

特別講演II

SURGERY OF INFLAMMATORY BOWEL DISEASE

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**The Surgery of Inflammatory Bowel Disease**

The patient with ulcerative colitis is most at risk in an acute fulminating attack. Although cancer in colitis is a very emotive subject far more patients will die each year with acute fulminating colitis. In a study in 1974 by Dr. Ritchie of 294 patients with acute fulminating colitis in the North East Metropolitan Hospital Region between 1967 and 1972 there were 60 deaths out of 131 patients with acute colitis. Only 10 patients had carcinoma associated with colitis of whom 4 died. At St. Mark's Hospital in the decade from 1970 to 1979, 183 operations were carried out for ulcerative colitis. 112 of these were elective operations and there were no deaths. 71 patients had urgent operations of whom 3 died a mortality of 4.2%.

**Acute Colitis-Indications for Operation**

The severe attack of ulcerative colitis is one in which the patient had diarrhoea with more than 6 bowel actions in 24-hours containing blood. There will be systemic effects with the fever greater than 38 deg. C. a tachycardia of over 100. There will be a marked leukocytosis with a raised ESR. The patients will often be considerably anaemic and the plasma albumin may fall to below 30 grammes per litre. In some of these patients toxic dilatation of the colon will occur with a diameter of greater than 5.5cm. in the mid-part of the transverse colon where it crosses the spine.

In established cases of toxic dilatation the colon may dilate to two or three times this diameter and the dilatation is associated with extensive ulceration with residual mucosal islands which can be seen in plain X-rays of the abdomen. Patients who present with a severe attack of ulcerative colitis should be seen jointly by a gastroenterologist and a surgeon from the time of their admission. They will need clinical and laboratory evaluation and if there is any suggestion of dilatation of the colon repeated plain X-rays will be required. The outcome of a severe attack of ulcerative colitis can usually be determined in the first 24-hours after hospital admission with adequate medical treatment which will include intravenous fluid and electrolyte replacement, blood transfusion if required and parenteral steroids in large doses. If the temperature remains greater than 38 deg. C. and the bowel frequency greater than 8 in the first 24-hours only 1 in 5 patients will have a successful outcome on medical treatment. An albumin level of lower than 30 grammes per litre and the presence of oral monilia are also bad prognostic signs. However, the clinician must be cautious in the evaluation of these patients and a frequent error is to underestimate the severity of the disease. Buckle and Lennard-Jones in 1979 published their findings on the evaluation of 26 patients with toxic dilatation of the colon. 15 of them never had a temperature greater than 38 deg. C. • 12 of them never had a bowel frequency of more than 6 stools in 24-hours and there were no abdominal signs with guarding or rebound tenderness in 18 of the patients. However, 22 of this series came to urgent surgery for toxic dilatation of the colon and 3 of them died.

**The St. Mark's Experience**

Between 1971 and 1980 there were 75 patients at St. Mark's treated for acute inflammatory bowel disease. 36 of the patients were male and 39 female with an age range of from between 12 to 76 years.

Many patients will have an acute fulminating attack soon after the onset of their first symptoms of ulcerative colitis. In this series 20 of the patients had a total history of less than 1 year, a further 24 from 1 to 4 years and 31 had a history of more than 5 years before the onset of an acute fulminating attack. The majority of patients in this category will have extensive disease; 51 of the patients had total colitis, a further 11 had extensive colitis with disease extending to the hepatic flexure, and a further 11 substantial disease involving the transverse and descending colon. Only 2 patients had purely left-sided disease. The urgency of operation varied in this series. 28 patients had an emergency operation within 12 hours of being admitted to hospital. The other 47 patients had urgent surgery after attrial of medical treatment and most of these had operations within 72 hours. The indication for operation was failure of medical treatment in 44 patients 4 of whom died. Toxic megacolon in 20, severe bleeding in 3 and perforation in 8 patients, 1 of whom died. The operation of choice at St. Mark's for the last few years had been colectomy with an ileostomy and a mucous fistula made by bringing out the divided sigmoid colon through the lower end of the abdomnal incision. 51 patients had this operation carried out and there were 2 deaths. Total proctocolectomy which was more commonly carried out in the previous decade had a higher mortality and morbidity. In this series only 19 patients had this operation performed and with 2 deaths. The only indiciation to-day for carrying out an emergency proctocolectomy is for severe haemorrhage as the site of this is often the rectum. Colectomy and ileo-rectal anastomosis was carried out in 4 patients but this is not an operation to be carried out in the acute fulminating case. If special circumstances dictate that this operation is performed in the urgent as opposed to the emergency situation it must be covered with a defunctioning ileostomy. One patient with Crohn's disease who had persistently refused operation developed a caecal perforation in a loaded colon with distal stenosis and had sever faecal peritonitis. An ileostomy was constructed, peritoneal toilet was carried out and the perforation oversewn, but the patient died at the conclusion of the operation.

### **Colectomy and Ileostomy—The Operation of Choice**

Colectomy with an ileostomy and mucous fistula has been adopted as the operation of choice in these patients for a number of reasons. As has been shown many of these patients come to operation early after the onset of the disease when life has never been considered with an ileostomy and the operation is more acceptable if the rectum is left in situ and the possibility exists of continuity being restored. In all series the mortality and morbidity is decreased by avoiding proctocolectomy as it lessens the blood loss and the risk of pelvic infection. These patients need systemic antibiotic cover and the antibiotics most commonly used at St. Mark's are Gentamycin and Metronidazole. When operating on a case of toxic magacolon it is important to avoid perforation and soiling of the peritoneal cavity. This can be aided by deflating the colon with a soft tube or a small bore sigmoidoscope which is gently passed into the rectum after the patient has been anaesthetised. When the abdomen is opened further deflation can be carried out with a large bore needle and inserting it into the colon and sucking out gas and fluid contents again avoiding spillage. If the colon is adherent to the omentum or the perietal peritoneum in the lateral gutters it must not be stripped away from these structures as this can represent the site of a sealed perforation which will be opened. Discs of perietal peritoneum must be removed with the specimen. Although the omentum is preserved where possible in colectomy for inflammatory bowel disease in the acute fulminating case it may be difficult and dangerous to preserve the omentum which should be removed with the specimen. No attempt is made to suture the mucous fistula to the abdominal wall as the sutures may cut out of the oedematous colon and it is best fixed with an enterotome which will separate in about a week. In these cases closure of the rectal stump within the peritoneal cavity is contraindicated as in a considerable number of cases sepsis will lead to pelvic abscess formation and severe complications. At St. Mark's we have found no place for the split ileostomy procedure as advocated in Oxford or ileostomy and blowhole colostomies as advocated by Turnbull and his colleagues at the Cleveland Clinic.

Diagnosis of the condition in patients who present with acute fulminating colitis may be uncertain as the operation undertaken is the same. In the series from St. Mark's the pathological diagnosis was ulcerative colitis in 55 of the 75 patients, 6 of the patients were diagnosed as having acute Crohn's colitis and 14 unclassified colitis where the diagnosis was still uncertain. 2 of these patients subsequently proved to have Crohn's disease. Of the 49 operations survivors who had a colectomy and ileostomy carried out 25 of them subsequently had an excision of the rectum as a second stage procedure. 10 of them had an ileo-rectal anastomosis and a further 2 excision of rectum with an ileo-anal pouch constructed. In 12 the decision on the fate of the rectum is still pending. The seriousness of surgery for acute colitis can be seen from the continuing high mortality. In the North East Metropolitan Hospital Region involving many district hospitals between 1967 and 1972 the mortality was 46% while in the specialist centres at St. Mark's and Leeds the mortality for urgent surgery at the same time was less than 10%.

Over the last decade the mortality in district hospitals and specialist units has fallen but remains high. Muscroft, Asquith et al published their results from East Birmingham Hospital in April 1981 and reported 65 cases of acute colitis treated in two six-year periods before and after January 1973. The mortality fell from 36% to 21% but in toxic megacolon it remains at 30%. In the series reported here mortality at St. Mark's in the last decade was 6.6% while in the Cleveland Clinic experience reported by Fazio in 1980, 109 patients had surgical treatment with a mortality of 7.8%. When sub-total colectomy was carried out in their series in 26 patients the mortality was 11.5%. Decompression with an ileostomy (The Turnbull technique) was carried out in 83 patients with 3 deaths, a mortality of only 3.6% but 2 further deaths occurred in the subsequent colectomy giving an overall mortality in this group of patients of 9.6%. The mortality in the Oxford series reported by Truelove and Mark's in 1981, 25 patients came to emergency surgery, proctocolectomy was the operation of choice and there were no deaths. However, in this small series only 4 patients had toxic megacolon. These authors remain one of the few groups who still support the view that proctocolectomy should be carried out as the operation of choice in fulminating colitis. Perhaps the best results obtained so far are those reported from Oslo by Flatmark had only 1 death in 79 patients with 2 further deaths occurring after the second procedure, an overall mortality of 3.7%. With combined medical and surgical care and the choice of the correct operation the mortality for acute colitis should be reduced to below 10%. Perhaps a case can be made for these patients to be moved to regional centres for management.

### **Elective Surgery in Ulcerative Colitis**

Elective surgery in ulcerative colitis is carried out in patients with chronic relapsing disease and persistent ill health, or for those with total colitis of long standing who develop severe dysplasia and are at risk for developing carcinoma. The operations which are undertaken are elective proctocolectomy with a conventional Brooke ileostomy or colectomy with ileo-rectal anastomosis. Patients who require proctocolectomy but are reluctant to live with a conventional ileostomy may be suitable for a Kock ileostomy or an ileo-anal reservoir procedure.

Elective surgery is a safe procedure and at St. Mark's between 1971 and 1980, 115 elective operations were done for ulcerative colitis with no mortality. 73 of these patients had total proctocolectomy, 4 a colectomy and ileostomy and in 38 a restorative procedure was done in most cases an ileo-rectal anastomosis. The probability of surgery from the onset of symptoms depends upon the severity of the disease. If all patients with ulcerative colitis are considered the probability of surgery at 5 years is 8% and at 10 years 15%. While patients with extensive colitis have a 30% probability of requiring operation at 1 year and only slightly higher than this at 10 years. The probability of operating on patients with Crohn's colitis is significantly greater.

### **Proctocolectomy**

In carrying out a proctocolectomy for ulcerative colitis it is important that the site of the ileostomy

is marked pre-operatively and it must be situated over the right rectus muscle away from anterior superior iliac spine, the umbilicus and the incision. The latter is usually made either as a left paramedian incision or a mid-line incision. The ileostomy is made as a complete trephine before the abdomen is opened. The abdominal part of the colectomy is carried out in the usual manner but I prefer to fix the mesentery of the small bowel to the anterior abdominal wall from the ileostomy to the falciform ligament rather than close the lateral space. However, the rectum must be taken out in the conservative manner and is a different operation than excising the rectum for carcinoma. The presacral fat is left in situ and the branches of the superior rectal artery are taken close to the rectal wall. The perineal part of the operation is carried out in the intersphincteric plane. This method of rectal excision has two distinct advantages. Firstly there is no risk of damaging the pelvic sympathetic and parasympathetic nerve supply and therefore no risk of sexual or urinary impairment post-operatively, and secondly, there is a small perineal wound and 50% of these patients will have primary healing of the wound within ten days. The complications of surgery after proctocolectomy for ulcerative colitis are small bowel obstruction, problems associated with the stoma or the perineal wound. Between 1975 and 1979, 77 patients had an ileostomy constructed at St. Mark's, 5% of the patients were readmitted for a small bowel obstruction, 10% for reconstruction of the ileostomy and 3% for surgery to the perineal wound. At least one quarter of all patients with an ileostomy will have a readmission to hospital. The expectation of life of patients with ulcerative colitis after total proctocolectomy in the absence of carcinoma is very good with the observed mortality over the years only slightly exceeding the expected deaths in a population of similar age and sex. The late deaths are related to the disease or its treatment in about half the patients. Carcinoma will lead to death of some patients when carcinoma has already occurred before the proctocolectomy is carried out. In the remainder an important cause of death is hepatic cirrhosis and biliary tract carcinoma with the incidence in the colitic patient over ten times that found in the normal population.

### Ileo-rectal Anastomosis

About a third of patients who require elective surgery for ulcerative colitis are suitable for an ileo-rectal anastomosis. Contraindications to carrying out an ileo-rectal anastomosis are carcinoma complicating the colitis or severe dysplasia. Patients with severe active rectal disease with a non-distensible rectum are not suitable as they have excessive bowel actions and patients with impaired sphincters and difficulty in holding their stool are also unsuitable. Patients who have this type of surgery carried out must understand that the operation may only be satisfactory for a limited period. Careful follow-up is required every six months to one year with rectal biopsy. In severe dysplasia occurs in the retained rectum this must be excised.

Ileo-rectal anastomosis as an elective procedure is carried out in one stage. The anastomosis is made at the level of the sacral promontory. The anastomosis is end-to-end and I prefer a single layer anastomosis. A defunctioning loop ileostomy is unnecessary as is drainage because the anastomosis is intraperitoneal. After the operation the majority of patients have between three and six bowel actions a day but a few will have considerably more bowel actions and the operation becomes unsatisfactory. A significant number of patients will require occasional medication for the persistent colitis in the rectal stump or to delay bowel frequency. Between 1953 and 1979, 97 patients had ileo-rectal anastomosis carried out at St. Mark's Hospital with 2 post-operative deaths. Of the 95% patients followed up there were 5 late deaths and 63 patients are currently under surveillance. 2 who have an ileostomy but with a retained rectum. 25 patients had the rectum excised, 6 for technical reasons early in the series, 1 for bleeding from the rectal stump and 11 for excessive bowel actions. 7 patients have had the rectum excised, 3 for dysplasia and in 4 of these were small established carcinomas. The largest series of ileo-rectal anastomosis carried out in Britain was that of Aylett and between 1952 and 1976 he carried out 384 of these procedures with 10 operative deaths 375 patients were follow-up and 41 patients had the rectum excised. 22 patients have to date developed carcinoma of the rectum.

### Reservoir Procedures

Reservoir ileostomy procedures may be carried out in patients who refuse to have a conventional ileostomy carried out and are more suitable in the young patient. The majority of all operations carried out have been in young women.

Kock pioneered this type of operation by constructing a reservoir terminal ileum into which he manufactured a nipple valve for continence. The patient had a flush ileostomy opening on the abdominal wall but no appliance is worn and the pouch erupted 2 to 4 times a day with a soft catheter.

Up to the present time Kock has carried out 314 operations of which 240 were for ulcerative colitis. Between 1967 when the historic operations were made and 1974, 162 pouches were constructed with an operative mortality of 4.3% and a complication rate of 23.8%. Between 1975 and 1980 he carried out a further 152 operations with no mortality and a complication rate which was reduced to 7.2%. The complications result from sepsis following the operation with fistula formation and obstruction. However the greatest number of complications arise from valve stoppage resulting in incontinence and difficulty in intubation. Modification of valve fixation over the years has largely overcome this problem.

Another well recognized complication is ileitis in the pouch with pain and a blood stained effluent. This responds to treatment with salazopyrine and steroid retention enemas.

At St. Mark's only 21 of these operations have been carried out since 1973. There have been 2 related late-deaths, are due to electrolyte imbalance associated with salt-losing nephritis and another due to the perforation of the pouch. The majority of patients have a satisfactory result with only 2-4 catheterizations being required in twenty four hours.

A number of surgeons have been interested in ileoanal reservoir procedures which have the advantage that no stoma at all is necessary. At St. Mark's Parks has developed this type of operation. He constructs a pouch of three loops of terminal ileum and cores out the mucosa from the distal 8 to 10 cms of the rectum. The pouch and distal ileum is then sutured into it and an anastomosis constructed at the dentate line. He covers the operation with a loop ileostomy which is closed from 6 to 12 weeks postoperatively.

Patients pass a catheter into the pouch to empty it, continence being maintained by the pressured anal sphincter. This needs to be done with decreasing frequency to most patients managing with 3 to 6 catheterizations in 24 hours. Approximately 50% of patients learn to empty the pouch without the need of catheterization. Other methods of pouch construction have been tried in conjunction with an ileoanal anastomosis and I prefer to make a Kock pouch without a valve the efferent limb being sutured to the dentate line after the rectum has been divided at the level of the puborectalis.

At St. Mark's between 1976 and 1981, 27 ileoanal pouch operations have been carried out for ulcerative colitis, 9 as a one stage procedure and 18 in 2 stages. There has been no mortality and a low morbidity but 2 pouches have been excised because of septic complication.

Although these new operations allow the patient to avoid a conventional ileostomy and the operative mortality is low there is an increased morbidity.

The patient may need a great deal of determination and fortitude to overcome these problems and are not recommended in the elderly or those not completely determined to overcome the initial problems of management. Nevertheless they do have the advantage of allowing the patient to live with out an ileostomy and without the cancer risk from the retained mucosa in an ileorectal anastomosis.

### Crohn's Disease

Crohn's disease affects the whole of the gastrointestinal tract from the mouth to the anus but is most common in the ileum, colon, rectum and perianal regions. Because of its widespread distribution and the high incidence of recidescence the disease is normally treated medically and complications are managed by surgical treatment.

The indications for surgery are therefore for chronic disability with relatively localized disease for which medical treatment has failed, or stenosis with obstructive symptoms or fistula formation either internal fistulas between loops of bowel which are usually between the ileum and the sigmoid colon and sometimes involve the bladder, uterus or fallopian tubes or vagina.

Enterocutaneous fistulas occur particularly following surgical intervention whereas the entero-enteric fistulas arise spontaneously.

Operations carried out are resection or excision of the diseased bowel and bypass operation have largely been discarded for terminal ileal disease with or without the descending colon involved, a right hemicolectomy is undertaken.

The cumulative recurrence following this operation is over 60% in a period of fifteen years. A similar high recurrence rate follows colectomy and ileo-rectal anastomosis. In Crohn's disease however, where a stoma is constructed and no anastomosis carried out the recurrence rate is much lower being less than 20% in a similar long follow-up period.

Recurrent Crohn's disease can be treated by surgery again if necessary when the recurrence rate is similar to that for primary treatment. In treating recurrent disease minimal bowel resections are undertaken and there is no evidence that a wide clearance of the disease influences recurrence, but this remains controversial and will be discussed.

Patients with internal fistulae often require surgical treatment and those with small bowel enterocutaneous fistulae are always treated by a combination of medical treatment, parenteral nutrition and surgery.

Over the years a more conservative approach has been adopted to conservation of the rectum as diversion of the faecal stream with an ileostomy or a colostomy together with prolonged medical treatment may allow anorectal lesions to heal and function to be eventually restored.

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