

# ILEAL POUCH-ANAL ANASTOMOSIS PROCEDURE

ARTICLE BY RONALD C. ALSTON, CST

**T**he ileal pouch-anal anastomosis procedure removes disease in patients afflicted with ulcerative colitis. This is achieved so that (1) anal sphincters are preserved and (2) reservoir capacity is restored, thus allowing reliable fecal continence to be maintained in the ileal pouch.

Several separate procedures are involved in the surgical intervention, including an abdominal colectomy, a proximal proctectomy, and distal endorectal mucosal resection. This dissection helps preserve normal bladder and sexual function. It is important to note that a total proctectomy is not performed. As a result, a perineal wound, which often heals slowly and incompletely, is avoided. This article not only will detail the surgical procedures, but it also will discuss preoperative symptoms and common postoperative reactions.

## Indications for Surgery

Numerous factors can indicate the necessity of surgical intervention in patients with chronic ulcerative colitis. Among these are the following: intractability (long-standing illness that can't be treated with medication), medical management, growth retardation, inability to function socially or at work, steroid complications, dysplasia, stricture, cancer, fulminate toxic colitis, hemorrhage, perforation, and unremitting extraintestinal manifestations. Despite the lengthy list, intractability remains the most common indicator for operation.

Debate, however, surrounds the amount of intractability warranting surgery. One rule allows the patient to determine when symptoms are sufficiently troublesome so as to prompt surgical intervention. Such a decision must be made on an informed basis. The patient must understand the future course of the disease as well as complications, drawbacks, and other surgical options. Life without the diseased colon should be discussed completely and openly. Moreover, surgeons must be aware of the effectiveness of medical treatment. However, if radiography or colonoscopy show evidence of malignancy, surgery should be recommended.

Ileal pouch-anal anastomosis should not be offered to patients undergoing colectomy for emergency reasons. In addition, proctectomy should not invariably accompany emergency colectomy if clinical situations warrant preservation of the rectum, especially in young patients. The intention in these cases is to perform proximal proctec-

tomy, distal endorectal mucosectomy, and ileal pouch-anal anastomosis at a later date.

In general, patients are candidates for ileal pouch-anal anastomosis if the status of their disease is such that the operation can be performed electively. Although there are no studies documenting the impact of the severity of the disease on the ultimate outcome of the ileal pouch-anal anastomosis, it would seem the best results would be achieved with patients who are not severely compromised preoperatively.

Patients who remain unresponsive over extended periods of time to continuous, high dosages of intravenous steroids, antiinflammatory agents, and immunosuppressives may not do well after ileal pouch-anal anastomosis. In addition, patients who endure severe and uncontrolled extraintestinal manifestations may require intensive nutritional support. Patients who have experienced prolonged growth retardation also may have problems. In these patients, the more straightforward and less sophisticated the operation, the better.

Certain patient characteristics influence candidacy for ileal pouch-anal anastomosis. Younger patients, for example, appear to have better results than older patients. Similarly, technical success is more likely in thin patients; obese patients have a shorter mesentery, which makes it harder to pull the pouch through. In fact, the pouch may not pull through at all in some cases.

The more subjective candidacy criteria involve levels of intelligence, motivation, compliance, and emotional stability. Furthermore, as almost all patients are on low or moderate doses of steroids, steroids are not a contraindication for ileal pouch-anal anastomosis.

## Operative Procedure

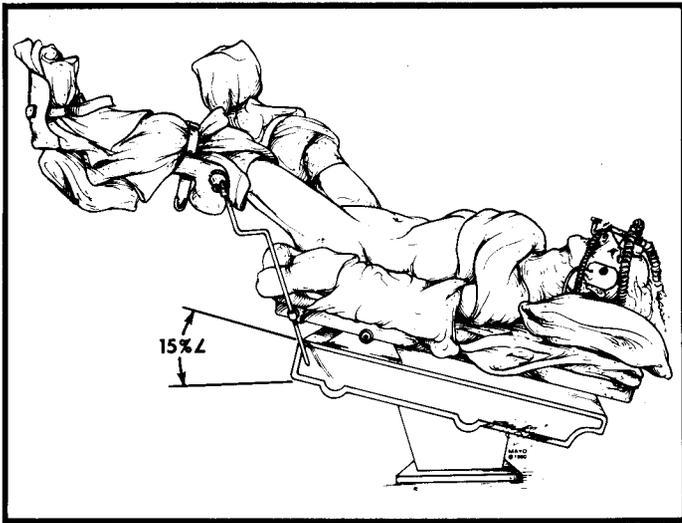
The ileal pouch-anal anastomosis operation is performed in two stages. The first is comprised of the abdominal colectomy, proximal proctectomy, distal endorectal mucosal resection, ileal J pouch-anal anastomosis, and loop ileostomy. The second stage is completed 8 to 12 weeks later when the protecting ileostomy is closed.

To begin, the abdominal colectomy is performed with the patient in the modified lithotomy/Trendelenburg's position (Figure 1). If anatomically possible, the ileocolic vessels are preserved. The ileum is transected close to the cecum. The retroperitoneal attachments of the ileal mesentery are divided to the level of the pancreas and third portion of the duodenum. This maneuver facilitates maximum mobility of the ileal mesentery.

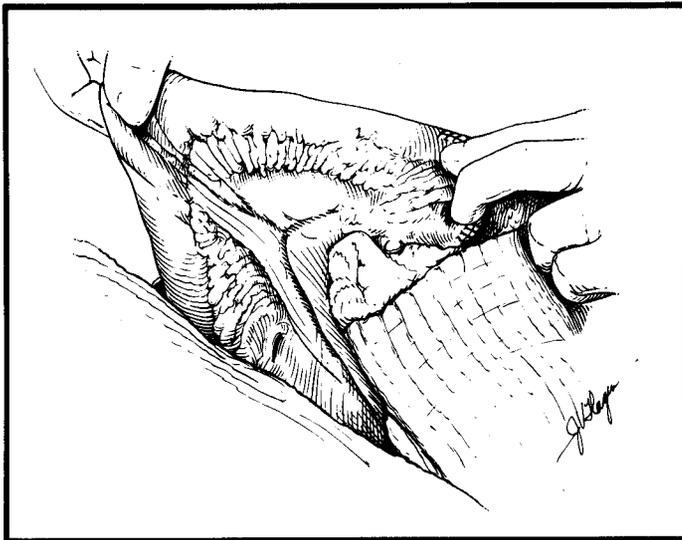
A convenient point then is chosen at the level of the low sigmoid colon for transection. The specimen is sent for

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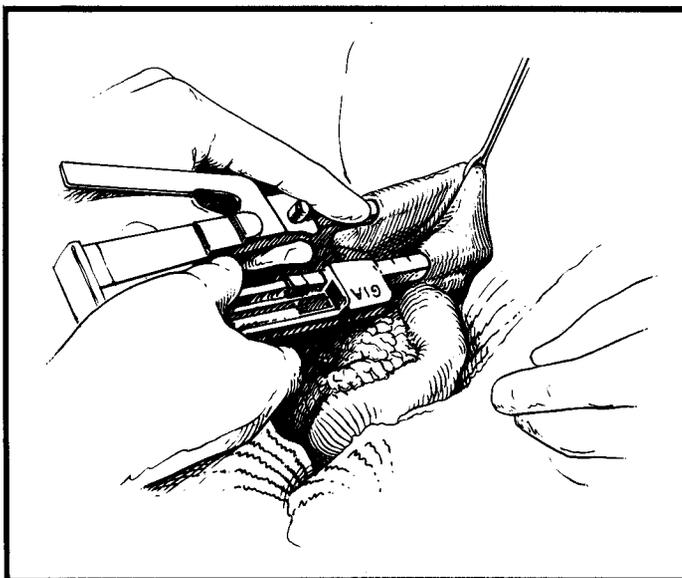
**Ron Alston, CST**, St Mary's Hospital, Rochester, Minnesota, has been a surgical technologist for 5 years. He has experience in cardiovascular, thoracic, and gyn. For the past 2 years he has been working with John Pemberton, MD, in colon and rectal surgery.



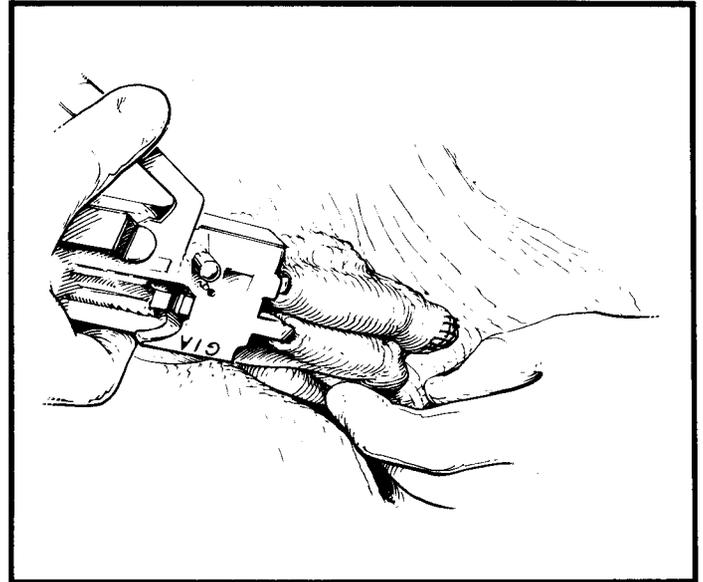
**Figure 1.** Patient in the modified lithotomy/Trendelenburg's position.



**Figure 2.** Measurement of ileum.



**Figure 3.** Two small enterotomies 5 cm proximal to the proposed apex of the pouch.



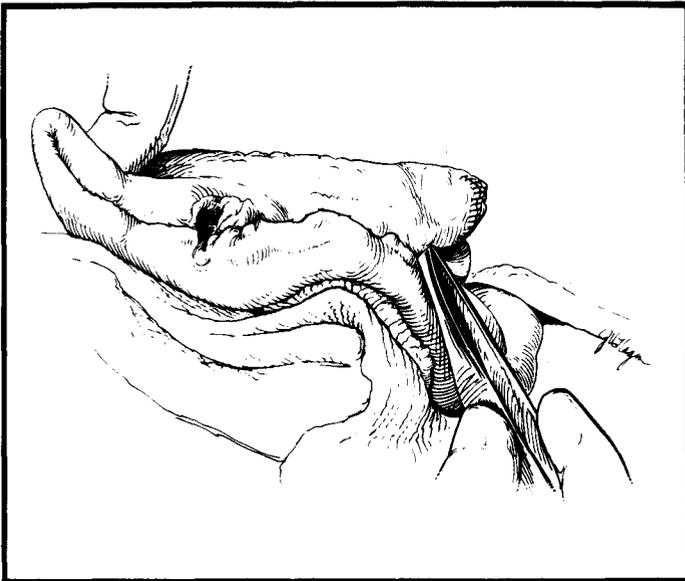
**Figure 4.** Stapler passed in opposite direction and fired twice.

histologic confirmation of ulcerative colitis. On elevating the rectum, the nerves at the sacral promontory are swept away from the superior hemorrhoidal vessels. A distinct fascia propria becomes obvious on retracting the rectum out of the pelvis. The dissection is carried down to the level of the coccyx posteriorly, to either the mid-vagina or the mid-prostate anteriorly, and to the levators laterally. A laparotomy pad is placed in the pelvis abutting the levators. This pad acts as a landmark above, the endorectal mucosectomy dissection has been completed.

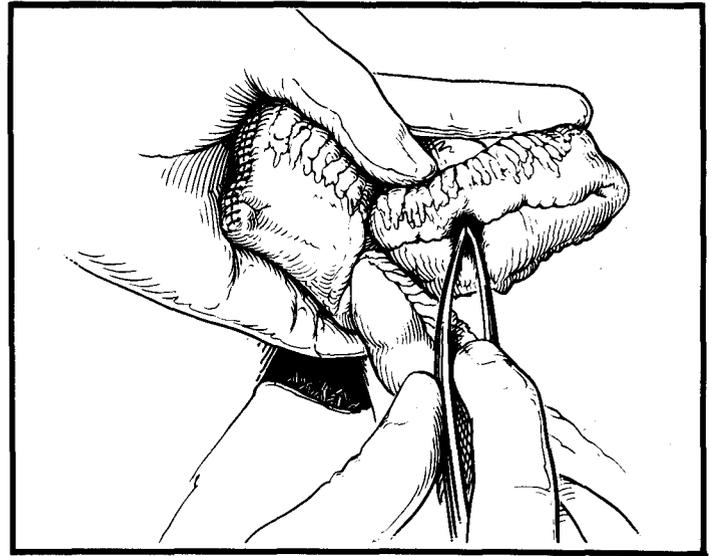
Next, the mobility of the terminal ileum is ascertained. If a point on the antimesenteric aspect of ileum, approximately 12 to 15 cm from the transected end, reaches beyond the skin overlying the symphysis pubis, then it is likely that the ileum will reach the anus without tension (Figure 2). If this cannot be achieved, tension is placed on the loop of bowel, and the area of mesenteric foreshortening is sought. The tethering vessels are then isolated with vascular clamps. If the terminal ileum remains viable, the vessels are divided.

Using a gastrointestinal anastomosis stapler, small enterotomies are made 5 cm proximal to the proposed apex of the pouch. The stapler is first passed toward the apex of the pouch and fired (Figure 3). The septum of tissue that usually remains at the apex of the pouch should be divided with the stapler. The stapler is then passed in the opposite direction and fired twice (Figure 4). The enterotomy is closed longitudinally in two layers.

The next step is of central importance. The apex of the pouch must be inverted through its own mesentery, exposing the posterior staple line (Figure 5). This is the most critical step in constructing the pouch; if the continuity of the overlapping staple lines posteriorly is not confirmed, the pouch will leak. The anastomotic staple line also should be checked for hemostasis. If a hole is found (Figure 6), it must be repaired. An alternative technique is to construct the J pouch entirely by hand.

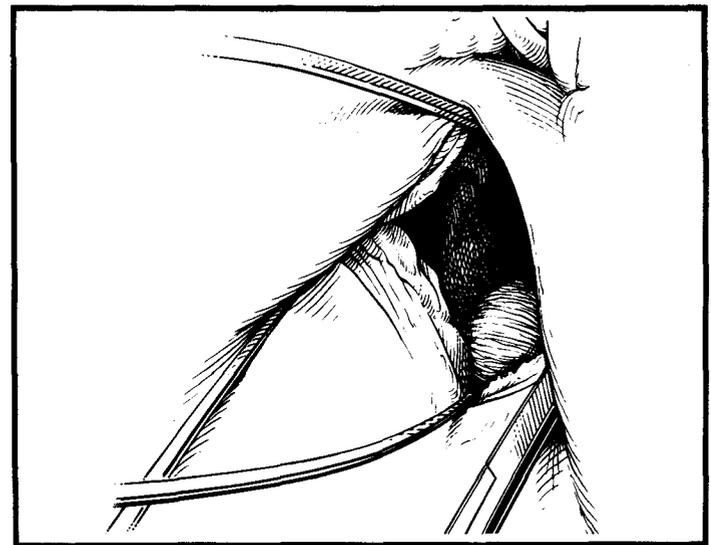


**Figure 5.** Apex of the pouch inverted through its own mesentery, exposing the posterior staple line.



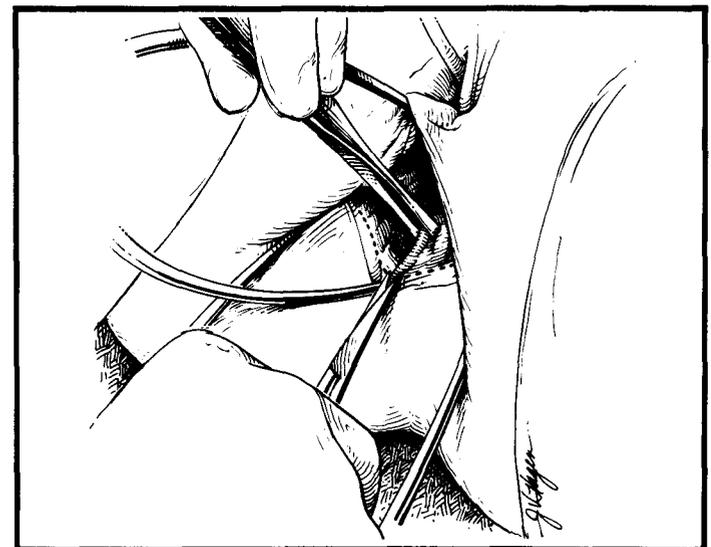
**Figure 6.** If a hole is found, it must be repaired.

The procedure continues with the endorectal mucosal resection. The anus is effaced by placing two Gelpi retractors at right angles to each other at the dentate line (Figure 7). The bulge produced by the laparotomy pad, which previously was placed deep in the pelvis above the levators, is easily palpated and clearly visible within 3 to 5 cm of the dentate line posteriorly. The mucosa is dissected beginning posteriorly. At the dentate line, a submucosal plane is developed circumferentially until the level of the laparotomy pad is reached (Figure 8). No residual rectal mucosa remains.



**Figure 7.** Anus is effaced by placing two Gelpi retractors at right angles.

The rectal muscularis is then incised posteriorly, and the remaining dissection is guided by the finger (Figure 9). The rectal muscular wall is divided laterally on both sides, leaving the rectum attached anteriorly. The rectum is then delivered through the anal canal. Traction should be applied to improve the exposure of the remaining anterior attachments. Alternatively, the rectum can be everted onto the perineum; and, under direct vision, the mucosa can be dissected away from the distal 5 cm of muscularis.



**Figure 8.** At dentate line, a submucosal plane is developed circumferentially until the level of the laparotomy pad is reached.

The ileal pouch-anal anastomosis follows. After ensuring there are no twists, the apex of the pouch is delivered through the rectal muscular cuff to the dentate line (Figure 10). Four synthetic absorbable 3-0 sutures are placed circumferentially to anchor the seromuscular layer of the pouch to the puborectalis muscle. The apex of the pouch is then incised (Figure 10), and the ileal pouch-anal anastomosis is constructed using an absorbable suture. Each suture should encompass the full thickness of the pouch, a portion of the internal sphincter, and a small section of the anoderm. Figure 11 is a diagram of the completed ileal pouch-anal anastomosis.

Upon completion of the first of the two-part ileal pouch-anal anastomosis operation, a loop ileostomy is constructed in the right lower quadrant at a premarked site (Figure 12). The stoma is matured immediately to ensure that the serosa is covered. Two round Jackson Pratt Silastic

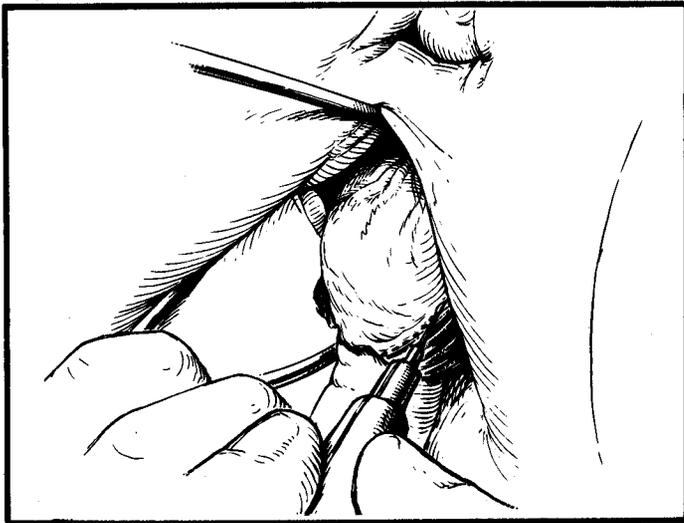


Figure 9. The rectal muscularis is incised posteriorly.

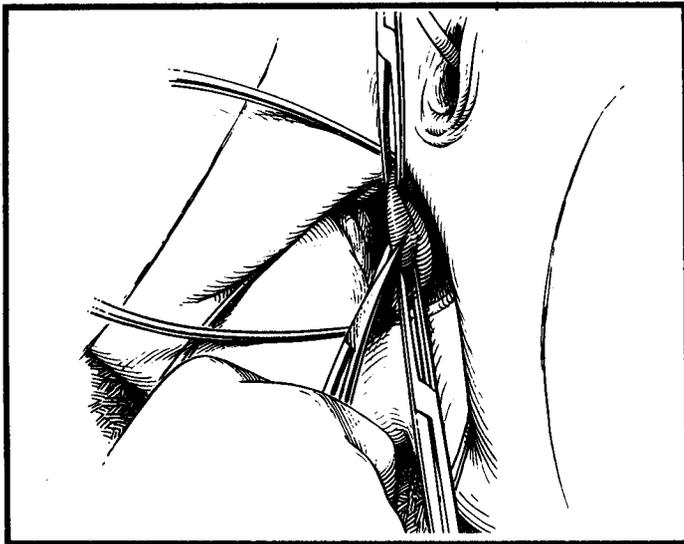


Figure 10. The apex of the pouch is delivered through the rectal muscular cuff to the dentate line.

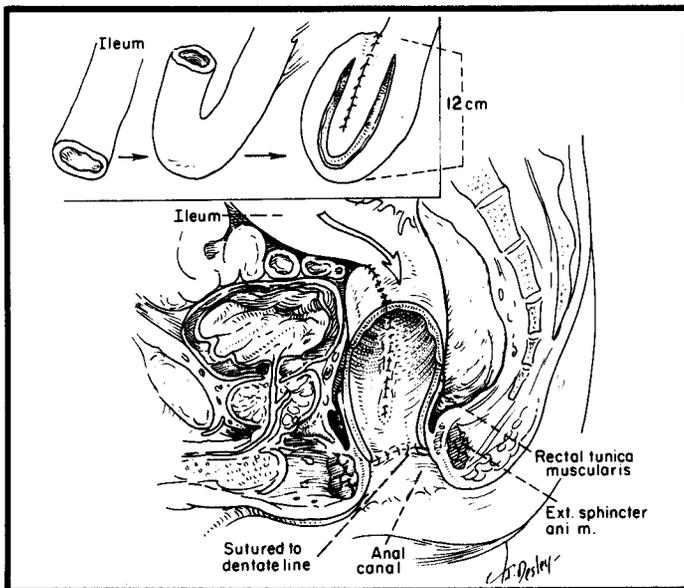


Figure 11. A diagram of the completed ileal pouch-anal anastomosis.

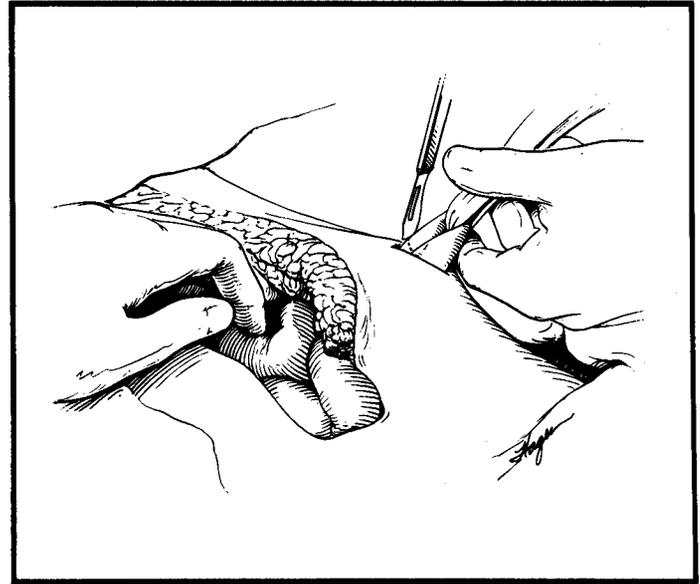


Figure 12. A loop ileostomy is constructed in the right lower quadrant at a premarked site.

drains are placed behind the pouch, exiting the abdomen through separate incisions in the left lower quadrant. The rectal cuff, however, is not drained separately.

### Postoperative Care and Complications

Postoperative care is essentially the same as that after standard proctocolectomy. This is because a loop ileostomy is in place. The patient also is taught anal care, specifically how to properly squeeze the anal sphincter.

Approximately 1 week after the operation, irrigation of the pouch begins through the distal limb of the stoma. The rationale for this maneuver is threefold. First, the irrigant flushes mucus from the pouch, thus minimizing peritoneal irrigation. Second, the patient exercises the muscles of the continence. Finally, because the patient is encouraged to increase the amount of irrigant over the ensuing weeks, the pouch dilates slowly.

The concluding operation involves the closure of the loop ileostomy. This operation is planned for a convenient time, 8 to 12 weeks following the initial operation. All patients undergo manometric and radiographic studies. A resting canal pressure of more than 40 mm Hg and voluntary squeeze pressure that is double the resting pressure are desirable. The capacity of the pouch is then measured with a 5- to 7-cc balloon. A volume in excess of 120 ml is ideal. Finally, an ileal pouch radiograph is obtained to determine the integrity of the anastomosis and of the pouch.

Closure may be accomplished in one of two ways: "folding over" of the stoma or resection and end-to-end ileo-ileostomy. After closure of the ileostomy, usually the first stools are passed 3 or 4 days after the operation.

Two important features of the postoperative course should be emphasized to the patient at this point. First, nocturnal soiling and daytime leakage both can be expected the first few days after closure. Second, 10 to 15 movements per day also are common early after closure. However, both of these somewhat distressing problems abate rapidly after

intake of solid food begins. If stool frequency does not decline to 8 to 10 bowel movements a day with solid diet alone, bulking agents are very helpful. Frequently, antiperistalsis drugs, such as Immodium, are given before dismissal. Finally, patients are instructed to protect perianal skin from irritation with constant care at all times until leakage ceases.

The principal late complication in some patients is non-specific reservoir inflammation, known as pouchitis, which normally occurs 14 months after the operation. This syndrome consists of cramps, abdominal discomfort, sudden onset of watery, often blood-tinged stool, diarrhea, fever, weakness, and malaise. The cause of pouchitis is not known, but a similar syndrome exists in Kocks' pouch patients, the etiology of which is likely bacterial overgrowth in the pouch and the more proximal jejunum. Although a similar etiology is suspected for ileal pouch-anal anastomosis, this has not been proven. Pouchitis occurs in 30% of patients at some point in postoperative course. Treatment with metronidazole promptly relieves symptoms of pouchitis within 48 to 72 hours.

A problem that might be confused with pouchitis is inefficient pouch emptying. Although almost all J pouches empty spontaneously, some do not empty as completely or rapidly as others. The time between emptying shortens

because less content is required to distend the pouch to a volume that prompts the urge to evacuate. This results in an overflow phenomenon. Stool frequency increases, and consistency becomes watery. Patients with such emptying problems do not respond to metronidazole.

### Summary

In summary, the technical goals of the operation are to preserve the innervation of the bladder and genitalia, the anal sphincter and puborectalis muscles and to construct a leak-proof and tension-free anastomosis. If these goals are achieved, complications are minimized, and functional results will be predictably good. □

### Bibliography

*Therapy of Inflammatory Bowel Disease: New Medical and Surgical Approaches.* New York, Marcel Dekker, 1990.

Pemberton JH: Quality of life after Brooke ileostomy and ileal pouch-anal anastomosis. *Ann Surg.* 1988.

Strader M: The ileo-anal reservoir: Alternative to permanent ileostomy. *Nursing Times*, Apr 5-11, 1989.

Pemberton JH, Kelly KA, Beart RW Jr, et al: Ileal pouch-anal anastomosis for chronic ulcerative colitis: Long-term results. *Ann Surg.* Oct 1987.

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