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Indications

See Chap. 48 for discussion of issues related to the choice of operative procedure, particularly the extent of distal resection. Ileoanal anastomosis is described in the chapter which follows (Chap. 57). The laparoscopic technique is used for many patients (Chap. 55). The open technique is still required for emergency situations.

Familial polyposis
Chronic ulcerative colitis
Crohn's colitis
Ischemic colitis, fulminant *Clostridium difficile* colitis, and other emergency conditions requiring extensive colon resection

Preoperative Preparation

Patients with cachexia may require nutritional support.
Adrenal suppression may be present in patients who have been on steroids for a long time.
For *emergency* colectomy, restitution with blood and electrolytes should be accomplished.
Perioperative antibiotics are prescribed.

Pitfalls and Danger Points

Operative contamination of the peritoneal cavity with colonic contents, leading to sepsis (with toxic megacolon)
Improper construction of ileostomy

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Operative Strategy

When choosing an emergency operative procedure for the patient with complications of inflammatory bowel disease (hemorrhage, perforation, toxic megacolon), consider both the immediate problem and the long-term result. Remember that sphincter-sparing procedures are now available for most of these patients, even when the rectum is involved by disease. Whenever possible retain the rectosigmoid, as it allows restorative proctocolectomy (see Chap. 57) to be performed at a later date.

Sepsis is not uncommon following an emergency colectomy for inflammatory bowel disease and its complications. In Crohn's disease one often finds a fistula to the adjacent bowel or to the skin. In some cases paracolic abscesses are encountered, making gross contamination of the peritoneal cavity inevitable.

When resecting the colon in cases of toxic megacolon, be aware that the colon, especially the distal transverse colon and splenic flexure, may have the consistency of wet tissue paper and can be ruptured by even minimal manipulation. This causes massive, sometimes fatal contamination of the abdominal cavity, and it must be avoided. Make no attempt to dissect the omentum off the transverse colon, as it may unseal a perforation. Elevation of the left costal margin by a Thompson retractor generally provides good exposure of the splenic flexure. Handle the colon gently, using forceps on the appendices epiploicae rather than on the colon wall. Consider decompressing the bowel before manipulating it. Intraoperative tube decompression may decrease the risk of perforating the colon and help minimize spillage if perforation occurs.

Divide the mesentery at a point of convenience nearer to the colon, rather than performing extensive mesenteric excision (as is done for malignancy). Minimize postoperative ileostomy problems by constructing an ileostomy that protrudes permanently from the abdominal wall, like a cervix, for 2 cm. This helps prevent the contents of the small bowel from leaking between the appliance and the peristomal skin.

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It also greatly simplifies the patient's task of placing the appliance accurately. Finally, close the gap between the cut edge of ileal mesentery and the lateral abdominal wall to avoid internal herniation. See Chap. 59 for additional tips on formation of a permanent ileostomy.

Documentation Basics

- Findings
- Extent of resection

Operative Technique

Placement of Ileostomy

On the day before the operation, the surgeon should obtain a faceplate from an ileostomy appliance, or some facsimile, and apply it tentatively to the patient's abdominal wall. Test proper placement with the patient sitting erect. In some patients, if the appliance is not properly placed, the rim strikes the costal margin or the anterior spine of the iliac crest. Generally, the proper location is somewhere near the outer margin of the right rectus muscle, about 5 cm lateral to the midline and 4 cm below the umbilicus. In this position the faceplate generally does not impinge on the midline scar, the umbilicus, the anterior superior spine, or the costal margin no matter what position the patient assumes. If the wafer covers the incision, we prefer a subcuticular skin closure for better skin approximation. The stoma should also be sited so the patient can see it when he or she is erect. In obese patients with a large pannus, it may be necessary to move the stoma higher on the abdomen. The input of an experienced stoma therapist is invaluable, especially if this may be a permanent stoma.

Operative Position

If there is a possibility that the colectomy and total proctectomy will be performed in one stage, position the patient in Lloyd-Davies leg rests (see Fig. 53.3a, b). Otherwise, the usual supine position is satisfactory.

Incision

We prefer a midline incision because it does not interfere with the ileostomy appliance. It also leaves the entire left lower quadrant free of scar in case ileostomy revision and reimplantation become necessary in the future. On the other hand, many surgeons use a left paramedian incision

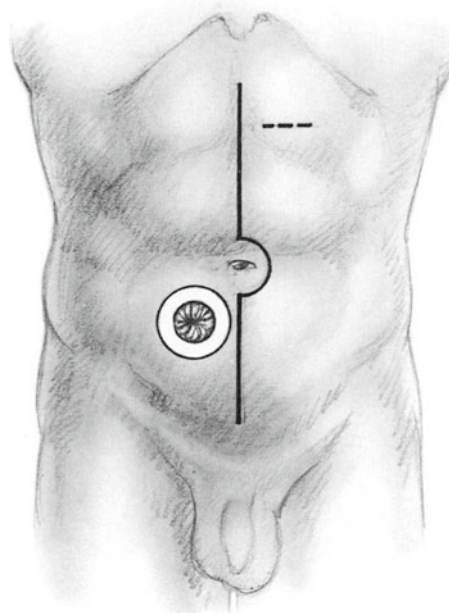


Fig. 56.1

to permit a wider margin between the ileostomy and the scar. The incision should extend from the upper epigastrium down to the pubis (Fig. 56.1). Because the splenic flexure is foreshortened in many cases of ulcerative colitis and toxic megacolon, exposure for this area is often good, with the Thompson retractor applied to the left costal margin.

Evacuation of Stool

For patients undergoing an operation for acute toxic megacolon, insert a heavy purse-string suture on the anterior surface of the terminal ileum. Make a small enterotomy in the center of the purse-string suture and pass a suction catheter through it, threading the catheter across the ileocecal valve into the cecum. After decompressing the colon, remove the tube and tie the purse-string suture.

Dissection of Right Colon and Omentum

Make an incision in the right paracolic peritoneum lateral to the cecum and insert the left index finger to elevate the avascular peritoneum, which should be divided by scissors in a cephalad direction (Fig. 56.2). If local inflammation has produced increased vascularity in this layer, use electrocautery to carry out the division. Throughout the dissection keep manipulation of the colon to a minimum. Continue the paracolic incision around the hepatic flexure, exposing the anterior wall of the duodenum.

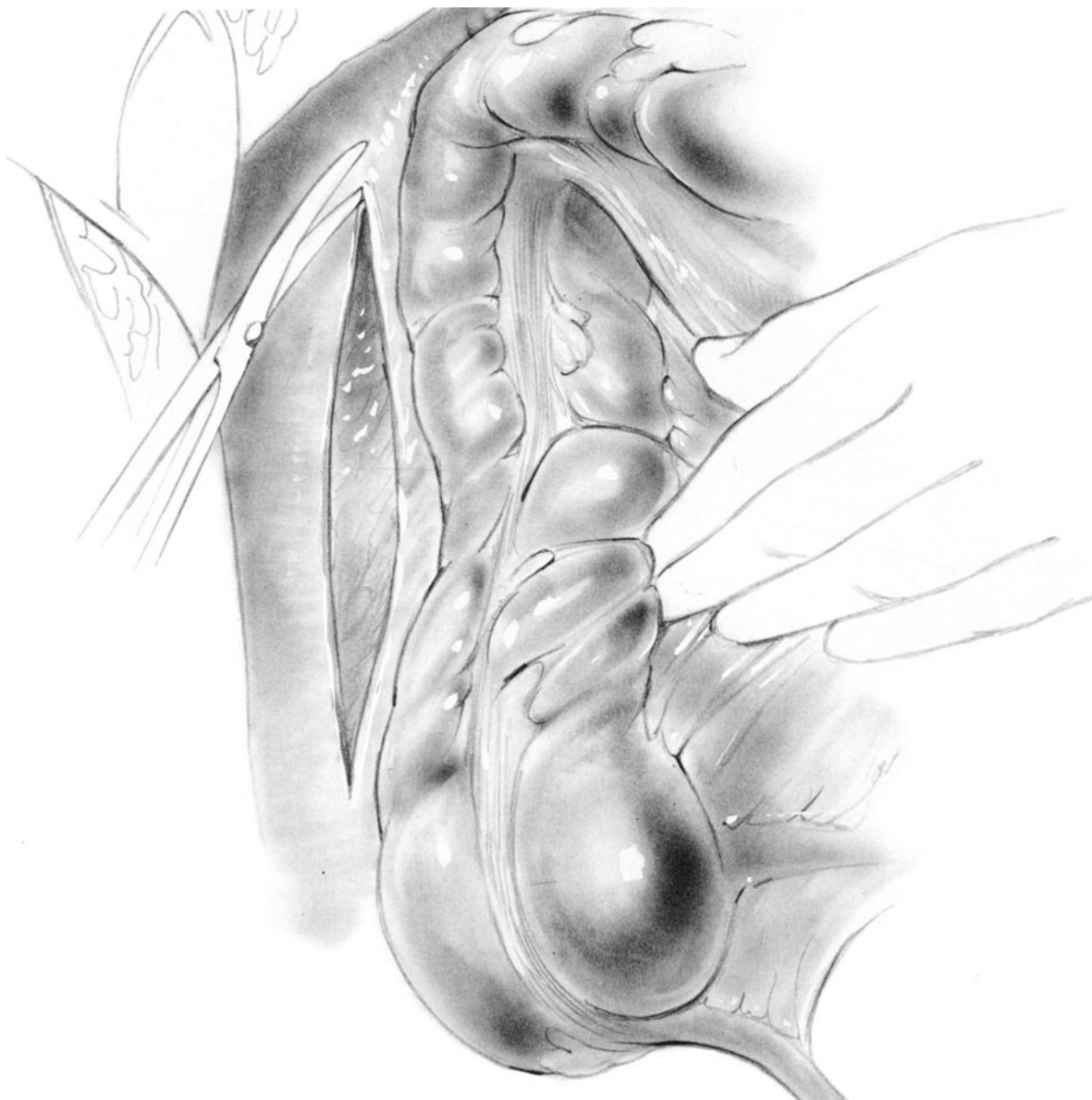


Fig. 56.2

For emergency operations for toxic megacolon, divide the omentum between Kelly hemostats 5 cm above its line of attachment to the transverse colon. If the omentum is fused to the transverse mesocolon, it may be divided simultaneously with the mesocolon in one layer. In most *elective* operations, the omentum can be dissected off the transverse colon through the usual avascular plane (Fig. 56.3).

Dissection of Left Colon

Remain at the patient's right side and make an incision in the peritoneum of the left paracolic gutter in the line of Toldt, beginning at the sigmoid. With the aid of the left hand elevate

the avascular peritoneum and divide it in a cephalad direction with Metzenbaum scissors. Carry this incision up to and around the splenic flexure (Fig. 56.4). Mobilize the splenic flexure as described in Chap. 51 (see Figs. 51.5, 51.6, 51.7, and 51.8). In patients who suffer from toxic megacolon, perform this dissection with extreme caution so as not to perforate the colon.

Division of Mesocolon

Turn now to the ileocecal region. If the terminal ileum is not involved in the disease process, preserve its blood supply and select a point of transection close to the ileocecal valve.

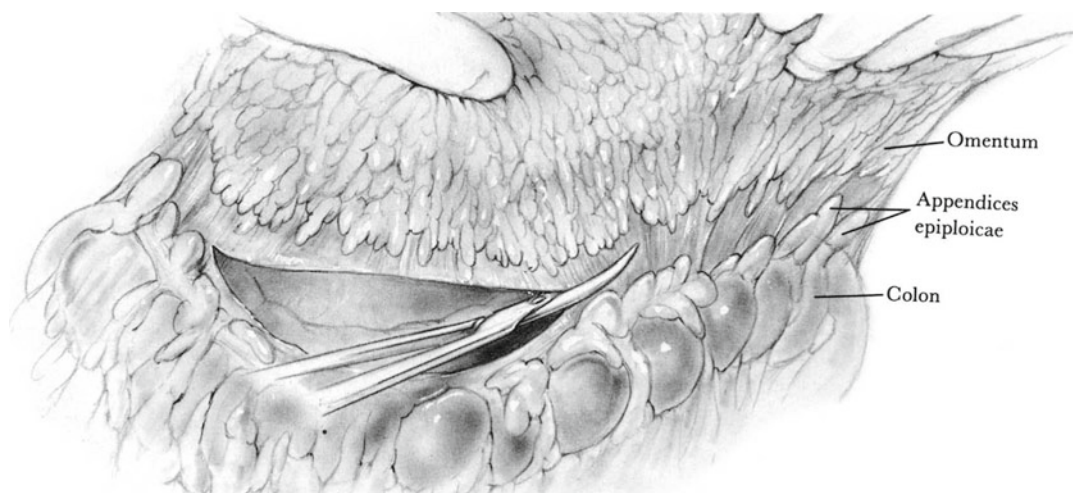


Fig. 56.3

Divide the mesocolon along a line indicated in Fig. 56.5. Because most patients who require this operation are thin, each vessel can be visualized, double clamped, and divided accurately. Ligate each vessel with 2-0 PG or silk ligatures and divide the intervening avascular mesentery with Metzenbaum scissors. In the same way, sequentially divide and ligate the ileocolic branches and the right colic, middle colic, two branches of the left colic, and each of the sigmoidal arteries.

Ileostomy and Sigmoid Mucous Fistula

The technique of fashioning a permanent ileostomy, including suturing the cut edge of the ileal mesentery to the right abdominal wall, is depicted in Figs. 59.1, 59.2, 59.3, 59.4, 59.5, 59.6, 59.7, 59.8, and 59.9. After the sigmoid mesentery has been divided up to a suitable point on the wall of the distal sigmoid, divide the colon with De-Martel clamps (as shown) or a linear cutting stapler. Bring this closed stump of the rectosigmoid through the lower pole of the incision (Fig. 56.6). Fix the rectosigmoid stump to the lower pole with a few 3-0 PG sutures, approximating the mesocolon and the appendices epiploicae to the anterior rectus fascia. Close the abdominal incision around the mucous fistula.

Alternatively, the closed distal bowel can be returned to the abdomen as a Hartmann's pouch. See Chap. 65 for additional tips on safe construction of a Hartmann's pouch.

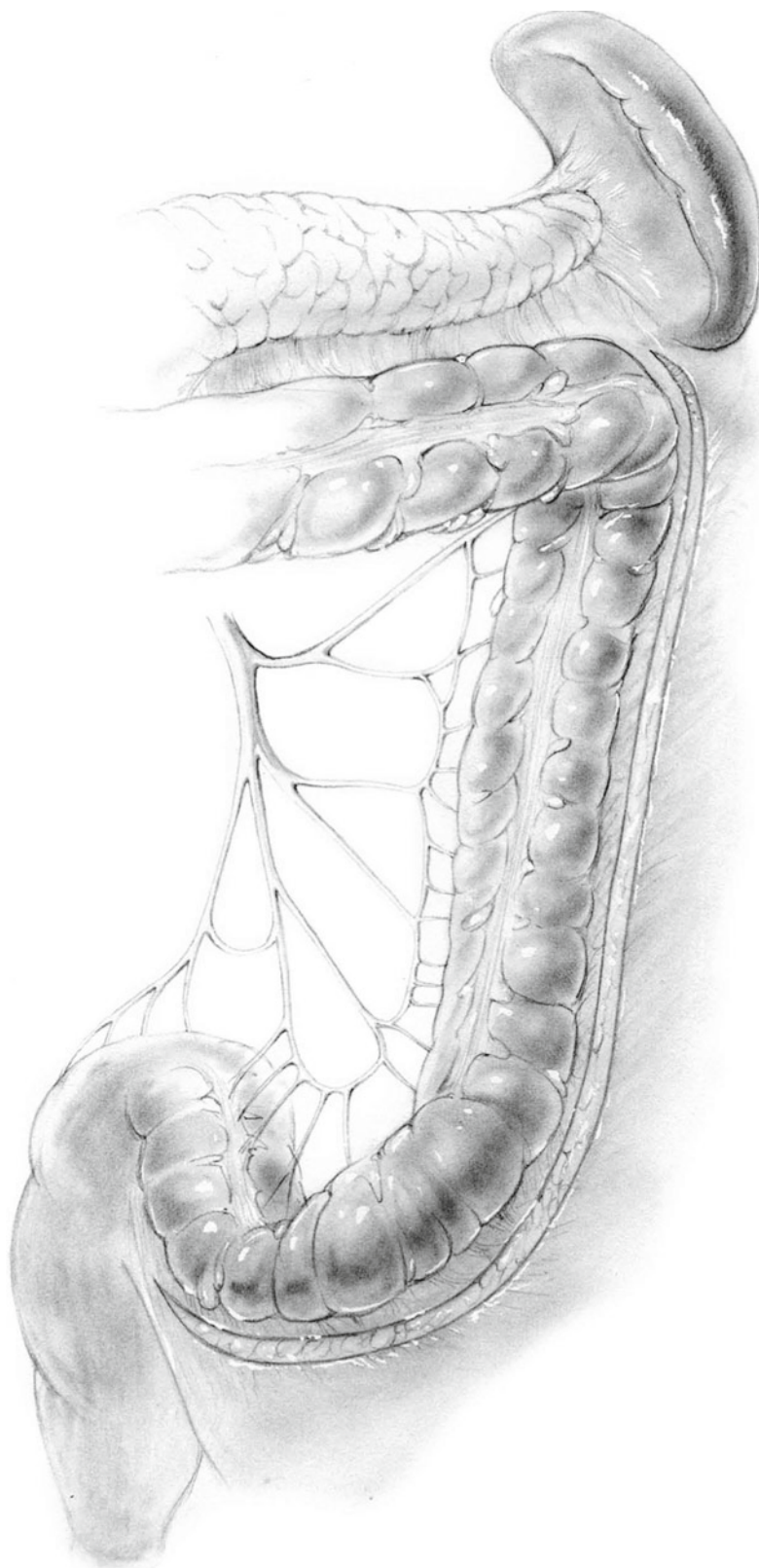
Ileoproctostomy

When an ileorectal anastomosis is elected, we prefer the side-to-end modified Baker technique (see Figs. 53.12, 53.13, 53.14, 53.15, 53.14, 53.15, 53.16, 53.17, 53.18, 53.19,

53.20, 53.21, 53.22, and 53.23) for the colorectal anastomosis because it completely eliminates issues of difference in bowel lumen and provides a general lumen. After the mesentery has been cleared at the point selected for transection of the ileum, apply transversely and fire a 55/3.5 mm linear stapler. Apply an Allen clamp to the specimen side of the ileum, and with a scalpel transect the ileum flush with the stapler. Lightly cauterize the everted mucosa and remove the stapling device. Inspect the staple line to ensure that proper B formation of the staples has occurred.

Divide the mesentery of the rectosigmoid up to the point on the upper rectum that has been selected for transection, which is generally opposite the sacral promontory. Apply a right-angle renal pedicle clamp to the colon to exclude colonic contents from the field. Dissect fat and mesentery off the serosa of the rectum at the site to be anastomosed. Make a linear scratch mark on the antimesenteric border of the ileum beginning at a point 1 cm proximal to the staple line and continuing in a cephalad direction for a distance equal to the diameter of the rectum, usually 4–5 cm.

The first layer should consist of interrupted 4-0 silk seromuscular Cushing sutures inserted by the successive bisection technique. After the sutures are tied, cut all the tails except for the two end sutures, to which small hemostats should be attached. Then make incisions on the antimesenteric border of the ileum and the back wall of the rectum (Fig. 56.7). Initiate closure of the posterior mucosal layer by inserting a double-armed 5-0 PG suture in the middle point of the posterior layer and tying it. With one needle insert a continuous locked suture to approximate all the coats of the posterior layer, going from the midpoint to the right corner of the anastomosis. Use the other needle to perform the same maneuver going from the midpoint to the left (Fig. 56.8). Amputate the specimen. Then use a continuous Cushing, Connell, or seromucosal suture to approximate the anterior

Fig. 56.4

mucosal layer, terminating the suture line at the midpoint of the anterior layer. Close the final anterior seromuscular layer with interrupted 4-0 silk Cushing sutures (Fig. 56.9). If possible, cover the anastomosis with omentum.

Approximate the cut edge of the ileal mesentery to the cut edge of the right lateral paracolic peritoneum with a continuous 2-0 atraumatic PG suture. Do not close the left paracolic gutter. Irrigate the abdominal cavity.

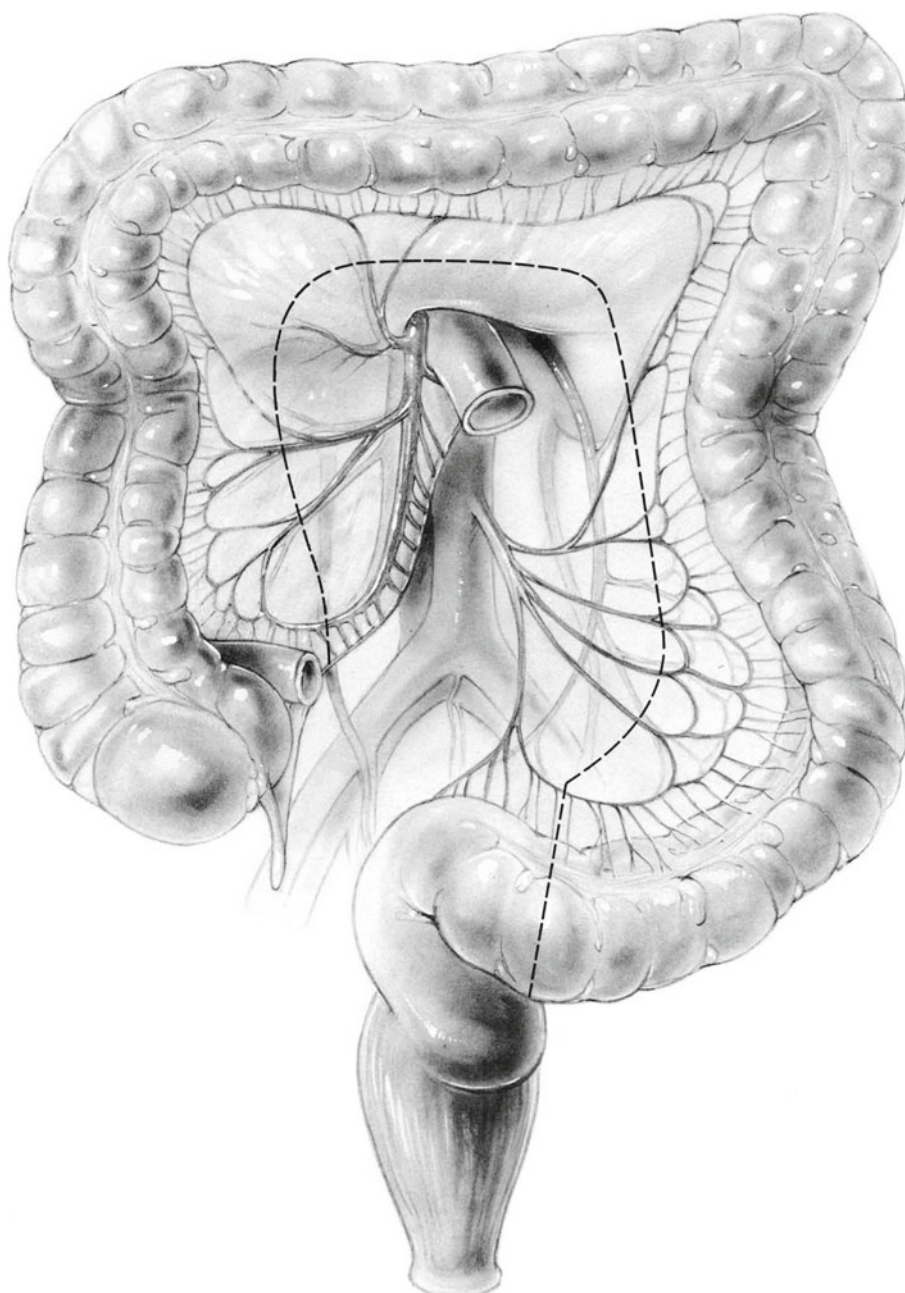


Fig. 56.5

Subtotal Colectomy Combined with Immediate Total Proctectomy

When a proctectomy is performed at the same stage as a subtotal colectomy, occlude the rectosigmoid by a layer of TA-55 staples. Apply an Allen clamp to the specimen side of the colon, which should be transected with removal of the specimen. This eliminates the colon and any source of contamination in cases of toxic megacolon. Then perform abdominoperineal proctectomy by the technique described in Chap. 58. Construct the ileostomy as depicted in Figs. 59.1, 59.2, 59.3, 59.4, 59.5, 59.6, 59.7, 59.8, and 59.9.

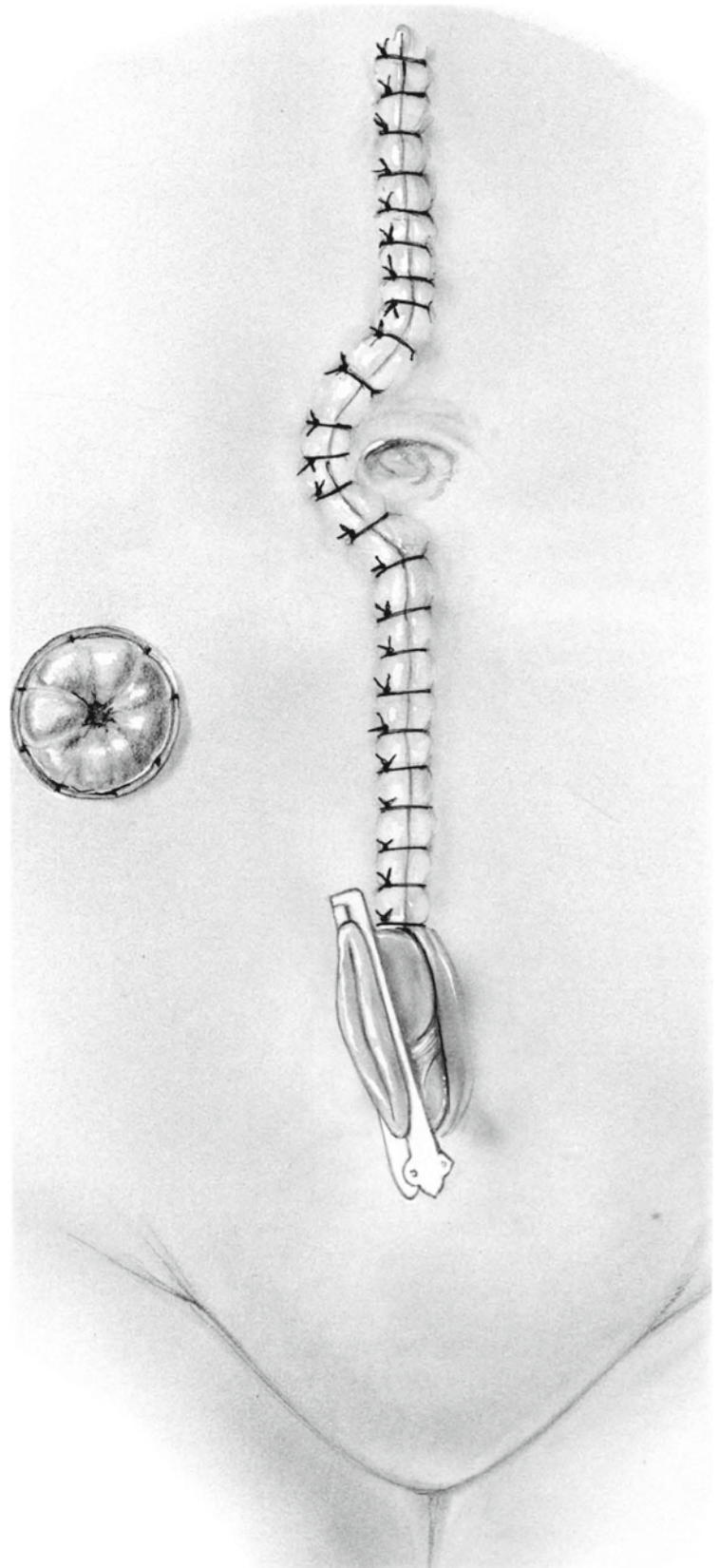
Needle-Catheter Jejunostomy

Consider performing needle-catheter jejunostomy in any patient suffering from malnutrition to permit enteral feeding immediately after surgery.

Closure of the Abdominal Incision

Close the abdominal wall in routine fashion without drains (see Chap. 3).

Fig. 56.6



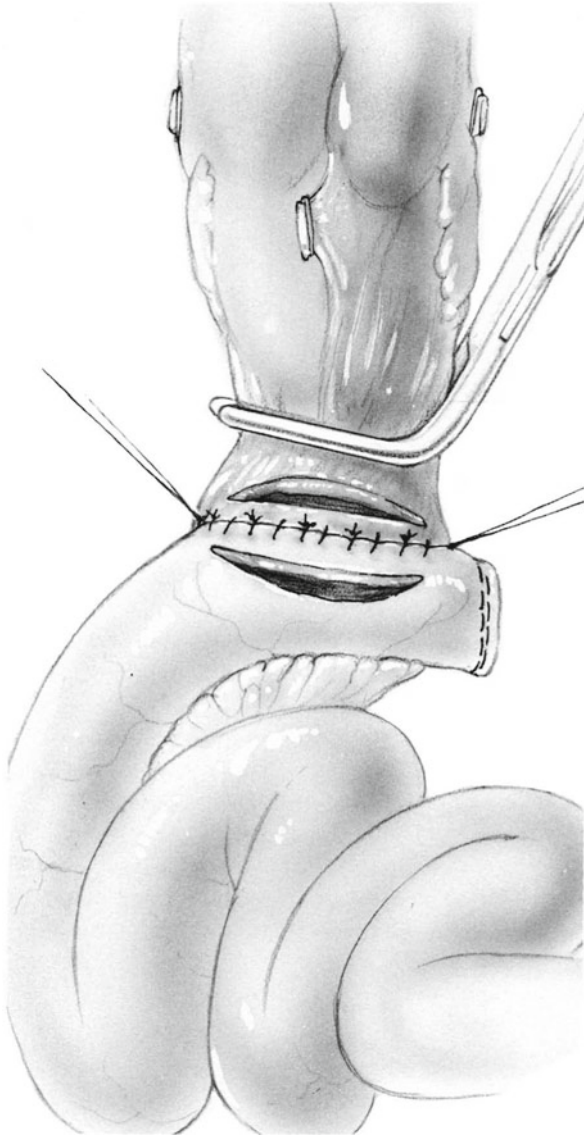


Fig. 56.7

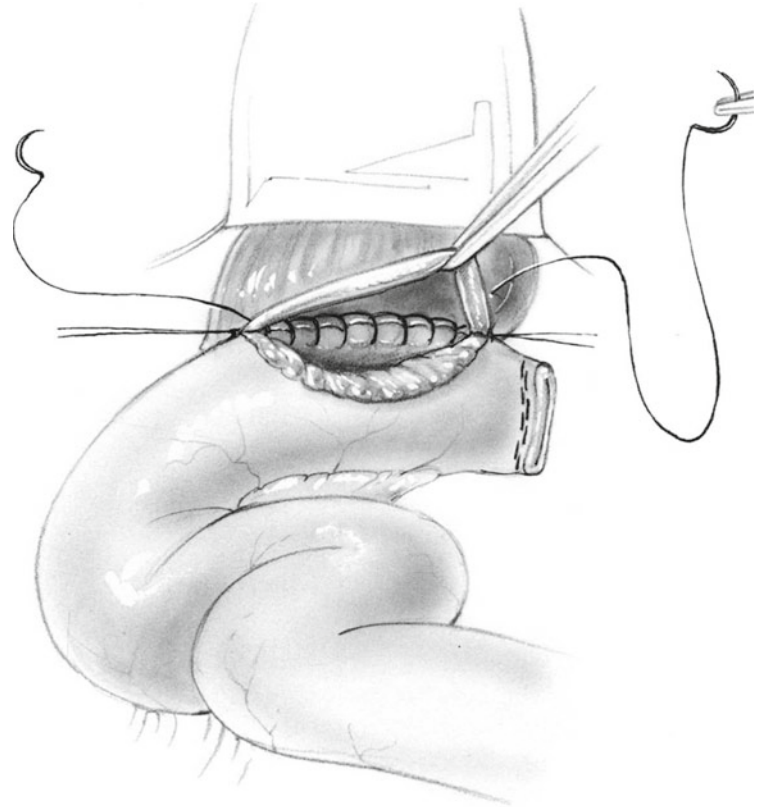


Fig. 56.8

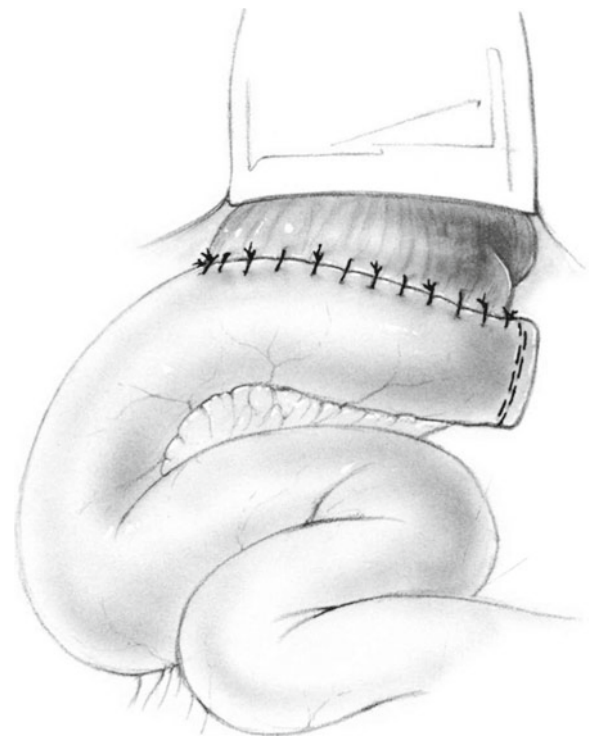


Fig. 56.9

Postoperative Care

Continue nasogastric suction (when indicated) and intravenous fluids until there is good ileostomy function. If there was no operative contamination, discontinue the operative antibiotics within 6 h. Otherwise, continue antibiotics, modifying as indicated by the operative findings and the postoperative course.

In the operating room apply a Stomahesive disk to the ileostomy after cutting a properly sized opening. Over the disk, place a temporary ileostomy bag. Instruct the patient in the details of ileostomy management and encourage him or her to join one of the organizations of ileostomates, where considerable emotional support can be derived by meeting patients who have been successfully rehabilitated.

Complications

Intra-abdominal abscess is more common after colon resection for inflammatory bowel disease than for other conditions. When signs of intra-abdominal infection appear, prompt laparotomy or percutaneous computed tomography-guided catheter drainage for evacuation of the abscess is indicated.

Intestinal obstruction due to adhesions is not rare following this group of operations because of the extensive dissection. If nonoperative treatment does not bring a prompt response, laparotomy for enterolysis becomes necessary.

Leakage of the anastomosis may follow ileoproctostomy. In case of a major leak, immediate laparotomy for a diverting loop ileostomy (see Chap. 60) followed by pelvic drainage is mandatory. Alternatively, the anastomosis may

be taken down and the ileum brought out as a terminal ileostomy.

Further Reading

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