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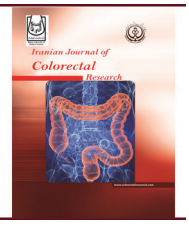

Incontinence and Quality of Life in Ulcerative Colitis Patients After Total Proctocolectomy with an Ileal Pouch Anal Anastomosis- A Cross-Sectional Study

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Abstract

Introduction: Total proctocolectomy with ileal pouch-anal anastomosis (IPAA) is a surgical procedure performed on patients with ulcerative colitis (UC) to avoid the need for permanent stoma. The objective of this study was to assess the quality of life and fecal incontinence in UC patients after IPAA and compare the quality of life among different subgroups.

Methods: This cross-sectional study included all UC patients who had underwent IPAA between 2017 and 2021 at Shahid Faghihi Hospital, Shiraz, Iran. Fecal incontinence was evaluated using Wexner questionnaire, while quality of life was assessed using the inflammatory bowel disease questionnaire (IBDQ). Patients were categorized into groups based on the severity of their fecal incontinence, classified as no/mild (0-4) or moderate to severe (≥5), according to their Wexner scores. Differences between groups were assessed using independent sample t-test, Mann–Whitney U, Chi-square, or Fisher's exact tests based on the type of variables.

Results: A total of 138 patients completed the Wexner questionnaire, and 119 completed the IBDQ questionnaire. The mean age of participants at the time of questionnaire completion was 43.39 years (±11.16). Among the included patients, 19% experienced moderate to severe fecal incontinence. These patients had lower scores across all domains and the total score of IBDQ compared to patients with no/mild fecal incontinence. Additionally, those who underwent IPAA more than four years ago had significantly lower scores in the social function domain (P=0.047) and total score of IBDQ (P=0.027).

Conclusion: Patients with fecal incontinence and those who have undergone IPAA for a longer duration have better quality of life scores.

Keywords: Proctocolectomy, Restorative; Colitis, Ulcerative; Quality of life; Fecal incontinence

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Introduction

Ulcerative colitis (UC) is an inflammatory bowel disease (IBD) that has become a worldwide health concern. It has an incidence rate of 9-20 patients per 100,000 subjects each year (1). Despite advancements in the effectiveness, availability, and early initiation of medical treatments, approximately 30% of UC patients will ultimately require total colectomy mainly due to intractable fulminant disease or the occurrence of dysplasia. A total proctocolectomy with ileal pouch-anal anastomosis (IPAA) is a procedure of choice for UC patients requiring surgery to avoid permanent stoma and its related complications and problems (2). There are conflicting findings regarding the comparison of health-related quality of life between permanent ileostomy and IPAA. While some studies have reported better quality of life in patients who underwent IPAA, others have reported contrasting results or no differences. It appears that the incontinence and urgency observed in patients who underwent IPAA may be bothersome, similar to complications associated with ileostomy, and can negatively impact their quality of life (3). Therefore, the present study aimed to analyze the quality of life and fecal incontinence outcomes in UC patients who have undergone proctocolectomy with IPAA. Additionally, we aim to identify subgroups of patients who are at a higher risk of experiencing a deterioration in their quality of life after undergoing IPAA.

Patients and Methods

The present cross-sectional study was conducted on all UC patients who had undergone proctocolectomy with IPAA during 2017-2021 at Shahid Faghihi Hospital, Shiraz University of Medical Sciences, Iran. This study was conducted in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of Shiraz University of Medical Sciences, Shiraz, Iran (IR.SUMS.REC.1400.251).

A list of eligible patients with their clinical characteristics (age at surgery, sex, time since operation, technique of operation, and number of procedures) was obtained from the hospital information system. Ostomy-free patients were included if they had contact information and consented to participate in the study. Subsequently, patients were contacted for completion of the Wexner questionnaire for assessing fecal incontinence (4) and IBD questionnaire (IBDQ) for assessing quality of life (5). The Wexner questionnaire evaluates incontinence to solid, liquid or gas, and need to wear pad and lifestyle alteration. Each item comprises five levels of severity (from 0 to 4 meaning never to always). Higher scores indicate severe fecal incontinence. The IBDQ is also a 32-item questionnaire containing four domains: bowel symptoms, systemic symptoms, social function, and emotional function. The validity and reliability of the Persian version of these tools have been confirmed previously (6, 7).

The Wexner score was divided into no/mild (0-4) or moderate (5-8) to severe (≥9) (8), and a total IBDQ score ≥168 was defined as good quality of life (9).

Statistical Analysis

IBM SPSS 25 (SPSS Inc., Chicago, Illinois, USA) was utilized for the analysis of the data. The normality of the quantitative data distribution was evaluated through descriptive statistics. Parametric, non-parametric, and qualitative data were presented as mean±standard deviation (SD), median (range), or frequency (percentages) respectively. Differences between groups were assessed using the independent sample t-test for parametric variables, Mann–Whitney U for non-parametric parameters, and Chi-square or Fisher's exact tests for categorical variables. A two-sided $P<0.05$ was considered statistically significant.

Results

Among the 198 patients, 42 were excluded for various reasons: 29 patients did not respond or had

Table 1: Comparison of the characteristics of the included patients between different levels of fecal incontinence

Variable	Moderate/Severe FI (n=26)	No/Mild FI (n=112)	P value
Age at questionnaire completion (years), mean±SD	44.96±10.08	43.12±11.02	0.436*
Age at surgery (years), mean±SD	37.85±11.56	36.94±10.85	0.705*
Sex (male), n (%)	14 (53.8)	47 (42.0)	0.272‡
Time since operation (year), mean±SD	7.12±3.56	6.18±3.91	0.211*
Technique of operation (laparoscopy), n (%)	98 (87.5)	20 (76.9)	0.168‡
Number of procedures, mean±SD	2.23±0.43	2.24±0.43	0.912*
Incontinence for gas, median (range)	0.00 (0-4)	0.00 (0-2)	<0.001†
Incontinence for liquid stool, median (range)	3.00 (2-4)	0.00 (0-3)	<0.001†
Incontinence for solid stool, median (range)	0.50 (0-3)	0.00 (0-0)	<0.001†
Need to wear pad, median (range)	3.00 (0-4)	0.00 (0-2)	<0.001†
Alteration in lifestyle, median (range)	3.00 (0-4)	0.00 (0-3)	<0.001†

FI: fecal incontinence, SD: standard deviation. Parametric variables are reported as mean±SD and between-group comparison is conducted by independent sample t-test (*). Non-parametric variables are reported as median (range) and between-group comparison is done by Mann–Whitney U test (†). Categorical variables are reported as frequency (percentage) and between-group comparison is conducted by Chi-squared test (‡). P value<0.05 was considered significant.

Table 2: Comparison of dimensions of the inflammatory bowel disease questionnaire (IBDQ) according to the exploratory variables

Variable	Bowel symptoms (mean±SD)	P value*	Systemic symptoms (mean±SD)	P value*	Social function (mean±SD)	P value*	Emotional function (mean±SD)	P value*	Total Score (mean±SD)	P value*	Good quality of life, n (%)	P value†
Total (n=119)	50.45±10.94		23.42±6.68		26.47±10.23		60.77±13.82		161.41±36.24		54 (45.8)	
Age at questionnaire completion		0.949		0.363		0.960		0.468		0.993		0.735
<42 years (n=57)	50.39±9.70		22.84±6.90		26.42±7.14		61.74±13.19		161.39±32.82		27 (47.4)	
≥42 years (n=62)	50.52±12.06		23.97±6.49		26.52±12.48		59.89±14.43		161.44±39.43		27 (44.3)	
Age at surgery		0.423		0.150		0.696		0.952		0.469		0.758
<35 years (n=55)	49.58±9.79		22.47±7.00		26.07±6.99		60.69±13.50		158.82±33.66		26 (47.3)	
≥35 years (n=64)	51.20±11.87		24.25±6.33		26.81±12.41		60.84±14.20		163.68±38.47		28 (44.4)	
Sex				0.566		0.895		0.627		0.650		0.792
Male (n=54)	50.30±10.48	0.887	23.04±7.07		26.33±12.90		60.09±14.02		159.76±38.87		24 (44.4)	
Female (n=65)	50.58±11.39		23.75±6.38		26.58±7.44		61.34±13.74		162.81±34.11		30 (46.9)	
Time since operation		0.122		0.105		0.047		0.073		0.027		0.014
<4 years (n=30)	53.13±10.30		25.17±6.31		29.37±15.03		65.10±10.57		174.31±32.58		19 (65.5)	
≥4 years (n=89)	49.55±11.06		22.85±6.74		25.49±7.88		59.31±14.52		157.21±36.54		35 (39.3)	
Technique of operation		0.138		0.449		0.807		0.357		0.337		0.326
Laparoscopy (n=96)	49.55±10.80		23.06±6.52		26.26±10.83		59.87±13.55		159.09±35.87		41 (43.2)	
Laparotomy/ Conversion (n=14)	54.14±10.32		24.50±7.21		27.00±8.13		63.57±16.66		169.21±39.78		8 (57.1)	
Fecal incontinence		<0.001		0.017		0.021		0.003		0.002		0.002
No/Mild (n=85)	52.05±10.79		24.37±6.25		27.99±10.71		62.91±13.17		167.78±34.78		46 (54.8)	
Moderate/ Severe (n=16)	45.37±5.03		20.25±5.98		21.50±6.53		51.94±12.04		139.06±24.84		2 (12.5)	

FI: fecal incontinence, SD: standard deviation. *P value was calculated using independent sample t-test. †P value was calculated using Chi-squared of Fisher's exact tests. P value <0.05 was considered significant. A total IBDQ score≥168 was defined as good quality of life.

no contact information, 2 had ostomies, 2 were not Persian, 1 had a cord injury, and 8 were deceased. Of the remaining 156 patients, 138 completed the Wexner questionnaire and 119 completed the IBDQ questionnaire. The mean age of the participants at the time of questionnaire completion was 43.39 years (SD=11.16), and their age at surgery was 36.99 (SD=11.20). The gender distribution in the population was almost equal, with men accounting for 44.2% and women for 55.8%. The patients underwent laparoscopy (85.0%), laparotomy (9.5%), or conversion (5.4%). The mean duration since operation was 6.40 years (SD=3.42).

Of the patients who completed the Wexner questionnaire, 96 (69.6%) subjects showed no signs of fecal incontinence, while 16 (11.6%) had mild, 11 (8%) had moderate, and 15 (10.9%) had severe fecal incontinence. The median Wexner score for the total population was found to be at a value of 0.00 with a range from 0-19. The comparison of baseline characteristics between patients with different levels of fecal incontinence is presented in Table 1. There were no significant differences in the age at questionnaire completion (P=0.436), age at surgery (P=0.705), sex (P=0.272), time since operation (P=0.211), technique of operation (P=0.168), and number of procedures (P=0.912) between patients with moderate/severe and no/mild fecal incontinence. Furthermore, upon categorizing patients based on the time since IPAA, we observed that 22.1% of patients who had undergone IPAA≥4 years ago experienced moderate/severe fecal incontinence, whereas this proportion was 8.8% in patients who had undergone IPAA<4 years ago (P=0.128).

We also conducted a comparison of IBDQ scores among groups categorized by age, sex, time since operation, technique of operation, and fecal incontinence (Table 2). Our findings revealed that the social function (P=0.047) and total score of IBDQ (P=0.027) were notably lower in patients who had undergone the operation more than four years ago compared to others. Furthermore, patients with moderate to severe fecal incontinence reported significantly lower scores for all domains and the total score of IBDQ compared to patients with no/mild fecal incontinence. In essence, good quality of life was predominantly observed in patients with no/mild fecal incontinence (54.8% *vs*. 12.5%, P=0.002).

Discussion

In the current study, among the included patients, 45.8% had a good quality of life and 81.2% had no or mild fecal incontinence. Patients who had undergone IPAA less than four years ago and those with no or mild levels of fecal incontinence had significantly better quality of life compared to the others. However, age, sex, and technique of operation did not influence quality of life and fecal incontinence. Health-related quality of life is a multidimensional and complex concept that is typically used to evaluate the influence of health status on a patient's perspective and quality of life. It is increasingly identified as an essential outcome measure for medical strategies to compare their efficacies (10).

Similar to our results, Jonker *et al*. reported lower quality of life in incontinent patients following IPAA. They also observed no association between fecal incontinence and the time between IPAA surgery and questionnaire competition or sex. Nonetheless, in that study, a significant correlation was observed between patients' age at the time of surgery and Wexner score (11). In another study conducted in Sweden, there was a significant negative correlation between health-related quality of life, which was evaluated by Short Form 36 Health Survey Questionnaire subscales, and the Wexner score after IPAA (12). In contrast to our findings, some previous studies reported unchanged quality of life after IPAA for UC over 18 months, 7 years, and 20 years following surgery (13, 14). However, in another study, a downward trend was observed in some domains of general and health-related quality of life in the 36 months after IPAA compared to the 24 months (10). Contradictory results could be attributed to the differences in the cultural and economic characteristics of the population, access to health and medical facilities, and the instruments used to assess quality of life in different studies.

We also conducted an assessment of different domains of the IBDQ between subgroups and found that while all domains were affected by fecal incontinence, only social functioning was influenced by follow-up time since IPAA surgery. Given that we did not observe any association between categories of time since IPAA and fecal incontinence, it is possible that reduced social functioning over time may not be solely due to fecal incontinence. Therefore, further studies are warranted to explore this relationship.

The present study has several limitations. Firstly, the small sample size and its single-center design may limit the generalizability of our findings. Secondly, the lack of data related to the quality of life and incontinence prior to the IPAA surgery restricted our ability to establish a comparison with baseline. Thirdly, the absence of a control group consisting of patients with ileostomy may have limited our ability to compare the quality of life between these groups. Additionally, we did not collect information regarding details related to the surgical procedure, including the type of anastomosis (hand-sewn vs. stapled anastomosis) as well as possible pouchitis and its management.

Conclusion

Our study suggests that patients with no or mild

levels of fecal incontinence have significantly better overall quality of life scores and separate domains of the IBDQ. Furthermore, patients who underwent IPAA surgery less than four years ago reported significantly better quality of life and better social function compared to the others.

Ethics Approval and Consent to Participate

The study was performed in accordance with the Declaration of Helsinki. Written informed consent was obtained from the study participants. The protocol of the study was approved by the Ethics Committee of Shiraz University of Medical Sciences (code: IR.SUMS.REC.1400.251).

Availability of Data and Materials

Data are available from the corresponding author upon request.

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Authors' Contribution

Conceptualization: S.V.H., A.M.B., A.R.S; Methodology: M.M.A., M.K., Z.S.; Data curation, Formal analysis, Software: A.R.S., S.S.Z.; Project administration, Validation: A.R.S; Writing – original draft: A.R.S., S.S.Z, Writing – review & editing: S.V.H., A.M.B., M.M.A., M.K., A.R.S, Z.S. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of interest: None declared.

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