

Leading article

Progress with the pouch – restorative proctocolectomy for ulcerative colitis

A total colectomy and ileostomy can be a life saving operation and transform the quality of life of someone with severe ulcerative colitis, but the first meeting between patient and surgeon is always rather difficult. No one wants an ileostomy, and though many patients cope remarkably well with a stoma and stoma appliances have improved beyond recognition, there is a psychological and social price to pay for an ileostomy.^{1,2} All this is changing now with the introduction of the ileo anal pouch procedure, or restorative proctocolectomy, as it is more formally known and even if the surgery is more complex and potentially dangerous, patients are prepared to take the risks. Over 1000 of these procedures have now been carried out. It is important to remember, however, that there are risks, and though stoma free, patients with a pouch are not normal. Gastroenterologists looking after patients with ulcerative colitis should be fully aware of the advantages and disadvantages of a pouch so that a careful informed decision can be made about surgery.

Until recently the best procedure was a proctocolectomy and ileostomy. All the disease can be removed in one operation and postoperative recovery is usually straightforward, with a speedy return to work and family life. Refinements of the pelvic dissection^{3,4} have decreased the incidence of pelvic nerve damage and sexual dysfunction to less than one half per cent, and the small perineal wound left after an intersphincteric dissection will heal primarily with a low incidence of perineal sinus. A popular alternative at one time was a colectomy and ileorectal anastomosis,⁵ particularly in those patients with relative sparing of the rectum. In suitable younger patients it allows them to mature through adolescence without a stoma, but there is a revision rate back to an ileostomy of around 30%. The disadvantage is a risk of malignant change in the retained rectum of 3–5%, and because tumours may be difficult to recognise, follow up has to be meticulous. It can still be used as a compromise in young adults who are worried about sexual dysfunction and in those with complications such as sclerosing cholangitis and portal hypertension. The Kock continent ileostomy has the advantages of a classical proctocolectomy, but the spouted Brooke ileostomy is replaced with a flush continent stoma.⁶ A reservoir is constructed from ileum and the efferent ileum intussuscepted into itself to make a nipple valve placed behind the abdominal wall. The patient is appliance free but still has to intubate the reservoir intermittently for emptying. Early problems with the nipple valve were overcome,⁷ but this operation has now been superseded by the pouch procedure, except in those patients who have already had a proctocolectomy and dislike the conventional ileostomy.

Joining the ileum to the anus had been proposed in 1947 by Ravitch and Sabiston⁸ but the procedure never became popular because of intolerable

frequency and perianal excoriation. Ten years ago Parks *et al*⁹ and others¹⁰ reported the first results of the new pouch operation in which an ileal reservoir was joined on to the anal sphincter from below. This anastomosis is usually protected by a proximal loop ileostomy which is closed eight weeks or so later provided all suture lines have healed. There have been a number of technical modifications to the original idea. The triplicated reservoir (S shaped) described by Parks *et al*¹¹ had a long efferent limb. Subsequent versions have used a much shorter limb,^{12,13} a duplicated (J) reservoir,^{10,14} and a four loop (W) reservoir.¹⁵ These pouches can be either hand sewn or stapled and use around 40–50 cm of terminal ileum. The ileoanal anastomosis is still being developed. At first the rectum was transected 10 cm above the pelvic floor, and the mucosa stripped off the underlying muscle by a tedious dissection down to the dentate line using a technique inside the anal canal from below.^{9,16} More recently the rectum has been transected at the pelvic floor, leaving very little remaining colitic mucosa to be removed.^{13,15} The rectal muscle wall cuff originally thought to be essential for pouch filling sensation is not needed, and may have contributed to the early high incidence of pelvic sepsis.¹³ The exact level at which the anastomosis is made is controversial.^{17–19} Some argue that the anal transitional zone reaching 1 or 2 cm above the dentate line and not involved by colitis should be preserved to allow optimum sensory discrimination and continence, but this remains to be proven. Earlier fears that islands of diseased mucosa can be inadvertently left *in situ* appear unfounded,²⁰ but this is still a theoretical longterm risk. The critical factor which determines how easily an anastomosis can be made is the length of the small bowel mesentery. Rarely the mesentery will not allow the ileum to reach the anus, but judicious division of mesenteric vessels will usually give the necessary length.

In a recent symposium¹³ the operative complications in 759 patients from various centres were reviewed. There has been one postoperative death (0.14%). The most common complication was pelvic sepsis with or without anastomotic breakdown, occurring in between 8 and 25%, but the incidence is decreasing with experience. Sepsis here can be difficult to manage, it cannot drain freely, and healing with fibrosis may spoil the eventual functional result. A stricture can be seen in some 10% of patients, but usually responds to simple dilatation. Adhesion obstruction is the other major problem and although initially managed conservatively, a further laparotomy may be necessary in up to 15% of patients. The loop ileostomy may lead to dehydration and salt loss before it is closed. Nonetheless, about three quarters of patients will not have a serious complication. These series have included the early part of the learning curve with the procedure: with experience complications become less frequent. When the ileostomy is closed the functional result improves during the first six months. Of the early triplicated (S) reservoirs, 54% of patients needed to catheterise the pouch,¹² a function of the distal ileal segment. Recent reports of S reservoirs with short efferent limbs show a low incidence of catheterisation,¹³ and in the duplicated (J) and four loop (W) designs which do not have an efferent limb all patients can evacuate spontaneously.^{13,15} There would appear to be a normal desire to evacuate and in 75% of patients this can be deferred without urgency. Fortunately pouch patients do not seem to make or pass much flatus. Whilst there is a range of frequency of defecation within any series from two to 10, and a mean of five to seven actions per 24 h, the bigger

pouches seem to have a better record on average S: five per 24 h, J: six per 24 h, and W: 3.3 per 24 h.^{13 16}

In the large Mayo clinic series of J pouches, mean nocturnal frequency is 1.2,¹³ whereas only 14% of W pouch patients have night evacuation more than once a week.¹⁵ Some 20% of patients have to use codeine phosphate or loperamide. Frank incontinence is unusual, but around 10% have minor leakage of mucus, especially at night. The best clinical results are associated with a large volume, highly compliant pouch which empties completely.²¹ The resting anal pressure, reflecting internal anal sphincter activity is diminished after the operation,^{21 22} and low resting pressures are associated with minor soiling. The cause of this injury to the internal anal sphincter is not clear. Further physiological studies on this group of pouch patients may give the answer, but the mechanism is likely to be complex, involving not only anal sphincter function, but sensory discrimination, pouch motility and efficiency of evacuation. Outright failure occurs in only 5% of patients for the reasons of pelvic sepsis, undiagnosed Crohn's disease, or unacceptable stool frequency.¹³

A group of patients from St Marks hospital compared life with their ileostomy and then a pouch. Over 90% preferred the pouch because of self confidence, cleanliness, sexual self image, social and sports activities, and ease at work.²³ Impaired sexual function is related to the proctectomy, rather than the pouch.

A close rectal dissection will ensure that the pelvic autonomic nerves are not damaged,^{14 15} but some groups claim that dissection in the mesorectal plane is no less safe and technically much easier.¹³

Whilst no serious histological or nutritional problems have emerged, the longterm consequences of a reservoir are not known. Early studies on Kock pouches showed chronic inflammation and villous atrophy,⁷ and similar changes are seen in most pelvic reservoirs.^{24–26} Histochemical studies of mucin in pouch biopsies have suggested a change from small intestinal to colonic mucin,²⁴ and this colonic metaplasia could theoretically lead to an increased risk of adenoma formation in the reservoir. No dysplasia has been recorded, but few pouches have been in place for 10 years. Acute inflammation and ulceration are less common than chronic changes, and have the histological features of colorectal mucosa in ulcerative colitis.^{24 26} The presence of backwash ileitis at the time of colectomy does not seem relevant,²⁷ and it is interesting that colitis patients have more pouch inflammation than the smaller group of polyposis patients who have the procedure.²⁴ In 10% of the colitic patients a syndrome of acute pouch inflammation, excessive stool frequency, and malaise has been recognised and termed 'pouchitis'. Bacterial overgrowth is heavier in a pouch than in a conventional ileostomy, but there is no clear relationship between microbiology, stasis and incomplete emptying, histological changes and clinical result.^{21 28 29} Pouchitis may respond to treatment with metronidazole, steroids or pouch drainage, but can sometimes be particularly indolent. The Mayo group²⁹ have found a correlation between poor results and jejunal colonisation arising as a result of either inhibited small bowel motility or reflux. The reasons for pouchitis are still to be determined.

Longterm nutritional assessments of pouch patients have shown normal fat absorption and serum folate concentrations. A mild microcytic anaemia is seen in up to 30% of patients, together with low serum iron concentra-

tions.^{28,29} Marginally decreased serum vitamin B₁₂ has been reported, and should be checked regularly. Abnormalities of liver function tests are only seen where these were present before colectomy.²⁹

In selecting patients it is important to rule out Crohn's disease even if it appears to be limited to the colon. Those patients under 50 years of age have the best results, and a short interval between colectomy and pouch is to be preferred. It is possible to combine the pouch procedure with an elective total colectomy, but it should not be offered to a patient with toxic dilatation or fulminating colitis. Here a subtotal colectomy, preserving the rectal stump as a mucous fistula is much safer, and a pouch can still be offered once the patient has recovered. Patients with severe dysplasia or early malignancy discovered on colonoscopic surveillance can be considered, but not those with an advanced rectal cancer. In women, pregnancy and labour seem to be straightforward, and although successful vaginal deliveries have been reported, a caesarian section ensures there is no risk to the anal sphincter.

When this operation was first introduced there was an understandable reluctance by many gastroenterologists and surgeons to abandon the well tried proctocolectomy. The results of the pouch procedures have improved so much over the last 10 years that suitable patients should be offered it as an alternative to proctocolectomy. If they are young, have a safe job and know the risks, it is difficult to turn down the opportunity of being free of an ileostomy.

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