Ileal pouch anal-anastomosis without covering ileostomy

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Restorative proctocolectomy (RPC) with ileoanal anastomosis (IAA) removes all of the colorectal glandular mucosa while preserving intestinal flow and rectal function. The two principal indications are ulcerative colitis (UC) and familial adenomatous polyposis (FAP). The procedure requires wide pelvic dissection and extensive intestinal sutures to fashion the 15 to 20 cm ileal pouch and the IAA. Because of the risk of pelvic sepsis or fistulization, a temporary ileostomy is classically proposed for protection [1-3]. A second procedure is generally planned 2 to 3 months later to reverse the temporary ileostomy.

When well informed, patients generally accept this temporary ileostomy quite well. It can however be a source of complications related to the construction or closure procedures or to dysfunction during the period of use. Excessive outflow can lead to dehydration and metabolic disorders [4]. Peristomal irritation is also related to the construction or closure procedures or to dysfunction.

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Patients and methods

Restorative proctocolectomy with IAA was performed in 84 patients between February 1993 and February 1998 at the Digestive Surgery Unit of the Saint-Antoine Hospital, Paris. This consecutive series of patients included 48 men and 36 women, mean age 33 years (range, 9-72). Indications for IAA were FAP in 51 patients (60%), UC in 30 (35.7%), non-familial colonic polyposis in 2 (2.4%) and indeterminate colitis in 1 (1.2%). Among the patients with UC, 10 were taking corticosteroids at a mean dose of 20 mg per day (range, 10-30 mg/d). Ten patients (8 FAP, 2 UC) had rectal cancer; preoperative radiotherapy was not administered.
The surgical technique has been described previously [9]. After colonic preparation, the procedure began by a total colectomy. Proctectomy was then performed with close contact to the muscularis propria to avoid injury to the pelvic nerves. In case of rectal cancer, total excision of the mesorectum was performed. The rectum was sectioned 2 to 3 cm above the pelvic floor after closure with a automatic stapler. A J-pouch measuring 18 cm was fashioned from the terminal ileum. Mucosectomy of the entire height of the rectal stump, starting at the dentate line was performed perineally. The apex of the reservoir was then opened and anastomosed manually to the dentate line using separate slowly resorbable 4.0 sutures. The decision to omit the ileostomy was made at the end of the procedure. Besides absence of corticosteroid therapy > 30 mg/d, conditions required for omission of the ileostomy were: lack of difficulty in performing the RPC, no peroperative contamination, no excessive tension on the anastomosis. The pouch was drained with a transanastomotic tube (Charrière 30).

Outcome assessment evaluated morbidity and functional results. All surgical and medical complications were retained as morbidity events, with a distinction between early events occurring less than one month after surgery and late events. Patients were seen at follow-up consultations at 1, 6, and 12 months. Further follow-up was performed by the primary care physician or at annual outpatient consultations. Data collected included: number of stools per 24 hr, number of nocturnal stools, quality of daytime and nighttime stool, presence of urgency (impossibility to delay defeacation more than 15 minutes), use of anti-diarrheal agents, complications, and re-operations.

Pouchitis was defined clinically as a syndrome associating diarrhea, urgency, pelvic pain, malaise and fever > 38°C for a period of 48 hours with rapid resolution after administration of oral antibiotics. Endoscopic confirmation was not required.

Fisher’s exact test was used for the statistical analysis. Differences were considered significant for P < 0.05.

Results

Restorative proctocolectomy with ileoanal anastomosis was performed in 56 patients (66.7%) and transformation of an ileorectal anastomosis to ileoanal anastomosis in 16 (19%). For the twelve other patients, eight (9.5%) had had prior subtotal colectomy with ileostomy and mucous fistula, three (3.6%) underwent subtotal colectomy with closure of the rectal stump (Hartmann’s procedure), and one (1.2%) left colectomy. Mean duration of the surgery was five hours (range, 3-11). The nasogastric aspiration lasted a mean 6 days (range, 3-11), as did the transanal drainage (range, 2-11 days). Mean duration of the hospital stay was 13.8 days (range, 8-26).

Complications

None of the patients were lost to follow-up. One patient (1.2%) died from pulmonary embolism on day 16 following surgery. Postoperative complications are detailed in table I. Twenty-five patients had 29 complications, four of which required a revision procedure. In one patient, a second operation for ileostomy was performed on day 2 postoperatively as a preventive measure due to the development of hemoperitoneum subsequent to anticoagulant overdosage. One patient underwent a second procedure at one month to drain a pelvic abscess; an ileostomy was fashioned. These two temporary ileostomies were later closed without complication. Eight patients developed fever of unknown cause (an average on day 6 postoperatively); endoscopy and histology explorations did not demonstrate any evidence of a pelvic collection or fistulization and the clinical course was favorable with antibiotics. Complications were not more frequent in patients with UC who were receiving corticosteroids (3 of the 10 UC patients) than for those without corticosteroid therapy (7/19).

Median follow-up was 22 months (range, 1-65). Late complications were observed in 23 patients (table II). Nine required a revision procedure, two for ileostomy. The first case concerned a patient who developed peritonitis subsequent to perforation of the reservoir’s blind loop 25 months after the IAA. This second operation was complicated by an enterocutaneous fistula from the pouch to the retrorectal area. The IAA was dismounted and the pouch was moved to the abdomen for repair. A new IAA was protected with a diverting ileostomy. Closure of this ileostomy led to a new retrorectal fistula and skin lesions suggestive of pyoderma gangrenosum and a diagnosis of Crohn’s disease was suspected. The patient was given infliximab and the fistula closed. The second patient developed an anastomotic fistula which also revealed Crohn’s disease leading to resection of the reservoir two months after the initial operation.

Fourteen patients developed a late complication which did not require revision surgery. Half of these patients had an anastomotic stricture that resolved favorable after dilatation. There was no difference for early and late morbidity between

Tableau I – Early postoperative complications (30 days) after ileal pouch anal-anastomosis without covering ileostomy.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>With revision procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemoperitoneum (temporary ileostomy)</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>Pelvic sepsis (temporary ileostomy)</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Hemmorhoidal thrombosis</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Bilateral compartment syndrome</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Without revision</td>
<td>25</td>
<td>29.8</td>
</tr>
<tr>
<td>Unexplained fever</td>
<td>8</td>
<td>9.5</td>
</tr>
<tr>
<td>Postoperative ileus</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Pelvic sepsis</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>Pouch bleeding</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td>Other medical complications: diarrhea, phlebitis, pulmonary embolism, dehydration, urinary tract infection, pleural effusion</td>
<td>6</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>29</td>
<td>34.6</td>
</tr>
</tbody>
</table>

Early postoperative complications occurred in 25 of the 84 patients.
Twenty patients (25%) took anti-diarrheal and 62 (75%) did not. Two patients with FAP and 3 with UC had urgency symptoms. Seventy-seven patients (97%) were urgency free.

Nighttime continence was normal in 74 patients (95%). Four suffered anal leakage that required a protective pad. Twenty patients (25%) took anti-diarrheal and 62 (75%) did not.

Functional outcome

At median follow-up of 22 months (range, 1-65), functional outcome was assessable in 82 patients. Two patients were excluded from this analysis (one death and one resection of the reservoir). Mean number of stools per 24 hours was 3.8 ± 1.0 (range, 1.0-6.5). It was 3.7 ± 1.1 (range 1-8) in patients with FAP and 4.1 ± 1.2 (range 1.0-6.5) in patients with UC (NS). Nineteen patients (23%) (12 FAP, 7 UC) had stools at night (mean 1.3). Daytime continence was normal in 78 patients (95%).

Discussion

This study demonstrated that temporary ileostomy can be avoided in selected patients undergoing ileal anal anastomosis. This was an open study because the decision to try this new approach was made progressively by one surgeon of the surgical team with 9 years experience with IAA; as it did not create new complications it was subsequently adopted by other senior surgeons. Like most authors reporting on this subject, we did not randomize our patients, but preferred to allow the operating surgeon to determine at the end of the IAA procedure which patients would not require an ileostomy [3, 10-12, 14]. The first IAA without ileostomy was performed in 1993; indications have been widened since that time. During the last two years of the present study, 51 patients (61%) had IAA without ileostomy (73% of the patients undergoing IAA for FAP and 51% of those undergoing IAA for UC). The IAA was protected by a diverting ileostomy in 38 other patients (39%) during this same period. Patients were carefully selected for IAA without ileostomy. Familial adenomatous polyposis is the best example. These patients are in good physical condition and usually symptom free, the diagnosis being the final result of a genetic study. Tissue in these patients have not been modified by inflammation. Omitting the ileostomy has the advantage of limiting the social and occupational impact of the operation for these patients. Many of our patients preferred to schedule the procedure at the end of the school year in order to be able to reach full recovery for the next academic year. This could not have been achieved if the procedure included an ileostomy.

For UC patients, the decision to omit the protective ileostomy after IAA must be made prudently. Inflammation can compromise the procedure and the risk of septic complications is higher in patients taking corticosteroids. A prednisone dose > 20 mg/d is an exclusion criteria for most teams [3, 10-13]. Sugerman et al. [14] however did not confirm this threshold and we set the upper limit at > 30 mg/d for our patients. A second selection is made peroperatively in view of the state of the tissues (fragility, hemorrhagic infiltration). Despite the subjective nature of this assessment, corticosteroid therapy was not found to increase the rate of complications.

Unlike us, most teams have omitted the ileostomy after mechanical closure of the IAA [3, 10, 13, 14]. The advocates of this method point out the facility of the procedure and the lesser tension on the mesentery as well as the lower risk of anastomotic fistulization compared with mucosectomy and hand-sewn anastomosis, arguments suggesting the ileostomy could be omitted. But the cylinder of glandular mucosa measuring 0.5 to 3 cm which is left in place could be a focus for inflammation or dysplasia in UC or malignant transformation in FAP and more rarely UC. Since neither the hand-sewn nor the mechanical technique has proven superiority, the choice depends on the surgical team and is a subject of much debate. We consider that removal of the glandular mucosa must be given priority and all patients had mucosectomy starting from the dentate line followed by hand-sewn anastomosis. Our results confirm those reported by other teams who have also found that the ileostomy can be avoided after mucosectomy and hand-sewn IAA [10, 11, 14, 15].

Five patients (5.9%) developed an early septic complication of the pelvis. The rate of pelvic sepsis after IAA without ileostomy has varied from 4 to 22%. In the only randomized study published, rates were similar with or without ileostomy [13]. In two series of unselected consecutive patients undergoing IAA with ileostomy, we reported a 4% rate of septic complications in FAP patients and 6% in UC patients [16, 17]. Other comparative studies have demonstrated a higher rate without ileostomy, but the rate of secondary ileostomy has remained below 6%. In case of septic complication, revision surgery can be avoided if there is no peritoneal dissemination, perforation or fistula. The rate of hemorrhagic perforation in our series was 0.6% (one patient). In the literature, 13% of patients required an ileostomy subsequent to complications of unrecognized Crohn’s disease; this patient now has an ileostomy.

Complications related to the ileostomy and its closure have been reported in 30 to 59% of patients. Complications can involve small bowel obstruction, dehydration due to excessive outflow, reintegration, cutaneous erosion subsequent to difficult prosthesis fitting, peritonitis or fistulization at closure, or wound dehiscence. Small bowel obstruction is one of the most frequent complications of IAA. The rate depends on the length of the follow-up. About two-thirds of the early obstructions are directly related to the ileostomy, either by small bowel volvulus around the stomy fixation point, or by formation of adherences [6]. Omitting the ileostomy should be able to reduce the rate of obstructions as has been generally confirmed by comparative studies that have demonstrated a reduction of more than 50% in the rate of revisions for obstruction [11, 13, 14]. In our series followed for a mean 22 months (range, 6-36), the rate of small bowel obstruction was 8.3% (7 patients, 5 of whom required revision). This rate is the same as we noted after protected IAA for UC patients, but lower than the 15% observed for FAP patients [16, 17].

Seven patients (8.3%) developed an anastomotic stricture. Six resolved favorably after dilatation. One patient required transanal lowering of the reservoir and reconstruction of the anastomosis at 8 months. After IAA with ileostomy, we reported a 4% rate of strictures in FAP patients and 3.2% in UC patients [16, 17].

Failure, defined as need for a definitive ileostomy with or without resection of the ileal pouch has been reported in 10% of the IAA after 10 years follow-up [19]. In a series of IAA without ileostomy, the rate of failure has varied from 0 to 4.5%, but with a follow-up less than 10 years. One patient in the present series (1.2%) had Crohn’s disease; this patient now has an ileostomy after resection of the ileal pouch. We have no other patient who has a definitive ileostomy subsequent to a septic complication or
functional failure. The fear of complications and early failure appears to be unjustified.

It is known that a protective ileostomy does not reduce the number of septic complications but can limit severity. Theoretically, the risk of omitting the ileostomy is that function would be compromised subsequent to pelvic sclerosis following infection which would prohibit expanding the reservoir. In our two series of IAA with ileostomy, the mean number of stools per day after one year follow-up was 4.2 in FAP patients and 4.5 in UC patients [16, 17]. The proportions of patients without nighttime stools were 74% and 60% for FAP and UC respectively, and daytime continence was normal in 98% and 87%. These results, together with those for nighttime continence, need for protective pads, or presence of urgency, are quite similar to those reported in the present series without ileostomy.

In conclusion, IAA without a protective ileostomy can be proposed for FAP and UC patients. By eliminating complications related to the ileostomy, it is possible to reduce the number of revision procedures, particularly for occlusion. The rates of septic complications and failure are not higher than with protected IAA and postoperative function does not appear to be different. This conclusion does however allow us to propose omitting the ileostomy for all patients undergoing IAA. Selection criteria include a well-trained surgical team with sufficient experience with this type of surgery, planned procedures, and patients with good clinical status who do not require large doses of corticosteroid.

REFERENCES