Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1456
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1456*
Original Research Article

EVALUATION OF QOL AND OUTCOMES OF PATIENTS WITH NEOPLASIA UNDERGOING COLECTOMY

MUMTAZ S*, HAIDER ANH

Department of General Surgery, General Hospital Lahore, Pakistan
**Corresponding author`s email address:* doc.safura@gmail.com

(Received, 15th October 2024, Revised 25th December 2024, Published 30th December 2024)

Abstract: *Colectomy is a common surgical intervention for colonic neoplasia and complex colonic polyps. While it is effective in treating the underlying condition, it can significantly impact bowel function and quality of life, both in the short and long term.* ***Objective:*** *To assess the short-term and long-term quality of life and functional outcomes of colectomy in patients with neoplasia.* ***Methods:*** *A prospective study was conducted in the General Surgery Department of General Hospital, Lahore from September 2023 to September 2024. A total of 100 patients undergoing or had undergone hemicolectomy or colectomy were included in the study. Patients were divided into two groups based on the timing of colectomy. Early bowel function was assessed in 50 patients with benign complex colonic polyps undergoing colectomy. Intermediate bowel function was assessed in patients who had undergone colectomy for neoplasia 2-4 years before the study. A group of 50 healthy immediate relatives of patients was included as the control group for evaluating early bowel function. Postoperative bowel function was assessed by Memorial Sloan-Kettering Cancer Centre questionnaire and the EuroQoL questionnaire was used to measure quality of life.* ***Results:*** *Six-months and one-year post-op, patients had increased frequency of bowel movement per day ($p<0.001$). Lower frequency score, reduced gas control and differentiation between gas and stool one year after surgery were significant, indicating worse function. A weak association between EuroQol visual analog score and six months post-op urgency score ($p=0.006$), flatulence control ($p=0.004$), and total MSKCC score ($p=0.005$), hence patients with higher scores had good quality of life.* ***Conclusion:*** *Colectomy adversely impacts bowel function up to 1 year after surgery, however, it is comparable to the general population.*

Keywords: Bowel, Colectomy, Neoplasia, Quality of Life

Introduction

A healthy colorectal system works through the propulsion of feces from the colon to the rectum with the absorption of electrolytes and water along the way, its storage, and defecation at least once a day. Colectomy alters this physiology through anatomical changes and can cause dysfunctions that affect the long-term lifestyle of patients (1). Literature reports functional disturbances in sexual life, urinary and intestinal tract post rectal cancer treatment but the data on functional changes and quality of life in patients who underwent colon resection is limited (2,3). Several studies show that patients who undergo surgery for diverticular disease or colorectal cancer report increased bowel movements after left-sided resection (4). However, these studies did not employ standard questionnaires but rather assessed bowel function by collecting numerical data in self-constructed questionnaires, creating a gap between processing information. We hypothesized in this study that bowel function and quality of life suffer adverse effects after curative hemicolectomy in patients with neoplasia.
We conducted this study to assess the short-term and long-term quality of life and functional outcomes of hemicolectomy in patients with neoplasia.

Methodology

A prospective study was conducted in the General Surgery Department of General Hospital, Lahore from September 2023 to September 2024. A total of 100 patients undergoing or had undergone hemicolectomy, sigmoid, or transverse colectomy with pre-op ASA grade and IUCC stages I-III were included in the study. Patients with rectal neoplasm, inflammatory bowel disease, celiac disease, anal incontinence, had previously undergone bowel or colon resection, pelvic radiation, colostomy, vagotomy, bypass surgery, and those with localized disease recurrence were excluded. Patients were divided into two groups based on the timing of colectomy. Early bowel function was assessed in 50 patients with benign complex colonic polyps undergoing colectomy. Intermediate bowel function was assessed in patients who had undergone colectomy for neoplasia 2-4 years before the study. A group of 50 healthy immediate relatives of patients was included as the control group for evaluating early bowel function. Demographic and clinical data was collected from all groups. All groups were inquired about the use of antibiotics, opioids, and laxatives one month after selection, and those selected preoperatively were inquired about the use of these substances 6-12 months after surgery. Postoperative complications including abscess formation, anastomosis leak, and repeated surgery were recorded. Postoperative bowel function was assessed by patient responses to an 18-item Memorial Sloan-Kettering Cancer Centre questionnaire. The questionnaire was divided into three sections. The first section consisted of 6 questions that inquired about frequency of daily bowel movements, continence, and stool consistency which could be answered on a Likert scale with a maximum score of 30 and minimum

score of 6. The second section consisted of 4 questions about the impact of consumption and avoidance of dietary items on bowel movements which could be answered on a Likert scale with a maximum score of 20 and minimum score of 4. The last section included 4 questions about fecal incontinence, its management, and its impact on daily activities which could be answered on a Likert scale with a maximum score of 20 and minimum score of 4. In addition, 4 questions about incomplete bowel emptying, subsequent bowel movement after 15 minutes, ability to pass gas, and being aware of passing gas or bowel movements. The total maximum score of the questionnaires was 90 and the minimum score was 18 with a good function indicated by higher score. The EuroQoL questionnaire was used to measure quality of life which assessed the mobility, daily activities, self-care, pain, and mental health of patients. The score range was 0 to 100 with 0 representing poor QoL and 100 representing good QoL.

Patients in the early assessment group completed the questionnaire after 6 months and 1 year of surgery. The intermediate assessment group and control group only completed the questionnaire once.

All data was analyzed by SPSS version 24. Categorical data was assessed by Fisher's exact test and continuous data was assessed by t-test. Difference between groups was evaluated by linear regression analysis. The association between bowel function and quality of life was evaluated by Spearman's rank correlation. The relationship between the length of the resected colon and MSKCC parameters was also assessed by Spearman's correlation.

Results

Table I shows the demographic details of the study groups. Most patients in the control group were married (86%), younger (60.1 ± 12.8 years), employed (50%), and non-diabetic (98%) as compared to the early and intermediate function group. There was no significant difference in characteristics between early and intermediate function groups. Preoperatively, the early and intermediate bowel group had significantly more bowel movements daily than the control group (p=0.63). Six months post-op, 30% of the bowel group patients reported more than 3 bowel movements per day, and 40% reported more than 1 movement per day which is significantly higher than controls where 12% reported 3 movements and 22% reported more than 1 movement (p<0.001). One-year post-op, 32% of bowel group patients had 3 movements and 36% had more than one movement per day (p<0.001). The early bowel function group had a lower urgency score (p=0.010) and differentiation between gas and stool after six months (p=0.05) and one year after surgery (p<0.001).

After adjusting for demographic parameters, bowel movements at follow-up, lower frequency score, reduced gas control and differentiation between gas and stool one year after surgery were significant. MSKCC items were not related to the length of the resected colon (Table II).

Quality of life was similar between patients and control with no significant difference (Table III). However, a weak association between EuroQol visual analog score and six months post-op urgency score (p=0.006), flatulence control (p=0.004), and total MSKCC score (p=0.005), hence patients with higher scores had good quality of life. Complete bowel emptying one year after surgery also showed a similar association (p=0.01). In the intermediate function group, complete emptying was associated with the VAS score and quality of life score one year after surgery (p=0.01) but differentiation between gas and stool was only associated with the QOL score (p=0.01).

Table 1: Sociodemographic parameters of study groups

Variables	Control group (n=50)	Early bowel function group (n=50)		Intermediate bowel function group (n=50)	
		N (%)	P	N (%)	P
Mean age	60.1 ± 12.8	72.5 ± 11.3	<0.001	70 ± 10.7	<0.001
Gender			0.41		0.05
Male	20 (40%)	24 (48%)		29 (58%)	
Female	30 (60%)	26 (52%)		31 (42%)	
BMI	26.6 ± 5.4	25.7 ± 6.2	0.22	26.2 ± 24.8	0.19
Marital status					
Single	7 (14%)	2 (4%)	0.001	8 (16%)	0.006
Married	33 (86%)	38 (96%)		32 (84%)	
Working status					
Employed	25 (50%)	8 (16%)	<0.001	10 (20%)	<0.001
Unemployed/ retired	25 (50%)	32 (84%)		40 (80%)	
Use of laxatives					
Baseline	1 (2%)	5 (10%)	0.03	6 (12%)	0.03
At 6 months	1 (2%)	7 (14%)	0.003		
At 12 months	1 (2%)	3 (6%)	0.19		
Use of antibiotics	1 (2%)	-	0.53	3 (6%)	0.19
Anti-diarrhea mediation					
Baseline	1 (2%)	-	0.55	3 (6%)	0.18
At 6 months	1 (2%)	7 (14%)	0.006		
At 12 months	1 (2%)	3 (6%)	0.19		

[Citation: Mumtaz, S., Haider, A.N.H. (2024). Evaluation of QOL and outcomes of patients with neoplasia undergoing colectomy. *Biol. Clin. Sci. Res. J.*, **2024***: 1456*. doi: https://doi.org/10.54112/bcsrj.v2024i1.1456]

Use of opioids					
Baseline	3 (6%)	1 (2%)	0.30	3 (6%)	1
At 6 months	3 (6%)	-	0.08		
At 12 months	3 (6%)	1 (2%)	0.12		
Diabetes	1 (2%)	6 (12%)	0.02	7 (14%)	0.006

Table 2: MSKCC scores in study groups

	Early bowel function group	P	Intermediate bowel function group	P
Daily bowel movements	1 (0.83-1.22)	0.57	1.52 (1.17-1.69)	<0.001
Bowel frequency	0.2 (-1.5, 1.9)	0.88	-2.1 (-2.9, 0)	0.05
Impact of diet	1.5 (0.6, 2.3)	0.05	0.8 (-0.6, 1.8)	0.26
Urgency score	0.4 (-0.4, 0.9)	0.43	-0.8 (-1.7, 0.4)	0.18
Incomplete bowel emptying	0.2 (-0.5, 0.7)	0.82	-0.2 (-0.7, 0.4)	0.51
Subsequent bowel movement	0.4 (-0.3, 0.8)	0.30	-0.2 (-0.7, 0.4)	0.49
Differentiation between gas and stool	0 (-0.5, 0.4)	0.81	-0.3 (-0.8, 0.2)	0.10
Flatus control	-0.2 (-0.6, 0.4)	0.69	-0.8 (-0.9, -0.5)	<0.001
Total score	2.0 (-1.4, 4.6)	0.23	-3.0 (-35, 0.8)	0.09

Table 3: Quality of life at baseline and follow-up

	OR (95% CI)	P
Early bowel function QoL score		
At baseline	-0.02 (-0.09, 0.07)	0.82
At 6 months	-0.03 (-0.10, 0.06)	0.49
At 12 months	0 (-0.08, 0.08)	0.90
Intermediate bowel function group	-0.06 (-0.09, 0.06)	0.27

Discussion

This study was conducted to evaluate the bowel function and quality of life after colonic resection in neoplasia patients. The results suggest that postoperative bowel function and QOL in surgery patients were similar to healthy controls. These findings comply with previous literature (5, 6, 7). Our study is unique as no local study has been published to assess bowel function after colon resection and evaluate short-term and long-term parameters. The use of standardized questionnaires enhances the reliability of our results.

A 1/3rd of patients reported a significant increase in daily bowel frequency at follow-up with every 1 in 5 patients having more than three movements. Twelve months postoperatively, patients experienced problems in differentiating gas and stool but this did not impact the quality of life and VAS score significantly. Flatus control, complete bowel emptying, lack of urgency, and ability to differentiate between gas and stool were related to good QOL. Seo et al, Sandberg et al and Malczak et al back these findings (8, 9, 10).

Although the MSKCC score, QOL score, and VAS score were weakly associated, the overall quality of life at follow-up was not significantly different from controls. Roesal et al recorded the quality of life in patients undergoing laparoscopic colectomy after 30 days, 180 days, and 1 year using detailed questionnaires like GIQLI, SF-36, QLQ-CR29, and QLQ-C30. The results were similar to our study where QOL scores at follow-up were improved and comparable to healthy patients (11). Ferri et al assessed quality of life in colorectal cancer survivors at 5-year follow-up and reported that patients had better-perceived quality of life scores than matched healthy controls (12).

Conclusion

Colectomy adversely impacts bowel function up to 1 year after surgery, however, it is comparable to the general population.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department Concerned. (IRBEC-TCHM-033/23)

Consent for publication
Approved

Funding
Not applicable

Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

SAFURA MUMTAZ (MO)
Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript.

AREEJ NADEEM HUSNAIN HAIDER (MO)
Coordination of collaborative efforts.
Study Design, Review of Literature.

References

1. Seo SHB, Carson DA, Bhat S, Varghese C, Wells CI, Bissett IP, et al. Prolonged postoperative ileus following right-versus left-sided colectomy: A systematic review and meta-analysis. Colorectal disease. 2021;23(12):3113-3122.
2. Purdy AC, Murphy S, Vilchez V, Shanmugan S, Whealon M, Mills S, et al. Outcomes of colectomy and proctectomy according to surgeon training: general vs colorectal surgeons. Journal of the American College of Surgeons. 2023:10.1097.
3. McCarthy E, Gough BL, Johns MS, Hanlon A, Vaid S, Petrelli N. A comparison of colectomy outcomes utilizing open, laparoscopic, and robotic techniques. The American Surgeon. 2021;87(8):1275-1279.
4. Verkuijl SJ, Jonker JE, Trzpis M, Burgerhof JG, Broens PM, Furnee EJ. Functional outcomes of surgery for colon cancer: A systematic review and meta-analysis. European Journal of Surgical Oncology. 2021;47(5):960-969.
5. Cao Y, He M, Chen K, Liu Z, Khlusov DI, Khorobrykh TV, et al. Short-and long-term outcomes after surgical treatment of 5918 patients with splenic flexure colon cancer by extended right colectomy, segmental colectomy and left colectomy: a systematic review and meta-analysis. Frontiers in Oncology. 2024;14.
6. Podda M, Pisanu A, Morello A, Segalini E, Jayant K, Gallo G, et al. Laparoscopic versus open colectomy for locally advanced T4 colonic cancer: meta-analysis of clinical and oncological outcomes. British Journal of Surgery. 2022;109(4):319-331.
7. Kuwabara H, Kimura H, Kunisaki R, Tatsumi K, Koganei K, Sugita A, et al. Postoperative complications, bowel function, and prognosis in restorative proctocolectomy for ulcerative colitis—a single-center observational study of 320 patients. International Journal of Colorectal Disease. 2022:1-10.
8. Seo SHB, Bissett I, O'Grady G. Variable gut function recovery after right vs. left colectomy may be due to rectosigmoid hyperactivity. Frontiers in Physiology. 2021;12:635167.
9. Sandberg SJ, Park JM, Tasselius VA, Angenete E. Bowel Dysfunction After Colon Cancer Surgery: A Prospective, Longitudinal, Multicenter Study. Diseases of the Colon & Rectum. 2024;67(10):1322-1331.
10. Małczak P, Wysocki M, Pisarska-Adamczyk M, Major P, Pędziwiatr M. Bowel function after laparoscopic right hemicolectomy: a randomized controlled trial comparing intracorporeal anastomosis and extracorporeal anastomosis. Surgical endoscopy. 2022:1-6.
11. Roesel R, Mongelli F, Ajani C, Iaquinandi F, Celio D, Christoforidis D. Bowel function recovery after laparoscopic transverse colectomy within an ERAS program: a comparison to right and left colectomy. Langenbeck's Archives of Surgery. 2021;406:1563-1570.
12. Ferri V, Vicente E, Quijano Y, Duran H, Diaz E, Fabra I, et al. Right-side colectomy with complete mesocolic excision vs conventional right-side colectomy in the treatment of colon cancer: a systematic review and meta-analysis. International Journal of Colorectal Disease. 2021;36(9):1885-1904.