

Restorative Proctocolectomy: The Current Ochsner Experience

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ABSTRACT

Background: Restorative proctocolectomy with an ileal pouch-anal anastomosis is a technically demanding procedure to treat ulcerative colitis and familial adenomatous polyposis. Since its initial description almost 30 years ago, the operation has undergone technical and perioperative modifications to improve the patient's experience.

Methods: We performed a retrospective review of the records of patients undergoing restorative proctocolectomy at the Ochsner Clinic Foundation Hospital from 2008 to 2012 and compared data from that period to data from 1989-1995 (prior to laparoscopic pouch surgery) to determine factors associated with patient outcome.

Results: Ileal pouch-anal procedures were performed in 77 patients. The 30 male and 47 female patients ranged in age from 13 to 63 years (mean, 34.5 years). The indications for the procedure were ulcerative colitis in 62 patients, polyposis coli in 12 patients, and Crohn disease in 3 patients. Forty patients (52%) had laparoscopic-assisted procedures. The overall hospital length of stay for pouch creation averaged 6.9 days (range 3-29) and for ileostomy closure averaged 4.3 days (range 1-15). No perioperative deaths occurred within 30 days.

Complications occurred in 37.7% of patients. Compared to a previous report of 72 patients from 1989 to 1995, the recent group had more laparoscopic procedures, shorter hospital stays, a smaller percentage of 3-stage procedures, and fewer general and pouch-related complications. Pouch failures were similar for both groups.

Conclusion: Advances in operative techniques and perioperative management have improved the outcome of restorative proctocolectomies.

INTRODUCTION

Restorative proctocolectomy with an ileal pouch-anal anastomosis (IPAA) is a technically demanding procedure used to treat patients with chronic ulcerative colitis (CUC) and familial adenomatous polyposis (FAP). Even in experienced hands, this procedure is associated with significant complications. Overall complication rates have ranged from 29% to 87%, and pouch failure has varied from 3% to 13%.¹⁻⁹ Since its initial description almost 30 years ago, the operation has undergone both technical and perioperative modifications with the goal of improving the patient's experience. Advances in operative techniques such as laparoscopy and perioperative management have had significant impacts on patient outcome.

To document the significance of these changes, we reviewed our recent experience with IPAA to determine (1) if there was a difference in surgical outcome of our recent procedures compared with previously reported experience, and (2) what factors were associated with surgical outcome.

METHODS

After obtaining institutional review board approval, we retrospectively reviewed the electronic hospital and clinical records for cases of restorative proctocolectomy performed from January 2008 to December

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Table 1. Patient Demographics and Clinical Characteristics

	Group 1 (2008-2012) n=77	Group 2 (1989-1995) n=72
Disease		
Ulcerative colitis	62	63
Polyposis coli	12	9
Crohn disease	3	0
Gender		
Male	30	37
Female	47	35
Number of Procedures		
1 stage	3	2
2 stages	64	50
3 stages	10	20
Pouch Type		
J-pouch	76	26
S-pouch	1	46
Operative Technique		
Open	37	72
Laparoscopy	40	0
LOS, mean days		
All patients	6.9	10.3
Ulcerative colitis	9.0	10.5
Polyposis coli	5.9	8.6
Crohn disease	4.7	N/A
30-Day Mortality, %	0	1.4

LOS, hospital length of stay; N/A, not applicable.

2012 at the Ochsner Clinic Foundation Hospital. All procedures were performed by board-certified colon and rectal surgeons with the assistance of a colon and rectal surgery fellow or general surgery chief resident. The variables recorded included patient demographics, clinical diagnosis (ulcerative colitis, Crohn disease, FAP), operative technique, type of

ileal-anal pouch construction (J, S, hand sewn, or double stapled), number of operations, hospital length of stay (LOS), and complications. Hospital LOS was calculated from the date of surgery to date of discharge.

Complications were categorized as general (ie, those associated with any major abdominal operation) and as pouch related. Follow-up was the last documented patient contact. Data on the current patients (Group 1: 2008-2012) were compared to data on a previously reported Group 2 (1989-1995) to quantify the changes in patients' experience. These time periods were chosen because they encompass alterations in operative techniques (laparoscopy) and perioperative management (enhanced recovery pathways [ERP]), and the early group corresponded to our institution's previous experience.⁹

Statistical analysis was performed using StatView (SAS Institute, Cary, NC). Comparisons of complications between groups were performed with either a Fisher exact test or a chi square analysis. For comparison of continuous variables, Student *t* test was used. Significance was defined as $P < 0.05$.

RESULTS

From 2008-2012, 77 patients underwent restorative proctocolectomy with IPAA. Follow-up ranged from 2 weeks to 5.3 years after ileostomy closure. The 30 male and 47 female patients ranged in age from 13 to 63 years (mean, 34.5 years) and had a body mass index (BMI) of 18 to 41 (mean, 26.8). The indications for the procedure were ulcerative colitis in 62 patients, polyposis coli in 12 patients, and Crohn disease in 3 patients. Forty patients (52%) had laparoscopic-assisted procedures compared to 37 patients (48%) who had conventional open procedures. The IPAAs were constructed as a J-type reservoir in 76 patients and an S-pouch in 1 patient. The anastomoses were created with a double-stapled technique in 75 patients and were hand sewn in 2 patients (1 with an S-pouch). The majority (74 patients) received a

Table 2. Laparoscopic vs Open Procedures in Group 1 (n=77)

	Laparoscopic n=40	Open n=37	P Value
Average Age, years (range)	31.6 (13-59)	37.5 (13-63)	0.06
Female, %	63	59	
Body Mass Index, average (range)	28.0 (19-40)	25.2 (18-41)	0.15
Diagnosis			
Ulcerative colitis	34	28	
Polyposis coli	6	6	
Crohn disease	0	3	
Length of Stay, average (range)	7.6 (3-29)	6.6 (3-21)	0.28
Complications, %	30	46	

Table 3. General Complications

	Group 1 (2008-2012) n=77	Group 2 (1989-1995) n=72
Small-bowel obstruction	2	26
Dehydration	3	7
Gastrointestinal bleed	1	4
Addisonian crisis	0	3
Infections	11	8
Incisional hernia	1	2
Evisceration	0	1
Sciatic neuropathy	0	1
Total number of complications	18	52

diverting loop ileostomy. Demographics and clinical characteristics of the patients are summarized in Table 1. Data comparison between the 2 groups showed only one significant difference: significantly more S-pouches were done in the earlier group.

Ileostomy closure was planned to occur approximately 6 weeks later provided there were no complications or evidence of extravasation during contrast enema examination. Ten patients presenting with toxic colitis or severe malnutrition or comorbidities had their procedures performed in 3 stages: initial colectomy and ileostomy, pouch construction, and loop ileostomy closure.

A comparison of the laparoscopic vs open procedures in Group 1 is presented in Table 2. The overall hospital LOS for pouch creation averaged 6.9 days (range 3-29) and for ileostomy closure averaged 4.3 days (range 1-15). There was no difference in LOS between laparoscopic pouch procedures (7.6 days) and open-pouch procedures (6.6 days, $P=0.28$). BMI was similar in both groups. There were no perioperative deaths within 30 days. Total complications occurred in 29 patients, for a 37.7% overall complication rate. Again there was no difference in complication rate between open and laparoscopic patients nor was there a significant difference in LOS secondary to complications. There was no correlation between BMI, disease state, and overall or pouch-related complications. General complications are listed in Table 3 and pouch-specific complications are listed in Table 4.

Compared to a previous report of 72 patients from 1989 to 1995, the recent group had more laparoscopic procedures, a smaller number of 3-stage operations, shorter LOS, and fewer general and pouch-related complications. The recent group had a lower incidence of small-bowel obstruction. Pouch failures were similar for both groups.

Table 4. Pouch-Specific Complications

	Group 1 (2008-2012) n=77	Group 2 (1989-1995) n=72
Pouchitis	2	4
Pelvic abscess	2	3
Anastomotic sinus	1	1
Anastomotic leak	2	2
Pouch fistula	4	2
Total number of complications	11	12

DISCUSSION

IPAA is a successful operation for patients with CUC and FAP, but even when performed by experienced surgeons, it carries a risk of short-term, resolvable morbidities and a small but recognized mortality and major morbidity. This complex operation removes the diseased colon and rectum and creates a neo-rectum using a pouch constructed from the distal ileum. Operative times range from 2-6 hours. The ileal pouch can be constructed as a J-type reservoir using 2 12-18 cm loops of ileum or as an S-pouch using 3 8-10 cm limbs.¹⁰ This operation can be done with open or laparoscopic techniques. A laparoscopic procedure has longer operative times, but the smaller incisions usually lead to a quicker recovery. To minimize the clinical consequences of potential complications, a diverting loop ileostomy is frequently used (Figure). The ileostomy is closed 5-12 weeks after creation.

Our results in 77 patients compare favorably with other large series. Our overall morbidity of 37.7% and pouch-related complications are similar to other reported series.^{1-9,11-20} The most common perioperative pouch complications are fistulas, anastomotic leaks, and abscesses²¹⁻²² that can often be managed with medication or additional operative procedures.^{19,23-25} Unsuccessful management of these complications may lead to pouch failure and removal. Pouch removal was required in 4 patients (5.2%). This result compares well with other series that have reported excision rates of 3% to 13% (median of 6%).^{1-9,11-20}

Comparing our previous experience (1989-1995) to the present series, patients referred for IPAA had a similar frequency of inflammatory bowel disease but a smaller number of 3-stage procedures.⁹ The frequency of total and pouch-specific complications was lower in the recent period, but the number of pouches requiring excision was similar. Significantly, our recent patients had a lower incidence of small-bowel obstruction that may have resulted from the increased

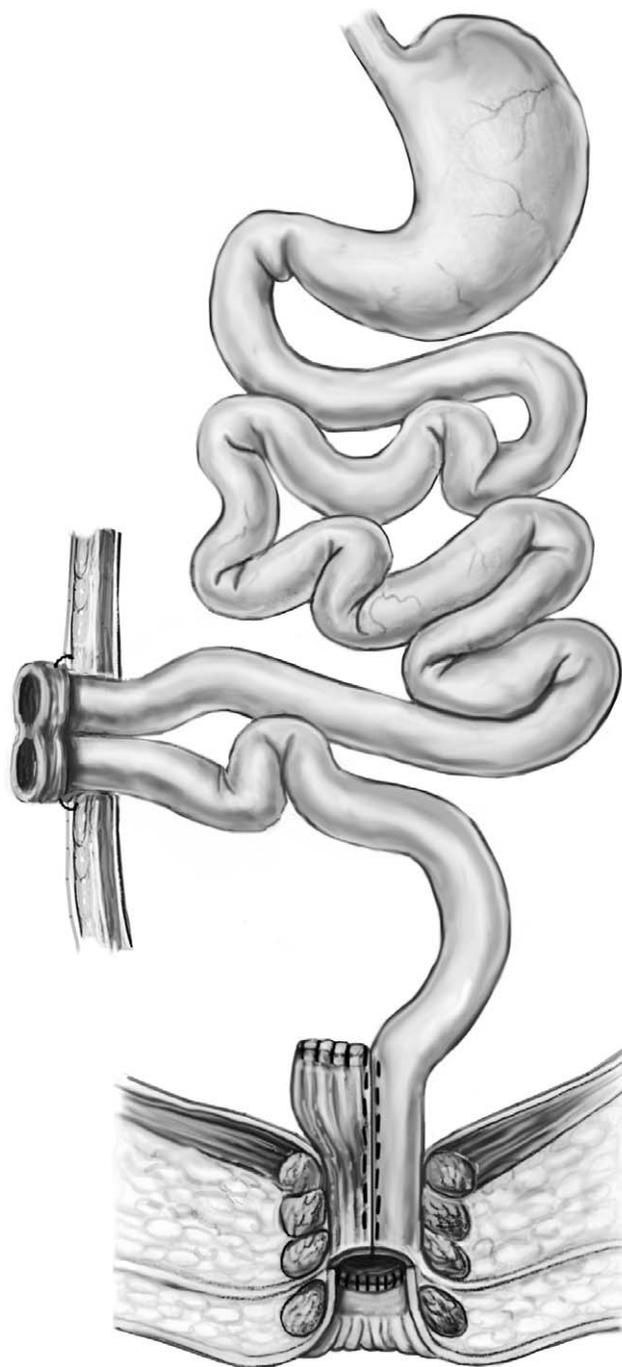


Figure. Restorative proctocolectomy.

use of laparoscopic techniques and antiadhesion barriers such as Seprafilm (Genzyme, Bridgewater, NJ).

Perioperative management also changed in the recent group. ERPs have included early feeding and

multimodality pain management that included non-opioid adjuvants such as intravenous acetaminophen and ibuprofen, as well intraoperative local infiltration of liposomal bupivacaine (Exparel). This resulted in the shorter LOS for patients with both CUC and FAP.

The number of staged procedures was reduced in the recent time period but remains prudent for selected patients: those on biologic agents and those with severe disease or malnutrition. Two other studies in the literature concur with the use of staged procedures in selected patients.^{26,27}

Several factors are associated with surgical outcome of the IPAA: technical experience, perioperative care, surgical reoperation for pouch complications when indicated, and the judicious use of a 3-stage procedure in patients who are malnourished or present with acute or toxic colitis.

CONCLUSION

Restorative proctocolectomy with an IPAA remains the procedure of choice for treating patients with CUC and FAP. Advances in operative techniques and perioperative management have improved the outcome of this demanding procedure.

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