

## Management of parastomal ulcers

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### Abstract

Management of surgically placed ostomies is an important aspect of any general surgical or colon and rectal surgery practice. Complications with surgically placed ostomies are common and their causes are multifactorial. Parastomal ulceration, although rare, is a particularly difficult management problem. We conducted a literature search using MD Consult, Science Direct, OVID, Medline, and Cochrane Databases to review the causes and management options of parastomal ulceration. Both the etiology and treatments are varied. Different physicians and ostomy specialists have used a large array of methods to manage parastomal ulcers; these including local wound care; steroid creams; systemic steroids; and, when conservative measures fail, surgery. Most patients with parastomal ulcers who do not have associated IBD or peristomal pyoderma gangrenosum (PPG) often respond quickly to local wound care and conservative management. Patients with PPG, IBD, or other systemic causes of their ulceration need both systemic and local care and are more likely to need long term treatment and possibly surgical revision of the ostomy. The treatment is complicated, but improved with the help of ostomy specialists.

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**Key words:** Parastomal ulcers; Peristomal ulcers; Ostomies; Complications

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### INTRODUCTION

Creating and managing enteral stomas is an integral part of many surgical practices. Ostomy outcomes depend on

initial optimization of placement and wound care and the circumstances under which the stoma is created (emergent *vs* elective). Unfortunately, even with appropriate technique in the placement of an ostomy, complications are fairly common. Parastomal ulceration, although a rare complication, can prove particularly troublesome. A review of the literature shows many management options but little in the way of definitive care.

An ostomy is a surgically placed opening in the bowel that is brought to the surface of the abdominal wall. The term stoma refers to the actual end of the portion of bowel that comes through to the surface of the abdominal wall, based on the Greek word for mouth or opening. Ostomies themselves may be temporary or permanent, loop or end, and made from small bowel or colon. They can be used as definitive treatment or as a temporary diversion to permit inflammation to resolve or allow an anastomosis to heal. They are used for the management of a variety of pathological conditions, including congenital malformations, cancer, trauma, inflammatory conditions, and ulcerative colitis. They may be exteriorized on the neck, chest, or abdomen. The abdomen is the most common site utilized. Esophagostomy, gastrostomy, jejunostomy, and cecostomy are usually only used temporarily. Colostomy, ileostomy, and ileal conduits are used for more extended periods of time. While each type of ostomy has different characteristics and maintenance needs, they all have complications, many of which can be managed in a similar manner.

### TYPES OF OSTOMIES

#### Colostomy

A colostomy is performed when it is necessary to bypass or remove the distal colon and or rectum. A sigmoid colostomy may be used to divert the fecal stream for anorectal disease or after proctectomy in cases in which the colon is spared of disease. Other indications for either a permanent or temporary colostomy include diverticulitis, congenital anomalies, colorectal trauma, and Crohn's disease.

The most common indication for performing a permanent sigmoid colostomy or end colostomy is carcinoma of the rectum. If the distal rectum and anorectal sphincter mechanism are removed, the colostomy is permanent. Endoanal stapling devices have reduced incidence of this type of ostomy because they permit a low anastomosis in a setting where a hand-sewn anastomosis would not have been possible.

A proximal or transverse colostomy is often used as a temporary basis for obstructing or perforating lesions of the colon, trauma, anastomotic leak, segmental colonic resection to protect an anastomosis when residual disease or sepsis is present, or more rarely for congenital anomalies. Decompressing colostomies are constructed by bringing the loop of bowel to the abdominal surface and creating an opening through the anterior abdominal wall. This provides a mechanism for evacuating fecal contents and also permits access to the obstructed bowel for subsequent resection.

A diverting colostomy may also be performed in order to divert the fecal stream proximal from an area of pathology. In this setting, a fecal diversion promotes healing of the involved site. There are several approaches to the construction of a temporary diverting colostomy. Both ends of the transected bowel can be brought to the abdominal wall as stomas; the proximal end can be brought to the abdominal wall as an end colostomy and the distal end may be over-sewn and left the abdomen (Hartmann's procedure). Alternatively, a primary anastomosis can be performed and a proximal loop can be brought to the abdominal wall for protection of the anastomosis.

### **Cecostomy**

Historically, cecostomy has been advocated to protect a left sided anastomosis, used as a treatment for large bowel obstruction, cecal perforation, volvulus or Ogilvie's syndrome. However, its use nowadays is extremely limited<sup>[1]</sup>. Cecal volvulus must be treated surgically and is usually treated with ileocolonic resection with ileostomy and mucus fistula. However, if the patient's condition is such that resection is not advisable due to comorbidities, such as if the patient is in frail condition, immunosuppressed, or critically ill, then the best option is to place a cecostomy tube. The purposes of a cecostomy are two-fold. First, it effectively decompresses the cecum, whose distention was a contributing factor in the development of the volvulus. Second, it anchors the cecum to the anterior abdominal wall, which prevents recurrence of the volvulus. This second effect is also known as "pexing" of the cecum<sup>[2]</sup>. A cecostomy is a temporizing decompressive procedure and does not divert the fecal stream.

### **Enterostomy**

Ileostomy is most often performed after total proctocolectomy for Crohn's disease, familial polyposis, or other conditions requiring the removal or bypass of the entire colon and rectum. If the anorectal sphincter is removed, the ostomy will be permanent, if it is retained it has the potential for reversal. A standard ileostomy may be constructed as either a loop or end stoma. A continent ileostomy is constructed by detubularizing a segment of terminal ileum and reconfiguring it as a reservoir.

An end ileostomy, or Brooke Ileostomy, is the standard of care for patients requiring pan-proctocolectomy. The Brooke technique involves the eversion of bowel to expose the mucosa followed by mucocutaneous suturing to create an end stoma in order to prevent the development

of serositis and stricture formation.

A loop ileostomy used to provide temporary fecal diversion following sphincter-saving procedures. Loop ileostomies are typically more difficult to manage because the stoma more frequently empties close to the skin. In addition, a loop ileostomy may be performed more proximally in the ileum and may be associated with higher enzyme and fluid output.

Continent ileostomies are formed after colectomy. A reservoir pouch and valve are created using ileum and a stoma is brought up to the skin; these allow for a storage place for stool and some control of continence. After surgery, patients empty the pouch by using a tube through the ostomy site. This procedure is often used in ulcerative colitis where it is a curative procedure.

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## **OSTOMY PLANNING AND CREATION**

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Preoperative planning is important in determining ostomy outcomes. Optimal site selection is an important part of stoma construction. Poor stoma placement may cause difficulties with appliance fit. This, in turn, may cause leakage leading to clinically important skin irritation or breakdown around the ostomy<sup>[3]</sup>. Marking the site must take into account the patient's body habitus and physical limitations as well as any supports or braces utilized by the patient. The patient must be able to visualize and reach the stoma. Skin folds should be avoided.

The location of the stoma is the most important factor contributing to subsequent morbidity and requires marking the site prior to surgery to ensure optimal placement. Marking may be performed by surgeons or trained enterostomal therapists. Proper location of the stoma can reduce or prevent complications.

Enterostomies can be brought through the abdominal wall in laparotomy incisions or through a separate site. Some of the disadvantages of bringing a stoma through a large laparotomy incision include the risk of wound infection, dehiscence, and evisceration. Some stomas are created through the incision, especially when the only goal of surgery is to create a stoma (e.g. PEG placement).

Generally, the stoma should be placed within the triangle formed by lines between the umbilicus and the anterior superior iliac spine, the umbilicus to the pubis, and anterior superior iliac spine to pubis (inguinal ligament), but exceptions exist. For example, the waistline may pose a problem. Typically, in obese patients the stoma should be sited at a higher level, which permits these patients to directly visualize and to care for the stoma optimally. Usually the stoma is placed at the summit of the infraumbilical bulge and within the rectus muscle. The groin, costal margins, waistline, and scars should be avoided because they commonly interfere with appliance management. Consequently, patients should be assessed when standing, sitting, and lying to ensure that the appliance sits properly and the risk for leakage is avoided. In obese patients the stoma should be situated at a higher level of the abdomen so that the patient is able to visualize and access the stoma.

The opposite side of the abdomen should always be

marked, especially in individuals with IBD. As the final amount and area of bowel resection at the time of surgery may be different from originally planned and not allow for creation of the ostomy on the originally planned site. If the terminal ileum has been resected, it is usually easier to bring the stoma out in the left lower quadrant rather than the right. Other locations may be used if appropriate. For example, a jejunostomy may necessitate placement in the upper abdomen.

## COMPLICATIONS

Ostomies have a high risk of complications, which are not only related to stoma location or type<sup>[4]</sup>. Obesity and IBD predispose to complications.

Complications include intestinal obstruction, stenosis, retraction, prolapse, skin irritation, diarrhea, kidney stones, gallstones, ileitis, varices, parastomal abscess or fistula, and parastomal ulceration<sup>[5]</sup>. Frequency of ostomy complications are in the range of 6%-26%<sup>[6,7]</sup>.

### Peristomal skin breakdown/irritation

(Mechanical trauma, effluent contact damage, allergic reactions, fungal infections) Skin irritation is a common problem in patients with stomas. It is more common in ileostomies than colostomies and is seen in 30%-40% of patients<sup>[4]</sup>. It may be secondary to contact dermatitis, mechanical irritation, trauma, infection, or peristomal hyperplasia. The mainstay of treatment is local wound care and identifying the underlying cause of the problem. Immunosuppressed and diabetic patients are more susceptible to fungal infections.

### Parastomal herniation

Parastomal herniation occurs in approximately 10%-30%<sup>[8]</sup> of all stomas and occurs more often in colostomies than ileostomies. Most of these should be repaired if symptomatic, but because of the incidence of local recurrence, they present a difficult problem. Surgical options include local repair with mesh or relocation. Actual etiological factors include poor wound healing, poor abdominal muscle tone, poor placement of the stoma, poor surgical technique, including too large a fascial opening.

### Stomal stenosis

Stomal stenosis usually occurs secondarily to ischemia, infection, or a retracted stoma. The incidence is approximately 10%. Management may require either dilation or revision of the stoma. Dilation itself leads to additional scarring and is only a temporary measure. Dietary modifications may alleviate complications from stomal stenosis.

### Stomal retraction

Retraction of a stoma leads to difficulty with appliance placement and as a result leads to skin irritation adjacent to the stoma. The use of a convex appliance often helps outcome and may prevent leakage and skin breakdown.

### Stomal prolapse

Stomal prolapse can occur in both end and loop stomas. Both the proximal and distal bowel segments can protrude, although prolapse appears to be more common in the distal segment<sup>[9]</sup>. The rate of stomal prolapse is 7%-11%<sup>[9]</sup>. Improvement in surgical techniques and operative placement have reduced the incidence of prolapse. Sizing of the stoma and placement within the rectus muscle are important. Nutritional status of the patient may also affect outcome. In most cases the prolapse is just a cosmetic problem, but may result in strangulation or obstruction if large amounts of bowel herniate. Reduction of an incarcerated stoma may be achieved by the use of an osmotic agent such as sugar or salt, which helps reduce edema. Ice may also be used to reduce swelling. In rare cases, however, surgical revision is indicated for ischemia, obstruction, ulceration or chronic bleeding.

### Obstruction

Stomal stricture can occur at the skin and/or fascial level. A stricture may be the result of scarring, inflammation, or technical error. Obstruction can lead to hyperperistalsis and hypersecretion, and subsequent fluid losses resulting in massive dehydration. Most severe stoma strictures require surgical revision.

### Peristomal varices/bleeding

Peristomal varices can be seen in patients with stomas and any cause of portal hypertension. Acute management includes direct pressure and injection of sclerosing agents. Recurrence is frequent and usually involves portalcaval shunting in patients who are surgical candidates.

## PREVENTION AND OSTOMY CARE

Hughes *et al* found that optimizing the perioperative health status of the patients, particularly the elderly, may reduce morbidity and complication rates. Their results also support specialist surgical care of patients undergoing stomal surgery<sup>[5]</sup>. Enterostomal nursing can be instrumental in preventing complications and in decreasing the frequency of peristomal complications. Proper fitting of appliances, leakage control, and early local wound care lead to lower morbidity and better quality of life<sup>[4]</sup>.

## PERISTOMAL ULCERATION

### Symptoms and etiology

Chronic parastomal ulcers in patients with ileostomies or colostomies are unusual and difficult to manage. Many causes have been attributed to parastomal ulceration including infections, fistulas, recurrent inflammatory bowel disease, pyoderma gangrenosum and trauma. Parastomal ulcers occur most commonly in patients with Crohn's disease but have also been observed in patients with mucosal ulcerative colitis. The main symptoms are pain and difficulty with appliance placement. Patients often complain of pain that is quite severe, and may be out of proportion to physical findings. It is usually described as

burning. On examination, erythema and induration with a pink halo are seen. There is often drainage from the mucocutaneous junction, but no overt collection.

Parastomal ulcers that occur within the first few months after stoma construction are more likely to be attributable to operative technique, but may also be due to low grade infection at the site. Those that evolve later are less likely to be associated with the stoma site itself and are more likely caused by recurrence of IBD or chronic infection that only becomes apparent with a weakened host system<sup>[10]</sup>.

Ramanujam *et al* report an unusual case of a squamous cell carcinoma arising at the ileocutaneous stomal site<sup>[11]</sup>. The patient presented with peristomal ulceration and bleeding and was treated with a wide local excision of the stoma and relocation of the ileostomy. Only two other cases of this have been reported in the literature<sup>[11]</sup>. Therefore, although rare, one must always consider a malignancy if a peristomal ulcer does not heal after aggressive medical management.

## MEDICAL MANAGEMENT

Management of ulceration at the stomacutaneous junction is mostly medical consisting of local wound care, proper appliances, and local and systemic corticosteroids<sup>[10]</sup>. Wolfson and colleagues reviewed ten cases over eight years of refractory parastomal ulcers. Eight of the ten patients had ileostomy placement for IBD while the other two had undergone colostomy for colon cancer. Five of the patients were diagnosed as having peristomal pyoderma gangrenosum. Those five patients required a mean of 25 wk of systemic steroid or IBD therapy before resolution of their parastomal ulcers. The other patients had ulcers that were due to contact ulcers from appliances, or dermatoses. These patients received traditional stomal care and topical creams and averaged 4 wk to ulcer healing. They concluded that early dermatologic evaluation should be sought in patients without PPG due to their rapid response to appropriate local therapy<sup>[12]</sup>.

Last *et al* presented their cumulative experience of conservative management in parastomal ulceration in patients with Crohn's disease. They discussed 17 patients with Crohn's disease who developed 28 parastomal ulcers (at least 1.5 cm in diameter), ranging in time from two weeks to seven years after ileostomy construction (the mean time was 45 wk). The methods of management that were utilized included debridement, curettage, unroofing the ulcer complex, pouching of the stoma with Telfa strips in the ulcer base. They reported that most ulcers healed in a mean of 12.7 wk and median of 8 wk. Six patients did not resolve with conservative measures and underwent ileostomy relocation<sup>[10]</sup>. Last *et al* also suggest that placement of parastomal drains may decrease the rate of infection.

Pyoderma gangrenosum is an idiopathic, inflammatory, ulcerative condition of the skin. A specific type of parastomal ulceration, PPG is unusual and is often misdiagnosed as a stitch abscess, contact dermatitis, irritation from the leaking feces or urine, extension of underlying Crohn's disease, or a wound infection. PPG has been reported in patients with inflammatory bowel

disease and occasionally in patients with malignancies. The onset of PPG from the creation of the stoma is extremely variable. Hughes *et al* reported their 7 case experience in a retrospective review in *JAMA*<sup>[13]</sup>. In these cases, treatment was empiric and the final responses were varied. Histopathology was verified by biopsy. All patients had initially been treated with one or more courses of broad spectrum antibiotics for a presumed skin infection prior to the diagnosis of PPG. Topical clobetasol propionate (a class I topical corticosteroid) used in conjunction with intralesional injection of triamcinolone acetonide was effective in three patients, ineffective in two patients, and used as a possible helpful adjuvant therapy in two others. Three patients required the addition of an immunosuppressive agent (cyclosporine or mycophenolate) due to systemic corticosteroid failure or adverse effects. Oral dapsone also appeared to be helpful in two of the patients. The authors concluded that treatment of patients with PPG is empiric and two fold. The underlying disease process must be treated along with local wound care management (i.e., the addition of a topical corticosteroid)<sup>[13]</sup>.

In children, parastomal excoriation, following chemical irritation can lead to parastomal breakdown and ulceration. Many topical agents have been tried. Hayashi *et al* reported their experience with 15 patients with stomal or perineal skin ulceration treated with topical sucralfate after failure of other common firstline agents. Their results showed complete healing in 13 patents. Their main observations were that noticeable improvement usually took two to three days, healing occurred from the outside in, the sucralfate itself was soothing and improved comfort, when fungal dermatitis was the cause the sucralfate was not effective<sup>[14]</sup>.

The consensus of these studies is that medical management will work for a majority of patients. This includes local wound care, proper appliances, and local and systemic corticosteroids. If systemic disease such as IBD is suspected, the disease should be controlled systemically and the ulcer itself may then resolve. In severe systemic disease, local wound care can be used along with systemic therapy. In many cases it may take weeks for final resolution of the ulcers. The various studies that documented the medical management of parastomal ulcers are summarized in Table 1.

## SURGICAL MANAGEMENT

While a last resort, surgical revision of a stoma for parastomal ulceration is a possibility. Reoperation of patients with Crohn's disease is common as a result of stomal complications, including ulceration, and is often associated with recurrence of inflammation both at the ileal site and at the parastomal site<sup>[15]</sup>. Surgical options include revision of the current stoma or new stoma placement. If the problem is refractory to medical treatment, most surgeons opt to relocate the stoma. The procedure involves takedown of the existing stoma and reformation at a more appropriate site. It is important to optimize systemic disease (IBD) before this is attempted.

Table 1 Medical management of parostomal ulcers

Author	Design	Number of patients	Treatment	Summary
Wolfson <i>et al</i>	Retrospective Review	10 patients (8 with IBD), 5 with PPG	Patients with PPG received systemic steroids or IBD therapy. Other patients were treated with conservative measures, corticosteroid creams, wound care.	Patients with IBD should be treated systemically. Patients with other causes for ulceration should be evaluated by dermatology and receive local therapy.
Last <i>et al</i>	Retrospective Review	17 patients with Crohn's who developed 28 ulcers	Treatment included debridement, curettage, unroofing the ulcer complex, pouching of the stoma with Telfa strips in the ulcer base.	6 patients did not respond to conservative management, and required relocation.
Hughes <i>et al</i>	Retrospective Review	7 patients	Topical clobetasol propionate used with intralesional injection of triamcinolone acetonide in seven patients. Three patients received an immunosuppressive agent (cyclosporine or mycophenolate). Oral dapsone was used in patients.	The underlying disease process must be treated along with local wound care management (i.e. the addition of a topical corticosteroid).
Hayashi <i>et al</i>	Retrospective Review	15 children with stomal or perineal skin ulceration	Used topical sucralfate after failure of other common first line agents.	Topical sucralfate can be soothing when other measures fail.

## CONCLUSION

Complications with surgically placed ostomies are common and multifactorial. Outcomes can be improved by optimizing the health of the patient, particularly in patients with Crohn's disease or IBD, by careful preoperative planning and placement, thorough surgical training and experience, and by proper wound ostomy nursing care. Unfortunately, despite meticulous preoperative planning, ostomy complications still occur. Parastomal ulceration, although rare, is a particularly difficult management problem. The etiology is varied and treatment possibilities are as well. A review of the literature shows that most patients with parastomal ulcers who do not have associated IBD or PPG respond quickly to local wound care. Patients with PPG, IBD, or other systemic causes of their ulceration need both systemic and local care and are more likely to need long-term treatment, and possibly surgical revision of the ostomy. The treatment is complicated, but improved with the help of ostomy specialists.

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