Abdominal Wall Modification for the Difficult Ostomy

David E. Beck, M.D.¹

ABSTRACT

A select group of patients with major stomal problems may benefit from operative modification of the abdominal wall. Options may include a modified abdominoplasty (abdominal wall contouring), localized flaps, or liposuction. Although frequently successful, these techniques have the potential for significant morbidity.

KEYWORDS: Colostomy, ileostomy, stoma, complications, abdominal wall contouring

Objectives: On completion of this article, the reader should be able to summarize current indications and techniques of abdominal wall modification for difficult stomas.

Although many stoma problems can be managed nonoperatively, some require operative reconstruction and a few can only be solved with innovative surgical solutions such as abdominal wall modification. These procedures include a modified abdominoplasty (sometimes referred to as abdominal wall contouring), localized flaps with skin or fat removal, or liposuction. Although frequently successful, these techniques have potential for significant morbidity.

Patients who may benefit from these techniques include those with stomal retraction (especially those who have bowel limitations, e.g., continent ileostomies, dense intraabdominal adhesions or short gut; prolapse; large peristomal hernias; abdominal wall laxity, usually resulting from major weight loss), and peristomal skin problems such as pyoderma. In many of these patients stomal relocation may not be the best option.

TECHNIQUES

Modified Abdominoplasty (Abdominal Wall Contouring)

The technique is similar to that employed by plastic surgeons.¹⁻⁴ A low curvilinear transverse incision is made at the inferior abdominal fold or 2 to 3 cm above the pubis and anterior superior iliac spines (Fig. 1) and carried down to the fascia. A flap of skin and subcutaneous tissue is created by electrocautery dissection in a cranial direction, just above the fascia. Perforating vessels are identified and ligated or cauterized. As the dissection continues, the stoma will be encountered. With the flap on traction, the intestine is separated from the skin and subcutaneous tissue. Care is taken to avoid injury to the bowel or its blood supply. The dissection should err on leaving additional subcutaneous fat attached to the intestine. This can be carefully resected later. A similar maneuver may be performed at the umbilicus if the

¹Department of Colon and Rectal Surgery, Ochsner Clinic Foundation, New Orleans, Louisiana.

Address for correspondence and reprint requests: David E. Beck, M.D., Department of Colon and Rectal Surgery, Ochsner Clinic Foundation, 1514 Jefferson Hwy., New Orleans, LA 70121 (e-mail: dbeckmd@aol.com).

Stomas and Wound Management; Guest Editor, David E. Beck, M.D.

Clin Colon Rectal Surg 2008;21:71-75. Copyright © 2008 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. Tel: +1(212) 584-4662.

DOI 10.1055/s-2008-1055324. ISSN 1531-0043.

Figure 1 Redundant abdominal wall folds of skin associated with ileostomy retraction. (A) Frontal view. (B) Sagittal section demonstrating skin and subcutaneous fat incisions.

surgeon and patient prefer to preserve it in its normal location. Again, care is taken to preserve the tissue's blood supply. If the umbilicus is not to be maintained, it can be amputated at the fascial level. The flap dissection is continued cranially just above the fascia until enough laxity or length is obtained in the upper flap for the upper edge of the previous stomal opening to reach the inferior portion of the incision without excessive tension or to the costal margins. Any associated peristomal hernia can be repaired at this time with suture repair of the fascia and/or mesh (synthetic or biologic) reinforcement.

As the flap is retracted inferiorly, new sites for the ostomy and, if desired, the umbilicus are selected and openings created in the flap. Excess subcutaneous fat can be carefully removed to thin the flap. Fortunately, there is usually less subcutaneous fat above the umbilicus compared with below it. The excess, distal portion of the flap is excised (Fig. 2). The intestine and umbilicus are brought through the respective flap openings and matured with interrupted absorbable sutures (Fig. 3). Excess bowel or umbilical tissue can be carefully excised. Closed suction drains are placed below the flap to avoid seromas and the inferior incision is closed in layers.

As intraabdominal dissections are avoided with this technique, patients usually recover quickly. Morbidity is usually associated with infection, flap ischemia, or seromas. These are managed with wound care.

Figure 2 Excess skin and subcutaneous fat have been excised. (A) Frontal view. (B) Sagittal section.

Figure 3 Ileostomy relocated through upper flap and skin incisions closed. Closed suction drains placed below flaps. (A) Frontal view. (B) Sagittal section.

Flaps

Several types of flaps can be used to modify the abdominal wall around the stomas. Most involve peristomal dissections and removal of skin and subcutaneous fat. The *medial approach* starts with an incision through the midline incision down to the fascia (Fig. 4). Dissection is carried laterally just above the fascia until the stoma is reached. The ostomy is dissected free of the skin and subcutaneous tissue as described above. After the stoma is freed, lateral dissection to the flanks will provide enough laxity to advance the previous stoma site to the midline (advancement flap). As above, a new ostomy opening, in fresh skin, is created. Excess fat may be excised around the stoma and redundant midline skin is resected.

If the skin flap is not redundant enough to advance the original ostomy opening to the midline, the subcutaneous fat can be excised and the stoma returned to its original skin opening through the thinned flap. Either method is performed in such a manner to leave a smooth, flat, thinned flap that provides a flat surface to site the appliance (Fig. 4C). The stoma is matured and the midline incision is closed.

Figure 4 Medial approach. (A) Frontal view with skin incision marked. (B) Cross section demonstrating midline incision and areas of subcutaneous fat excision. (C) After removal of excess subcutaneous tissue, incision is closed, flaps attached to fascia, and stoma matured with adequate eversion.

Figure 5 Peristomal incisions outside area of appliance faceplate. (A) Inferior. (B) Lateral.

Subcutaneous closed suction drains are placed above and below the stoma.

A similar technique can be used through an inferior or inferolateral peristomal incision. A curvilinear incision is made below or lateral to the ostomy outside the location of the face plate. The size and direction of the incision are determined taking into consideration the blood supply of the peristomal skin (Fig. 5). The subcutaneous tissue is dissected off the fascia with electrocautery in a manner similar to the technique used for a peristomal hernia repair. After this dissection is completed, excess subcutaneous fat can be excised in a circumferential manner. Care is taken to remove the fat in a way to avoid a lumpy peristomal area. Small closed suction drains are placed and the incision is closed. If the thinned flap appears redundant after the subcutaneous tissue is removed, the stoma can be separated from the flap and the flap can be advanced toward the incision in a manner described previously. The bowel can be re-sited through the advanced flap and the excess flap excised.

The *circumstomal approach* starts with an incision around the stoma at the mucocutaneous junction. With careful dissection, the bowel is separated from the subcutaneous tissue down to the fascia. The subcutaneous tissue is then separated from the fascia with electrocautery in a circumferential manner to a point 7 to 8 cm out from the stoma. A wedge of subcutaneous tissue is circumferentially created from the upper skin edge to

Figure 6 Circumstomal flap dissection. (A) Delineation of subcutaneous fat dissection. (B) Flaps sutured to fascia and stoma matured with adequate eversion.

meet the outer edge of the extrafascial dissection (Fig. 6). Small, closed suction drains may be placed and the ostomy is matured to the skin edges. If there was a preoperative stenosis, the skin opening may be enlarged or the bowel may be matured with a Z-plasty technique (Fig. 7).^{5,6} If the preoperative stomal opening was too large or it becomes too large from the dissection, the diameter of the opening can be reduced with interrupted sutures (Fig. 8). This type of closure has been referred to as the “Mercedes technique.”⁷

Liposuction

Rapid and significant weight gain in ostomy patients may produce stomal retraction. If attempts at weight loss have not been successful and stomal revision is not desirable or feasible (e.g., continent ileostomy or short gut patients), liposuction is an excellent option. This method is preferred if there is no associated stomal stenosis or hernia. Experienced plastic surgeons can carefully use liposuction techniques to remove subcutaneous fat around the stoma. Obviously, care must be

Figure 7 Z-plasty repair for stenosis. (A) Incisions in skin and bowel. (B) Completed repair.

Figure 8 Mercedes or triangular closure. (A) Stoma site with fascia closed. (B) Initial approximation of skin and subcutaneous fat. (C) Completed closure with small area in center left open for drainage and secondary healing.

Figure 9 Abdominal wall contouring. (A) Preoperative photo demonstrating hernia. (B) Excess skin. (C) Completed flaps. (D, E) Postoperative views.

taken to not injure the stoma during the procedure and to leave a flat smooth peristomal skin surface for the ostomy faceplate. Once the fatty tissue is removed, it will not be redeposited despite additional weight gain.

CASE PRESENTATION

A 60-year-old woman previously had a proctocolectomy and ileostomy for ulcerative colitis. Over the years, she had significant weight gain and loss and developed a peristomal hernia (Fig. 9A). The best solution was to perform abdominal wall contouring as described in Figs. 1–3, 9B, C. This patient suffered a superficial postoperative wound infection, which healed with antibiotics and wound care. After her wounds healed, she had a well-formed stoma and could wear her ileostomy appliance for 5 to 6 days (Fig. 9D).

SUMMARY

Obviously, significant weight changes (gain or loss) can affect the abdominal wall and associated stomas. Diet, calorie control, or the efforts of an experienced stoma therapist will prevent or manage many of these problems.⁸ When this is insufficient, a stomal relocation or abdominal wall modification may be the patient's best option. Centers and surgeons that specialize in the management of patients with stomas should be able to

offer patients a full range of options from enterostomal therapy to operative approaches. Fortunately, few patients will require procedures of the magnitude described above, but in appropriately selected patients these procedures provide the only successful solution.

REFERENCES

1. Beck DE, Harford FJ. Intestinal stomas. In: Beck DE, ed. *Handbook of Colorectal Surgery*. 2nd ed. New York: Marcel Dekker; 2003:127–148
2. Beck DE. Stomal prolapse. *Ostomy Quarterly*. 2004;41:54–55
3. Evans JP, Brown MH, Wilkes GH, Cohen Z, McLeod RS. Revising the troublesome stoma: combined abdominal wall recontouring and revision of stomas. *Dis Colon Rectum* 2003; 46:122–126
4. Pitanguy I. Lipectomy. In: Grabb WC, Smith JW, eds. *Plastic Surgery. A Concise Guide to Clinical Practice*. 2nd ed. Boston: Little, Brown and Co; 1973:1005–1013
5. Gorfine SR, Bauer JJ, Gelerni IM. Continent ileostomies. In: MacKeigan JM, Cataldo PA, eds. *Intestinal Stomas. Principles, Techniques, and Management*. St. Louis, MO: Quality Medical Publishing; 1993:154–187
6. Castillo E, Thomassie LM, Whitlow CW, Margolin DA, Malcolm J, Beck DE. Continent ileostomy: current experience. *Dis Colon Rectum* 2005;48:1263–1268
7. Todd IP. Mechanical complications of ileostomy. *Clin Gastroenterol* 1982;11:268–273
8. Steel MCA, Wu JE. Late stomal complications. *Clin Colon Rectal Surg* 2002;15:199–207