

Elective and Emergent Operative Management of Ulcerative Colitis

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Approximately 25% of patients who have ulcerative colitis ultimately require colectomy for the management of their disease. The precise indication for surgical intervention plays an important role in the choice of surgical procedure chosen. Although most patients (and their surgeons) have the luxury of an elective resection, a small but significant number of patients require emergent therapy, the nature of which may well alter the possibility of subsequent restorative procedures.

Elective operative management of ulcerative colitis

Indications for surgical treatment

Intractable disease is the most common indication for elective operative management of ulcerative colitis. Intractable disease is considered to be present when medical therapy fails to adequately control symptoms or when symptoms are only controlled by therapy that carries an excessive long-term risk for morbidity (for example, high-dose corticosteroids). Growth failure in pediatric patients is considered to reflect intractable disease and should prompt consideration of surgical therapy [1]. Colectomy in patients who have intractable disease has been demonstrated to improve quality-of-life indices [2–4]. Non-adenomalike dysplasia-associated lesions (DALM), high-grade dysplasia, or low-grade dysplasia associated with stricture are also indications for elective colectomy [5]. This recommendation is strongest when two experienced gastrointestinal histopathologists have independently reviewed the specimens and are in diagnostic agreement [6]. Bernstein and colleagues [7] reported synchronous carcinoma at immediate colectomy in 43% of patients who had DALM, 42% of patients who had high-grade

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dysplasia, and 19% of patients who had low-grade dysplasia. There are issues regarding the distinction between DALM lesions and typical adenomas. DALM lesions have associated surrounding flat mucosa dysplasia, whereas typical adenomas do not. Some authors believe that if a lesion is surrounded by biopsy-proven normal mucosa, these lesions can be managed endoscopically without excessive carcinoma risk [8,9].

There is controversy concerning the management of patients who have low-grade dysplasia not associated with stricture. Bernstein and colleagues [7] demonstrated that patients who have low-grade dysplasia have a 16% to 29% incidence of progression to high-grade dysplasia, DALM, or cancer when followed endoscopically. There are reports suggesting that low-grade dysplasia may not be as ominous a finding, however. Befrits and colleagues [10] reported a group of 60 patients who had low-grade dysplasia followed for a mean period of 10 years, in whom only 18% progressed to high-grade dysplasia. This study has been criticized for not following standard histopathologic criteria, in that patients who had biopsies that were indefinite for dysplasia were included in the low-grade dysplasia group.

Stricture develops in 5% to 10% of patients who have ulcerative colitis, and up to 25% are malignant. Strictures that occur in patients who have longstanding colitis, are proximal to the splenic flexure, or are symptomatic have a higher risk for malignancy [11]. Although biopsy of strictures may be helpful, it is often unreliable in the diagnosis of dysplasia or malignancy [12,13], and therefore resection is reasonable.

This longitudinal risk for the development of carcinoma in patients who have ulcerative colitis may be mitigated by the use of 5-ASA medication in patients in clinical remission. There have been several reports that suggest a reduction in carcinoma with long-term use of these medications [14,15].

Surgical options

Proctocolectomy with ileostomy

Despite the popularity of restorative proctocolectomy with ileal pouch–anal anastomosis (IPAA), proctocolectomy with ileostomy remains the benchmark procedure against which others must be compared. It remains the procedure of choice in patients who have impaired sphincter function, significant comorbid conditions, or those who simply choose not to have a restorative procedure [5]. Complications are not uncommon and occur in up to 26% of patients [16]. These include small bowel obstruction, alterations in bladder and sexual function, infertility, failure of perineal wound healing, and stoma-related complications. Stoma-related complications are the most frequent.

Restorative proctocolectomy with ileal pouch–anal anastomosis

Proctocolectomy with IPAA has become the most common procedure performed for patients who have ulcerative colitis undergoing elective

resection. It can be performed open or laparoscopically assisted. The benefits of a laparoscopic approach compared with an open approach seem to mimic those seen with less extensive resections (ie, decreased pain, decreased hospital stay, and improved cosmesis) [17]. Although it has been performed as a single-stage procedure in highly selected patients, it is most commonly performed in two stages with construction of a temporary loop ileostomy. Although there have been several configurations of pouches used (Fig. 1), none has clearcut advantage in functional results [5]. Overall, the J configuration is used most widely. Either a double-stapled technique or a mucosectomy with hand-sewn anastomosis can be used. Several studies have demonstrated no difference in functional results between the two techniques [18,19]. The double-stapled technique is technically easier, but is generally considered to be contraindicated if the procedure is being performed for dysplasia. Symptomatic inflammation in the retained mucosa and the potential development of dysplasia are long-term complications of the double-stapled technique. Long-term surveillance of any retained mucosa is recommended [5]. Age greater than 60 years, although not considered to be a contraindication, is associated with poorer functional results overall [20]. Patients who have a diagnosis of indeterminate colitis are candidates for this procedure. The incidence of pelvic sepsis and long-term pouch failure is higher in this group of patients, however [21]. Concomitant carcinoma is a relative contraindication to an immediate IPAA procedure; a subtotal colectomy with ileostomy with later conversion to an IPAA is usually more appropriate [5]. Overall, the IPAA has been demonstrated to be a safe, durable procedure with an acceptable morbidity (19% to 27%) and an extremely low mortality (0.2% to 0.4%) [22,23]. The quality of life following this procedure is near that of the normal population [24,25]. The risk for long-term pouch loss is 10% and is usually secondary to sepsis,

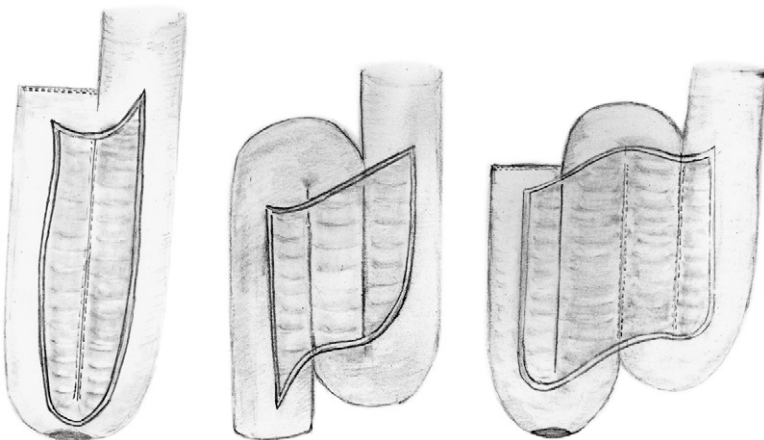


Fig. 1. J, S, and W configurations of ileal pouches.

which may be associated with the development of Crohn's disease [26]. The long-term risk for complications is significantly higher than after proctocolectomy with ileostomy (52% versus 26%) [16] and this relates primarily to pouchitis, the most frequent long-term complication of this procedure [27]. The diagnosis of pouchitis is often mainly on clinical grounds of diarrhea and associated deterioration of anorectal function. This complication occurs in up to 50% of patients postoperatively and is associated with extraintestinal manifestations of inflammatory bowel disease and sclerosing cholangitis [26]. It is most commonly believed to be an immunologic response to the altered bowel flora in the pouch and has been associated with sulfate-reducing bacteria [28,29]. Approximately 60% of patients have recurrent episodes; a minority of patients (5%–19%) develop refractory or chronic pouchitis that requires continuous therapy [30–32]. Treatment with metronidazole or ciprofloxacin alone or in combination is usually all that is needed. A minority of patients require more aggressive therapy with immunosuppressive agents, such as steroids or azathioprine [33]. Other treatment options include probiotics, budesonide enemas, short-chain fatty acid enemas, and even Remicade [33]. The development of ulcerations in the small bowel proximal to the pouch is considered to be suggestive of the development of Crohn's disease. Endoscopic biopsies usually demonstrate nonspecific inflammation.

Subtotal colectomy with ileostomy

Although this is not a common procedure for patients who require an elective resection, this may be an appropriate choice in some situations. One situation would be the unexpected finding of carcinoma at the time of surgery. If palliation is the only reasonable goal based on the findings at surgery, a procedure associated with the lowest risk for complications is a reasonable choice. If a serious attempt to convert to a pouch procedure in the future is anticipated, preservation of the presacral space and the ileocolic vessel by division of the mesentery adjacent to the cecum is extremely important. Several authors have advocated this approach with a delay of 12 months before attempted conversion to detect patients who have early recurrent cancer [34]. Pelvic irradiation following a pouch procedure is associated with a high risk for pouch loss and has a significantly deleterious effect on pouch function [35]. Although conversion to a restorative procedure following pelvic irradiation has not been performed frequently, it is certainly a theoretic possibility. Adjuvant therapy, whether chemotherapy or radiation therapy, is tolerated better with an end ileostomy compared with a high output loop ileostomy.

Proctocolectomy with Kock pouch construction (continent ileostomy)

Currently, this procedure is performed so infrequently that most surgical residents are unfamiliar with this option. Essentially, the distal ileum is intussuscepted into a pouch constructed of more proximal bowel to form

a continent nipple valve (Fig. 2). This procedure is a reasonable alternative for patients who are not candidates for IPAA because of poor sphincter function, patients who are dissatisfied with an ileostomy, or patients who have a failed IPAA. Early complications occur in 25% and are most commonly related to sepsis. Late complications occur in at least 50% and include incontinence and obstruction because of nipple dysfunction [36]. These complications require valve revision. Patients who undergo a conversion to a Kock pouch have a significantly higher rate of long-term failure (46%) compared with those who had the procedure as a primary procedure (23%) [36]. Patients who have a functioning Kock pouch have a quality of life that is only slightly inferior to patients who have an IPAA [37]. Overall, the cumulative loss of small bowel if both an IPAA and a Kock pouch fail make conversion to a Kock pouch after a failed IPAA a procedure to be undertaken only after careful consideration.

Subtotal colectomy with ileoproctostomy

This option is reasonable only in highly selected patients who have minimal rectal involvement without anoperineal disease, as might be seen in patients who have indeterminate colitis [38–40]. It might be appropriate for a patient who has metastatic colon cancer who wishes to avoid a permanent stoma. Patients who have dysplasia or curative carcinoma should not have this procedure performed as a definitive procedure, however [41]. Although it is a safe procedure, the durability of this procedure is limited. Several studies have demonstrated a relatively high risk for failure, ranging between 12% and 50% with follow-up of more than 6 years [42,43]. An additional disadvantage is the need for long-term surveillance of the residual rectum.

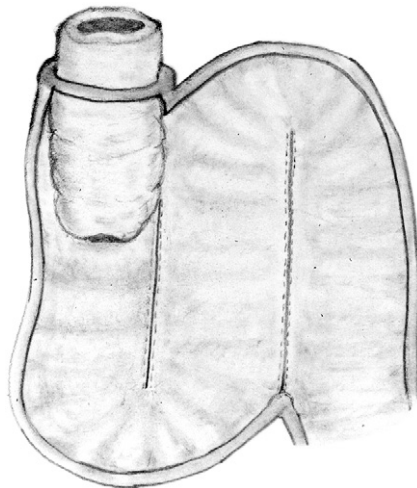


Fig. 2. Kock pouch demonstrating intussuscepted ileum forming nipple valve.

Emergent operative management

Indications for operative intervention

The indication for urgent or emergent surgical intervention includes patients who have fulminant colitis, toxic megacolon, or significant hemorrhage. Approximately 15% of patients who have ulcerative colitis present initially with severe colitis requiring hospitalization. Severe colitis as defined as more than 6 bloody stools per day, fever (temperature $>37.5^{\circ}\text{C}$), tachycardia, anemia (hemoglobin $<75\%$ of normal), and elevated sedimentation rate. Fulminant colitis is defined as more than 10 bloody stools per day, fever and tachycardia as above, anemia requiring transfusion, elevated sedimentation rate, colonic distension by radiograph, and abdominal distension with tenderness [44,45]. Dilation of the transverse colon to greater than 6 cm defines a diagnosis of toxic megacolon and is an indication for emergent surgical intervention [5].

Some 20% to 30% of patients who have severe colitis require surgery [44,45]. Failure to respond adequately within 96 hours of initiation of medical treatment with high-dose corticosteroids, with or without intravenous cyclosporine, predicts a high risk for colectomy. In one study, patients who had more than eight stools per day or three to eight stools per day and an erythrocyte sedimentation rate 0.45 mg/mL after 3 days of therapy had an 85% chance of requiring colectomy during that hospitalization [46].

Perforation, either localized or free, is a serious complication of severe colitis and has a mortality rate between 27% and 57% [47,48]. Impending or actual perforation is suggested by continued or worsening colonic dilation, pneumatosis, localizing peritoneal signs, and the development of multisystem organ failure. As would be expected, the development of multisystem organ failure is extremely ominous. In one series 8 of 11 such patients died postoperatively [49].

Surgical options

Subtotal colectomy with ileostomy

Subtotal colectomy with ileostomy and Hartmann's pouch or mucous fistula is the appropriate choice of procedure for most patients requiring urgent or emergent colectomy. Mortality is extremely low in the absence of perforation [50,51]. Construction of a mucous fistula or transanal drainage of the Hartmann's pouch may decrease the incidence of pelvic sepsis [52,53]. Preservation of the entire length of the ileocolic vessel and nonviolation of the presacral space maximizes the chances for successful conversion to an IPAA procedure at a later date. Some authors have suggested that the optimal time interval to attempting conversion is 6 months because this interval seemed to result in a lower incidence of pelvic sepsis compared with that seen in patients who underwent earlier conversion [54].

Summary

Surgical therapy of ulcerative colitis is effective, safe, and provides an improved quality of life in those whose disease cannot be managed medically. It is life saving for patients who have dysplasia, cancer, or fulminant disease. In the elective setting, widespread acceptance of restorative proctocolectomy has made surgical therapy an attractive option in the overall management of ulcerative colitis. Enthusiasm for this procedure should be tempered by the acknowledgment of the significant incidence of pouchitis in the long term, however. Proctocolectomy with ileostomy remains a good surgical option for patients who are unsuitable for restorative procedures. The standard therapy for fulminant colitis or toxic megacolon remains subtotal colectomy with ileostomy. Patients undergoing subtotal colectomy are candidates for conversion to restorative procedures.

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