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INTERPOSITION OF A GASTRIC POUCH BETWEEN ILEUM AND ANUS AFTER PROCTOCOLECTOMY : LONG-TERM RESULTS IN 3 PATIENTS

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ORIGINAL ARTICLE
Running head: inter-ileo-anal gastroplasty.
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Abstract

Background. After proctocolectomy, ileal pouch-anal anastomosis may not be feasible, especially in the case of desmoid tumour or after failed ileal pouch-anal anastomosis requiring excision of the pouch. We designed a gastric pouch interposed between the terminal ileum and the anus in order to avoid a permanent ileostomy for these patients. Long-term results and quality of life with this technique remain unknown.

Patients and methods. After proctocolectomy, ileal pouch-anal anastomosis was not feasible or had failed in three patients (two with familial adenomatous polyposis and one with ulcerative colitis; 40, 49 and 50 years-old respectively). Two of the patients had had end-ileostomy 7 and 8 years previously. A pouch was created using the left half of the gastric fundus, supplied through the right gastro-epiploic vessels; it was anastomosed proximally to the terminal ileum and distally to the anus. Diverting ileostomy was performed in all cases.

Results. After a mean follow-up of 6 years, all 3 patients were highly satisfied with the operation and described their quality of life was good. The median stool frequency during the day and night were 6 and 1, respectively. No patient reported incontinence or urgency. Two patients had minimal soiling with gastric juice. One patient had anastomotic ulcers with bleeding requiring resection with re-anastomosis. All of the patients needed long-term proton-pump inhibitor therapy and topical perianal treatment to prevent skin burning.

Conclusion. Inter-ileo-anal gastroplasty is a surgical salvage technique that can avoid a permanent ileostomy. It provides a good quality of life for patients with unfeasible or failed ileal pouch.

Introduction

Ileal pouch-anal anastomosis is currently the standard restorative proctocolectomy for patients with familial adenomatous polyposis or severe ulcerative colitis. However, it is well-known that the reconstruction with an ileal pouch – anal anastomosis is not feasible or fails in up to 10 % of patients after proctocolectomy due to technical, anatomical or postoperative complications. Desmoid tumours are the main cause of unfeasibility of an ileal pouch in patients with familial adenomatous polyposis[1,2]; for these patients ileostomy is often the only possible solution after proctocolectomy. Septic complications after restorative proctocolectomy sometimes require pouch excision, particularly in patients operated on for inflammatory bowel disease. In this setting, it is not always possible to recreate an ileal or jejunal pouch. Despite salvage surgery, 12 % to 40 % of patients with pouch failure end up with a permanent ileostomy[3,4,5].

A previous anatomical study performed in cadavers has shown the feasibility of interposing a gastric pouch between the ileum and the anus in order to avoid permanent ileostomy after proctocolectomy[6]. We describe here the long-term results for 3 patients who benefited from gastric pouch construction.

Patients and methods

Surgical technique

A midline xypho-pubic laparotomy was performed. The gastrocolic and the gastrosplenic ligaments were cut carefully to avoid injuries to the right gastroepiploic vessels; the gastro-phrenic ligament was preserved. The right gastroepiploic vessels were carefully dissected from the greater gastric curve, starting at their origin and then cephalad until a point located 15 cm from their end (the upper gastric branches of the gastroepiploic artery were thus preserved). The left half of the stomach was then transected in the transversal axis using an automatic type GIA device; the transection was continued in the longitudinal axis cephalad for 20 cm; and then, in the transversal axis reaching the greater curve 5 cm cephalad to the highest branch of the right gastroepiploic artery (Figure 1). A gastric pouch measuring 20 cm long and 6 cm wide was obtained; it received its blood-supply from the upper branches of the right gastroepiploic vessels. All staple lines were reinforced by continuous absorbable sutures.

This pouch was then taken down to the anus. The gastro-epiploic vessels were positioned behind the small bowel, along the right paracolic gutter. The perineal dissection was performed using a Lone-Star retractor. A transanal end-to-end anastomosis between the gastric pouch and the anus was performed with interrupted absorbable stitches, followed by an end-to-side anastomosis between the distal ileum and the gastric pouch (2 cm from the upper end) with continuous absorbable sutures. The posterior aspect of the gastric pouch was fixed to the pelvic peritoneum with 3 absorbable stitches. A protective loop ileostomy was performed in all cases.

This procedure was described as an experimental procedure to all patients and they provided specific written informed consent.

Medical treatment

Proton-pump inhibitors (40 mg of Omeprazol twice a day) were prescribed. All patients apply cream to the perianal skin daily to avoid burning or irritation. They take antimotility drugs (Loperamide) when necessary, depending on stool quality and frequency.

Patient 1. A 50-year-old man underwent emergency proctocolectomy with ileostomy in September 1999 for ulcerous colitis with acute bleeding. He was operated on 4 months later for reconstruction; the mesentery was retracted and it was impossible to lower an ileal pouch despite a ligation of the superior mesenteric vessels and a section of the ileocolic vessels. In 2000, inter-ileo-anal gastroplasty was performed.

Patient 2. A 43-year-old man underwent total proctocolectomy in 1993 in another institution for familial adenomatous polyposis. At that time, a large mesenteric desmoid tumour retracting the mesentery precluded an ileal pouch–anal anastomosis and the patient had a permanent ileostomy. In 2000 (at 50-year-old), inter-ileo-anal gastroplasty was performed.

Patient 3. A 29-year-old woman underwent proctocolectomy with ileal pouch - anal anastomosis and protective loop-ileostomy in 1989 for familial adenomatous polyposis in another institution. A pouch fistula precluded ileostomy closure for 3 years. In 1992 she had a necrotizing pelvic desmoid tumour with pouch destruction and sepsis. The pouch was excised. In 2000 (at 40-year-old), as she had had an ileostomy for 8 years, inter-ileo-anal gastroplasty was performed.

Assessment of functional outcome and quality of life

The questionnaire employed was based on those used by most authors to assess the functional outcome after proctocolectomy[7,8,9] and particularly on the Gastro-Intestinal Functional Outcome (GIFO)[10]. Functional outcome was assessed on various aspects of bowel function: number of stools during the day and night, stool consistency, soiling or incontinence during the day or night, urgency (inability to retain feces for at least 15 minutes), incontinence for gas, ability to distinguish between flatus and feces, need for antidiarrheal medication and protective padding, presence of cramp or abdominal pain, dietary restrictions and incidence of perianal skin irritation, early gastric satiety, restrictions in sexual, social and professional life. Patients were asked if they would recommend this operation to a friend who had undergone ileostomy after proctocolectomy and if they would undergo the procedure again if they were in their initial situation. In addition to these questions, patients were given a French version of the SF-36 questionnaire (self-perceived general health) to fill in. Endoscopy and biopsies of the pouch and the anastomosis were performed every year during the follow-up.

Physiological study

Five years after the procedure, the pH in the pouch was monitored for 24 hours, with and without the proton-pump inhibitor (after 2 days off treatment). pH was recorded with a transanal probe (Jubileum 1.8, Microbioprobe and Telemedicine s.r.l (Napoli, Italy), and a pHmeter type Orion (Medical Measurement Systems, Enschede, Netherlands).

Results

Technique and postoperative period

The pouch was feasible in all three patients, and there were no technical complications. No residual rectal mucosa was found, and mucosectomy was not required in these 3 patients. The pouch reached the dentate line with an average excess length of 10 cm. The median operation time was 255 minutes. The postoperative period was uneventful and all patients were discharged within 10 days after the operation on regular diet. The pouch was tested with a postoperative barium enema at 1 month; no fistulae were found (Figure 2). The loop-ileostomy was closed within 3 months after the operation with uneventful recovery of all patients.

Clinical and pathological results

Results regarding the number of bowel movements and continence are presented in Table 1. Despite applying perianal cream daily, patients described episodic food-related skin irritation. To prevent this, patient 2 avoided spicy meals, whereas patients 1 and 3 had no dietary restrictions. Patient 1 takes occasionally loperamide when feces are liquid. Patient 3 occasionally required a double dose of proton-pump inhibitors during days when perianal burning increased. Pouchoscopy and biopsies performed every year showed non-inflammatory chronic gastritis in patients 1 and 2. Patient 3 had episodic rectorragia with chronic iron-deficiency anemia requiring iron supplements. Upper endoscopy and pouchoscopy showed friable mucosa but histology was normal. No cause for the anaemia was found despite an extensive work-up. Pouchoscopy at 5 years showed a stricture of the ileal-pouch anastomosis. The patient underwent an operation in order to remove this

anastomosis and perform a new one. The specimen showed a fibrous stricture with ulcerated mucosa on the ileal side. She had an uneventful recovery from this surgical operation. No bowel occlusion or twisting of the pouch occured during follow-up of these patients.

pH monitoring

Results of the 24-hour pH monitoring with and without proton-pump inhibitors are shown in Table 2. Patient 3 accepted to stop proton-pump inhibitors only during the 24h prior to pH monitoring due to the risk of perianal burning.

Self-perceived quality of life

All three patients declared that they were very satisfied with the intervention (mean of 8.3 on a scale from 0 to 10), would undergo surgery again if they were in their initial situation and would recommend it to a friend with a permanent ileostomy. The operation had a positive impact in their social and sexual life. Quality of life (as measured by the SF-36 form) remained unchanged at 3 and 5 years after surgery, but was much better as compared with that before the operation. All three patients reported feeling in good health (3 on a scale from 1 to 5), active and optimistic about life and the future. Patient 3 experienced difficulties climbing stairs and tired quickly; she also had episodic abdominal pain (about once every two weeks, 3 on a scale from 1 to 6) and thought that her health would deteriorate in the future due to chronic anaemia. All of them limited physical efforts, such as picking up or carrying heavy objects. All three are working.

Discussion

The early postoperative course was uneventful in all three patients. There were no fistulae or septic complications. We believe the risk of leakage is low: the anastomosis between the ileum and the gastric pouch is as safe as gastro-entero-anastomosis; the mechanical stapling and transection of the stomach is safe (and reinforced by continuous absorbable sutures) and the pouch-anal anastomosis has a good blood supply and is tension free (excess length of the pouch is about 10 cm). There was no twisting or vascular occlusion as the pouch was fixed in the pelvis .

The functional outcome after gastric pouch–anal anastomosis was consistent with that reported with ileal pouch–anal restorative proctocolectomy: the patients were continent, had 6 bowel movements per day on average and were able to delay defecation until it was convenient[8]. The functional results were satisfactory when compared with patients undergoing reconstructive surgery for failed ileal pouch-anal anastomosis[11,12]. Although the compliance of the pouch has not been studied, its size suggests a volume close to that of a J-pouch; this seems to be evident in the contrast imaging (figure 2). The antiperistaltic position of the pouch could contribute to feces retention and explain in part the good functional outcome. However, no tests have been performed to prove that the pouch conserves any motility.

Self-perceived quality of life (according to the questionnaire and the SF-36 form) is consistent with results obtained with ileal pouch – anal anastomosis[4,8,10].

All of the patients found that this operation greatly improved their quality of life and felt in good physical and psychological health and were active and optimistic in their daily

activities. The operation had a positive impact on their lives; they would undergo the operation again if they had to wear an ileostomy pouch and would recommend it to a friend in their previous situation. Patients' body weight remained stable as compared to the weight prior to the operation, as did their eating habits; the decrease in gastric volume associated with this technique should not have any nutritional impact.

The side effects of this operation are the need for long-term proton-pump inhibitors (which have been shown to be safe[13]) and the risk of perianal skin irritation if no cream is applied. Both are due to acid secretions in the pouch. The patients who underwent this operation thought that these inconveniences were counterbalanced by the fact that they did not have an ileostomy and had a normal social, professional and sexual life. Patient 3 had chronic anaemia with episodic rectal bleeding due to anastomotic ulcers which required resection and a new anastomosis. A ph<4 was never documented in this patient. This was probably due to high doses of proton-pump inhibitors that she accepted to stop only during the 24 hours prior to pH-monitoring; this was too short a period and explains the absence of pH < 4 in the short "off-PPI" test. Skin irritation and anastomotic ulcers are likely due to acid secretion with pH between 4 and 7.

With a longer follow-up, chronic acid secretion in the pouch with reflux could induce metaplasia, dysplasia and malignant transformation of the surrounding ileal and anal mucosa. A regular clinical and endoscopic follow-up of these patients is warranted.

We conclude that interposition of a gastric pouch between the ileum and the anus is feasible. It can avoid permanent ileostomy when an ileal pouch-anal anastomosis is unsuitable, offering to these patients a quality of life at 5 years follow-up close to that in conventional restorative proctocolectomy. Further evaluation of this technique is warranted.

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FIGURE LEGENDS

Figure 1. The pouch is constructed in the left upper part of the gastric body (with its blood-supply coming from the gastroepiploic vessels) and then lowered to reach the anus.

Figure 2. Barium enema. The gastric pouch in an antero-posterior view **(a)** and a lateral view **(b)**. Gastric folds are easily recognized.