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Indications

A temporary ostomy should be closed when it is no longer needed. Anastomotic healing and absence of a distal obstruction should be demonstrated by contrast studies. Loop ostomies may be closed by the techniques described in this chapter.

Preoperative Preparation

Barium colon enema radiography to demonstrate patency of distal colon and integrity of any distal anastomoses.
Nasogastric tube is optional.
Routine mechanical and antibiotic bowel preparation (saline enemas to cleanse the inactivated left colon segment may be required as well).
Perioperative systemic antibiotics.

Pitfalls and Danger Points

Suture-line leak
Intra-abdominal abscess
Wound abscess

Operative Strategy

To avoid suture-line leakage, use only healthy, well-vascularized tissue for ostomy closure. Adequate lysis of the adhesions between the transverse colon and surrounding structures allows a sufficient segment of transverse colon to be mobilized, avoiding tension on the suture line. If necessary, the incision in the abdominal wall should be enlarged to provide exposure. If the tissue in the vicinity of the colostomy has been devascularized by operative trauma, do not hesitate to resect a segment of bowel and perform an end-to-end anastomosis instead of a local reconstruction. Proper suturing or stapling of healthy colon tissue and minimizing fecal contamination combined with perioperative antibiotics help prevent formation of abscesses. These same principles apply for closure of a loop ileostomy.

Infection of the operative incision is rather common following colostomy closure, owing in part to failure to minimize the bacterial inoculum into the wound. Another phenomenon that contributes to wound infection is retraction of subcutaneous fat that occurs around the colostomy. This can produce a gap between the fascia and the epidermis when the skin is sutured closed, creating dead space. Avoid this problem by leaving the skin open at the conclusion of the operation.

Operative Technique

Incision

Throughout this chapter, transverse colostomy closure is described and illustrated. The same principles apply for closure of a loop ileostomy.

Occlude the colostomy by inserting small gauze packing moistened with povidone-iodine solution. Make an incision in the skin around the colostomy 3–4 mm from the mucocutaneous junction (Fig. 63.1). Continue this

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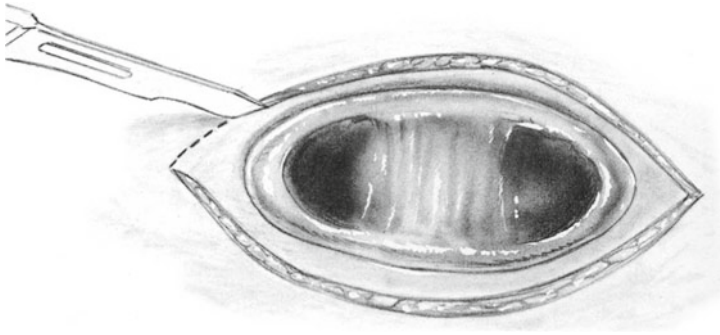


Fig. 63.1

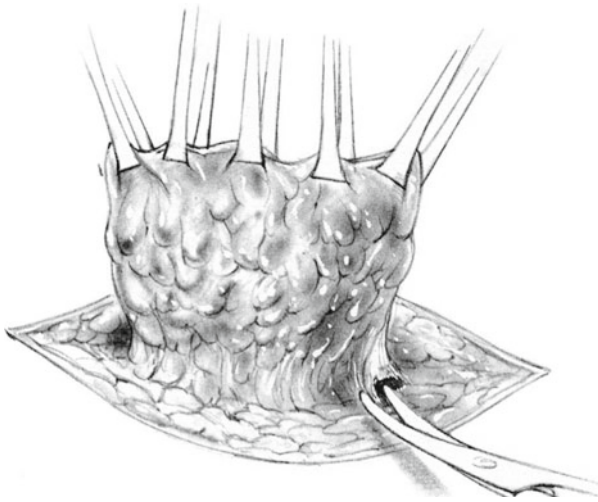


Fig. 63.2

incision parallel to the mucocutaneous junction until the entire colostomy has been encircled. Applying three Allis clamps to the lips of the defect in the colon expedites this dissection and helps prevent contamination. Deepen the incision by scalpel dissection until the seromuscular coat of colon can be identified. Then separate the serosa and surrounding subcutaneous fat by Metzenbaum scissors dissection (Fig. 63.2). Perform this dissection with meticulous care to avoid trauma to the colon wall. Continue down to the point where the colon meets the anterior rectus fascia.

Fascial Dissection

Identify the fascial ring and use a scalpel to dissect the subcutaneous fat off the anterior wall of the fascia for a width of 1–2 cm until a clean rim of fascia is visible all around the colostomy. Then dissect the colon away from the fascial ring until the peritoneal cavity is entered.

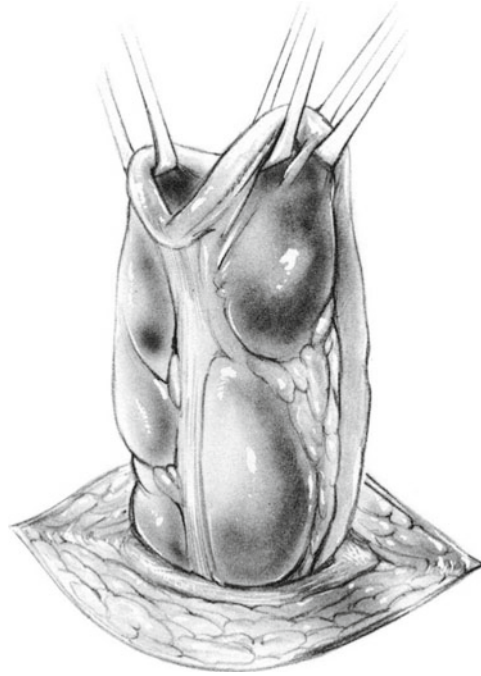


Fig. 63.3

Peritoneal Dissection

Once the peritoneal cavity has been identified, it is often possible to insert an index finger and gently dissect the transverse colon away from the adjoining peritoneal attachments. Using the index finger as a guide, separate the remainder of the colon from its attachments to the anterior abdominal wall. This can often be accomplished without appreciably enlarging the defect in the abdominal wall. However, if any difficulty whatever is encountered while freeing the adhesions between the colon and peritoneum, extend the incision laterally by dividing the remainder of the rectus muscle with electrocautery for a distance adequate to accomplish the dissection safely.

Closure of Colon Defect by Suture

After the colostomy has been freed from all attachments for a distance of 5–6 cm (Fig. 63.3), detach the rim of skin from the colon. Carefully inspect the wall of the colon for injury. A few small superficial patches of serosal damage are of no significance so long as they are not accompanied by devascularization. In most cases, merely freshening the edge of the colostomy by excising a rim of 3–4 mm of scarred colon reveals healthy tissue.

The colon wall should now be of relatively normal thickness. In these cases the colostomy defect, which resulted from a longitudinal incision in the transverse colon at the

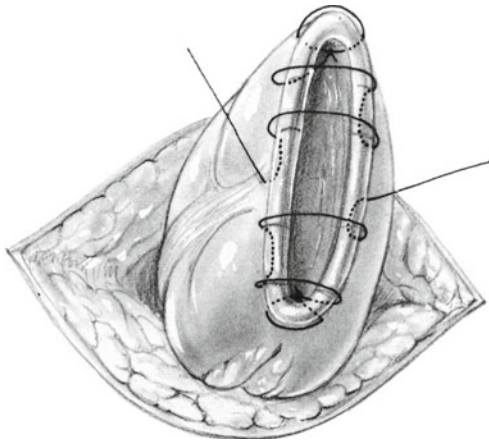


Fig. 63.4

initial operation, should be closed in a transverse direction. Initiate an inverting stitch of 4-0 PG on an atraumatic curved needle at the caudal margin of the colonic defect and pursue it as a continuous Connell or continuous Cushing suture to the midpoint of the defect (Fig. 63.4). Then initiate a second suture of the same material on the cephalad margin of the defect and continue it also to the midpoint; terminate the suture line here (Fig. 63.4). Invert this layer with another layer of interrupted 4-0 silk atraumatic seromuscular Lembert sutures (Fig. 63.5). Because of the transverse direction of the suture line, the lumen of the colon is quite commodious at the conclusion of the closure. There should be no tension whatever on this suture line. Finally, irrigate the operative field and reduce the colon into the abdominal cavity.

Closure of Colonic Defect by Staples

If the colon wall is not so thick that compressing it to 2 mm produces necrosis, stapling is an excellent method for closing the colon defect. Align the defect so the closure can take place in a transverse direction. Place a single guy suture to mark the midpoint of the transverse closure (Fig. 63.6) and apply Allis clamps to approximate the colon staple line with the bowel wall in eversion.

Carry out stapling by triangulation with two applications of the 55 mm linear stapling device, rather than attempting a single application of a 90 mm device. This minimizes the chance of catching the back wall of the colon in the staple line. First, apply the stapler across the everted mucosa supported by the Allis clamps on the caudal aspect of the defect and the guy suture. Fire the staples and use Mayo scissors to excise the redundant everted mucosa flush with the stapler. Leave the guy suture at the midpoint of the closure intact.

Make the second application of the 55 mm linear stapler with the device positioned deep to the Allis clamps on the cephalad portion of the defect (Fig. 63.7). It is important to

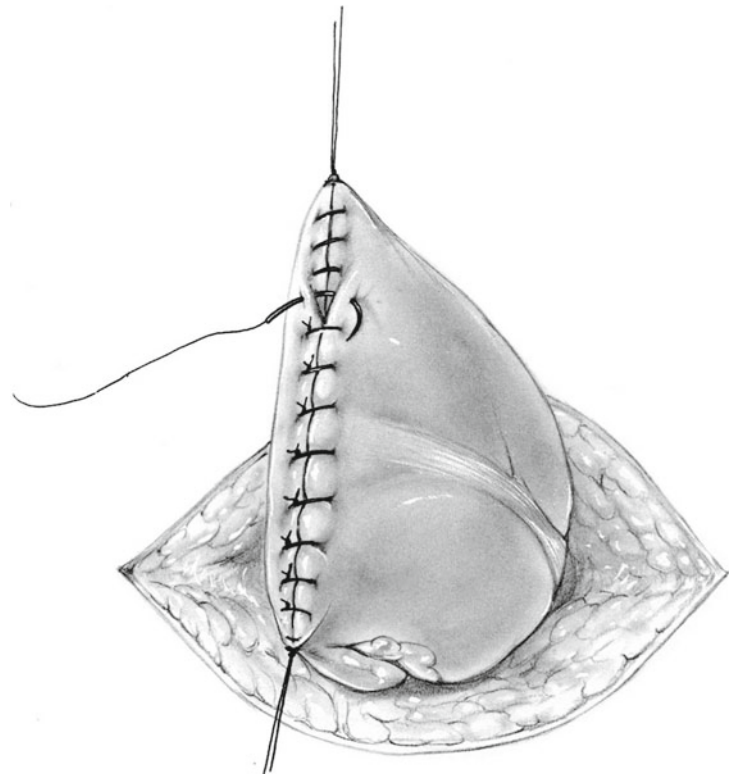


Fig. 63.5

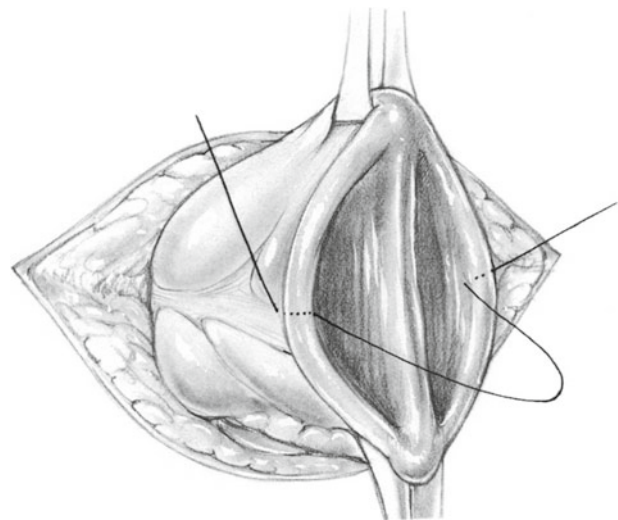


Fig. 63.6

position the guy suture to include the previous staple line in this second line of staples, ensuring that no gap exists between the two staple lines. Then fire the staples. Remove any redundant mucosa by excising it with Mayo scissors flush with the stapler. Lightly electrocoagulate the everted mucosa. Carefully inspect the integrity of the staple line to

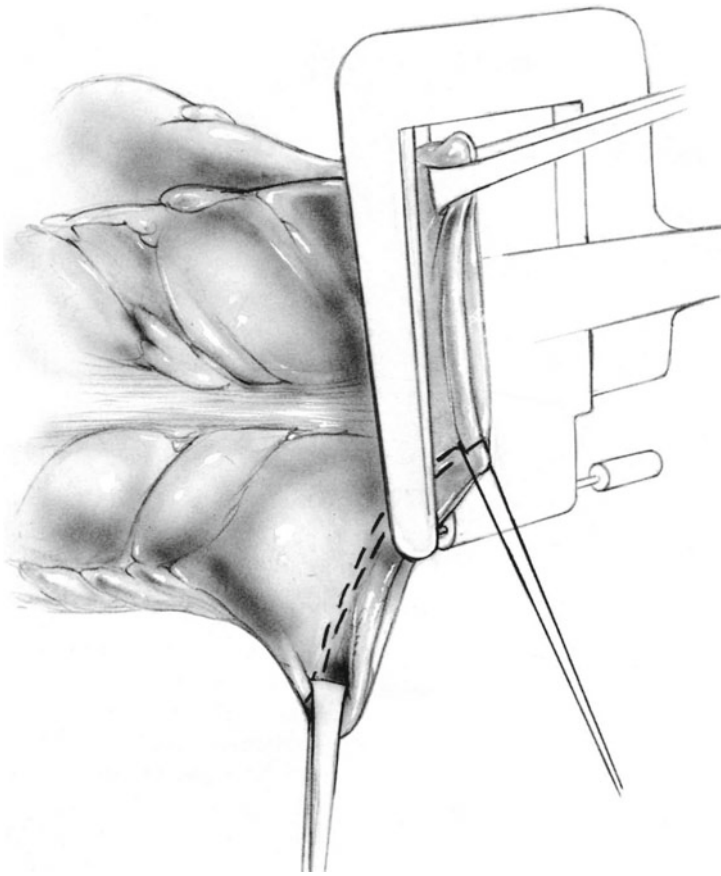


Fig. 63.7

ensure that proper B formation has taken place. It is important, especially with stapling, to ascertain that no tension is exerted on the closure.

Resection and Anastomosis of Colostomy

Whenever the tissue is of inadequate quality for simple transverse closure, enlarge the incision in the abdominal wall and resect a segment of colon. Mobilize a sufficient section of the right transverse colon, occasionally including the hepatic flexure. Dissect the omentum off the transverse colon proximal and distal to the defect. After the proximal and distal segments of the colon have been sufficiently mobilized and the traumatized tissue excised, an end-to-end anastomosis can be constructed by the usual two-layer suture technique (see Figs. 51.18, 51.19, 51.20, 51.21, 51.22, 51.23, 51.24, 51.25, and 51.26) or the staple technique (see Figs. 51.35, 51.36, 51.37, and 51.38).

Closure of Abdominal Wall

Irrigate the area with a dilute antibiotic solution and apply an Allis clamp to the midpoint of the abdominal wall on the caudal and cephalad aspects of the wound. Then close the incision by the modified Smead-Jones technique (see Chap. 3).

Management of Skin Wound

Frequently the colostomy can be closed without enlarging the skin incision, which was no longer than 5–6 cm. There is a high incidence of wound infection following primary closure of the skin. In such cases we simply insert loosely packed gauze into the subcutaneous space, which we allow to heal by granulation and contraction. If desired, several interrupted vertical mattress sutures of nylon may be inserted, but do not tie them until the eighth or tenth postoperative day. Keep the subcutaneous tissue separated with moist gauze packing and approximate the skin by previously placed sutures or tape strips when healthy granulation tissue has formed.

Postoperative Care

Apply nasogastric suction if necessary.

Systemic antibiotics are not continued beyond the perioperative period unless there was serious wound contamination during surgery.

Complications

Wound infection
Abdominal abscess
Colocutaneous fistula

Further Reading

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- Renz BM, Feliciano DV, Sherman R. Same admission colostomy closure (SACC): a new approach to rectal wounds: a prospective study. *Ann Surg.* 1993;218:279.