ORIGINAL ARTICLE

OUTCOME OF POUCH SURGERY FOR ULCERATIVE COLITIS: SINGLE CENTER EXPERIENCE

By

Ahmed Abdel-Raouf, Mohamed El-Hemaly, Tarek Salah, Emad Hamdy, Omar Fathy, Nabeih Anwar, Ahmed Sultan

Gastroenterology center, Mansoura University, Egypt

Correspondence to Ahmed Abdel-Raouf, Email: ahmedraoaf@mans.edu.eg

Aim: *The purpose of the present study is to present the experience of our center in surgical management of ulcerative colitis (UC), stressing on evaluating the outcome of pouch surgery.*

Methods: *Fifty eight patients underwent surgery for UC between 1996 and 2007 at Mansoura Gastroenterology Center. A retrospective analysis has been done of all patients with UC undergoing surgery which includes details of the patient's history, indication of surgery, type of operation, postoperative morbidity, and functional outcome.*

Results: *The main indication for operation was failed medical treatment (n=42, 72.4%). Pouch surgery was performed in 25/58 patients (43.1%). The majority of patients, 23/25 (92%) had J-shaped pouch. Twenty patients (80%) had a defunctioning ileostomy. There was one postoperative death after pouch surgery. Early complications after pouch surgery included pelvic sepsis (n=4), small bowel obstruction (n=2), pouch hemorrhage (n=1), wound sepsis (n=3). The most common long-term complication after pouch surgery (n=14) was anastomotic stricture (n=9, 42.6%). Five patients (35.7%) presented with pouchitis. Median daytime stool frequency was 5.1. Three patients (21.4%) presented with fecal incontinence.*

Conclusion: *Pouch surgery is a major one that attains many complications. However, the long term results and patient's satisfaction are reasonable.*

Keywords: *Pouch, anastomosis, stapling.*

INTRODUCTION

Ulcerative colitis (UC) is an inflammatory disease of the colorectal mucosa, the exact etiology of which is still unknown. Treatment of UC is medical in the first place; however, surgery may have a role in selected patients.[1-3]

There are many indications for surgical intervention in patients with UC but the most common is unresponsiveness to adequate medical treatment. Despite the presence of a number of surgical options, the surgical procedure of choice in such case is restorative proctocolectomy (RP) or proctocolectomy with ileal pouch-anal anastomosis (IPAA) first described by Parks and Nicholls in 1978.[4] This procedure removes the diseased mucosa, effectively curing the disease whilst maintaining the normal route of defecation and continence. Other surgical options that may be considered in selected patients include proctocolectomy with either a Brooke

ileostomy or a Kock pouch, and abdominal colectomy with ileorectal anastomosis. The choice of operation requires consideration of the advantages and disadvantages of a particular procedure and must be tailored to an individual patient's needs and circumstances.

The purpose of the present study was to present our experience and evaluate the outcome of surgery for patients with UC performed at Mansoura gastroenterology surgical center over a period of 11 years. In this work we will make a special focus on the short-term and long-term outcome of pouch surgery.

PATIENTS AND METHODS

A total of 58 patients (39 male, 19 female) underwent surgery for UC between Jan 1996 and Apr 2007 in Mansoura Gastroenterology Surgical Center. The mean age at the time of surgery was 31.6 (range 13-60) years. Patients' records were reviewed retrospectively. A database has been maintained of all patients with UC undergoing surgery which includes details of the patient's history, indication of surgery, type of operation, postoperative morbidity, functional outcome and follow-up assessments.

All procedures, including obtaining written informed consent from the patient, were conducted in accordance with the recommendations of the Ethics Committee of the Faculty of Medicine, Mansoura University.

The preoperative diagnosis was UC in all patients. The diagnosis of UC was based on clinical presentations, endoscopic findings, results of colonoscopic biopsies and exclusion of infectious causes.

Following pouch surgery patients were reviewed at 2-12 weeks, 3, 6 and 18 months, and annually thereafter. At each review, data concerning late morbidity and pouch function were obtained, and this included daytime and night-time frequency, presence or absence of incontinence, urgency and mode of pouch evacuation, use of antidiarrheal drugs and episodes of pouchitis. Incontinence was defined as major (gross leakage, wearing pads day and night) or minor (occasional fecal seepage, spotting of underclothes). Urgency was defined as an inability to defer defecation for at least 30 min. Pouchitis was defined as an increase in pouch evacuation frequency with endoscopic and histological evidence of acute inflammation.

RESULTS

Indication for surgery: The main indication for operation was failed long-term medical treatment of the disease (42 patients, 72.4 per cent) Table 1. Failure of medical treatment was defined as unresponsiveness to maximal medical therapy (5-Aminosalycilic acid derivatives (sulphaslazine 6g/d or Mesalamine 4 g/d) and oral steroids (prednisone or prednisolone 40mg/d) or hospitalization and intravenous steroids (hydrocortisone 100mg three times daily.

Table 1. Indications for surgery

Indications	Number	Per cent
Failed medical treatment	42	72.4
Severe fulminant colitis	5	8.6
Severe dysplasia	2	3.4
Frank carcinoma	2	3.4
Perforation with peritonitis	2	3.4
Chronic bleeding	2	3.4
DAML*	1	1.7
Toxic megacolon	1	1.7
Growth retardation	1	1.7

DAML = Dysplasia Associated Mass/Lesion.

Treatment intolerance or recurrence of symptoms on withdrawal (steroid dependence) were other forms of failed medical treatment indicating surgical intervention.

Operative technique: The categories of operations performed are shown in (Fig. 1). The choice of surgical procedure was based on patients' circumstances and surgeon's preference. Early in our work total proctocolectomy with terminal ileostomy and total proctocolectomy with ileal-anal anastomosis were the preferred operations, but with increased experience all the last cases underwent total proctocolectomy with ileal pouch-anal anastomosis. Terminal ileostomy was performed in one patient only. This patient had perforation with generalized peritonitis and was in poor general condition to withstand major surgery. Subtotal colectomy and ileorectal anastomosis was done in two patients; one had toxic megacolon with impending perforation and the other had severe rectal bleeding. The last patient had completion pouch surgery 2 months after the original operation (Fig. 2).
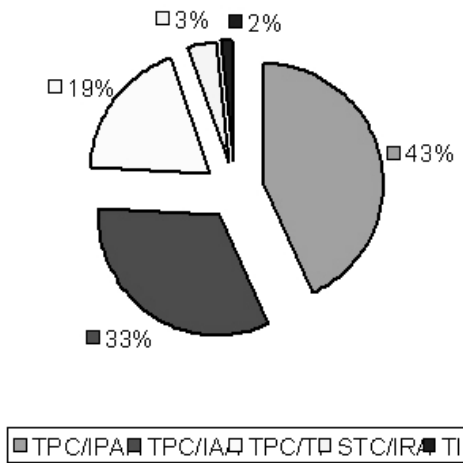
Fig 1. Type of operations performed*.
*TPC/IPAA= Total proctocolectomy with ileal pouch-anal anastomosis, TPC/IAA= Total proctocolectomy with ileoanal anastomsosi, TPC/TI = Totcal proctocolectomy with terminal ileostomy, STC/IRA = Subtotal colectomy with ileorectal anastomosis, TI = Terminal ileostomy.
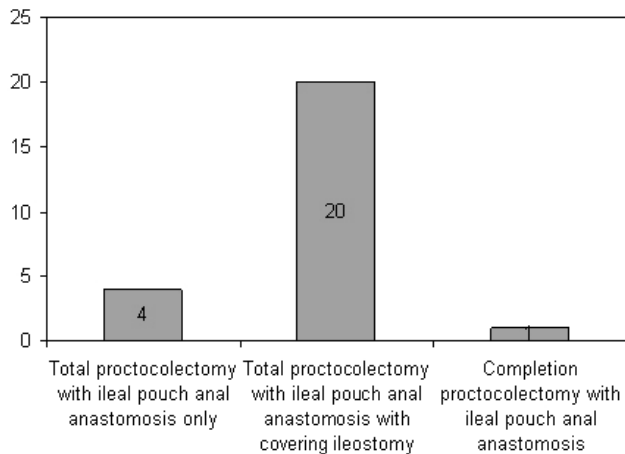

Fig 2. Type of pouch surgery performed.

Pouch surgery: Pouch surgery was performed in 25/58 patients (43.1 per cent) (Fig. 2). The majority of patients, 23/25 (92 per cent) had J-shaped pouch. Only two patients had S-shaped pouch because of difficult reach of the pouch to the anal canal. The majority of patients, 19 (76 per cent), underwent a stapled pouch-anal anastomosis. Some 3 (12 per cent) had a handsewn anastomosis and the remaining 3 patients had handsewn anastomosis after failure of stapling. The anastomosis was performed 1-3 cm above the dentate line in all cases whether performed by stapling or handsewn. No patient had endoanal mucosectomy. The number of handsewn anastomoses reduced as the series matured.

Twenty patients (80 per cent) had a defunctioning ileostomy fashioned at the time of pouch surgery, of which 16/20 (80 per cent) had been closed at the time of analysis. Two patients refused to close the ileostomy the other two are awaiting for closure. The median time to closure of ileostomy after restorative proctocolectomy was 15 (range 8-19) weeks. Five patients (20 per cent) underwent pouch surgery without an ileostomy. Early in the series, defunctioning ileostomy was mandatory but later on, it was added only when there is doubt about the anastomosis, patients in poor general condition, patients on steroid therapy, and in patients with hypoalbuminemia.

Mortality after pouch surgery: There was one postoperative death in the series. This patient had bladder injury during pelvic dissection that was complicated early postoperatively with urinary fistula. The patient had intra-abdominal sepsis due to anastomotic leakage that was managed with ultrasound-guided drainage. Unfortunately, the patient died of multiple organ failure from septicemia.

Early complications (within the same hospital admission) after pouch surgery Table 2.

Four patients (16 per cent) developed pelvic and intra-abdominal sepsis; one patient was managed with operative drainage, one patient was managed with percutatneous drainage (died), and two were managed with antibiotic therapy alone.

Pouch hemorrhage occurred in one patient and it was settled spontaneously with the aid of hemostatic drugs. Adhesive small bowel obstruction occurred in two patients but no patient required laparotomy.

Long-term morbidity after pouch surgery Table 3.

Long-term follow-up data were available for 14 of the 24 patients (one patient died) at a median of 23 (range 1-53) months. Long-term complications are detailed in Table 4.

The most common long-term complication was anastomotic stricture noted in 6 patients (42.6 per cent). Anastomotic stricture was defined as a palpable stricture at the site of pouch-anal anastomosis at digital rectal examination. This was managed by finger dilatation as an outpatient procedure, but dilatation under general anesthesia was needed in 2 of them. Defunctioning ileostomy was closed in those patients only after the stricture reached a sufficient diameter.

Five (35.7 per cent) of 14 patients presented with pouchitis. The diagnosis of pouchitis was based on clinical grounds

(abdominal pain, tenderness, tenesmus, increasing diarrhea) and colonoscopic findings (inflamed pouch mucosa with friability) and histological findings (non specific inflammatory cells). Of these, 4 experienced one episode and only one patient had more than one episode. Standard treatment comprised a 10-day course of oral metronidazole and ciprofloxacin. The patient with recurrent pouchitis was treated with steroid enemas. No patient had the pouch excised for intolerable symptoms from resistant pouchitis.

Functional outcome: Functional data were assessed for 14 patients who came for follow up. Functional assessment was made only after closure of defunctioning ileostomy.

Median daytime stool frequency was 5.1 (range 1-16). Ten patients (71.4 per cent) reported passage of stool once or less at night. The distribution of stool frequency is detailed in Table 4.

Three patients (21.4) presented with fecal incontinence (two major, one minor). One patient with major incontinence after surgical correction of postoperative perianal fistula (fistula surgery was done outside our center). This patient is currently on biofeed back therapy after failure of surgical correction of incontinence. Two patients (14.3 per cent) reported urgency. Four patients (28.6 per cent) continued to take antidiarrheal drugs.

Table 2. Intraoperative and early postoperative complications after pouch surgery.

Complication	No of patients	Percent	Management	
			Conservative	Surgical
Intraoperative complications				
Splenic injury	1	4		1
Bladder injury	1	4		1
Colonic injury	1	4		1
Postoperative complications				
Intra-abdominal or pelvic sepsis	4	16	3	1
Small bowel obstruction	2	8	2	
Pouch hemorrhage	1	4	1	
Wound sepsis	3	12	3	

Table 3. Long-term complications after pouch surgery.

Percent	No of patients (n=14)	Complication	Management	
			Conservative	Surgical
Anastomotic stricture*	6	42.6	8	
Pouchitis**	5	35.7	8	
High pouch output	2	14.3	2	
Perianal suppuration/fistula	2	14.3	1	1
Pouch-vaginal fistula	1	7.1		1
Small bowel obstruction	1	7.1	1	
Pouch failure	0	0		

Table 4. Stool frequency in 14 patients after pouch surgery.

Frequency	Daytime	Nocturnal
0-1	0	10
2-3	1	2
4-5	5	1
>5	8	1

Table 5. Literature review of ileal pouch-related complications.

Study	No. of Patients	Pouch type	Anastomotic stricture (%)	Fistula (%)	Pouchitis (%)	Failure (%)
Fazio [7]	1005	J/S	14	9.5	23.5	4.5
Marcello [10]	460	J	9	6	18	3.5
Belliveau [12]	239	J/S	10.5	15.1	19.2	4.6
Mikkola [13]	100	J	6	5	36	5
Katsuhiko [28]	296	J	22.6	4	5.4	1
Current study	25	J/S	42.6	14.3	35.7	0

DISCUSSION

The principal advantage of IPAA over total proctocolectomy with terminal ileostomy is avoidance of a permanent stoma with preservation of the normal route of defecation. The procedure offers the opportunity to remove the diseased colon whilst preserving intestinal continuity, avoids long-term stoma-associated morbidity and, compared with ileorectal anastomosis, avoids the risk of carcinoma or recurrent proctitis in the retained rectum.

The majority of patients in this series had a J pouch fashioned. The incidence of incontinence, seepage, urgency and perineal excoriation were similar between the three reservoir designs. With its simpler, quicker construction and little difference in functional outcome, J pouch has become the procedure of choice for most surgeons.[5]

Rectal mucosectomy and hand sewn anastomosis is technically demanding and time consuming. Moreover, it decreases anal sphincter pressure with consequent impairment of anal continence.[6] The double-stapled technique now employed during pouch-anal anastomosis has largely eliminated the need for endoanal dissection and preserves the anal transition zone. We did not perform rectal mucosectomy in any patient in the series but the anastomosis was hand-sewn in three patients early in our experience.

Reported incidences of complications range from 22% to 62.7% [7-11]. Excluding the report by Hulten,[8] rates are around 50%. On the other hand, the reported incidence of late complications has ranged from 21% to 52.3 %.[7,8,12-14]

Pouch hemorrhage was reported in one patient. Bleeding was not significant and stopped on conservative measures. Some authors recommend luminal inspection of the pouch before leaving the theatre and to decompress the pouch with a rectal catheter providing early warning of any hemorrhage.[15]

Pelvic sepsis (due to leakage from the anastomosis) appears to be the commonest early postoperative complication (range 0-25 per cent) in reported series [16-20] and the present experience (16 per cent) is consistent with these reports. Adequate drainage of sepsis is essential and may require formal laparotomy (one patient) or percutaneous drainage (one patient). Excision of the pouch may be required to remove the source of sepsis in patients who have not responded to drainage and antibiotic

therapy, or may be requested for poor function. In this series, one mortality was due to sepsis (despite adequate percutaneous drainage) but the other patients did not require pouch excision.

Anastomotic stenosis (42.6 per cent) was the commonest long-term complication in the present series. Detection of anastomotic stenosis depends solely on digital rectal examination without colonoscopy or radiology. This is significantly higher than the reported incidence (5-18 per cent) in other series.[16,18] This could be explained by the use of smaller staplers (EEA stapler used in most cases was 29 mm) and leaving defunctioning ileostomy for long period before closure. There was a significant difference in the incidence of anastomotic stenosis between those with ileostomy and those without (P <0.05, chi squared test). [We had no mucosectomy in our study.] Most of these stenoses were diagnosed by examination before closure of the defunctioning ileostomy, and dilatation was performed at the time of closure. The majority of anal strictures were fibrous and were successfully treated by finger dilatation. No patient needed revision of the anastomosis but several required repeated dilatation.

In common with other series[19-21] 2/25 patients required admission for adhesive small bowel obstruction. No patient required operative intervention. Pouch-vaginal fistula is a difficult problem to manage. In this series, one fistula was detected and it was repaired by surgical closure via a transperineal approach.[22] This was the case managmed outside and the pathology poved to be Crohn's disease.

The functional results in the present series were acceptable, with a median daytime stool frequency of 5.1. The majority of patients had an undisturbed night or needed to pass stool once at night, an important result in terms of quality of life. Few patients had significant urgency (the definition of urgency was mentioned in the last paragraph in the methods section [Urgency was defined as an inability to defer defecation for at least 30 min]) following the construction of the pouch and many enjoyed good or excellent discrimination. The functional outcome in the series is nearly similar to that reported by other authors.[23]

The reported incidence of pouchitis following restorative proctocolectomy varies between 7 and 45 per cent [24-26]. If strict clinical, endoscopic and histological criteria are applied, the true incidence appears to be 10-20 per cent.[16,26-29] We had a similar incidence of pouchitis in our patients Table 5. Pouch ischemia was not experienced in our cases, perhaps because all of the mesenteric vessels were preserved during pouch construction.

In conclusion, the rate of complications using our methods was almost equivalent to that in other reports; however, comparatively, the incidence of anastomotic stenosis was higher and both pouch function and pouch survival were satisfactory.

REFERENCES

1.   Hanauer SB. Medical therapy of ulcerative colitis. Lancet. 1993;342:412-17.

2.   Hanauer SB. Inflammatory bowel disease. N Engl J Med. 1996;334:841-8.

3.   Selby W. Clinical perspectives in inflammatory bowel disease. Aust NZ J Med. 1996;26:15-19.

4.   Parks AG, Nicholls RJ. Proctocolectomy without ileostomy for ulcerative colitis. BMJ. 1978;2:85-8.

5.   Lovegrove RE, Heriot AG, Constantinides VA, Athanasiou T, Darzi A, Remzi FH, et al. A comparison of short-term and long-term outcomes of J, W, S pouch reservoirs for restorative proctocolectomy. Colorect Dis. 2006;10:1463-8.

6.   Lovegrove RE, Heriot AG, Constantinides VA, Athanasiou T, Darzi A, Remzi FH, et al. A comparison of hand-sewn versus stapled ileal pouch anal anastomosis (IPAA) following proctocolectomy; a meta-analysis of 4183 patients. Ann Surg. 2006;244:18-26.

7.   Fazio VW, Ziv Y, Church JM, Oakley JR, Lavery IC, Milsom JW, et al. Ileal pouch-anal anastomosis complications and function in 1005 patients, Ann Surg. 1995;222:120–7.

8.   Hulten L. Problems after ileo-pouch anal anastomosis for ulcerative colitis. How can we prevent it? What can we do? Neth J Med. 1994;45:80–5.

9.   McMullen K, Hicks TC, Ray JE. Complications associated with ileal pouch-anal anastomosis, World J Surg. 1991;15:763–7.

10.   Marcello PW, Roberts PL, Schoetz DJ. Long -term results of the ileoanal pouch procedure, Arch Surg. 1993;128:500–4.

11.   Setti-Carraro P, Ritchie JK, Wilkinson KH. The first 10 years' experience of restorative proctocolectomy for ulcerative colitis, Gut. 1994;35:1070–5.

12.   Belliveau P, Trudel J, Vasilevsky CA, Stein B, Gordon PH. Ileoanal anastomosis with reservoir complications and long-term results, Can J Surg. 1999;42:345–52.

13.   Mikkola K, Luukkonen P, Jarvinen HJ. Long-term results of restorative proctocolectomy for ulcerative colitis, Int Colorectal Dis. 1995;10:10–14.

14.   Simchuk EJ, Thirlby RC. Risk factors and true incidence of pouchitis in patients after ileal pouch-anal anastomosis, World J Surg. 2000;24:851–6.

15. Romanos J, Samarasekera DN, Stebbing JF, Jewell DP, Kettlewell MGW, McC Mortensen NJ: Outcome of 200 restorative proctocolectomy operations: the John Radcliffe Hospital experience.Br J Surg. 1997:84;814-18.

16. Kohler L, Troidl H. The ileoanal pouch: a risk-benefit analysis. Br J Surg. 1995;82:443-7.

17. Galandiuk S, Scott NA, Dozois RR. Ileal pouch-anal anastomosis. Reoperation for pouch-related complications. Ann Surg. 1990;212:446-54.

18. Setti-Carraro P, Ritchie JK, Wilkinson KH, Nicholls RJ, Hawley PR. The first 10 years' experience of restorative proctocolectomy for ulcerative colitis. Gut. 1994;35:1070-5.

19. Pemberton JH, Kelly KA, Beart RW Jr, Dozois RR, Wolff BG, Ilstrup DM. Ileal pouch-anal anastomosis for chronic ulcerative colitis. Long-term results. Ann Surg. 1987;206: 504-13.

20. Williams NS, Johnston D. The current status of mucosal proctectomy and ileo-anal anastomosis in the surgical treatment of ulcerative colitis and adenomatous polyposis. Br J Surg. 1985;72:159-68.

21. Pescatori M, Mattana C, Castagneto M. Clinical and functional results after restorative proctocolectomy. Br J Surg. 1988;75:321-4.

22. Shingo T, Dan R, Wexner D, Baig K, Sands R, Weiss G, et al. Surgical Management of Pouch-Vaginal Fistula after Restorative Proctocolectomy J Am C Surgeons. 2006;202: 912-18.

23. Michelassi F, Lee J, Rubin M. Long-term functional results after ileal pouch anal proctocolectomy for ulcerative colitis: a prospective observational study. Ann Surg. 2003;238:433-41.

24. Dozois RR, Goldberg SM, Rothenberger DA. Restorative proctocolectomy with ileal reservoir. Int J Colorectal Dis. 1986;1:2-19.

25. McIntyre PB, Pemberton JH, Wolff BG, Beart RW, Dozois RR. Comparing functional results one year and ten years after ileal pouch-anal anastomosis for chronic ulcerative colitis. Dis Colon Rectum. 1994;37:303-7.

26. de Silva HJ, Kettlewell MGW, Mortensen NJ, Jewell DP. Acute inflammation in ileal pouches (pouchitis). Eur J Gastroenterol Hepatol. 1991;3:343-9.

27. Moskowitz RL, Shepherd NA, Nicholls RJ. An assessment of inflammation in the reservoir after restorative proctocolectomy with ileoanal ileal reservoir. Int J Colorectal Dis. 1986;1:167-74.

28. Katsuhiko A, Kazutaka K, Hideaki K, Minako A, Fumihiko K, Akira S, et al. Incidence and outcome of complications following restorative proctocolectomy. Am J Surg. 2005;190:39-42.

29. McGuire BB, Brannigan AE, O'Connell PR. Ileal pouch-anal anastomosis. Br J Surg. 2007;94:812-2.