

Surgery and Ulcerative Colitis

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Abstract

The management of ulcerative colitis requires the collaboration of various teams looking after the patient and any decision regarding surgery should involve not only the patient and the surgeons but also various other professionals looking after the patient. Surgery may be needed in the acute setting or in patients with chronic disease and the management in these two scenarios is different.

This article will look at the indications for surgery in patients with both acute and chronic colitis and the various options available, together with the results expected. We will also give an overview of the results on 27 cases of chronic colitis with restorative proctocolectomy operated on in our unit.

Introduction

The management of a patient suffering from ulcerative colitis is complex and requires teamwork between various professionals. Apart from the gastroenterologist and the surgeon looking after the patient, the input from nurses, nutritionist, stoma therapist and social worker or psychologist is of great value.

The optimisation of patients' health, both physical and psychological, prior to undertaking such a taxing procedure is imperative especially in these patients who have been through a period of chronic ill health, malnutrition and may also have extra-alimentary disease.

Acute colitis

Although the majority of patients with acute colitis are successfully managed medically, a good 30-40% of patients will come to surgery for various indications.

Indications (Table 1)

Failure to respond to medical therapy is by far the commonest indication for surgery. A patient who undergoes regular clinical assessment for early recognition of signs of deterioration will end up with better results. Early and regular assessment by the gastroenterologist and surgeon together will benefit the patient tremendously.

Toxic megacolon should be detected clinically and a plain radiograph will enable assessment of colonic diameter. Abdominal tenderness and rigidity suggesting local or general peritonitis are an indication for surgery. The presence of intramural gas on plain abdominal radiography is a sign of imminent perforation and an indication for immediate surgery. Perforation in these patients who are almost invariably on high dose steroids may be silent and consequently carries a mortality rate in the region of 40%.

Apart from deterioration, failure of improvement over a period of several days is also an indication for surgery. A high frequency of defaecation on initial presentation, more than 10 times a day, with passage of blood with every motion is an indicator that surgery is more likely to occur in this admission. A low albumin, anaemia and weight loss of more than 10% all are indicators of high risk for surgery.

Procedure

The operation of choice is *colectomy with ileostomy and preservation of the rectal stump*. This will allow a restorative procedure to be carried out at a later stage. There is no role of limited colectomy.

The patient is placed in the Lloyd Davies position to allow easy access to the rectum. The bladder is catheterised either via urethra or suprapubically. The ileostomy site is marked in advance, if possible by the stoma therapist, and the trephine for it made before the abdomen is opened. This enables accurate siting before the abdominal wall is distorted by the laparotomy.

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Table 1: Indications for surgery in severe acute colitis

- Acute severe colitis failing to respond to medical treatment
- Toxic dilatation
- Perforation
- Severe Bleeding

A midline incision preserves the abdominal wall on either side for potential stoma sites.

Antibiotic and deep vein thrombosis prophylaxis are imperative.

Deflation of the bowel by endoscopy prior to the procedure might be helpful in the presence of dilatation of the bowel.

Mobilisation starts from the right colon and the terminal ileum is divided early to avoid traction on the friable small bowel mesentery. Preservation of the greater omentum is desirable but not compulsory. Vessel ligation is performed with a transfixion stitch.

The distal level of resection is very important, as, unless the indication for surgery is rectal bleeding, one should allow enough length of distal stump to be able to exteriorise it as a mucous fistula. Whether to exteriorise or not is decided during the operation depending on the patient's condition and the frailty of the bowel wall. If in doubt it is safer to bring out a fistula in the left iliac fossa or suprapubically. Otherwise the rectosigmoid is closed off with sutures or staples and postoperatively drained by intermittent insertion of a proctoscope until the proctitis settles.

A spouted ileostomy should also be fashioned with a spout of about 2.5 cm. The terminal 5 cm of ileum should be dissected in such a way as to be supplied by the marginal artery only, to facilitate eversion with minimal bulk of mesentery. To avoid intra-abdominal volvulus of the small bowel, the mesentery of the terminal ileum is sutured for a distance of 5 to 10 cm to the peritoneum of the anterior abdominal wall.

Postoperative outcome

After urgent surgery the recovery period is slow, sometimes taking weeks. One must remember that the proctitis still needs to be treated. Complications include intestinal obstruction, which tends to settle down on conservative management, and sepsis. In the presence of a closed off rectosigmoid stump leakage is the commonest source of sepsis and, if this is confirmed by a contrast enema, should be exteriorised as a fistula. Perioperative mortality is in the region of 3%.¹⁷

Chronic colitis

Most patients requiring surgery are those with extensive disease as they are more likely to have severe symptoms and debility as compared with those with limited disease. They are at a higher risk of developing acute severe colitis and malignant transformation and they are more prone to develop extra-alimentary disease.

In our unit there were 27 patients undergoing surgery for chronic colitis with a female to male ratio of 16:11. Their results have been audited prospectively and during this section of the article will be discussed.

Table 2: Indications for surgery in chronic colitis

- Failed medical treatment
- Extra-alimentary manifestations
- Growth retardation in the young
- Malignant transformation

Indications (Table 2)

Failed medical treatment is difficult to define as; unlike in the acute situation where clinical signs play a major role in chronic cases, one has to rely on the patient's perspective of his symptoms. Close liaison between gastroenterologist and surgeon is very important in these situations.

Failed medical treatment includes a spectrum of clinical situations. Chronic symptoms, whether general e.g. anaemia, retardation of growth in children and extra-alimentary manifestations; or local e.g. diarrhoea interfering with patient's work, social or family life will all support a decision for surgery and are other chronic symptoms one has to consider. In our series, 1 patient had surgery for uncontrollable bleeding, one for extra-alimentary disease. Another patient did not tolerate the medication

Failure of complete remission is another indication. This was the main indication for surgery in our group: 10/27 (37%). The risks of steroid dependence or prolonged immunosuppression have to be balanced against the dangers and sequelae of surgery. This is why it is important for surgeons carrying out these procedures to audit their results.

Recurrent acute exacerbations, even if they respond to medical therapy, are also a relative indication for surgery during remission as one must remember that surgery in the acute phase will take the form of a colectomy and ileostomy whilst in remission a definitive restorative procedure can be performed. The next highest indication for surgery 6/27 (22%) was active disease for more than 10 years.

Malignant transformation or the presence of dysplasia on biopsies should be considered as indications for radical (oncological) resection.

Choice of operation

There is no place for partial colectomy even if the right colon looks normal due to the high incidence of recurrence of disease in the residual colon. Proctocolectomy preserving only the anus has also fallen out of favour because of the high incidence of pelvic sepsis owing to poor drainage through an intact sphincter. Also a second stage restorative procedure is rendered difficult due to the distal level of resection of the bowel.²

Colectomy with ileostomy and preservation of rectum

This procedure as used in the acute situation has a role in elective surgery. There are a group of patients who are too debilitated to undergo a major restorative procedure. The advantages include a well-tolerated procedure with low morbidity, quick recovery and withdrawal of treatment. The end ileostomy is also an educational exercise to the patient who is planned for a pouch in case the latter fails and to prepare them for the slightly increased frequency of defecation associated with this procedure.

Table 3: Choice of operation in chronic colitis

- Colectomy with ileostomy and rectal preservation
- Colectomy with ileorectal anastomosis
- Proctocolectomy with permanent ileostomy
- Restorative proctocolectomy with ileal reservoir

Table 4: Causes of excessive frequency

Mechanical

- Partial intestinal obstruction
- Outlet resistance
 - Ileo-anal stricture
 - Distal ileal segment
 - Retained distal rectum
- Weak sphincter
- Small reservoir

Inflammatory

- Pouchitis
- Retained distal rectum

Functional

- Increased motility
- Short bowel syndrome

The disadvantage is the need for a further operation although there will be no particular hurry for reoperation in most cases.

Colectomy with ileorectal anastomosis

To allow this procedure the rectum should be able to act as a reservoir: thus on proctosigmoidoscopy there should be mucosal sparing and distensibility on insufflation or proctography, absence of dysplasia, and good sphincter function.

It is a compromise operation: easy to carry out with low morbidity and mortality at the price of regular proctoscopy with biopsy and also treatment of residual proctitis. Failure rate can be up to 20% because of persisting inflammation and development of malignancy⁸. This will necessitate rectal excision with either ileostomy or restoration.

The colonic resection is similar to that of colectomy with ileostomy and rectal preservation. An anastomosis is subsequently fashioned between the rectum and terminal ileum. There is no difference in results between stapled and hand anastomosis.

Conventional proctocolectomy with permanent ileostomy

With this procedure ulcerative colitis is cured with the disadvantage of a permanent ileostomy. This procedure is indicated if the rectum and anus are unsuitable for restorative procedures e.g. sphincter dysfunction with incontinence. Further advantages include the absence of pelvic sepsis and pouch related problems. These are offset by the inconvenience of a permanent ileostomy, the possibility of ileostomy-related complications (at around 25% at 5 years) and delayed healing of the perineal wound (20% up to 6 months).^{4,5}

The resection and fashioning of ileostomy is similar to that of colectomy with ileostomy and rectal preservation. Dissection of the rectum with cancer should ensure good clearance. In the absence of cancer or dysplasia, perimuscular dissection of the rectum preserving the mesorectum and therefore the pelvic nerves is indicated. The perineal dissection in this case should also be intersphincteric.⁶

A Kock's⁷ continent terminal ileostomy for intermittent catheterisation can be fashioned but in patients with an intact perineum, this has been superseded by restorative proctocolectomy.

Restorative proctocolectomy

Sphincter preservation was first described in 1949⁸ and has developed from a straight ileo-anal pouch⁹ through to the ileal pouch,¹⁰ as we now know it. The only indication for a restorative proctocolectomy is to avoid a stoma as a conventional proctocolectomy gives excellent results. Both medical and personal issues have to be taken into consideration.

It is important to mention that ill patients would benefit more from an initial colectomy as mentioned earlier. Another important point is that in the presence of cancer, radicality of surgery should take precedence over anything else. Many surgeons feel that Crohn's disease should be excluded because of the poor results (over 20%); patients with "indeterminate" colitis in the long term also do not do well. Active anal lesions such as fissures, fistulae, sepsis or ulceration are also a contraindication.

When there are no medical issues contraindicating restorative procedures, the decision is best left to the patient as to whether to proceed with the procedure after informed consent regarding failure and complication rates, total treatment time, the possibility of pouchitis, and the final functional outcome. It is therefore important for the surgeon involved in these procedures to keep an accurate audit of his results. The support of a stoma nurse, and any other support groups or personnel is very important at this stage.

The technique is similar to conventional proctocolectomy to the stage where the rectum is mobilised. Then the rectum is taken down to the anorectal junction and divided either by a transverse stapler or by hand.

The next step is to assess the mobility of the small bowel mesentery and if necessary mesenteric vessels are divided, being very careful to preserve the vascular supply to the planned pouch, to elongate the mesentery.

There are three main type of reservoirs, the "J" 2-limb reservoir is easy to make with only one anastomotic line.¹¹ The "S" 3-limb original Park's reservoir has a short segment of ileum distal to the pouch that gives problems with evacuation and is now falling out of favour. The "W" 4-limb reservoir has a very large capacity, and therefore less frequency, at the expense of 3 anastomotic lines¹². In our series the first case was an "S" pouch which was immediately abandoned for the reason mentioned above, the next 5 were "W" pouches with very good function, in fact one patient defaecates once every 2 days a well formed stool. The remaining 21 pouches were of the "J" variety, still with excellent function as we will see later.

There is no difference between hand and stapled ileo-anal anastomosis as regards morbidity, mortality and function. There are techniques for accurate placement of the anastomosis in both situations. Erroneous stapling in the abdomen can result in pouch-rectal stump anastomosis with incomplete emptying, frequency, bleeding, discomfort and urgency.

Although anal pressures drop after surgery¹³, there are usually no problems with continence post-operatively.

Most surgeons use a defunctioning ileostomy routinely

especially in the early stages of experience. Apart from its “educational” role as mentioned before, it is thought to minimise the effects of pelvic sepsis in the presence of a leak should it occur (10-20 %) and allows recovery from such a major operation without the initial functional problems associated with a new pouch. The first 22 cases had a temporary ileostomy for between 3 and 12 weeks, the next 4 without ileostomy, then the last one again with ileostomy.

Unfortunately the ileostomy itself can cause problems with its formation and closure in up to 20% of patients (5/27 (18.5%) in our cases: mainly post ileostomy closure incisional hernia). Therefore one has to balance the advantages of a one-stage procedure with the potential serious complication of pelvic sepsis or peritonitis in a small number that develop a leak.

The results of this procedure are assessed in three categories but unfortunately in most studies, colectomy for ulcerative colitis and for familial adenomatous polyposis are grouped under the same umbrella. In our study however the cases operated on for colitis were separately studied:

- Failure of pouch is when the pouch needs to be removed and a permanent ileostomy given to the patient and is reported at 5–15% at 1 year. Our local figures are very good with no case of pouch failure reported. The usual reasons are pelvic sepsis and poor function. Fistulae and occasionally pouchitis are also reported as reasons for failure at a later stage.
- Complications or post-operative morbidity is in the region of 20–50 %. Most resolve spontaneously. The incidence of pelvic sepsis varies between 5–20 % and is due either to anastomotic breakdown, infected haematoma or both. A defunctioning ileostomy is essential and any collection drained under anaesthesia into the lumen. There were no cases of anastomotic breakdown in our series.

Anastomotic stricture requiring dilatation or a more active intervention is common. Four out of 27 cases (15%), one late, were reported in our study. These were managed by dilatation or incision, with excellent results.

Intestinal obstruction occurs in 5–20% of cases, most cases resolving spontaneously. Pouch-vaginal fistula occurred in 1/16 (6.25%) and is reported at about the same rate in about 7.5% of female patients and is a major cause for late failure occurring at a median interval of 8 months post-op. Repair under ileostomy protection is only successful in around 40 %. In our case it was repaired successfully via the vagina without covering ileostomy.

- Problems with function are mainly related to frequency of defaecation and continence. The following are our results that compare very well to published literature. All patients are fully continent with no cases of nocturnal soiling. All can distinguish between flatus and faeces. The frequency of defaecation is 1-4 times. There were no cases of bladder dysfunction and 1 patient carried a pregnancy to term and delivered vaginally with a quadruple pouch.

The frequency of defaecation is inversely related to the capacitance of the reservoir. The average published frequency is around 6 times in 24 hours but most patients are usually happy with this because of the absence of urgency. Frequent nocturnal defaecation is a bit more upsetting and is usually an indicator of poor function. The causes are varied (Table 4) and treatment varies according to aetiology. Incontinence is not usually a problem with adequate preoperative assessment of sphincter function (5% in published literature).

4 cases of pouchitis (15%) – all successfully treated medically. Although 1 was associated with seronegative arthropathy and was advised pouch removal, the patient refused to give up on her pouch. Pouchitis is of unknown aetiology but the incidence is related to the original disease. Diagnosis is confirmed by histology. Removal of the pouch is rarely needed. Treatment is medical with antibiotics or anti-inflammatory agents.

Conclusion

Ulcerative colitis is a medical disease that might need surgical intervention. It is important to audit one's results to enable the patient to make an informed consent. However the results of surgery are dependent not only on the surgical procedure chosen and the surgical technique employed, but also on the multidisciplinary support offered to the patient.

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