



Ulcerative Colitis and the Surgeon

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Abstract

Patients of ulcerative colitis are mostly managed by physicians. Surgeons play a very pivotal role in curative treatment and in dealing with complications of ulcerative colitis. Various technical advances made in the field have reduced surgical morbidity and mortality in these patients with improvement in the quality of life. The article discusses the role of surgery and various surgical options available for ulcerative colitis.

Introduction

Ulcerative colitis (UC) is common in developed countries with an incidence of 10-15 per 100,000 populations and a prevalence of 40-100 per 100,000 populations [1]. Though exact figures are not available from this part of the world, a good number of patients do suffer from ulcerative colitis.

Although treatment of ulcerative colitis primarily remains medical (though not curative), the surgeon continues to have a major role in saving patients life and in eliminating cancer and its long term risk (3.5% which increases to 12% after 20 years of disease) 1 and abolish large intestinal disease. Previously surgery was often delayed because of fear of ileostomy and its social and psychological consequences. With the various technical advances in surgery, understanding timing and proper patient selection, surgeons have been able to preserve sphincters and fecal continence in most of the patients. There have been improvements in stomal care reflecting in improved quality of life, so more and more patients are benefited by surgery.

Surgical Treatment

The rationale of surgical treatment in ulcerative colitis is to remove diseased bowel completely, maintain voluntary transanal defecation with reasonable fecal continence, avoidance of permanent ileostomy with minimal complications. Therefore, patients show overall improvement in health.

Elective indications

Failure of medical treatment: About 87-92% of patients with mild to moderate disease respond to medical treatment. Some patients with partial response continue to live with mild to moderate symptoms but patients with complete failure should be advised surgery. In patients with severe disease response rates are low and they need large doses of medications which may be unacceptable because of intolerable side effects, such patients opt for surgery. Patients with poor nutritional status and failure to grow despite medical treatment do better with surgery.

Recurrent intestinal obstruction: Intestinal obstruction is almost always due to malignancy. Even if investigations including biopsy favour benign stricture, still proctocolectomy is recommended.

Chronic bleeding: Chronic blood loss necessitating frequent admissions for transfusion is also an indication for elective surgery.

Cancer: Patients with disease for more than 10 years, involvement of entire colon and onset in childhood are at risk of developing cancer and should be offered prophylactic proctocolectomy. Alternatively they should be kept under close and vigorous surveillance which may be difficult especially in mild to moderate disease. Colonoscopy should be advised every second year after 9th year of disease with sigmoidoscopy in intervening year upto 15 years after which colonoscopy should be done yearly. Dysplasia does not always precede carcinoma and carcinoma may be already present when dysplasia is first detected. Patients with colonic mucosal dysplasia have more than 50% chance of developing invasive cancer and proctocolectomy should be recommended to them [2].

Extraintestinal manifestations: Approximately 30% patients of ulcerative colitis have at least one extraintestinal manifestation [3]. Cutaneous, joint and vascular manifestations usually regress

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Received Date: 14 Nov 2016

Accepted Date: 28 Dec 2016

Published Date: 30 Dec 2016

Citation:

Chowdri NA. Ulcerative Colitis and the Surgeon. Clin Surg. 2016; 1: 1280.

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Figure 1: Acute fulminant colitis (sub total colectomy specimen).

and do not recur after resection of entire colon and rectal mucosa. Other manifestations like ankylosing spondylitis and rheumatoid arthritis have separate disease pattern and genetic predisposition in common with ulcerative colitis and usually do not respond to surgical treatment. Patients with primary biliary cholangitis may progress to cirrhosis and cholangiocarcinoma after surgery. Many of the extracolonic manifestations improve as the severity of disease decreases with medical treatment, but if these continue to cause considerable symptoms, surgery should be considered.

Emergency indications

Fulminant colitis: Nearly 10% of ulcerative colitis patients present with fulminant colitis (Figure 1). These patients present with severe abdominal pain, fever, tachycardia, severe diarrhea, dehydration, weight loss and increased leucocyte count. Sometimes fulminant colitis may be the initial presentation of the disease. Though ulcerative colitis is primarily a mucosal or submucosal disease, inflammation in fulminant colitis has gone through all the layers of colon. These patients are treated aggressively with medication but failure to improve within 72 hours and continued deterioration warrants prompt surgical intervention. With aggressive medical treatment and early surgical intervention mortality is reduced to less than 3% [4].

Toxic megacolon: It may be initial presentation of the disease and develops in 6% of hospitalized patients of ulcerative colitis. These patients have colonic diameter of more than 6 cm in addition to signs and symptoms of fulminant colitis. So patients with severe colitis should have serial daily radiographs of the abdomen. Hypokalemia, anticholinergics and barium sulphate enema are the precipitating factors. Dysentery, typhoid and amoebic colitis should be considered in differential diagnosis of toxic megacolon. Surgery is indicated if there is no improvement in 24 hours with medical treatment, deteriorating general condition and progressive increase in colonic diameter. Early operative intervention is better. Mortality of toxic megacolon without perforation is 4% and it increases to 20-40% in patients with perforation [5].

Perforation: It is usually rare for colonic perforation to occur in absence of toxic megacolon. In such cases, crohn's disease should be ruled out. High doses of steroids may mask symptoms. Early surgical intervention reduces mortality in these patients.

Acute massive bleed: Less than 4% of patients of ulcerative colitis present with massive bleed but it accounts for 10% of emergency colectomies performed in such patients [2]. It is often associated

with toxic megacolon. Excessive need for transfusion is an indication for emergency near total proctocolectomy with ileal pouch anal anastomosis in young patients; however, restorative procedure may not be possible in elderly patients.

Indeterminate and crohn's colitis

Sometimes pelvic pouches are made with incorrect diagnosis in a patient with crohn's colitis. However failure rates and fistula rates are higher (19% vs. 8% and 31% vs. 9% respectively) in indeterminate colitis vs. patients with ulcerative colitis [6]. Such patients should be offered restorative surgery only if they desire so and cannot live with permanent ileostomy, provided they understand risks and are aware of removal of pouch with loss of two feet of small gut, if needed.

Preoperative preparation

The patient should be well prepared to reduce the complications with improved surgical results.

Patient counseling and education: All patients should be educated and explained the various surgical options available, risks and benefits of different procedures, the need for stoma and follow up.

Nutrition: These patients usually have low nutritional status. Fluid and electrolyte imbalance, anemia, coagulation deficiencies and hypoproteinemia should be corrected first. Sometimes patient may need parenteral nutrition.

Medical measures: Patient receiving or who have recently (within 1 year) received steroids should have additional stress dose therapy of 100 mg of hydrocortisone 8 hrly in the perioperative period to ensure adequate hormonal support during surgery. Preferably patient should be off steroids for two months or on a very low dose (10 mg per day) before extensive restorative surgery. Similarly aspirin compounds are withdrawn a week before elective surgery. Immunosuppressants should also be withdrawn for as long as possible before surgery.

Prevention of thromboembolic: Prophylaxis for thromboembolic in the form of elastic stocking and pneumatic compression should be provided. However, heparinization is withheld.

Bowel preparation: Conventional bowel preparation in the form of clear liquids a day before surgery, whole gut irrigation a night before surgery, neomycin (1 gm) and metronidazole (500 mg) orally a day before procedure at 5 pm and 11 pm are advice.

Surgical options

The surgical procedures currently in use for ulcerative colitis are

Total proctocolectomy with ileal pouch anal anastomosis (TPC with IPAA): Restorative proctocolectomy with pouch formation has become the procedure of choice for many patients of ulcerative colitis [7]. The operation is attractive because it avoids permanent ileostomy, cures the patient of disease while preserving the anorectal function. The indications for TPC with IPAA are:

- Ulcerative Colitis: Most cases of ulcerative colitis (surgery indicated) who are well motivated, are less than 50 years of age, have good sphincter function, without any significant comorbidity or low rectal or perianal pathology are candidates for this procedure.
- This procedure is also indicated for Familial adenomatous polyposis, some cases of colorectal tumours and Hirschprung's disease. Crohn's disease is a contraindication.

In this procedure total proctocolectomy is done with mucosectomy of upper anal canal and distal rectum with anastomosis of ileal pouch with dentate anal. In an alternative technique TPC with IPAA is performed by using staplers without mucosectomy. The advantages of this technique are precision, no tension on anastomosis with preservation of good blood supply to the stump. However, retained anorectal mucosa has a risk of colitis, dysplasia and malignancy and these patients should be kept under surveillance, though malignancy has been reported even after mucosectomy probably because of regeneration of mucosa. Temporary fecal diversion is done in most of the centers to allow anastomosis to heal well and reduce septic complications; however, diversion can be avoided in selected patients.

The complications of ileal pouch anal anastomosis procedure include small bowel obstruction (13%), pelvic sepsis (3-6%), anastomotic leaks (10-14%), wound sepsis (3%), urinary dysfunction (5%), stoma related (5-25%), fecal incontinence (usually nocturnal in 20-30%), pouchitis (18% at 1 yr and 40% at 10 yrs), stricture, fistula (9%), sexual dysfunction (11-12%), cancer, pouch failure (75% at 1 yr and 9% at 10yrs). The mortality following TPC with IPAA is less than 2% with morbidity ranging from 13-58%. However, inspite of high morbidity majority of patients (80-90%) are satisfied and the overall consensus at present is that the pouch anal procedure offers the best quality of life when compared with alternatives [8-13].

Proctocolectomy with ileal pouch distal rectal anastomosis:

The rationale of this procedure is that it is easy to perform and preserves transitional mucosa (anal sensation, sphincter function and continence). However, the concern with this procedure is that the diseased mucosa that is left behind can undergo dysplasia and malignant change.

Proctocolectomy with end ileostomy (Brooke): This procedure is indicated in elderly patients, those with incontinent sphincter, synchronous low rectal cancer, significant comorbidity and prohibitive concern about outcome of pelvic or Kock's pouch. Toxic colitis, toxic megacolon and significant comorbidity are contraindications for this procedure. In these patients subtotal colectomy with end ileostomy should be done. The advantages of this procedure are that it is one stage operation, least complex and with good social support 90% of these patients adapt to limitations of ileostomy. The drawbacks include complete fecal incontinence, problems related to stoma, ever present threat of leakage of stools and gas, psychological factors, appliance cost, urinary and sexual dysfunction and perineal wound [14].

Proctocolectomy with continent ileostomy (Kock's Pouch):

The rationale of this procedure is making an internal reservoir for storage of feces which can be voluntarily emptied by a catheter (30 Fr with big holes) with internal valve for continence. Incisions for making pouch are made on antimesenteric border which reduces contractions and keeps the pressure low in the pouch. This type of operation is indicated in all those patients who are candidates for conventional Brooke ileostomy but want to improve quality of life, preserve fecal continence, avoid external appliance and for those with non availability of bathroom facilities and failed ileoanal anastomosis. The contraindications include old patients (more prone to valve dysfunction), crohn's (risk of recurrence in small bowel), obese patients (more chance of nipple valve failure), critically ill patients, toxic megacolon (staged procedure better), psychologically unfit (unable to intubate and cannot tolerate reoperation if required) and those with multiple abdominal operations (due to adhesions).

The procedure avoids external bag (95%) and offers improved quality of life. It is effective with no peristomal odour, social, sexual or psychological problems. However, it is complex with risk of pouchitis, valve complications (5-25%) and needs expert surgeon to fashion pouch [15,16].

Colectomy with ileorectal anastomosis: This type of operation is indicated in patients who are not suitable for IPAA or Kock's pouch, young patients who want to avoid any type of ileostomy and its disability and risks related to rectal excision, if crohn's disease cannot be excluded and if ulcerative colitis is associated with metastatic malignancy of colon. However, this procedure is avoided in patients with severe rectal disease, dysplastic changes in rectum, emergency situation (anastomotic breakdown- it is better to close distal rectal stump or make a mucous fistula if stump is friable with proximal ileostomy).

The procedure maintains anal route of defecation and is safe with minimum complications. But, it leaves the disease in the stump with 6% cumulative risk of cancer after 20 years (15% at 30 yrs) and needs continuous endoscopic surveillance. The procedure is performed as a single stage electively but should be performed as a two stage procedure in emergency conditions [17].

This type of operation has a limited role at present and only 55% have satisfactory functional results. Approximately 36% of these patients require proctectomy within few years. However, this is the safest procedure for seriously ill patients (severe colitis, leucocytosis, toxic megacolon, massive hemorrhage, severe anemia and hypoalbuminemia). Proctectomy should be avoided in these patients. It reduces blood loss and avoids transfusion. Patient can be weaned off steroids slowly (over a period of 4-6 wks), anemia and nutritional status improves. Patient also gains experience to live with ileostomy for comparison with pelvic pouch. The pouch can be constructed later and rectum dissected under best possible conditions.

Conclusion

With the advances made in surgical technique, anesthesia, antibacterial therapy the morbidity and mortality in expert hands has significantly reduced in patients with ulcerative colitis. Therefore, surgery should be offered to all suitable patients in whom it is indicated.

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