Anorectal Diseases in Acute Care Surgery

Ho H Phan, MD FACS

Reviewed by: Joseph M Galante, MD FACS
Clay Cothren Burlew, MD FACS

THROMBOSED HEMORROIDS

Injury/Disease Demographics

- Self-reported prevalence of symptomatic hemorrhoids is 4.4%.
- Internal hemorrhoids arise from the superior hemorrhoidal plexus and their three primary locations are left lateral, right anterior and right posterior (in a supine patient).
- External hemorrhoids arise from the inferior hemorrhoidal plexus and are covered by highly innervated anoderm.
- Thrombosed external hemorrhoids are more common than thrombosed internal hemorrhoids.

Clinical Presentation

- Thrombosed external hemorrhoids:
    - Patients present with acute anal pain associated with enlarged tender bluish lump at the anal verge.
    - Pain is worse during the first 48-72 hours.
    - Erosion of the overlying anoderm can lead to bleeding
- Thrombosed internal hemorrhoid is less painful. However, when it is prolapsed and strangulated it can be very painful

Evaluation/Diagnostics/Imaging

- Inspection, digital examination and anoscopy is performed to look for external hemorrhoids, prolapsed internal hemorrhoids, abscesses, fissures, fistulae, neoplasms, and condylomas.

Role of Nonoperative Management and Associated Considerations

- Acutely thrombosed external hemorrhoids:
    - Management is based on symptom severity
    - Excision of the thrombosed hemorrhoid or incision with clot evacuation are reserved for patients with severe pain, usually within 48-72 hours of onset
    - Medical management includes anti-inflammatory analgesics, warm sitz bath, stool softeners, topical analgesics, education and reassurance
- Thrombosed internal hemorrhoids
    - Manual reduction of prolapse may help reduce pain
    - Medical management as above
    - If extensively thrombosed, irreducible or strangulated, hemorrhoidectomy is usually required

Indications for Operative Intervention

- Acutely thrombosed external hemorrhoids with severe symptoms

- Extensively thrombosed irreducible internal hemorrhoids or strangulated internal hemorrhoids

Pre-operative Preparation

- Preoperative coagulation profile if suspicion of liver disease
- Hemorrhoidectomy should be avoided if possible in patients with portal hypertension.
- Potential positions:
    - Prone jackknife position with rolled up sheet under the hip and pillows supporting the feet. Lateral retraction of the buttocks with benzoin and adhesive tapes.
    - High lithotomy

Operative Techniques/ Intraoperative Considerations

- Perianal block with lidocaine or bupivacaine in four quadrants will help with post-operative pain
- For thrombosed external hemorrhoids, excision (i.e. hemorrhoidectomy) is associated with lower rate of recurrence compared to incision with clot removal
- Excision: elliptical incision is made overlying the hemorrhoid and carried around the entire column. The wound edge can be left open or closed.
- Incision: an incision is made into the hemorrhoid to completely evacuate the clot
- For a thrombosed/strangulated internal hemorrhoid, conventional hemorrhoidectomy is indicated (below)
- Conventional hemorrhoidectomy:
    - Grasp the hemorrhoidal mass with a Babcock and retract it away from sphincter muscles
    - Make elliptical incision over mucosa
    - Dissect in submucosal plane and carry it to the vascular pedicle just superior to the dentate line
    - Dissect tissue off internal sphincter, avoid injury to muscle
    - Vascular pedicle can be suture ligated prior to removal.
    - Mucosal wound can be closed or left open
    - Typically, three-column hemorrhoidectomy is done, however, one- or two-column hemorrhoidectomy can also be done.
    - Make sure to leave at least 1 cm of normal mucosa between wounds to avoid anal stenosis

Postoperative Management/ Complications

- Hydration and stool softener
- Sitz bath several times per day and after each bowel movement
- Oral analgesics
- Postoperative bleeding 1%
- Infections (abscess/fistula) 2%

- Injury to internal sphincter <1%
- Anal stenosis 1%
- Urinary retention up to 30%

Considerations for Special Populations

- For patient with cirrhosis, avoid hemorrhoidectomy if able
- Treat underlying portal hypertension

ANORECTAL ABSCESS

Injury/Disease Demographics

- Approximately 100,000 cases annually in the US
- Originate from obstructed crypt glands that allow bacterial growth and abscess formation
- Abscesses form within the intersphincteric location and can spread to adjacent areas such as perianal region, ischiorectal fossa or supralevator space

Clinical Presentation

- Severe anal pain with associated constitutional symptoms such as fever and malaise
- Purulent rectal drainage may be present

Evaluation/Diagnostics/Imaging

- Tender, erythematous, fluctuant mass on exam
- Deeper abscess may not be obvious on external exam, but may be felt internally on digital exam or may be evident on imaging
- Computed tomography, MRI or transrectal ultrasound can be used for diagnosis, especially in patients suspected of having deeper abscesses (intersphincteric and supralevator)
- Classification
    - Perianal abscess – confined to the perianal area
    - Perirectal abscess – more complex and involves different planes
        - Ischiorectal abscess – penetrates anal sphincter into ischiorectal space
        - Intersphincteric abscess – located in the intersphincteric groove between internal and external sphincters; may not have perianal skin changes; can be felt on digital exam
        - Supralevator abscess – can arise from crypt infection that extend through the intersphincteric space to the supralevator

space. It can also arise from rectal perforation/inflammation from cancer or Crohn's disease
    - Horseshoe abscess – arises in the posterior anal space, and because of its restricted boundaries, it spreads laterally

Role of Nonoperative Management and Associated Considerations

- None

Indications for Operative Intervention

- Suspicion or diagnosis of anorectal abscess

Pre-operative Preparation

- Lithotomy or prone jackknife position

Operative Techniques/ Intraoperative Considerations

- For perianal and ischiorectal abscesses, elliptical or cruciate incision through the skin can be made to drain the abscess
- Intersphincteric abscess should be drained internally into the anal canal, with or without internal anal sphincterotomy
- Supralevator abscess that involves the ischiorectal space can be drained through the skin similar to ischiorectal abscess.
- Supralevator abscess that extends from pelvis or from intersphincteric space should be drained transrectally with ultrasound guidance with an incision or a drain
- Horseshoe abscess should be drained with a posterior incision between the anus and coccyx and the anococcygeal ligament should divided. Counter lateral incisions may be made to drain the extension.
- Wound culture is not necessary
- If fistula is present, consider placement of draining seton

Postoperative Management/ Complications

- Postoperative antibiotics are not required, but are considered for patients with extensive cellulitis, signs of systemic infection, diabetes, immunosuppression or valvular heart disease.
- Fecal diversion is not required.
- For most of the cases, postoperative packing is not necessary and the wounds are kept clean with frequent sitz baths.
- In the case of horseshoe abscesses with counter incisions, Penrose drains may help facilitate drainage.
- Fistulo-in-ano develops in up to 30% of patients
- If fistula develops, it typically occurs within the first 6 months

Considerations for Special Populations

- Untreated anorectal abscesses, especially in immunocompromised patients can lead to pelvic sepsis or necrotizing infection of the perineum

- Perirectal abscess in patients with Crohn's disease is often related to obstruction of perirectal fistula. In these patients, perirectal abscess can tract deep in the pelvis and pelvic MRI is a helpful diagnostic tool. Control of infection with surgical drainage with or without draining seton and a short course of antibiotics should be achieved prior to the intiation of anti-TNF agents.

NECROTIZING SOFT TISSUE INFECTION OF THE PERINEUM (FOURNIER GANGRENE)

Injury/Disease Demographics

- Severe and life-threatening soft tissue infection of the perineum
- Polymicrobial infection that develops secondary to anorectal abscess, genitourinary infection or skin infection
- More common in patients with diabetes or immunocompromised conditions

Clinical Presentation

- Severe perineal pain with fever and malaise
- Septic shock

Evaluation/Diagnostics/Imaging

- Requires a high index of suspicion
- Exam shows induration and swelling of skin with or without purple skin discoloration, bullae, skin necrosis
- Crepitus may be present on exam
- CT scan of the pelvis and abdomen may be useful to delineate the degree of extension

Role of Nonoperative Management and Associated Considerations

- None

Indications for Operative Intervention

- Urgent surgical debridement is required

Pre-operative Preparation

- IV Fluid resuscitation
- Broad spectrum antibiotics
- Type and cross for red blood cells as intraoperative transfusion is likely
- Coagulation labs and fresh frozen plasma should be prepared if necessary

Operative Techniques/ Intraoperative Considerations

- Lithotomy or prone position or both depending on extension of disease

- Wide debridement of necrotic tissue (grayish tissue with edema and thrombosed vessels that do not bleed) should be done
- Debrided margin should be healthy bleeding tissue
- Scrotal skin is often involved, but testicles are generally spared. Consideration should be made to involve the Urology intraoperatively.
- It often extends to the perirectal tissue

Postoperative Management/ Complications

- Second look exploration in the OR is often necessary
- Pain control and wound care can be intensive
- In some patients, fecal diversion maybe required. Bowel management catheter application should be considered to potentially avoid fecal diversion
- Eventual split thickness skin graft or local advancement flap will should be considered for tissue coverage in a delayed basis

Considerations for Special Populations

- None

IRREDUCIBLE AND STRANGULATED RECTAL PROLAPSE

Injury/Disease Demographics

- More common in older women (prevalence of 1% in women > 65 years old)
- Weakness in the pelvic floor leading to prolapse

Clinical Presentation

- Mass that prolapses through the anus
- History of incomplete evacuation, straining, and past prolapse that may reduce spontaneously or with manual reduction
- Abdominal pain

Evaluation/Diagnostics/Imaging

- Clinical evaluation: Protruding full-thickness rectal wall with concentric rings of mucosa
- This is different from prolapsed internal hemorrhoid, in that prolapse hemorrhoid has radial sulci between hemorrhoidal columns.
- Evaluate rectal tone
- Evaluate for concomitant vaginal prolapse. This is evaluated with inspection, manual palpation and speculum examination with the patient in dorsal lithotomy and standing. If there is suspicion for concomitant vaginal prolapse, consider gynecological consultation.

Role of Nonoperative Management and Associated Considerations

- Acute surgical intervention for rectal prolapse is rarely required
- Initial goal should be reduction of the prolapse if there is no tissue necrosis
- If there is edema present, attempt to reduce swelling with topical application of granulated sugar onto the mucosa prior to reduction can be done.
- Intravenous sedation and perianal block with lidocaine to relax the anal sphincter can help with reduction.
- Once prolapse is reduced, definitive surgical treatment can be deferred

Indications for Operative Intervention

- If the prolapse is strangulated and there is tissue necrosis, the prolapse should not be reduced.
- In these cases, prompt surgical intervention is required. The surgical treatment of choice is perineal proctectomy (Altermeier Procedure).

Pre-operative Preparation

- Involvement of colorectal surgeon or a surgeon experienced in perineal proctectomy is recommended
- Prone jackknive position is preferred

Operative Techniques/ Intraoperative Considerations

- Anesthetize with local anesthetic with epinephrine into the submucosa to reduce bleeding
- Full-thickness incision in the posterior wall of the rectum 2 cm above the dentate line
- Extend this incision circumferentially, while placing stay sutures along the rectal cuff to facilitate later anastomosis
- Gradually pull the redundant rectum out of the anal canal, detaching the mesorectum and ligamentous attachment from the rectum
- Dissection should be done close to the rectal wall to be safe
- When there is no longer redundancy, the bowel is transected and a single layer handsewn anastomosis is done with interrupted 3-0 silk sutures.
- If indicated, suture approximation of the levator muscle (levatorplasty) anteriorly to provide additional support

Postoperative Management/ Complications

- Perioperative antibiotics
- Stool softener and fibers to avoid constipation
- Sitz bath after each bowel movement
- Complications: anastomosis leak and recurrent prolapse

Considerations for Special Populations

- None

ANORECTAL TRAUMA

Injury/Disease Demographics

- Injuries to the anorectum are relatively uncommon events
- Rectal injuries are most commonly related to gunshot wound through the pelvis
- Traumatic anorectal injuries can result from introduction of foreign bodies, impalement, penetrating injuries, other blunt injuries with significant pelvic trauma

Clinical Presentation

- History of penetrating wounds to the pelvis/perineum
- The patients may present with abdominal pain, pelvic pain or peritonitis
- Genitourinary symptoms may also be present
- In blunt trauma, extensive perineal wounds may be present
- As with any trauma patients, the patient may present in shock

Evaluation/Diagnostics/Imaging

- Primary survey and stabilization of immediate life-threatening injuries should be completed first
- During the secondary survey, anorectal injuries can then be evaluated
- Visual inspection of the gunshot wounds to determine likelihood of rectal and genitourinary injuries
- Rectal digital examination to evaluate for rectal tone and blood in the rectum
- Abdominal exam to assess for peritonitis which may indicate intraperitoneal rectal injuries or associated intraabdominal injuries
- Computed tomography is a useful adjunct to evaluate for rectal injuries
- Rigid proctosigmoidoscopy should be done to evaluate for rectal injuries if there is suspicion.
- Patient with extensive perineal wounds should undergo exploration of wounds under general anesthesia to determine the extent of injuries
- Concomitant genitourinary injuries should also be evaluated with physical examination, contrast imaging studies, and/or endoscopy

Role of Nonoperative Management and Associated Considerations

- The primary treatment for anorectal injury is surgical.
- Partial thickness injuries may be managed nonoperatively

Indications for Operative Intervention

- Patients with intraperitoneal rectal injury should undergo exploratory laparotomy. The management of these patients is essentially the same as the management of patients with left colon injuries

- For patients with extraperitoneal rectal injuries and in patients with extensive anorectal wounds, fecal diversion is indicated.
- For patients with extensive perineal wounds as in the case of blunt injuries, wound debridement and wash out of the wounds should be done initially, as these patients often have other life-threatening injuries. Primary repair of the wounds and perineum should be attempted on re-exploration.

Pre-operative Preparation

- Life-threatening injuries should be addressed first
- Coordination with expertise from other services such as interventional radiology, orthopedic surgery, urology to address concomitant injuries
- Preoperative antibiotics that cover enteric organisms. For patient with suspected open pelvic fractures, antibiotics should be given at the time of initial resuscitation
- Ongoing resuscitation and having blood products available as indicated

Operative Techniques/ Intraoperative Considerations

- Eastern Association for the Surgery of Trauma (EAST) guidelines for penetrating colon injuries and penetrating extraperitoneal rectal injuries can be extrapolated to managing intraperitoneal penetrating or blunt rectal injuries
- It should be noted that blunt rectal injuries are associated with pelvic vessel injuries and genitourinary injuries and have high morbidity and mortality rates. However, the general treatment principles for penetrating injuries can similarly be applied to blunt injuries.
- Intraperitoneal rectal injuries
    - Nondestructive injuries (<50% of bowel wall without devascularization), standard primary repair should be done
    - Destructive injuries (>50% of bowel wall or devascularization) **without** evidence of shock, significant comorbidities, minimally associated injuries or peritonitis, resection with primary anastomosis can be done safely
    - Destructive injuries **with** evidence of shock, significant comorbidities, minimally associated injuries or peritonitis, should undergo resection and colostomy
- Extraperitoneal rectal injuries
    - Proximal fecal diversion is recommended
    - Routine presacral drainage and distal rectal washout should be avoided
    - Although not addressed in EAST guideline, many surgeons would agree that if feasible and reachable, transanal repair of rectal defects should be done.
- Anal injuries
    - Associated intraperitoneal and pelvic injuries should be addressed first

    - Thorough assessment of the perineal injury, proctoscopy, wound washout, creation of diverting colostomy should be considered at the initial operation
    - Delayed primary repair should be considered on re-exploration once viability of the tissues had been determined
    - Extensive injuries may be managed with dressing changes alone or a combination of partial repair and dressing changes, to avoid infectious complications.

Postoperative Management/ Complications

- Postoperative antibiotics
    - Postoperative antibiotics covering for enteric organisms for 24 hours should be sufficient
    - For patients with associated open fractures, antibiotics should be extended for 48 to 72 hours
- Postoperative complications
    - Anastomotic leaks
    - Intraabdominal and pelvic sepsis
    - Perineal infection

Considerations for Special Populations

- Patients with blunt injuries are more likely to have other associated life-threatening injuries and are more likely to require proximal diversion

Suggested Readings

Hemorrhoidal Disease:
Davis BR et al. The American Society of Colon and Rectal Surgeons clinical practice guidelines for the management of hemorrhoids. Dis Colon Rectum. 2018 Mar;61(3):284-292.

Lohsiriwat V. Anorectal Emergencies. World J Gastroenterol. 2016 July;22(26):5867-5878.

Perirectal Abscesses
Steele SR et al. Practice parameters for the management of perianal abscess and fistula-in-ano. Dis Colon Rectum 2011 Dec;54(12):1465-1474.

Necrotizing Soft Tissue Infection – Fourniere Gangrene
Phan HH, Cocanour CS. Necrotizing soft tissue infection in the intensive care unit. Crit Care Medicine. 2010 Sep;38(9 Suppl): S460-8.

Rectal Prolapse
Seenivasagam T et al. Irreducible rectal prolapse: Emergency surgical management of eight cases and a review of the literature. Med J Malaysia. 2001 Jun;66(2):105-107.

Lohsiriwat V. Anorectal Emergencies. World J Gastroenterol. 2016 July;22(26):5867-5878.

Bordeianou L et al. Clinical practice guidelines for the treatment of rectal prolapse. Dis Colon Rectum. 2017 Nov;60(11):1121-1131.

Anorectal Trauma
Cullinane DC et al. Management of penetrating intraperitoneal colon injuries: A meta-analysis and practice management guideline from the Eastern Association for the Surgery of Trauma. J Trauma Acute Care Surg. 2019 Mar;86(3):505-515.

Bosarge, PL et al. Management of penetrating extraperitoneal injuries: An Eastern Association for the Surgery of Trauma practice management guideline. J Trauma Acute Care Surg. 2016 Mar;80(3):546-551.