Single Surgical Procedures - 16

A Colour Atlas of PROCTOCOLECTOMY

J. P. S. Thomson R. T. Hutchings

Wolfe

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Wolfe Medical Publications Ltd

Published by Wolfe Medical Publications Ltd, 1984
Printed by Royal Smeets Offset b.v.,
Weert, Netherlands
ISBN 0 7234 1038 0
ISSN 0264-8695

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Acknowledgements

We wish to thank Mrs Anne Hutchings for the line diagrams, Mr Ian Fraser FRCS for assisting with the operations and Mrs Mary Groves for typing the script. We would also thank the other medical and nursing staff without whose co-operation the production of this atlas would not have been possible.

We acknowledge the kindness of Sir Hugh Lockhart-Mummery in allowing us to use figure 98.

Introduction

The term proctocolectomy is used to describe the one-stage operation in patients for the complete removal of the anal canal, rectum and colon. It is evident that these patients will require a terminal ileostomy.

In some situations this end is achieved in two stages. At the first operation the greater part of the colon (subtotal colectomy) is removed, exteriorising the ileum as a terminal ileostomy and the distal colon as a mucous fistula, usually through the lower end of the wound. At the second operation, after a variable interval, the distal, now defunctioned, large intestine is removed.

Indications

The operation of proctocolectomy may be required in the management of patients with extensive disease of the large intestine. These include patients with:

- inflammatory bowel disease – idiopathic proctocolitis. (Ulcerative colitis) and Crohn's disease; and
- neoplastic disease – multiple adenocarcinomas and some cases of adenomatous polyposis.

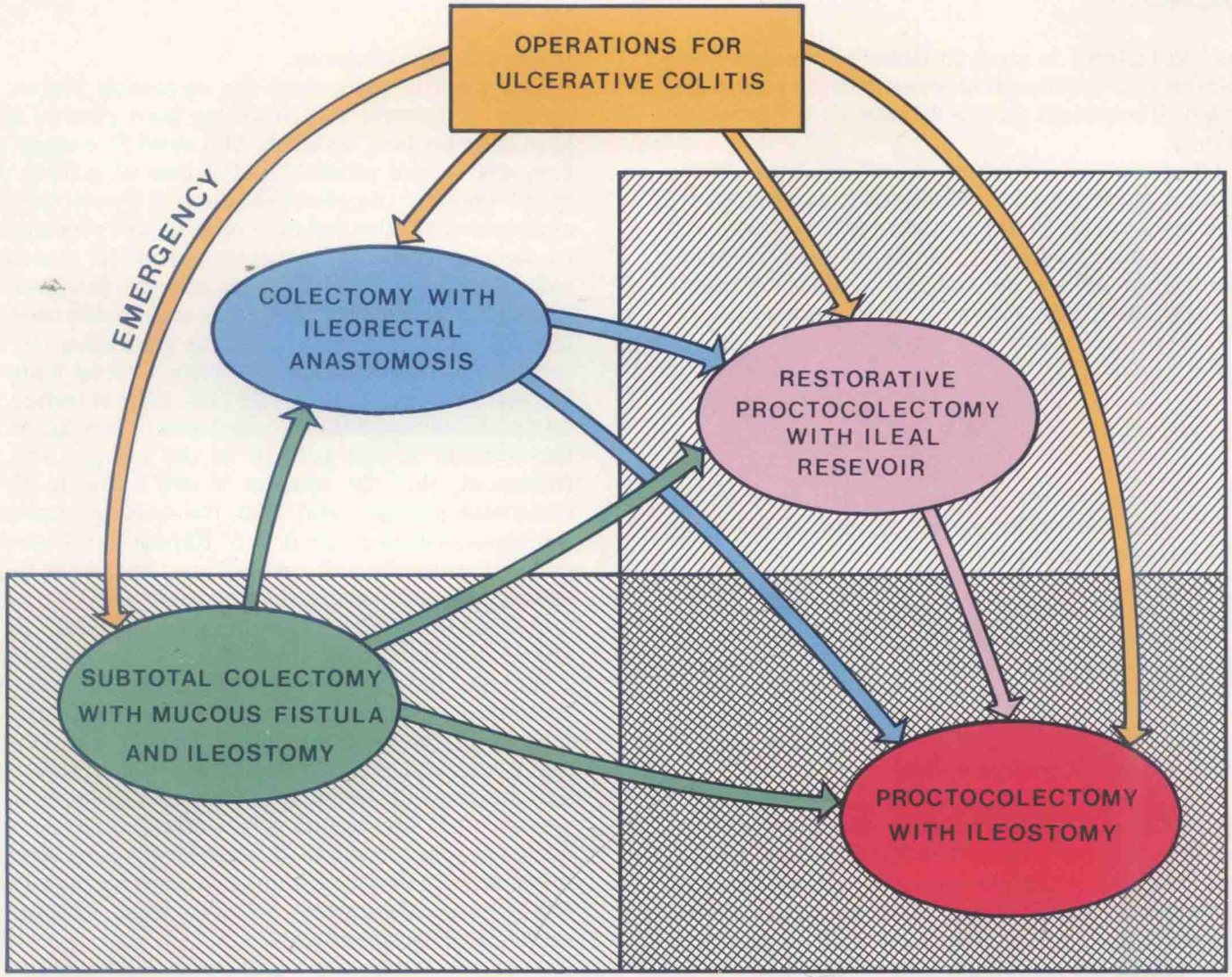
Idiopathic Proctocolitis (ulcerative colitis)

The indications for operative treatment in patients with idiopathic proctocolitis may be broadly divided into two groups, emergency and elective. In the emergency situation – colonic dilatation, perforation, haemorrhage and an acute severe attack unresponsive to medical treatment – it is now well established that removal of the rectum adds considerably to the morbidity and mortality of the operation. For this reason, subtotal colectomy with a mucous fistula and terminal ileostomy is the operation of choice.

The elective indications for operation include a failure of medical treatment with resulting poor general health, weight loss, malnutrition, anaemia and stool frequency and urgency; frequent severe attacks; retardation of growth and development; systemic complications such as pyoderma gangrenosum, erythema nodosum and arthropathy, and precancer and cancer. In these patients proctocolectomy is the standard and most widely used operation. In some patients, however, if the rectum is not severely diseased and has a reasonable capacity as judged clinically, radiologically and/or by measuring the volume of air comfortably accommodated within a rectal balloon (>100 ml) the rectum may be preserved and, after resection of the colon, an ileo-rectal anastomosis constructed. It must be remembered that disease is still present in the rectum and may require treatment, that the mucosa is still liable to dysplastic, and malignant change, and that the average number of bowel movements in 24 hours is 3–6. Repeated follow-up is required and in a proportion of cases (25 per cent or more), excision of the rectum may eventually be necessary.

A recent surgical innovation by the late Sir Alan Parks (Parks, A.G., Nicholls, R.J., and Belliveau, P., *Brit. J. Surg*, 1980, **67**, 533–538) is the operation of restorative proctocolectomy with ileal reservoir and ileo-anal anastomosis. The mucosa of the lower rectum and upper anal canal is removed and a reservoir is constructed from the terminal small intestine and attached to the lining of the anal canal at the level of the dentate line. The results of this operation are encouraging and as this procedure avoids the need for a permanent ileostomy it might replace the need in some patients for proctocolectomy.

The inter-relationship between these various operations is shown in the diagram below.


OPERATIONS FOR ULCERATIVE COLITIS
EMERGENCY
COLECTOMY WITH ILEORECTAL ANASTOMOSIS
RESTORATIVE PROCTOCOLECTOMY WITH ILEAL RESEVOIR
SUBTOTAL COLECTOMY WITH MUCOUS FISTULA AND ILEOSTOMY
PROCTOCOLECTOMY WITH ILEOSTOMY

The indications for operation can again be divided into two groups, but it must be remembered that Crohn's disease, unlike ulcerative colitis, may involve the whole of the gastrointestinal tract. Thus, although a simple proctocolectomy may be required on occasions, other procedures such as resection of small intestine may be needed. In emergencies, subtotal colectomy is the best procedure. Elective indications for proctocolectomy include extensive disease unresponding to medical treatment, patients requiring large doses of steroid drugs and patients with fistulae, systemic complications and severe anal disease.

Adenomatous polyposis

Most patients with multiple benign lesions have adenomatous polyposis, passed on by a Mendelian dominant gene. If all the lesions in the rectum are benign at the time of diagnosis, it is the policy at St Mark's Hospital to perform a total colectomy with an ileo-rectal anastomosis. The rectum will need regular surveillance, and any adenomas are treated by diathermy fulguration. 7.5 per cent of patients do subsequently develop malignancy within the rectum (Bussey, HJR, Eyers, AA, Ritchie, S and Thomson, JPS 1984, unpublished data). The rectum will then need to be excised.

There are surgeons who recommend proctocolectomy at the outset for all patients with adenomatous polyposis. In most patients this is, in our view an overtreatment, provided that adequate follow-up can be arranged after colectomy and that there is no 'carpeting' of the rectum with adenomas, no sessile adenomas and no carcinoma in the rectum; 17.4 per cent have a rectal carcinoma at the time of diagnosis (Bussey, HJR *et al*, 1984, unpublished data).

Multiple malignant lesions

Adenocarcinomas of the large intestine are multiple in approximately 3–5 per cent of patients. Occasionally their position dictates the need for proctocolectomy.

Preparation

Bowel preparation

As the whole of the large intestine is being removed, mechanical bowel preparation is not essential. In patients with severe inflammatory bowel disease the involved segment is usually empty of faecal matter and a full bowel preparation would be contra-indicated. Limiting the patient to a fluid diet during the two to three preoperative days is usually all that is required.

Preparation of patient to receive ileostomy

It is essential to spend time with patients before operation describing the nature of the operation they are about to have, and in particular the nature of the ileostomy. In many centres help in this may be obtained from a stoma care nurse and patients are often encouraged by meeting a patient of similar age, sex, and if possible social background.

Selection of site for ileostomy

The importance of correct siting of an ileostomy cannot be overemphasised. The optimum site is usually on the right side of the abdomen through the outer third of the rectus abdominis muscle on the summit of the infra-umbilical fat mound. When the

appliance with its adhesive back plate is fitted it must not impinge on the umbilicus, the anterior superior iliac spine, the groin crease, or any previous operation scar; previous scars in the right lower abdomen usually dictate that the ileostomy be sited on the left. The site should be selected and marked preoperatively and the position checked with the patient fully dressed. Because an ileostomy may be required one day in the management of a patient with Crohn's disease it is essential to avoid incisions, if possible, on the right side.

Preoperative investigations

It is assumed that the disease for which proctocolectomy is required has been fully assessed. Preoperatively the following investigations are now regarded as routine:

Blood tests: haemoglobin concentration; group and cross match four units of blood for transfusion; blood urea concentration; serum electrolyte concentration; serum protein concentration.

Urine examination.

Electrocardiogram.

Radiological investigations: chest radiography; intravenous urogram.

Physiotherapy

It is important for the patient to meet a physiotherapist preoperatively, especially if there is a history of respiratory problems. Cooperation with the physiotherapist postoperatively is thus more likely to be successful.

Antimicrobial agents

It is usual now to give antimicrobial agents intravenously on induction of anaesthesia and at six and twelve hours afterwards for prophylaxis. There are various regimens but the authors favour metronidazole 500mg and gentamicin 120mg intravenously for three doses.

Technique

Proctocolectomy is usually carried out by two teams of surgeons: the abdominal and the perineal teams. The description of the operation will therefore be in these two sections and will have the following headings:

Positioning and towelling of patient

Abdominal dissection
- Ileostomy trephine
- The incision
- Laparotomy
- Mobilisation of the colon
- Preparation of terminal ileum for ileostomy
- Division of ileum
- Resection of colon
- Mobilisation of rectum
- Closure of pelvic peritoneum
- Delivery and fixation of ileostomy
- Closure of abdominal incision
- Opening of ileostomy

Perineal dissection
- Preparation
- The incision
- Intersphincteric dissection
- Closure of perineal wound

The dissection of the rectum

Most proctocolectomy operations are done for inflammatory bowel disease without cancer. Under these circumstances, whilst it is convenient to divide the vascular pedicles of the *colon* near their origin, the *rectal* dissection should be carried out close to the bowel, with preservation of the inferior mesenteric artery and vein and as much of the perirectal fibrofatty tissue as possible.

The perineal dissection also should be close to the bowel, and the technique described here of the intersphincteric approach is both close and straightforward. Even in a patient with extensive perianal Crohn's disease this is usually possible. If a carcinoma is present in the rectum, more radical rectal dissection will clearly be required.

When a more radical approach is not required the advantages of a close dissection of the rectum include the preservation of all the striated muscle of the pelvic floor, a small perineal wound and, most importantly, less risk of damage to the nerves supplying the bladder and sexual organs.

Ileostomy

The traditional form of ileostomy is a terminal spout, which functions more or less continuously during the day so that 400–600 ml of effluent are passed, necessitating emptying of the drainable appliance about four times a day. The continent ileostomy, however, by fashioning a reservoir in the terminal ileum, aims at substituting a controlled intermittent drainage by means of a catheter (four or five times a day) for the continuous evacuation of the conventional ileostomy. Leakage occurs in as many as 50 per cent of patients and this procedure is seldom used, although it was an important step historically in the development of the operation of restorative proctocolectomy with ileal reservoir and ileo-anal anastomosis. The technique for constructing a continent ileostomy will not be described in this book.