

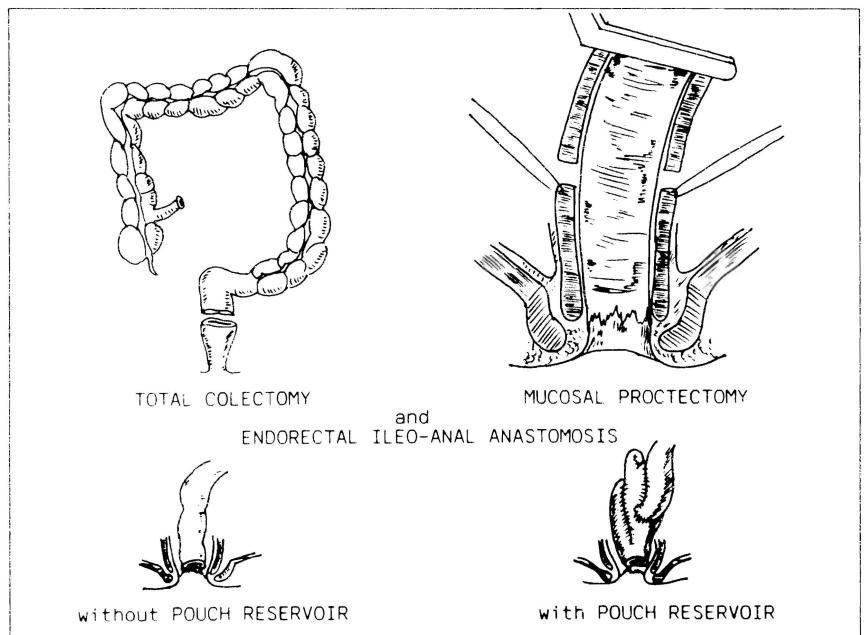
RESTORATIVE PROCTOCOLECTOMY WITH ILEAL POUCH RESERVOIR IN ULCERATIVE COLITIS: THE FIRST SERIES FROM MALTA

Dennis Gatt

INTRODUCTION

Seventy five to eighty percent of patients with ulcerative colitis are more or less satisfactorily treated medically. Surgery cures the disease, but because proper surgical therapy has until recently necessitated a permanent ileostomy, physicians and patients are understandably reluctant to agree to definitive surgical treatment until absolutely necessary.

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Although the standard operation in ulcerative colitis unresponsive to aggressive medical treatment has for many years been a one or two stage pan-proctocolectomy with permanent Brooke incontinent ileostomy, the

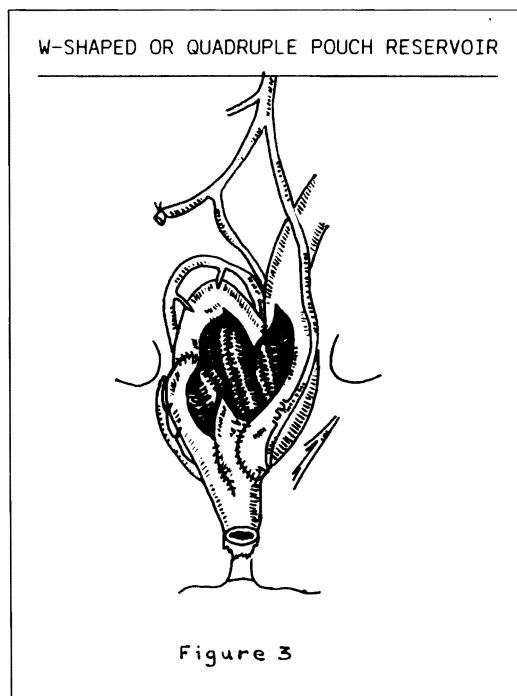
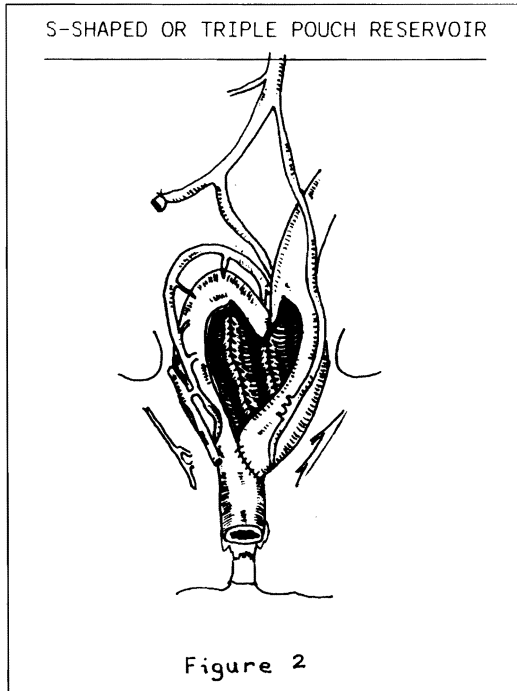
desire by patient and surgeon for a more normal existence after curative surgery for ulcerative colitis has stimulated surgeons to attempt and eventually devise surgical procedures which maintain per anus evacuation

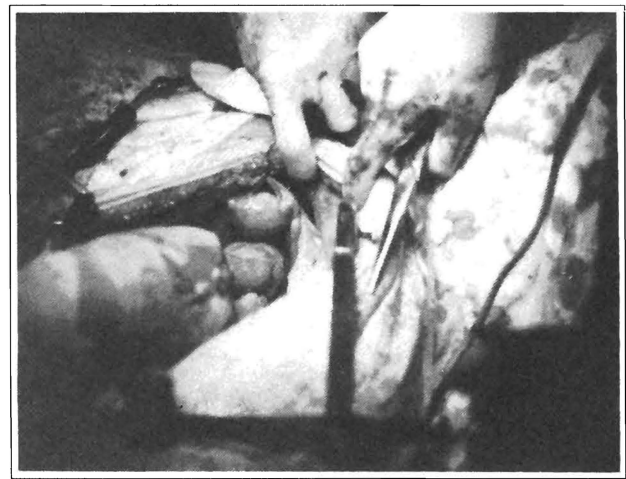
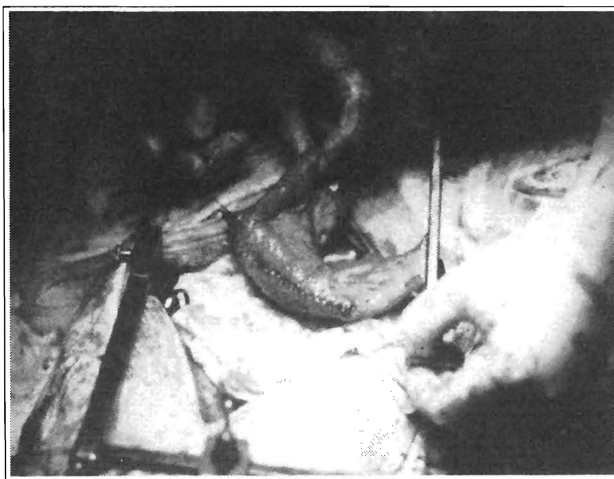
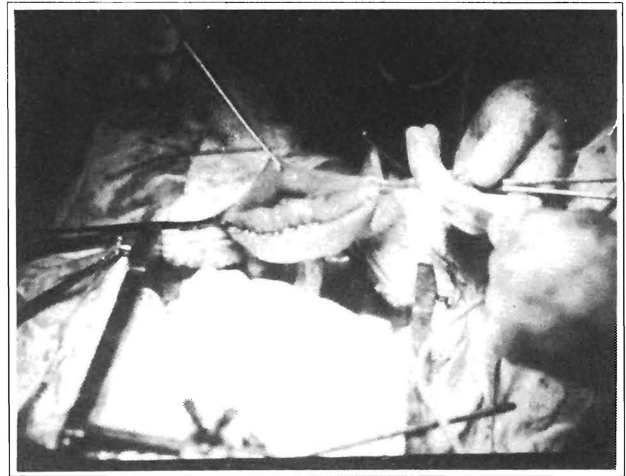
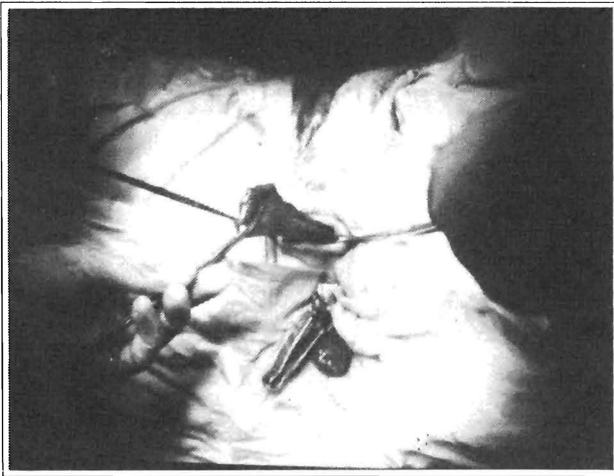
with full continence and without any need for a permanent stomal opening on the anterior abdominal wall.

Historically, subtotal colectomy with ileoproc-tostomy has been championed by Aylett (1), but most surgeons are less enthusiastic about it. In this operation a short segment of diseased rectum is left behind the terminal ileum anas tomosed directly end to end to it. The operation is only practicable if the rectal segment is not severely diseased or strictured, the sphincter mechanism is not deficient and there is no perianal disease. One half of the few patients who are suitable for this operation have acceptable results but the remainder have to be converted to panproctocolectomy with ileostomy because of continuing severe ulcerative proctitis or because of cancer in rectal stump.

In recent years interest has centred on a third alternative to colectomy and ileostomy; colectomy, mucosal proctectomy and endorectal ileoanal anastomosis with or without an ileal pouch reservoir (fig 1). Ravitch and Sabiston devised the procedure without a reservoir back in 1947, but soon lost interest because of unsatisfactory results in some patients. In 1955 Valiente and Bacon suggested the creation of an ileal reservoir but again at these early stages the results were far from satisfactory and the procedure was abandoned and forgotten. In 1978 Parks (2), Goligher and Pech resurrected the procedure with an ileal pouch reservoir and at around the same time Martin (3), Telander (4) and Fonkalsrud (5,10) advocated and re-established the revival of the procedure without a reservoir.

Because of the endorectal removal of the mucosa, autonomic nerves are preserved; thus impotence and bladder dysfunction are avoided, as is the prolonged perineal drainage so often associated with total proctectomy.





Preservation of the rectal neuromuscular apparatus and the anal sphincters also retains rectal sensation and control. Nearly all patients are continent of both faeces and flatus during the day, though some may be partially incontinent at night. A temporary diverting ileostomy until the reservoir heals, helps to minimize the risk of early complications.

As experience started to be gained with the surgical techniques demanded by the procedure and as the results started to improve in the early eighties, it became apparent that the procedure with a reservoir was proving superior and was allowing patients as near a normal existence as could be hoped for after total removal of the colon. This

led to a drive to identify the best shape and size of ileal reservoir, that would reduce to a minimum the incidence of incontinence, anastomotic stenosis and the need for pouch catheterisation which badly affected the early results. Thus following the development of the S-shaped reservoir, devised by Parks and Nicholls (2,11) in 1978 (fig.2), which incorporated 3 loops of ileum with a 5cm segment of straight endorectal ileum distally. Utsunomiya (6) reduced it to a J-shape in 1980 and Shraut and Block constructed a double-barrelled reservoir in 1982 in order to improve pouch emptying. At the other extreme Nicholls (7) in 1982, in order to increase pouch capacity and therefore reduce the frequency of bowel action introduced the W-shaped or quadruple reservoir (fig.3). Despite their varying

shapes and sizes all pouch reservoirs fit comfortably in the pelvis of both male and female patients, difficulties arise only in achieving enough mobility on the mesentery of the ileum being used to fashion the reservoir without jeopardising its blood supply. Recently there has been concern about an entity known as "pouchitis" where some of these patients develop non-specific inflammation of the pouch mucosa which histologically is not dissimilar from ulcerative colitis. In the majority of cases pouchitis responds to saline washouts, metronidazole or mesalazine suppositories or colifoam enemas but may if severe necessitate removal of the pouch.

PATIENTS & METHODS

Six consecutive patients requiring colectomy for ulcerative colitis because of failure of medical therapy were given the option of choosing between a standard panproctocolectomy with permanent ileostomy and the newly introduced restorative proctocolectomy with ileal pouch reservoir. All patients were informed about the fact that there was a possibility that the creation of the pouch may fail because of complications and all agreed to consent to conversion to panproctocolectomy with ileostomy if such complications were to arise.

We performed the first operation in

May 1988 as a one stage procedure creating the classical Parks S-shaped reservoir. This procedure was documented photographically. Photo 1 shows the dissection of the rectal mucosa being completed from the perineal aspect after the total colectomy and the initial stages of the mucosal dissection had been performed from the abdominal side. Photo 2 shows the 3 loops of the planned pouch sutured together. At this stage only the seromuscular layer has been completed. Photo 3 shows the completed S-shaped pouch reservoir with the distal end held in a non-crushing intestinal clamp. Photo 4 shows the completed operation with the pouch sitting comfortably behind the uterus which is still suspended via the round ligaments for access. More technical details of the procedures are described in the results.

In all the other five patients a W-shaped or quadruple reservoir was created. Only one patient underwent a two-staged procedure because surgery was indicated on an emergency basis for massive uncontrollable bleeding. In this case a total colectomy leaving the rectal stump as a mucous fistula was performed in the first instance leaving the mucosal proctectomy and creation of the pouch till the patient had recovered sufficiently from the life threatening emergency to tolerate the procedure.

In the immediate post-operative period all patients were admitted for a short period to the Intensive Therapy Unit. All patients had a temporary de-functioning ileostomy which was closed after a water-soluble contract

INDICATIONS FOR OPERATION	
3	Failure of medical treatment
1	Uncontrollable haemorrhage
1	Intolerance of all medication
1	Recurrent severe pyoderma gangrenosum

Table 1

INTERVAL SINCE OPERATION	
PATIENT	MONTHS
1	34
2	30
3	27
4	26
5	21
6	1

Table 3

TEMPORARY ILEOSTOMY CLOSURE	
PATIENT	WEEKS POST-UP
1	3
2	6
3	6
4	12
5	6
6	8

Table 2

LATE RESULTS
NO POUCH CATHETERISATION
NO NOCTURNAL SOILING
NO INCONTINENCE OF FLATUS
NO INCONTINENCE OF FAECES
NO BLADDER DYSFUCTION
ANTIDIARRHOEAL MEDICATION IN ONE
POUCHITIS IN ONE PATIENT

Table 4

pouch enema confirmed the integrity of the pouch reservoir. All pouches were examined endoscopically using a flexible sigmoidoscope 6 weeks after the closure of the temporary ileostomy.

RESULTS

All patients in this series were female and their ages ranged from 13 to 44

years. The indications for surgical intervention as shown in Table 1 include: 3 cases of failure of medical treatment, one case of uncontrollable haemorrhage, one case of intolerance of all standard medication including mesalazine and one case of extensive recurrent pyoderma gangrenosum which failed to respond to aggressive steroid therapy. The shortest history of ulcerative colitis was of 2 years and the longest of 10 years. All patients were

on steroid therapy at the time of surgery. Operating time was of 4.5 hours for the first operation, of 3.5 hours for the next four and of 3 hours for the last operation. The oldest patient in the series had a massive fibroid uterus which left no space in the pelvis for the pouch so she underwent a total hysterectomy in addition. In the first operation the rectal tube was more than 6cm long and the mucosal proctectomy was performed almost exclusively from

NICHOLLS and PEZIM - 1985

	S-shaped	J-shaped	w-shaped
Frequency of defaecation		+++	
Nocturnal soiling		+++	
Anti-diarrhoeal treatment		+++	
Pouch catheterisation	+++		

Table 5

CASE No.	AGE/SEX	DIAGNOSIS	COMPLICATIONS
1	38M	UC	Pelvic Abscess
2	24M	UC	Chest Infection
3	27M	UC	Bowel Obstruction
4	35M	UC	Pelvic Abscess
			None - Pouch removed
5	34F	P	Bowel Obstruction
6	39F	UC	None
7	31M	UC	Haemorrhage
8	47F	UC	None
9	40F	UC	Bowel Obstruction
			Sodium Depletion
10	35F	UC	Pelvic Abscess
11	29M	UC	None
12	20F	UC	None
13	31F	UC	Chest Infection
14	25M	P	None
15	39M	UC	None
16	42M	P	None
17	27M	UC	None
18	30M	UC	Deep Vein Thrombosis
19	16M	P	None
20	22M	UC	None
21	14M	UC	None

Table 6 (from Parks and Nicholls 1978)

above. The length of the rectal tube was shortened to approximately 4cm in subsequent cases and the mucosectomy was performed largely from below starting at Hilton's line and working proximally. In the last case we reverted to the mucosal dissection largely from above. Histologically all resected specimens showed total active ulcerative colitis with, in addition, severe dysplasia in 2 cases but without evidence of malignant change. The limbs of the small bowel used to construct the pouch were 15cm long and continuous 2/0 polyglactin (Vicryl) sutures in 2 layers were used throughout. Fixation of the pouch to Hilton's line was completed with one layer of interrupted 2/0 polyglactin. None of the patients required intensive therapy admission for longer than 24 hours except the last one who required re-laparotomy because an LDS staple (Autosuture power LDS stapler) had come off a vessel in the mesocolon. All water-soluble contrast pouch enemas were performed during the third post-operative week and at this stage there was a suspicion of a leak only in the patient who underwent a two staged procedure. No action was taken and a repeat gastrografin enema performed on the 40th post-operative day showed the pouch to be perfectly sound. Early post-operative complications included a pneumothorax during insertion of a central line in one patient, a suspicion of minor pulmonary embolism in another which though not confirmed was nevertheless treated with anticoagulation and the relaparotomy in the most recent case.

The temporary ileostomies were closed between 3 and 12 weeks post-operatively (see Table 2). In the first case over-enthusiasm resulted in very early closure of the temporary ileostomy less than 3 weeks after the restorative colectomy and though well tolerated by the patient may have been responsible for episodes of abdominal distension and colicky pain in the first few days. In the young (13 year old)

patient who underwent the two staged procedure and who had the suspicion of a leak on the gastrografin pouch enema the temporary ileostomy was closed at 12 weeks. In the other cases it was closed at 6 weeks. Flexible pouchoscopy performed 6 weeks after temporary ileostomy closure showed no residual colonic mucosa in any of the cases.

The first 5 patients are now between 24 and 34 months post-op whilst the most recent case has just had her temporary ileostomy closed (see Table 3). Anastomotic stenosis occurred in the early period in two cases but responded to a single manual dilatation in both cases. None of the pouches required catheterisation and nocturnal soiling occurred only in the first case for about 6 months (see Table 4). All patients are now fully continent of both faeces and flatus with daily bowel action frequencies of one to three times daily. All patients can distinguish between flatus and faeces. In this series there was no incidence of bladder dysfunction. Pouchitis developed in only one case and responded initially to metronidazole suppositories and colifoam. Of particular interest is the fact that the patient who developed pouchitis also manifested signs of extracolonic autoimmune activity with the development of a generalised seronegative arthropathy responsive only to steroid therapy. One year after the restorative proctocolectomy she developed another bout of pouchitis which responded only to mesalazine suppositories. This was the same patient who originally had been intolerant of all medication. Mesalazine suppositories were used for pouchitis with good effect on the advice of Mr. Nicholls at St. Mark's Hospital London, the originator of restorative proctocolectomy with a quadruple pouch reservoir. From the medication point of view only the patient with the S-shaped reservoir takes regular imodium, all the others manage with a high fibre bulking agent only without medication.

All the patients are cured of their colonic disease and are leading a normal active life. The youngest is able to manage school without any bowel disturbances, the three housewives are back in full charge of their families, one manages a very busy office job and the first patient of this series who is now 34 months post-op and who is married with 2 children has gone as far as to take up tennis on a regular basis.

DISCUSSION

The success of the procedure of restorative proctocolectomy with ileal pouch reservoir and the results achieved in this first series in Malta are self-evident from what has been presented so far and any further comparative discussion is unnecessary. After the first operation with the S-shaped or triple loop reservoir, we tried the quadruple or W-shaped and as we were very happy with the result we decided to stick to this design. Nicholls and Pezim in 1985 (see Table 5) (8) compared 3 pouch designs in a series of 104 patients. They concluded that the double of J-shaped pouch was associated with the highest frequency of defaecation, with the highest incidence of nocturnal soiling and also patients with this pouch design required the largest doses of antidiarrhoeal agents. In this same series patients with the S-shaped pouch had the highest incidence of failure of spontaneous defaecation requiring pouch catheterisation in as many as 59% of cases. In the Nicholls study therefore the quadruple reservoir was superior to the other designs because of its greater capacity, better emptying and better overall diurnal and nocturnal continence. These results were undoubtedly borne out by our series. Although when one is attempting to identify one's own personal preference one feels bound to try all the different possibilities, yet when early results with one model are excellent, as in our case, one is loathe to change particularly as

this may be at the expense of the patients' final result.

Of particular interest to our series is the review by Metcalf and associates (9) of 6 women with an ileal pouch reservoir who have conceived and carried a pregnancy to term. Three of them had transient deterioration of anorectal function during the third trimester of pregnancy which resolved after delivery. Four delivered vaginally without perceptible alteration in subsequent continence.

Table 6 shows the results of the first series of 21 patients operated by Parks and Nicholls in 1978 (2,11). It is immediately apparent that the first 10 operations were associated with a variety of serious complications which included the removal of the pouch in case No. 4. Results since have improved dramatically world wide as our own first steps in this direction show and in this light one must conclude stressing that no patient with ulcerative colitis necessitating proctocolectomy should be denied the chance of as near a normal existence as this procedure can offer.

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