Original Article

Assessment of Age in Ulcerative Colitis Patients with Ileal Pouch Creation—An Evaluation of Outcomes

Ker Kan Tan, [1]*MBBS, MMed (Surg), FRCS (Edin)*, Ragavan Manoharan, [2]*MBBS (Hons)*, Saissan Rajendran, [2]*MBBS*, Praveen Ravindran, [2]*MBBS (Hons)*, Christopher J Young, [2,3]*MBBS, MS, FRACS*

Abstract

Introduction: The aim of the study was to determine if age at the creation of an ileal pouch-anal anastomosis (IPAA) has an impact on the outcomes in patients with ulcerative colitis (UC). Materials and Methods: A retrospective review of all patients who underwent IPAA for UC from 1999 to 2011 was performed. Long-term functional outcome was assessed using both the Cleveland Clinic and St Mark's incontinence scores. Results: Eighty-nine patients, with a median age of 46 (range, 16 to 71) years, formed the study group. The median duration of disease prior to their pouch surgery was 7 (0.5 to 39) years. There were 57 (64%) patients who were aged ≤50 years old and 32 (36%) who were >50 years old. Fifty-seven (64%) patients developed perioperative complications of which 51 (89.5%) were minor. High ileostomy output (n = 21, 23.6%) and urinary symptoms (n = 13, 14.6%) were the most commonly encountered complications. The older patients were more likely to have an ASA score ≥3 and a longer length of stay. Although there was a higher incidence of complications in the older group of patients, the difference was not statistically significant. There were no significant differences in the incidence of severe complications. Forty-nine (55%) patients completed our questionnaire on the evaluation of their functional outcomes. There were no significant differences in the Cleveland Clinic and St Mark's incontinence scores between the older (n = 19, 38.8%) and younger (n = 30, 61.2%) patients. There were also no significant differences in the frequency of bowel movements during the day or overnight after sleep between the 2 groups. Conclusion: IPAA procedure for patients with UC can be safely performed. Long-term functional outcome is not significantly influenced by the age at which the IPAA was created.

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Introduction

A total proctocolectomy is considered the standard of care in patients with ulcerative colitis (UC). The indications for this operation in patients with UC include failure of medical treatment or dysplastic changes following endoscopic evaluation.[1-4] The timing of the surgery could hence be highly variable among patients.

An ileal pouch-anal anastomosis (IPAA) is increasingly performed following a total proctocolectomy or a completion proctectomy in these patients with the aim to preserve faecal continence and to avoid a permanent stoma.[1-4] In the past, this surgical option has largely been reserved in younger patients due to their good health and better physiological reserves, which would then be translated to better perioperative outcomes.[5-11] Some surgeons also postulated that older patients' ileal pouches are less adaptable and could be associated with worse functional outcomes and quality of life over time.[5-11] However, several recent studies have supported the safety, feasibility and benefits of an IPAA in older patients as well.[5-11]

With the above considerations in mind, this study was performed with the primary aim to determine if age at surgery had an impact on the perioperative outcomes in patients with UC who underwent an IPAA following a

[1]Division of Colorectal Surgery, University Surgical Cluster, National University Hospital, Singapore
[2]Department of Colorectal Surgery, Royal Prince Alfred Hospital, Australia
[3]Discipline of Surgery, University of Sydney, Camperdown, Australia
Address for Correspondence: A/Prof Christopher J Young, Department of Colorectal Surgery, Royal Prince Alfred Hospital, Missenden Road, Camperdown, NSW 2050, Australia.
Email: cyoungnsw@aol.com

total proctocolectomy or a completion proctectomy. The secondary aim was to assess if age at surgery had any influence on the long-term functional outcomes in the same group of patients.

Materials and Methods

A retrospective review of all the patients who underwent an IPAA for a final diagnosis of UC from August 1999 to November 2011 in our institution was performed. Patients were identified from the hospital's operating records and all the diagnoses were confirmed histologically. The IPAA was performed following a total proctocolectomy or a completion proctectomy depending on the patients' surgical histories and clinical conditions and surgeons' preferences. Patients who were referred for pouch revision were excluded. In our institution, the pouches created were all J-shaped and all the patients had a covering ileostomy following the IPAA procedure. In this study, all the procedures were performed electively. The study protocol was approved by our Institutional Ethics Committee.

We recorded demographic information including age, gender, American Society of Anesthesiologists (ASA) score, duration of disease, indications of surgery and types of procedures. Patients who were ≤50 years old were defined as the "younger" group and those who were >50 years old were defined as the "older" group. All perioperative complications were recorded and graded based on the classification proposed by Clavien et al (Table 1).[12-14]

Patients were then discharged to be followed up in the outpatient setting with the surgeons initially and some may choose to follow-up with their local surgeons subsequently due to the considerable distance from their home to the hospital. To assess their functional outcome following the closures of their ileostomies, a telephone interview to determine their continence status was performed between January 2012 and June 2012. After attaining their consent, the patients were asked to complete both the Cleveland Clinic and the St Mark's incontinence scores.[15-18] Patients who had their pouch removed or had end ileostomies were excluded from this interview.

Data analysis was performed using the Fisher's exact test for categorical variables with their odds ratio (OR) and 95% confidence interval (CI) reported. Continuous variables were analysed using the Mann-Whitney U test. All analyses were performed using the SPSS 17.0 statistical package (Chicago, Illinois) and all *P* values reported are 2-sided, and *P* values of <0.05 were considered statistically significant.

Results

During the study period, a total of 89 patients, with a median age of 46 (range, 16 to 71) years, had an IPAA performed for UC. There were 55 (61.8%) males and 34 (38.2%) females in the study group. The median duration of disease prior to their pouch surgery was 7 (0.5 to 39) years (Table 2).

The indications for operation included failure of medical treatment and/or worsening symptoms (n = 43, 48.3%), dysplastic changes on endoscopic evaluation (n = 19, 21.3%) and referral for completion proctectomy (n = 27, 30.3%) following a previous subtotal colectomy. Sixty-two

Table 1. Classification of Surgical Complications[12-14]

Grade of Complications (GOC)	
Grade I	Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions
Grade II	Requiring pharmacological treatment with drugs other than such allowed for Grade I complications. Blood transfusions and total parenteral nutrition are also included
Grade III	Requiring surgical, endoscopic or radiological intervention
Grade IV	Life-threatening complication(s) requiring ICU management (including organ dysfunction)
Grade V	Death of a patient

ICU: Intensive care unit

Table 2. Demographic Details of 89 Patients Who Underwent an IPAA Procedure for Ulcerative Colitis

	n (%)
Median age, range (years)	46 (16 – 71)
Gender	
Male	55 (61.8)
Female	34 (38.2)
Median duration of disease prior to pouch surgery, range (years)	7 (0.5 – 39)
Indication for IPAA	
Failure of medical treatment	43 (48.3)
Dysplastic changes on endoscopic evaluation	19 (21.3)
Referral for completion proctectomy	27 (30.3)
Median operating time, range (minutes)	220 (120 – 535)
Procedure performed	
Panproctocolectomy	62 (69.7)
Completion proctectomy	27 (30.3)
Technique of procedures performed	
Open	78 (87.6)
Laparoscopic	11 (12.4)
Creation of J-pouch	89 (100.0)
Creation of defunctioning ileostomy	89 (100.0)

IPAA: Ileal pouch-anal anastomosis

(69.7%) patients underwent a total proctocoletomy while 27 (30.3%) had completion proctectomy. All the patients had J-shaped ileal pouches and a covering loop ileostomy. Most of the anastomoses (n = 87, 97.8%) were performed using the double stapling technique and only 2 (2.2%) patients had a concurrent mucosectomy performed. Eleven (12.4%) patients had their procedures performed laparoscopically. The median operative time and length of stay were 220 (120 to 535) minutes and 10 (6 to 57) days respectively.

Although there was no mortality reported in our series, 57 (64%) patients developed perioperative complications of which 51 (89.5%) were minor in severity (GOC I and II). The details of the complications can be seen in Table 3. Notably, there were 4 patients who developed an intra-abdominal collection of which 2 of them required a radiological guided drainage. Another 3 patients underwent a relook laparotomy; 2 were for persistent small bowel obstruction, 1 due to early postoperative adhesions that was refractory to conservative management while the other had a kink just proximal to the ileostomy. The last patient underwent a relook laparotomy for suspected ischaemic gut which was normal when evaluated intraoperatively. One patient developed cardiac complications postoperatively and required an intensive care unit admission. High ileostomy output (n = 21, 23.6%) was the most frequently encountered complication, followed by urinary complications (n = 13, 14.6%).

Over a median follow-up of 7.5 (range 1 to 12) years, 5 (5.6%) patients developed pouch failure which necessitated excision of the pouch. Another 3 patients also had excision of their pouches. Two had malignancies involving the pouch that necessitated resection while the last patient opted for an end ileostomy rather than to reverse the stoma.

There were 57 (64%) patients who were ≤50 years old and 32 (36%) patients who were >50 years old. When analysed between the 2 groups, the older patients were more likely to have an ASA score ≥3 (OR: 3.68, 95% CI, 1.31 to 10.34) and a longer length of stay (13 (6 to 57) days vs 10 (6 to 34) days) in the hospital (P = 0.005). Although there was a higher incidence of complications in the older group of patients (OR: 2.18, 95% CI, 0.84 to 5.68), the difference was not statistically significant. There were no significant differences in the incidence of pouch failure or the duration of the operations (Table 4).

Of the 89 patients who had an IPAA, only 49 (55%) completed our telephone interview with the aim to determine their functional outcomes. Seven (7.9%) were deceased at time of interview. The remaining 33 (37.1%) patients were either lost to follow-up, declined the interview or had a permanent stoma.

When compared with the various characteristics between the younger (n = 30, 61.2%) and older (n = 19, 38.8%) patients, the Cleveland Clinic and St Mark's incontinence scores were comparable between the 2 groups. There were also no significant differences in the frequency of the bowel movement during the day or after sleep between the 2 groups. Table 5 describes the functional outcomes and the various components of the Cleveland Clinic incontinence scores between the 2 groups.

Table 3. Perioperative Outcomes of 89 Patients Who Underwent an IPAA Procedure for Ulcerative Colitis

	n (%)
Type of complication	
High ileostomy output	21 (23.6)
Urinary tract infection or acute retention of urine	13 (14.6)
Ileus	12 (13.5)
Atelectasis/pneumonia	5 (5.6)
Wound infection	4 (4.5)
Intra-abdominal collection	3 (3.4)
Relook laparotomy	2 (2.2)
Cardiac complication(s)	2 (2.2)
Septicaemia	2 (2.2)
Median length of stay following IPAA, range (days)	10 (6 – 57)
Median duration of follow-up, range (years)	7.5 (1 – 12)

IPAA: Ileal pouch-anal anastomosis

Discussion

Although the incidence of patients with UC requiring colectomy continues to decrease over the decades, a certain proportion of them will still require an operation.[19,20] Complications following these operations are unavoidable in some patients, especially more so following a technically challenging procedure such as a proctectomy with an IPAA.[21-23] Even though over 64% of our patients developed perioperative complications, most of them were mild in severity with only 6 patients that have developed severe complications. Our rates were slightly higher than those reported in the literature.[21-24] Our series also demonstrated that the older group of patients that had higher ASA scores was more inclined to develop perioperative complications, although the difference was not statistically significant. This higher incidence could also have accounted for the lengthier hospital stay. Fortunately, the incidence of severe complications was not significantly higher in the older patients.

Our series was unable to add to the growing literature on the role of laparoscopy in restorative proctectomy as the number of patients who had their procedures performed

Table 4. Analysis of the Various Factors between the Patients Aged ≤50 Years Old against Those that Are >50 Years Old

Characteristics	Aged ≤50 Years Old (n = 57)	Aged >50 Years Old (n = 32)	OR (95% CI)	*P* Value
ASA score ≥ 3	8 (14%)	12 (37.5%)	3.68 (1.31 – 10.34)	0.017
Median length of stay, range (days)	10 (7 – 34)	13 (6 – 57)	NA	0.001
Duration of operation, range (minutes)	220 (120 – 535)	220 (165 – 460)	NA	>0.05
Presence of any complications	33 (57.9%)	24 (75%)	2.18 (0.84 – 5.68)	0.167
Presence of severe complications (GOC III – V)	3 (5.3%)	3 (9.4%)	1.86 (0.35 – 9.82)	0.663
Pouch failure	2 (3.5%)	3 (9.4%)	2.85 (0.45 – 18.00)	>0.05

GOC: Grade of Complications; NA: Not available

Table 5. Analysis of the Functional Outcomes between the Patients Aged ≤50 Years Old against Those that Are >50 Years Old

Characteristics	Aged ≤50 Years Old (n = 30)	Aged >50 Years Old (n = 19)	*P* Value
Median number of bowel movement during day time, range	5 (2 – 15)	6 (1 – 10)	>0.05
Median number of bowel movement overnight after sleep, range	2 (0 – 5)	2 (0 – 5)	>0.05
Median St Mark's incontinence score, range	2 (0 – 7)	1 (0 – 11)	>0.05
Median Cleveland Clinic incontinence score, range	0 (0 – 7)	1 (0 – 15)	>0.05
Incontinent to solid	0	1 (4.3%)	>0.05
Incontinent to liquid	9 (30%)	4 (21.1%)	>0.05
Incontinent to flatus	2 (6.7%)	1 (5.3%)	>0.05
Usage of pad due to incontinence	5 (16.7%)	5 (26.3%)	>0.05
Lifestyle modification due to incontinence	2 (6.7%)	1 (5.3%)	>0.05

laparoscopically was too small. It remains debatable as to whether a laparoscopic approach would considerably improve the short-term outcomes. Several studies have supported the role of laparoscopy by demonstrating faster recovery and better postoperative outcomes, but other reports did not show any no additional benefits conferred by performing the procedure laparoscopically.[25-29]

While the usage of ASA score may not be accepted by all, it has withstood the test of time and has demonstrated that it is very predictive of outcomes following colectomy.[30-33] However, we do acknowledge that it does not take into account the impact of various other comorbidities. In elderly patients, some have advocated other scoring systems such as the Charlson Comorbidity Index which takes into account the impact of the various other co-existing conditions.[34-35] This was perhaps not applicable in our study as the majority of our patients were not even over 60 years old.

Similar to other series, gastrointestinal complications such as high stoma output and ileus were most frequently seen in our patients.[22,36,37] The need to create a proximal defunctioning stoma after additional resection of a segment of small bowel to ensure a tension-free IPAA would easily lead to a high stoma output. In the absence of any precipitating causations such as intra-abdominal sepsis, this can frequently be managed with oral medications. On the other hand, ileus can be a result of considerable manipulation of the intestines and compounded by the underlying disease and the long operative times. Urinary complications were also fairly common in our patients due to various reasons. The extensive dissection deep into the pelvis risks could injure the autonomic nerves and could lead to urinary retention, while the presence of a urinary catheter would predispose to any infection.

It is interesting to note that the median number of bowel movement during the day and after sleep were identical in the 2 groups. There were also no statistical differences in the proportion of patients who developed incontinence. Our findings were similar to several other recent reports that also reinforced that older patients can undergo an IPAA procedure with comparable outcomes with younger patients.[38-42] However, these studies have also gone on to highlight that the function of the pouch and continence often deteriorate over time due to continual weakness in the sphincters, especially in the older group of patients. Although this was not seen in our study, the small number of patients and the wide variation in the duration of follow-up from the timing of the IPAA procedure to the conduct of the questionnaire were considerable limitations. Moreover, the Cleveland Clinic and St Mark's incontinence scores were comparable between the 2 groups.

Some of the other limitations of our study include the retrospective nature of the study and the possibility of selection bias as patients in whom the surgeons believed would do poorly following an IPAA may not be offered this option and would have undergone an end ileostomy instead. The decision to opt for an IPAA is not an easy one. This is often influenced by various patient-related factors and the clinical judgment of the surgeon. The low number of patients in our study and a rather low response rate to our telephone interview are also significant drawbacks.

Although we did not attain validated quality of life scores, most of our patients were satisfied with the outcome of their pouches when interviewed. Several studies have reported excellent quality of life in these patients who had undergone an IPAA procedure.[42-47] However, it would be erroneous to assume that patients who opted for an end ileostomy have worse quality of life. After proper counseling, patients who opted for an end ileostomy can achieve comparable quality of life as patients who underwent an IPAA procedure, but without the associated complications of having an ileal pouch.[42-47]

Conclusion

IPAA procedure for patients with UC can be safely performed with acceptable outcomes. Long-term functional outcome is not significantly influenced by the age at which the IPAA was created. Age alone should not be a contraindication for an IPAA procedure.

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