

# Pouches and stomas

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## Abstract

A third of patients with ulcerative colitis will need colectomy. This can be followed by ileal pouch formation to enable restoration of normal bowel continuity. Patients with familial adenomatous polyposis may also undergo pouch formation. The commonest long-term problem with pouches is pouchitis though this can often be treated with antibiotics. Stomas come in many forms but the commonest types are ileostomy or colostomy and these can be permanent or temporary. The expertise of a stoma nurse is vital to the management of these patients.

**Keywords** adenomatous polyposis coli; colostomy; ileal pouches; ileo-anal pouches; ileostomy; J pouch; pouchitis; restorative proctocolectomy; ulcerative colitis

## Pouches

A pouch, or more correctly an ileal pouch anal anastomosis (IPAA), is formed during a restorative proctocolectomy. During this operation, the entire colon plus rectum from the ileocaecal valve to 2 cm above the dentate line are removed, and an ileal pouch is formed and anastomosed to the ano-rectal remnant. Since this operation was first described in 1978,<sup>1</sup> it is estimated that worldwide over 30,000 pouches have been formed.

### Reasons for pouch formation

The commonest pathologies for forming a pouch are ulcerative colitis (UC) and familial adenomatous polyposis (FAP).

**Ulcerative colitis:** up to one-third of patients with UC may require colectomy long term. This can be in an urgent setting, during an episode of acute severe colitis that has failed to respond to intravenous corticosteroids and rescue therapy; or elective, when medical management has failed to control colitis or dysplastic/cancerous changes have occurred. The cancer risk is related to the degree and extent of inflammation in the colon, the presence of post-inflammatory polyps or colonic strictures, primary sclerosing cholangitis or family history of colorectal cancer.<sup>2</sup> It has been estimated that 18% of patients found to have UC will develop cancer 30 years from diagnosis.<sup>3</sup>

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**Familial adenomatous polyposis:** FAP is an autosomal dominant condition in which a defect in the adenomatous polyposis gene leads to at least 100 colonic polyps forming in the colon. This can occur as early as the teenage years, with the potential of cancer change by the mid-twenties. As it is not possible to remove all the polyps endoscopically, a prophylactic colectomy has to be performed, normally before the age of 25 years.

Patients with a milder phenotype, with a lower polyp count, can be offered deferred surgery or subtotal colectomy with ileorectal anastomosis. Compared to pouch surgery, ileorectal anastomosis gives better bowel function and, as it avoids pelvic dissection, decreases the risk of pelvic nerve injury and/or impaired fertility. The rectal remnant will require regular screening as it has a 12–29% risk of developing cancer change.<sup>2</sup>

### Contraindications

**Crohn's disease (CD):** used to be an absolute contraindication to pouch formation as it results in multiple pouch fistulae and high failure rates. However, in patients who have only colonic disease it can be successful.<sup>4</sup>

**Indeterminate colitis:** recently renamed to IBD unclassified (IBDU), is the pathological description given to the 5–10% of IBD patients in whom histology cannot distinguish CD from UC. Many patients with IBDU subsequently turn out to have CD, so it is a relative contraindication to pouch formation. However with careful preoperative assessment to exclude features linked to CD, a good outcome can be achieved.<sup>5</sup>

### Pouch design

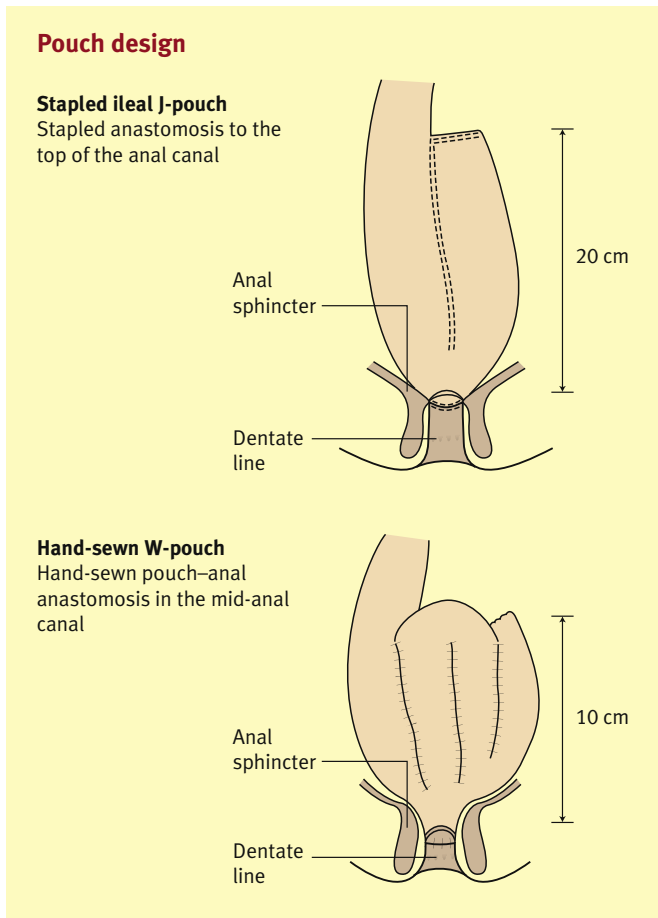
**J pouch:** (Figure 1) this is the commonest type of pouch formed today. The end of the ileum is stapled closed and the small bowel is looped back on itself to create a J that is 20 cm long. An opening is made in the apex of the J to allow the passage of a 10 cm long linear stapler. This is fired twice, converting the parallel lumens into one large lumen.<sup>6</sup> The apex is then anastomosed to the rectal remnant.

**W pouch:** (Figure 1) another type of pouch is the W pouch. In this pouch the small bowel is looped three times, so four lengths of small bowel lie next to each other. These are then joined together to form a pouch. The argument for this design is that it gives a large reservoir size, so pouch emptying is less frequent, but in our practice we have found that a J pouch is adequate.

**S pouch:** historically, the first described pouch was an S pouch. In this pouch, the most distal part of the small bowel is anastomosed to the anus with the pouch being just proximal. This pouch frequently has problems with pouch emptying and so has fallen out of favour.

### Rectal remnant

There has been debate about the mucosa left in the rectal remnant. As the rectum is normally the worst affected part of the bowel in UC and as in FAP cancer can develop in any colonic mucosa, some have argued that a mucosectomy should be routinely performed. The main benefit of keeping this mucosa is better sensation and less damage to the sphincter, leading to a better functional outcome.<sup>7</sup> Mucosectomy with a hand-sewn anastomosis is also



**Figure 1**

associated with increased septic complications.<sup>8</sup> Furthermore, in the Cleveland series of pouches, mucosectomy was not protective against pouch neoplasia in IBD patients.<sup>9</sup>

### Staged surgery

Though some centres have reported good results from one-stage surgery, it is more commonly done as a two-stage or three-stage procedure. This is because anastomotic leak is the major early complication of pouch formation and can lead to long-term pouch dysfunction and failure.<sup>10</sup>

**Two-stage:** if the patient is having the pouch for UC that has escaped medical therapy in a chronic setting, or for FAP, surgery is performed in two stages. The first stage is panproctocolectomy, ileal pouch formation and a defunctioning loop ileostomy. The second stage, closure of the loop ileostomy, is performed around 3 months later after a pouchogram has shown no leaks.

**Three-stage:** if the colectomy is being performed for acute severe colitis, the procedure is performed in three stages. Here, the first stage is a subtotal colectomy and end ileostomy with the rectum left untouched. Several months later, when the patient no longer requires corticosteroids, the inflammatory response has resolved and nutritional status has returned to normal, a completion proctectomy, pouch and defunctioning loop ileostomy is performed. Finally, as with the two-stage approach, the loop ileostomy is subsequently closed.

### Laparoscopic versus open

Increasingly, the colectomy is performed as a laparoscopic procedure. Laparoscopic colorectal surgery has been shown to have short-term benefits over open surgery, though long-term advantages have been harder to demonstrate. In our experience, like that of others,<sup>11,12</sup> there is a feeling that laparoscopy leads to fewer adhesions, and so a smaller future risk of adhesional obstruction and easier pouch formation if the operation is three-stage.

As laparoscopic colorectal surgery has matured, the proctectomy and pouch anal anastomosis has increasingly been formed laparoscopically.<sup>13</sup> However, if difficulties are encountered using this approach, it is important to convert to open operation, as leaving a long rectal stump leads to a poorer long-term outcome.

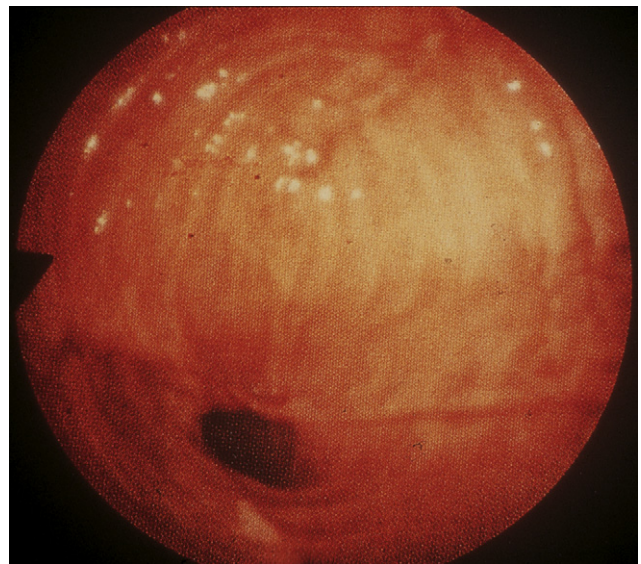
### Alternatives

Though pouch surgery is viewed as the gold standard in those requiring colectomy there is no need to form a pouch if the patient is happy to be left with an end ileostomy.

**Kock pouch:** in those who do not want, or cannot cope with, an ileostomy but are prevented from having an IPAA due to poor sphincter function, an alternative is the Kock pouch (continent ileostomy).<sup>14</sup> The Kock pouch is similar in shape to an S pouch, except that the distal end is intussuscepted into the pouch, forming a 'nipple valve'. The distal small bowel is then sutured low on the abdominal wall as a flat ileostomy. The 'nipple valve' prevents the stoma discharging any contents unless a Medena catheter is passed. This form of pouch was first described in 1969 but went out of favour with the creation of the IPAA, since it still requires a stoma, and because technical difficulties with the nipple valve led to its slippage and leakage of stoma effluent.

### Normal function

A mature well-functioning pouch will empty 5–6 times a day (Figure 2). The contents are liquid, though after the pouch has been in place for some years the effluent may thicken. Nocturnal pouch emptying is common.



**Figure 2** Endoscopic view inside a normal, healthy pouch. The seam of one of the vertical stricture lines in this J pouch can be seen (lower left).

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