Management of Nonhealing Perineal Wounds

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ABSTRACT

The manifestations of perianal Crohn's disease vary from primary lesions such as skin tags and fissures, to diffuse septic destruction of tissue and sphincter muscle. These manifestations are often persistent and refractory to surgical treatment; however, a more disappointing scenario is when the treatment itself results in a chronic wound. The ideal approach for management involves basic surgical principles, careful patient selection, and realistic expectations. Choice of appropriate procedure, effective elimination of sepsis, thorough evaluation to rule out concomitant systemic disease, and appropriate use of fecal diversion are each an important principle. If proctectomy is necessary, several strategies such as intersphincteric dissection, avoidance of fecal contamination, and appropriate wound closure, are effective in diminishing the postoperative morbidity of an unhealed perineal wound. When an unhealed perineal wound develops in a patient with Crohn's disease, the initial management is conservative. When surgical treatment is necessary, success depends on careful patient selection, optimizing the patient's condition, elimination of sepsis, and choice of an effective technique for healing.

KEYWORDS: Perianal Crohn's disease, nonhealing perineal wounds, perineal sinus, intersphincteric proctectomy

Objectives: On completion of this article, the reader should be able to define the clinical entities of unhealed perineal wounds associated with Crohn's disease, and to summarize strategies for prevention and management.

The manifestations of perianal Crohn's disease vary from primary lesions such as skin tags and fissures, to diffuse septic destruction of tissue and the anal sphincter muscles. These manifestations are often persistent and refractory to surgical treatment; however, a more disappointing scenario is when the treatment itself results in a chronic wound. The minimalist approach of some surgeons is to do nothing more than drain sepsis; this approach is based on the experience that aggressive treatment is ineffective and poorly tolerated in the setting of Crohn's disease. At the other end of the spectrum, is the use of aggressive, eager surgical approaches with unrealistic expectations, which

often results in disappointing consequences. The ideal approach is likely between these two extremes and involves basic surgical principles, careful patient selection, and realistic expectations.

GENERAL PRINCIPLES

A few principles are beneficial in the prevention and management of unhealed perineal wounds. First, choose appropriate procedures that account for all patient factors and symptoms. For example, asymptomatic skin tags and ulcers can be conservatively managed with medical therapy and observation. Removal of these lesions may

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Crohn's Disease; Guest Editor, Steven D. Wexner, M.D.

Clin Colon Rectal Surg 2007;20:322-328. Copyright © 2007 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. Tel: +1(212) 584-4662. DOI 10.1055/s-2007-991032. ISSN 1531-0043.

result in unhealed wounds and perianal sepsis.¹ The management of hemorrhoids deserves careful consideration as several studies suggest hemorrhoidectomy in Crohn's disease results in complications and should be avoided.²⁻⁴ Asymptomatic lesions should not be surgically treated. A thorough history and evaluation is mandatory to identify coexisting intestinal inflammation, as these lesions are often symptomatic secondary to systemic Crohn's disease rather than due to the lesions themselves. For example, endoscopy may reveal proctitis in a patient who complains of an uncomfortable, swollen skin tag. In this situation, frequent and irritating bowel movements are the source of the irritation and edema rather than the skin tag itself. Surgical removal of the skin tag in the setting of active proctitis is likely to cause a worse situation.

Consistent evaluation and attention to the patient's complaints often guides successful choice of procedures.⁵ Michelassi and colleagues⁶ prospectively evaluated 224 patients with anorectal complications of Crohn's disease; 24 patients required no surgical intervention. However, 200 patients underwent 284 procedures including examination under anesthesia, incision and drainage, Seton placement, endorectal advancement flap, and proctectomy. This wide spectrum of surgical approaches resulted in complete healing and control of sepsis in the majority of patients. Identifying key features of the disease and establishing reasonable goals and expectations were regarded as important to successful treatment.

The second principle is to identify and drain all areas of sepsis. Abscess drainage is one of the most common procedures performed for perianal Crohn's disease.^{7,8} For patient comfort, this procedure is best performed during an examination under anesthesia, which allows not only incision of an abscess, but a thorough evaluation of the perianal area. Adequate sedation and exposure may reveal occult abscesses or fistulas that may be less evident during an office evaluation. Abscesses should be defined and completely drained; if a fistula is identified a draining Seton can be placed. This procedure is often enough to relieve the patient's symptoms, prevent the abscess from progressing and destroying tissue and muscle, and eliminates the need for more aggressive techniques, which could result in larger, more difficult to heal wounds.

A third important principle is to consider carcinoma as the cause of delayed or unhealed perineal wounds. Cases of malignant degeneration of chronic and unhealed perineal wounds have been reported, suggesting that persistent symptomatic unhealing wounds, particularly in the absence of infection, may actually harbor malignancy.^{9,10} If carcinoma is suspected, even in the cases of asymptomatic primary lesions, a biopsy should be performed. The amount of tissue must be adequate for histologic examination, but

not so extensive as to exacerbate an already difficult wound.

A fourth principle is to establish guidelines for which patients will benefit from fecal diversion. By altering the bacterial flora and eliminating contact with stool, diversion of the fecal stream may promote healing, reduce inflammation, and prevent recurrent perianal sepsis. Loop ileostomy is an effective temporary measure for these purposes. Loop ileostomy is particularly helpful to allow tissue to heal prior to surgical repair of underlying lesions; the repair can then heal under the protection of the ileostomy and can be reversed after satisfactory healing has occurred. However, several studies have suggested that the improvement seen after diversion is limited. In a significant number of cases, overall disease progression does not cease with fecal diversion alone, and patients may ultimately require permanent diversion or proctectomy.¹¹⁻¹³ Galandiuk and colleagues studied 86 consecutive patients with perianal Crohn's disease to identify predictors for permanent diversion.¹⁴ In this series, 49% of the patients ultimately required permanent diversion. The presence of colonic Crohn's disease and anal stricture were independent significant predictors of the need for permanent diversion. In fact, if anal stricture and colonic Crohn's disease were both present, the likelihood of ultimate permanent stoma increased 30-fold. It is helpful to identify those patients who would benefit from temporary fecal diversion to allow healing and treatment of a perineal wound; these are usually patients with perianal sepsis without rectal involvement, colitis or anal scar/stricture. In contrast, for those patients who are likely to soon require proctectomy or permanent diversion, a temporary loop ileostomy may be an unnecessary step.¹⁵

PROCTECTOMY AND CROHN'S DISEASE

A subset of patients with Crohn's disease will require proctectomy, particularly those individuals with refractory perianal disease and rectal involvement. The rate of proctectomy for Crohn's disease is commonly reported between 12 to 20%.¹⁶⁻²¹ Williamson and colleagues reported a 14% rate of proctectomy in a 20-year review of patients with perianal Crohn's disease.¹⁹ The authors attributed this relatively low rate of proctectomy to early aggressive surgical treatment of suppurative disease, which results in more healing and a decrease in progression to more complex wound problems. However, if the status of the rectum is not favorable, and there is concomitant severe rectal involvement, a proctectomy is favored over sphincter-preserving treatment algorithms.⁶

While proctectomy is intended to relieve debilitating symptoms and improve the quality of life, postoperative perineal wound complications are a significant

source of morbidity and sometimes are more devastating than the preoperative perianal manifestations. Perineal wound healing difficulties are the primary complaint of patients within the first year following proctectomy for inflammatory bowel disease.²² Yamamoto and colleagues²³ reported a 23% rate of persistent perineal sinus after proctocolectomy for Crohn's disease. This rate is lower than earlier studies, which reported rates of unhealed perineal wounds from 36.8 to 78.9%.^{22,24-27} Proctectomy for Crohn's disease is associated with a higher incidence of unhealed perineal wounds than is proctectomy for ulcerative colitis. Several factors have consistently been associated with poor wound healing including preoperative perineal sepsis, and/or high anal fistulas, and intraoperative fecal contamination.^{22,23,28,29} Rectal stricture has also been demonstrated as a poor prognostic indicator for wound healing following rectal excision.²⁴

PREVENTION OF UNHEALED PERINEAL WOUNDS FOLLOWING PROCTECTOMY

With respect to persistent perineal wounds, prevention is better than is management; there are several strategies for prevention. First, the patient should be in optimal condition; all patient factors that could potentially contribute to poor wound healing should be minimized.⁵ Chronic comorbid conditions such as diabetes and obesity should be controlled as much as possible and nutritional status should be optimized. The relationship between smoking and recurrence of Crohn's disease has been reported in several studies.³⁰⁻³² Because of this evidence in addition to the numerous harmful effects of cigarettes, the preoperative period is an ideal time to strongly recommend smoking cessation. Medications, particularly steroids and immunomodulating agents, should be evaluated to adequately assess operative risk.

A second strategy is to heal the perineum as much as possible prior to proctectomy; this method may require preliminary operative examination and debridement to drain and control all areas of active sepsis. In cases of extensive disease where wide fistulous tracks make it impossible to decrease the inflammation and eliminate sepsis, a staged proctectomy should be considered. Active perianal inflammation at the time of proctectomy makes it difficult to perform a precise dissection and increases the likelihood of fecal contamination and subsequent wound healing problems. Thus, a low Hartman's procedure may be the preferred option in this setting.

A low Hartman's excision has been suggested in patients with severe perineal sepsis.^{28,29} Sher et al²⁹ reported 25 patients with severe anorectal Crohn's, including 17 with high fistula tracts, who underwent a low Hartmann's procedure as an alternative to proctectomy. Complete healing was achieved in 60% (15 of 25)

of the patients following a one-stage, low Hartmann's procedure alone; the remaining 10 patients underwent subsequent perineal proctectomy. With this algorithm, 88% (22 of 25) patients had a completely healed perineum at a mean follow-up of 69.1 months. The authors concluded that a low Hartmann's is an effective alternative to standard proctectomy for the subgroup of patients with severe perianal Crohn's disease who are most at risk for unhealed perineal wounds. They assert that following low Hartmann's procedure, the 3- to 5-cm cuff of retained rectum becomes atrophic. This allows regression of perianal disease, and facilitates a second-stage perineal proctectomy in those patients who do not have complete improvement from the initial low Hartmann's. However, the benefits of a low Hartmann's are debatable.³³⁻³⁵ A percentage of patients with perianal Crohn's disease who undergo diversion develop symptomatic disease in the excluded rectal stump, requiring further surgery.³⁶ Similarly, although the amount of tissue left behind after a low Hartmann's is much less, the remaining anal canal can continue to be a source of morbidity due to discharge, hematoma, and sepsis.^{34,35}

To achieve satisfactory results in one stage, intersphincteric proctectomy for inflammatory bowel disease has been well-described.^{5,37-44} Prior to the use of this technique, a wide abdominoperineal resection was used for both cancer and inflammatory bowel disease. However, the morbidity of unhealed wounds and disruption of sexual function caused by this wide removal of tissue and disruption in lymphatics prompted a more conservative dissection for the indication of inflammatory bowel disease. Lee and Dowling⁴⁵ first published a technique of perimuscular dissection. Lyttle and Parks described intersphincteric proctectomy in 1977.⁴⁴ Superior results⁴⁰ and preserved sexual function⁴¹ caused this technique to be favorably adopted.

Dissection is performed in the intersphincteric plane (between the internal and external sphincters), which minimizes the size of the perineal wound, and thus decreases the incidence of unhealed perineal wounds.^{5,37} The external sphincter and levators are left intact and can be used for a secure closure. In patients with widespread perianal disease, debridement, curettage, and unroofing of affected areas in the perianal skin is undertaken at the time of proctectomy. A successful intersphincteric proctectomy also involves controlling other technical factors that may contribute to poor wound healing postoperatively. Meticulous hemostasis, use of closed suction drainage, removal of all islands of rectal mucosa, and avoidance of fecal contamination are all important intraoperative technical factors.

Several points regarding closure of the pelvic floor are important after intersphincteric proctectomy. The hollow space of the pelvis should be filled with small bowel and omentum. The pelvic peritoneum should not be closed; leaving the peritoneum open prevents spaces

for potential fluid collections.⁴² The preserved levator and external sphincter muscle should be closed in layers with absorbable sutures. Transabdominal closed suction drainage is important to prevent fluid and hematoma formation, which would exert pressure on the perineal wound and lead to breakdown. In the presence of fecal contamination or excessive preoperative sepsis, the perineal skin and subcutaneous tissue should be left open.^{43,46} Fecal contamination is a strong indicator of prolonged perineal wound healing.^{23,47}

ASSESSMENT OF THE UNHEALED PERINEAL WOUND

The basic assessment of an unhealed perineal wound is similar whether the wound is a primary defect from septic complications of perianal Crohn's disease, secondary to anorectal procedures to treat manifestations of perianal Crohn's disease, or secondary to proctectomy. History should focus on the overall condition of the patient, the systemic status of the Crohn's disease, the nature of the drainage from the wound, and the extent of symptoms. Physical examination should determine the extent of the defect and the type of reconstruction that will be needed.⁴⁸ On physical examination, the size of the defect, condition of the skin and surrounding tissue, and the presence of active infection are identified. Potential involvement of the urethra or vagina should be considered. Deep, complex wounds or wounds with suspicious drainage should be further investigated with fistulogram, small bowel series, computed tomography (CT) scan, and magnetic resonance imaging (MRI). The purpose of imaging studies is to exclude undrained fluid collections and evaluate communication with other structures.

An unhealed perineal wound following proctectomy usually presents as one of two types: a narrow superficial sinus or a deep fibrotic wound with significant tissue loss. At the time of initial assessment of these wounds, primary causes such as stitch granuloma, foreign body, or residual rectal mucosa should be identified. Particular care and attention should be given to probing and investigating drainage to determine if an enteroperineal fistula is present.

TREATMENT OF THE UNHEALED PERINEAL WOUND

Delayed perineal wound healing is defined as a wound that has not healed within 4 to 6 months following proctectomy, but eventually heals.⁴⁸ An unhealed perineal wound is generally defined as one which has not healed at 6 months. Because of the significant time that is sometimes necessary for these wounds to heal, the initial approach is conservative management. Patience, hygiene, periodic debridement of necrotic tissue, and regular follow-up may be the only treatment necessary.

In clean wounds in which communication with bowel has been excluded, a vacuum-assisted closure device may be useful during this period.⁴⁹ As long as the wound is making some progress in healing, conservative management should be continued for up to 12 months.

The choices for operative management are varied. The operative approach for superficial sinuses or wounds with adequate surrounding tissue should be examination under anesthesia with curettage of granulation tissue, debridement of necrotic tissue, and unroofing of small cavities.⁴⁶⁻⁴⁸ This procedure may be repeated as the wound gets smaller and until it eventually heals. The use of fibrin glue is appealing, but has had disappointing results and high recurrence rates.^{50,51} Excision and primary closure has had success in a small number of patients.⁴⁶ However, if wide excision of fibrotic tissue is necessary, the resulting defect usually cannot be closed completely because the dead space easily becomes infected.⁵²

Excision of a perineal sinus with skin grafting of the defect has been described.^{53,54} McCleod and colleagues studied 9 patients with chronic perineal sinuses following proctectomy for inflammatory bowel disease who underwent wide excision of the sinus and split thickness skin grafting.⁵³ Five patients had initial complete healing; the remaining 4 patients required subsequent procedures. At mean follow-up of 4.6 years, 7 patients had complete healing. Skin grafting is difficult in cavitating wounds and long sinuses. Some have described "saucerization," where excision of the sinus includes a thorough debridement and curettage to change the tunnel shape to a flat wound; skin grafting is performed immediately or as a delayed procedure.^{55,56}

Recently, a cleft closure, modified from a technique for treatment of pilonidal disease, has been described.⁵⁷⁻⁵⁹ Branagan and colleagues achieved 100% successful healing in 8 patients using this procedure, which was performed as a same-day surgical procedure with local anesthesia. However, only one patient in the series had Crohn's disease.

Larger wounds and tissue defects require reconstruction with a bulk of well-vascularized tissue. Several options are available. Yamamoto and colleagues⁶⁰ used excision and omentoplasty for persistent perineal sinus after proctectomy for Crohn's disease in 6 patients. Five of the 6 patients achieved successful healing; in one patient, the omentum necrosed and the patient remains with a perineal sinus. The procedure was performed safely in this small series. However, the laparotomy required for mobilization of the omentum is a major procedure with significant potential intraoperative and postoperative morbidity.

The rectus abdominis myocutaneous flap is preferred by some surgeons because of its bulk and ability to adequately fill the fibrotic cavity, which often accompanies unhealed perineal wounds.⁶¹ Rectus abdominis

myocutaneous flaps have excellent healing rates, but involve lengthy abdominoperineal procedures.⁶²⁻⁶⁴ In addition, patients with Crohn's disease have a high likelihood of requiring a subsequent laparotomy; harvesting the rectus muscle could limit stoma construction options. The gluteus maximus flap is another option for muscle flap,⁶⁵ although our preference for large, persistent unhealed perineal wounds is the gracilis muscle interposition. The use of the gracilis muscle to heal complex perineal fistulas and sinus tracts has been reported in the literature.⁶⁶⁻⁷¹ The gracilis muscle offers a bulk of well-vascularized tissue to repair these difficult wounds. These properties of the gracilis muscle have contributed to its success in healing radiated tissue as well.⁷¹ The gracilis muscle is not essential for balance or function and is supplied by a single dominant proximal artery and minor pedicles from the profunda femoral system. This pattern allows the distal muscle to be fully mobilized and transposed while maintaining adequate proximal blood supply. The properties of the muscle, as well as familiarity with its use from previous experience with the gracilis neosphincter for fecal incontinence, make the gracilis muscle advantageous.

Gorenstein and colleagues⁶⁸ reported 2 patients with rectovaginal fistulas following restorative proctocolectomy treated with gracilis muscle interposition. The fistulas were successfully treated using the gracilis muscle, demonstrating its usefulness in cases of complex perineal fistulas.

Ryan⁶⁶ used the gracilis muscle flap in 15 patients with persistent perineal sinuses after proctocolectomy for inflammatory bowel disease. Wide excision including coccygectomy, transposition of the gracilis muscle into the rigid cavity and wound closure led to healing in 12 of the 15 patients and vast improvement in two others; there was one failure. There was no difference in the success between patients with Crohn's disease and patients with ulcerative colitis.

Rius and colleagues from the Cleveland Clinic Florida initially reported their experience with gracilis transposition in complicated perianal fistula and unhealed perineal wounds in Crohn's disease in 2000.⁶⁷ All 7 patients with Crohn's disease completely healed their wounds within 3 to 6 months following gracilis interposition. Rius and colleagues recently updated their experience of gracilis interposition for the treatment of rectovaginal and rectourethral fistulas. In a review of 53 patients with these fistulas, many of whom had failed prior attempts at repair, the success of gracilis interposition approaches 90%. The majority of these patients did not have Crohn's disease. However, experience and familiarity with the use of this muscle, refinements in the harvesting technique, and the consistency of the gracilis muscle as a bulky, well-vascularized tissue, makes the gracilis muscle transposition an ideal technique for the treatment of all complex perineal fistulas.

ADDITIONAL STRATEGIES

When faced with the challenge of unhealed perineal wounds, the surgeon should remember the other factors not specifically reviewed here. For example, medical management including antibiotics, immunomodulators, infliximab, and tacrolimus may play a role in treatment, but may also impair postoperative healing.⁷² Consultation with a gastroenterologist is strongly encouraged to ensure that patients are receiving maximal benefit from medical therapy before proceeding with operative intervention. Surgeons should not hesitate to consult other disciplines such as plastic surgery and wound care specialists. Finally, further research may refine existing techniques such as hyperbaric oxygen therapy.⁷³

CONCLUSION

The unhealed perineal wound in Crohn's disease is a challenging condition. To avoid overly aggressive techniques that can worsen the situation, careful patient selection and well-planned strategies will lead to elimination of debilitating and troublesome symptoms and successful healing.

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