliximab, IV/PO cyclosporine)  
*Present, et al (1999): studied efficacy of infliximab in double-blind, randomized, controlled study of 94 patients w/ Crohn's fistulas--> SIGNIFICANT RESULTS*  
--50% closure of fistulas: 68% (on 5mg) & 56% (on 10mg) vs. 26% (placebo)  
--complete closure of fistulas: 55% (5mg) & 38% (10mg) vs. 13% (placebo)  
--response was rapid (2-4 weeks) BUT of short duration (3 months)
  - iv) SURGERY  
--goal to eradicate fistula but preserve continence OR to transform complex fistula into more distal & manageable tract.  
--low/intersphincteric: *fistulotomy (63-100% healing rates in Crohn's-->first line?)*  
--transphincteric: *non-cutting seton*  
--sphincter involvement but normal mucosa: *mucosal advancement flap*
8. Prognosis: recurrence is common following medical or surgical tx (44% within 18mos.),  
decreased relapse rates in patients without rectal disease or s/p fecal diversion.

### C. RECTOVAGINAL FISTULAS

1. Found in 3-10% of female patients with Crohn's disease.
2. Etiology  
--mostly from anterior rectal ulcer eroding into midportion of rectovaginal septum (poor prognosis)  
--less commonly from infected anal gland opening at the dentate line (relatively benign)  
--Bartholin's abscess fistulizing to anorectum (poor prognosis)  
--rectal malignancy, previous radiotherapy, complication of restorative proctocolectomy
3. Symptoms: intermittent vaginal discharge, passage of gas thru vagina; rarely incontinence or excoriation
4. Diagnosis: EUA, proctoscopy, vaginoscopy, gastrogaffin enema, methylene blue, rectal insufflation.

5. Treatment: initially directed at control of sepsis with catheter drainage, noncutting seton; then depends on level of fistulas, degree of proctitis, and other symptoms--> fistulotomy, advancement flaps.  
*Success of surgical therapies thought to be worse in Crohn's (70% vs. 25% recurrence rates), while others report complete healing in 68-80% with approximately 25% need for proctectomy in patients without rectal disease (McClane, et al).*

#### **D. ANORECTAL ABSCESSSES**

1. Found in 50% of patients with Crohn's disease
2. Most often related to anal fistulas; often complex & multiple, requiring radiographic evaluation.
3. Classification: perianal, ischiorectal, deep postanal, intersphincteric, supralelevator.
4. Etiology: controversial (secondary to anal gland infection like common abscesses OR mechanism specific to Crohn's, i.e. secondary to cavitating ulcer which penetrates anorectal wall)
5. Symptoms: persistent but moderate anal pain worsened by sitting or defecation.  
severe constant anal pain, with or without fever & malaise  
sometimes purulent rectal drainage usually followed by relief of pain
6. Diagnosis: on exam, fluctuant area or patch of erythematous, indurated skin overlying cavity;  
sometimes only detectable by digital rectal exam or CT scan.
7. Treatment: local I&D, catheter drainage, seton placement; *50% recurrence in 1 - 2 years.*

#### **E. ANAL SKIN TAGS**

1. More prominent with active intestinal disease.
2. Typically asymptomatic; may interfere w/ perianal hygiene; occasionally tender or associated with anal ulceration.
3. About 25% resolve spontaneously, especially after remission of underlying bowel disease.
4. SHOULD NOT BE REMOVED ⇒ can result in unhealed wound, chronic ulcer, or perianal sepsis.
5. Removal only indicated in cases of severe hemorrhage or suspicion of malignancy.

#### **F. INCONTINENCE**

1. Found in 39% of patients with Crohn's disease
2. Etiology (multifactorial) & Treatment
  - a) severe & chronic fibrosis, scarring of anorectum, and loss of reservoir function ⇒ diversion or proctectomy
  - b) severe Crohn's-related muscle dysfunction ⇒ colostomy
  - c) diarrhea secondary to colonic disease or short-bowel syndrome ⇒ colostomy
  - d) secondary to obstetric injury or fistulotomy complications ⇒ sphincter repair during remission

## G. HEMORRHOIDS

1. Uncommon in Crohn's disease; may occur coincidentally, unrelated to bowel status
2. Can be confused with hypertrophied skin tags.
3. Become symptomatic when associated with diarrhea.
4. Treatment: local & conservative (fiber therapy, sitz baths, topical medications, rubber band ligation)  
Selective hemorrhoidectomy should be reserved for severe, refractory symptoms and where rectum is spared--->*study of 21 patients reported post-op complications in 10 patients (sepsis, stenosis, fistula, unhealed wounds), eventual proctectomy in 6 patients (McClane, et al.)*

## H. ANORECTAL CANCER

1. Squamous cell carcinoma : reported in patients with perianal Crohn's but no increased risk known.
2. Colorectal carcinoma: increased risk in Crohn's, may be higher in patients with stricturing disease or long-standing perianal disease.
3. Ky, et al (1998): reports eight cases of carcinoma (squamous & adenocarcinoma) arising in anorectal fistula of Crohn's disease; summarizes thirty-three cases of anorectal carcinoma which could have originated from anal fistulas.

## III. Anal Stenosis

### A. DEFINITIONS

1. *Anal stenosis* is the narrowing of the anal canal or an abnormally tight, non-elastic anal opening.
2. Can be ANATOMIC (stricture) or FUNCTIONAL (muscular)
3. *Anal stricture* ⇒ supple epithelial lining replaced by fibrous connective tissue, usually associated with underlying sphincter musculature stenosis.

### B. INCIDENCE: not well documented, likely underreported to due commonly asymptomatic presentation

1. Sangwan, et al (1996): 66 patients with perianal Crohn's disease-->5 patients with stenosis (8%)
2. Michelassi, et al (2000): 224 patients with perianal Crohn's disease-->65 patients with stenosis (29%)

### C. ETIOLOGY: congenital or associated with any condition that causes scarring of anoderm

1. Congenital: imperforate anus, anal atresia, Hirschsprung's disease
2. Acquired:
  - a) TRAUMATIC
    - i) lacerations or injury (crush, foreign body, thermal, radiation, chemical)
    - ii) iatrogenic (anal or lower rectal surgery, pull-through procedures)
    - iii) diarrhea
  - b) NEOPLASTIC
    - i) primary perianal, anal, or rectal lesions

- ii) leukemic infiltrate
- iii) metastatic lesions
- c) INFLAMMATORY
  - i) IBD (Crohn's, UC)
  - ii) perianal suppurative disease
  - iii) infection (TB, amebiasis, lymphogranuloma venereum, schisto, syphilis, actinomycosis)
- d) SPASTIC
  - i) acute (anal fissure)
  - ii) chronic (anal ulcer)
- e) ISCHEMIC
- 3. Most common cause is probably overzealous hemorrhoidectomy  
(87.7% of 212 patients with stenosis in one study resulted from this surgery--  
*Lieberman, et al*)
- 4. "Whitehead deformity": mucosal ectropion associated with anorectal stricture resulting from  
inaccurately performed Whitehead hemorrhoidectomy  $\Rightarrow$  *currently rare, incidence of stricture post-hemorrhoidectomy is 0-1.5%*

#### D. CLASSIFICATION

1. Shape: short & annular (<2cm), long & tubular, diffuse 2° dysfunctional atrophy, "paraffin anus" 2° laxative abuse (involutional, delicate, thin, & smooth, barely admits a finger)
2. Location
  - a) low (>0.5cm below dentate line)
  - b) middle (0.5cm proximal to 0.5cm distal to dentate line)
  - c) high (>0.5cm proximal to dentate line)

*Linares, et al. (1988): 44 patients with anal stenosis  $\Rightarrow$*   
     22 rectal  
     25 anal  
     11 anorectal
3. Severity
  - a) mild (tight but easily examined by well-lubricated index finger or medium Hill-Ferguson retractor)
  - b) moderate (forceful dilatation required to insert index finger or medium H-F retractor)
  - c) severe (forceful dilatation required to insert fifth digit or small H-F retractor)

#### E. DIAGNOSIS

1. Symptoms: does not usually correspond to anatomic findings
  - a) difficult evacuation (most common complaint)
  - b) constipation, obstipation, tenesmus, bleeding, and narrow caliber of stool
  - c) seepage & wetness (if ectropion present)
  - d) history of increasing laxative, enema, & suppository use-->can worsen stenosis
  - e) in Crohn's-->frequently asymptomatic due to looseness of stools

2. Physical Findings: anodermal breach, surgical scarring w/ or w/out significant anal deformity, inability to perform digital rectal exam, melanosis coli.
3. Other studies
  - a) EUA (functional stenosis relaxes with anesthesia, anatomic stricture persists)
  - a) anoscopy & proctoscopy (localize areas of scarring, delineate extent of involvement)
  - b) biopsy (not always necessary, recommended if strictures are recurrent or appearance is suspicious for Bowen's, Paget's, malignancy)

## F. MANAGEMENT

1. Prevention (*in traumatically derived lesions*)
  - a) delicate handling of tissue which avoids excessive stretching
  - b) fine absorbable suture material
  - c) avoid excessive scarring with judicious anorectal surgery that limits excision of large areas of anoderm & reconstructs mucosal lining
  - d) avoid packing of anal wounds unless absolutely necessary
  - e) avoid postoperative dilatation ⇒ can lead to further trauma, hematoma, scarring
2. Nonoperative (*for mild & moderate stenosis*)
  - a) stool softeners & fiber supplements (regular passage of bowel movements provides the most "natural" stretching to achieve dilation)
  - b) topical steroids, sulphasalazine, metronidazole for treatment of associated fissures & underlying disease
  - c) daily digital or mechanical self-dilatation (not often tolerated by patients but can be very successful)
3. Mechanical dilatation under anesthesia (*usually followed by regular self-dilatation*)
  - a) USE: Crohn's disease, patients with previously radiated anorectal tissue, & in other cases where major perineal surgery is contraindicated.
  - b) *Milsom, et al (1986)*: retrospective cohort
    - i) SUBJECTS: 212 patients with stenosis (87.7% 2° hemorrhoidectomy, **3.3% 2° to Crohn's**)
    - ii) METHODS: patients treated based on etiology & severity of stenosis
    - iii) RESULTS: dilatation in Crohn's patients successful in 6 of 7 cases
  - c) *Linares, et al (1988)*: retrospective cohort
    - i) SUBJECTS: 44 patients w/ stricture 2° to Crohn's (98% proctitis, 93% severe perianal disease)
    - ii) METHODS: primary treatment, complications, & follow-up procedures reviewed.
    - iii) RESULTS
      - initial therapy: medical (5), dilatation (33), rectal excision (5)
      - initial follow-up procedures in 33 patients who were dilated once

- ASYMPTOMATIC (15)
        - SECOND DILATION (8)
        - REPEATED DILATIONS (10)
        - later follow-up
          - ASYMPTOMATIC (14)
          - REPEATED DILATIONS (2)
          - LOOP ILEOSTOMY (3)
          - PROCTOCOLECTOMY/ILEOSTOMY (13)
          - COLECTOMY/ILEOSTOMY (1)
  - iv) COMPLICATIONS
    - perianal abscess/fistula exacerbation (6)
    - E. coli septicemia x 24hrs (1)
    - no overt intraperitoneal perforations or severe hemorrhage
    - s/p proctocolectomy: delayed wound healing (9/19), no healing (3/19)
  - v) CONCLUSIONS
    - anorectal strictures are a common manifestation of anorectal Crohn's
    - majority managed by 1-2 dilatations
    - when repeated dilations necessary, eventual proctocolectomy or loop ileostomy may be required (*16% of patients having initial dilation in 10yrs, 34% in 20yrs*)
- d) *MacDonald, et al. (1992)*: retrospective cohort
  - i) SUBJECTS: 100 patients (46 fissures, 22 hemorrhoids, **7 stenosis**, 25 without diagnosis)
  - ii) METHODS: outcome, complications, & follow-up reviewed after manual dilatation
  - iii) RESULTS: repeat dilatation required in 38 patients (5/7 patients w/ anal stenosis were unsuccessfully treated despite repeated dilatation 3-8x during follow-up)
  - iv) COMPLICATIONS: major or minor incontinence in 27 patients (all 7 stenosis patients)
- e) *Khubchandani, et al. (1994)*: reports incidence of sphincteral hematoma after manual dilatation
- f) *Sangwan, et al. (1996)*: retrospective cohort
  - i) SUBJECTS: 66 patients w/ perianal Crohn's (**5 with anal stenosis** treated by dilatation)
  - ii) RESULTS: 3/5 patients responded to dilatation
- g) *Michelassi, et al. (2000)*: prospective cohort
  - i) SUBJECTS: 224 patients w/ perianal Crohn's (**65 with anal stenosis**)

ii) RESULTS: 8 asymptomatic, 16 responded to dilatation, 17 required proctectomy or diversion

- G. Operative procedures: (for severe & refractory moderate stenosis, not usually appropriate in Crohn's patients)
1. STRICTURE RELEASE-->temporary symptomatic relief BUT usually avoided due to tendency for scar tissue to retract & stricture to recur.
  2. SPHINCTEROTOMY-->best for functional stenosis or mild strictures low in the anal canal
  3. ADVANCEMENT FLAPS  $\Rightarrow$  employs rectal mucosa or perianal skin to bring healthy & pliable tissue into anal canal to restore excessive loss of anoderm; performed with sphincterotomy in mixed functional & anatomic stenosis; can be performed bilaterally or in four quadrants.
    - (i) *Mucosal Advancement Flap* (modified Martin's anoplasty, Y $\rightarrow$ V)  $\Rightarrow$  below dentate
    - (ii) *Adjacent Tissue Transfer Flap* (V $\rightarrow$ Y)  $\Rightarrow$  at dentate line (rectangular/diamond/U/house)  $\Rightarrow$  long or above dentate
    - (iii) *Rotational Flap* (S-plasty)  $\Rightarrow$  for covering large areas skin
- H. POST-OP CARE: high fiber diet, sitz baths, bulk laxative & mineral oil briefly, occasional bowel rest
- I. COMPLICATIONS: infection, persistent stenosis, slough of flap, pruritis, temporary minor incontinence, exuberant granulation tissue at open donor site.

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**Table 1. COMMON ANORECTAL CLINICAL PRESENTATIONS IN CROHN'S DISEASE AND TREATMENT OPTIONS**

Clinical Manifestation	Treatment Options
Proctitis	Topical mesalamine or steroids (should improve anal symptoms)
Hemorrhoids	Noninvasive (topical creams, dietary regulation, stool softeners), rubber band ligation if internal with persistent symptoms, surgical hemorrhoidectomy (rarely)
Anal skin tags	Observation, excision if malignancy is suspected or if painful or if interferes with hygiene
Fissure	Observation, search for abscess if painful, topical medications if no abscess and painful, careful internal sphincterotomy if pain persists
Anal stenosis	If mild symptoms, topical steroids or 5-ASA; if persistent, digital dilatation; if no resolution, fecal diversion or proctectomy
Fecal incontinence	If severe scarring and muscle destruction, then colostomy; if iatrogenic, sphincter repair when disease is in remission
Fistula	Observe whether superficial and asymptomatic, fistulotomy if low or intersphincteric, noncutting seton if transsphincteric, mucosal advancement flap if sphincters involved and mucosa normal, medical therapy also if complex
Abscess	If simple, catheter drainage; if recurrent, drain and search for fistula; if perineal sepsis, drain and débride; medical therapy also if complex
Anal ulcer	If simple, catheter drainage; if recurrent, drain and search for fistula; if perineal sepsis, drain and débride; medical therapy also if complex
Cancer	Biopsy chronic lesions and those that fail to heal, surveillance or proctectomy for out-of-circuit rectum

ASA = aminosalicilic acid.

*McClane, et al (2001), [initials]*

**Table 29-1**

**Etiology of Anal Stenosis**

1. Congenital
  - A. Imperforate anus
    1. Anal stenosis: mild, moderate, severe
    2. Imperforate anal membrane
  - B. Hirschsprung's disease
2. Acquired
  - A. Traumatic
    1. Lacerations
    2. Crush injury
    3. Foreign body
    4. Thermal injury
    5. Radiation injury
    6. Chemical injury
    7. Iatrogenic
      - a. Following surgery of anal canal and lower rectum
      - b. Pull-through procedures
  8. Diarrhea
  - B. Neoplastic
    1. Primary perianal, anal, or rectal lesions
    2. Leukemic infiltrate
    3. Metastatic lesions
  - C. Inflammatory
    1. Inflammatory bowel disease
    2. Perianal suppurative disease
    3. Tuberculosis
    4. Amebiasis
    5. Lymphogranuloma venereum
    6. Schistosomiasis
    7. Syphilis
    8. Actinomycosis
  - D. Spastic
    1. Acute: anal fissure
    2. Chronic: anal ulcer
  - E. Ischemic

*Lumkefeld, et al. (1995)*