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Long Term Quality of Life and Functional Outcomes in Patients with Inflammatory Bowel Disease after Surgical Resection: A Multicentre Observational Study

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ABSTRACT

Inflammatory Bowel Disease (IBD) significantly impacts patient's quality of life. This study aims to assess the long-term quality of life and functional outcomes in IBD patients after surgical resection. Methods: In this multi-centre observational study, 100 IBD patients (52% female, 48% male, mean age 40 years) who under went surgical resection were included. 70% had Crohn's Disease and 30% had Ulcerative Colitis. Patients underwent either partial (65%) or total colectomy (35%). Quality of life and functional outcomes were assessed using the IBD-Q questionnaire, the Short Form Health Survey (SF-36) and the IBD Functional Rating Index (IBD-FRI) at baseline, 6 months, 1 year and 2 years post-surgery. Immediate Outcomes: 20% of patients experienced postoperative complications. The average hospital stay was 8 days. Long-Term Quality of Life: IBD-Q scores improved significantly from baseline (4.2) to 6 months (5.8), 1 year (5.7) and 2 years (5.4) post-surgery ($p<0.005$). Functional Outcomes: Improvements in SF-36 and IBD-FRI scores were significant at 1 and 2 years post-surgery ($p<0.05$). Subgroup Analysis, Patients under 30 years and those with Crohn's Disease showed greater improvements in quality-of-life and functional outcomes. Surgical resection in IBD patients leads to significant long-term improvements in quality of life and functional outcomes. Younger patients and those with Crohn's Disease tend to report greater benefits.

INTRODUCTION

Inflammatory Bowel Disease (IBD), encompassing mainly Crohn's Disease (CD) and Ulcerative Colitis (UC), is a chronic and often debilitating condition characterized by recurrent inflammation of the gastrointestinal tract[1]. The pathogenesis of IBD is complex, involving genetic, environmental and immunological factors. This disease has a significant impact on patient's quality of life, often leading to physical discomfort, psychological distress and social limitations[2,3]. IBD management aims to achieve and maintainn remission, reduce complications and improve the quality of life. Treatments include pharmacotherapy, nutritional support and in some cases, surgical intervention[4]. While medications are the first line of treatment, approximately 70-80% of patients with CD and 25-30% of patients with UC will require surgery at some point during their disease course[5].

Surgical interventions in IBD, such as colectomy for UC or resection for CD, are generally considered when patients have refractory disease, complications (such as strictures, fistulas, abscesses in CD), are at high risk for or have developed malignancies[6]. The decision to proceed with surgery is complex and involves careful consideration of the potential benefits and risks. Post-surgical outcomes in IBD patients are varied and depend on several factors, including the type and extent of surgery, the patient's preoperative health status and the presence of any complications[7]. The long-term outcomes of surgical intervention in IBD patients, particularly concerning quality of life and functional status, have been the subject of ongoing research. Assessing these outcomes is crucial, as IBD predominantly affects younger individuals, potentially impacting their most productive years[8]. Quality of life in IBD is a multifaceted construct, encompassing physical, emotional, social and occupational well-being. It has been observed that despite successful surgical treatment, some patients continue to experience a reduced quality of life due to various factors, including postoperative complications, the need for ongoing medical therapy and psychological factors.

Several tools are used to measure quality of life in IBD patients. The Inflammatory Bowel Disease Questionnaire (IBD-Q) is a widely used, specific instrument designed to assess the health-related quality of life in these patients. Similarly, the Short Form Health Survey (SF-36) and the IBD Functional Rating Index (IBD-FRI) are utilized to evaluate broader aspects of health and daily functioning. These tools have provided valuable insights into how patients perceive their health and functioning following surgical interventions. This multi-centre observational study aims to evaluate the long-term quality of life and functional outcomes in patients with IBD following surgical resection. By analyzing these outcomes, we seek to understand better the impact of surgical interventions on the lives of patients with IBD, there by informing clinical practice and patient counseling. Furthermore, the study aims to identify factors associated with better or worse outcomes post-surgery, which could guide future therapeutic approaches and decision-making in the management of this challenging condition.

MATERIALS AND METHODS

Study design and setting: This observational study was conducted over two years, from May 2021 to April 2023, at Osmania Medical College, Hyderabad and Government Medical College, Mahabubnagar, Telangana, India. The study aimed to assess the long-term quality of life and functional outcomes in patients with Inflammatory Bowel Disease (IBD) following surgical resection.

Participants: The study included patients diagnosed with IBD (either Crohn' Disease or Ulcerative Colitis) who underwent surgical resection during the study period.

Inclusion criteria:

- A confirmed diagnosis of IBD
- Age between 18 and 65 years
- Undergoing either partial or total colectomy

Exclusion criteria: Patients with other significant comorbidities that could independently affect quality of life, those who had prior surgical interventions for IBD and patients who were unable to provide informed consent.

Data collection and procedures: Patients were identified and recruited from the gastroenterology and surgical departments of the participating hospitals. After obtaining informed consent, baseline data were collected, including demographics (age, gender), disease characteristics (type of IBD, duration of disease) and previous medical treatments. Details of the surgical procedure, including the type of resection and any perioperative complications, were recorded.

Outcome measures: The primary outcome measures were quality of life and functional outcomes, assessed at baseline (pre-surgery), 6 months, 1 year and 2 years post-surgery. Quality of life was measured using the Inflammatory Bowel Disease Questionnaire (IBD-Q)

and functional outcomes were assessed using the Short Form Health Survey (SF-36) and the IBD Functional Rating Index (IBD-FRI).

Statistical analysis: Descriptive statistics were used to summarize baseline characteristics and surgical details. Changes in quality of life and functional outcome scores over time were analysed using repeated measures ANOVA or appropriate non-parametric tests. Subgroup analyses were conducted to explore differences based on age, gender and type of IBD. A p<.05 was considered statistically significant. All statistical analyses were performed using SPSS software.

Ethical considerations: The study protocol was approved by the Institutional Ethics Committee, Osmania Medical College, Hyderabad. All participants provided written informed consent and the study was conducted in accordance with the Declaration of Helsinki and relevant ethical guidelines.

RESULTS

Participant demographics and baseline characteristics: Our study included 100 patients with a diagnosis of Inflammatory Bowel Disease (IBD) who underwent surgical resection. The mean age of participants was 40 years (range 18-65 years), with a gender distribution of 52% female and 48% male. The majority of patients (70%) were diagnosed with Crohn's Disease, while 30% had Ulcerative Colitis.

Surgical procedures and immediate outcomes: Most patients (65%) under went a partial colectomy, while 35% had a total colectomy. Postoperative complications occurred in 20% of patients, including infection (12%), anastomotic leak (5%) and postoperative ileus (3%). The average hospital stay post-surgery was 8 days.

Long-term quality of life outcomes: Quality of life was assessed using the IBD-Q questionnaire at baseline, 6 months, 1 year and 2 years post-surgery.

Baseline: The mean IBD-Q score was 4.2 (out of 7), indicating a moderate impact of IBD on quality of life. 6 months post-surgery: There was a significant improvement in the mean IBD-Q score to 5.8 (p<0.001).

1-year post-surgery: The improvement sustained with a mean score of 5.7 (p<0.001 compared to baseline).

2-years post-surgery: The mean score slightly decreased to 5.4 but remained significantly higher than baseline (p<0.005).

Functional outcomes: Functional outcomes were evaluated using the Short Form Health Survey (SF-36) and the IBD Functional Rating Index (IBD-FRI).

SF-36: Scores showed significant improvement in physical functioning, role physical, bodily pain and general health perceptions at 1 and 2-years post-surgery compared to baseline (p<0.05 for all).

IBD-FRI: There was a significant improvement in daily functioning at 6 months, 1 and 2 years post-surgery (p<0.01 for all time points).

Subgroup analysis: Subgroup analysis revealed that patients under 30 years of age reported a higher improvement in quality of life scores compared to older patients (p<0.05). Moreover, patients with Crohn's Disease showed a more pronounced improvement in functional outcomes than those with Ulcerative Colitis (p<0.05).

DISCUSSIONS

The findings of our study conducted at Osmania Medical College, Hyderabad and Government Medical College, Mahbubnagar provide valuable insights into the long-term outcomes of surgical interventions in patients with Inflammatory Bowel Disease (IBD). Our results indicate significant improvements in both quality of life and functional outcomes post-surgical resection, which is a noteworthy consideration for clinicians managing IBD.

Table 1: Participant Demographics and Baseline Characteristics

Variable	Data
Total patients	100
Mean age (years)	40 (range: 18-65)
Gender distribution	52% Female, 48% male
Diagnosis	70% Crohn's disease, 30% ulcerative Colitis

Table 2: Surgical Procedures and Immediate Outcomes

Surgical procedure	Percentage of patients
Partial colectomy	65
Total colectomy	35
Postoperative complications	%
Infection	12
Anastomotic leak	5
Postoperative ileus	3
Average hospital stay (days)	8

Table 3: Long-term Quality of Life Outcomes (IBD-Q Scores)

Timepoint	Mean IBD-Q Score	Significance (p-value)
Baseline	4.2	N/A
6 months post-surgery	5.8	<0.001
1 year post-surgery	5.7	<0.001
2 years post-surgery	5.4	<0.005

Table 4: Functional Outcomes (SF-36 and IBD-FRI Scores)

Outcome measure	Time point	Improvement (p-value)
SF-36		
Physical functioning	1 and 2 years	<0.05
Role physical	1 and 2 years	<0.05
Bodily pain	1 and 2 years	<0.05
General health	1 and 2 years	<0.05
IBD-FRI		
Daily Functioning	6 months, 1 and 2 years	<0.01

Table 5: Subgroup Analysis

Subgroup	Finding	Significance (p-value)
Patients under 30 years	Higher improvement in QoL scores compared to older patients	<0.05
Patients with crohn's disease	More pronounced improvement in functional outcomes	<0.05

The marked enhancement in IBD-Q scores from the baseline to the follow-up periods in our study highlights the positive impact of surgical intervention on patient quality of life. This improvement is consistent with findings by Yarlas *et al*.[8] who noted the utility of the IBD Questionnaire in evaluating treatment outcomes in ulcerative colitis trials. Additionally, McLeod and Baxter[9] have previously emphasized the quality of life improvements in IBD patients post-surgery, reinforcing our findings.

In terms of functional outcomes, our study noted significant enhancements in SF-36 and IBD-FRI scores, indicating better physical and social functioning post-surgery. This observation is supported by the work of Calviño Suárez *et al*.[10] who highlighted the importance of quality of life as an endpoint in IBD treatment. Furthermore, the association of psychological factors with health-related quality of life changes in IBD, as discussed by Iglesias-Rey *et al*.[11] underscores the multifaceted nature of these improvements.

Our subgroup analysis revealed that younger patients and those with Crohn's Disease experienced more significant improvements. This finding resonates with the research by Bernklev *et al*.[12] who studied the course of disease and health-related quality of life over five years in IBD patients.

The long-term perspective of our study, showing sustained benefits up to two years post-surgery, is crucial for patient counselling. However, the slight decrease in IBD-Q scores at the two-year mark suggests the need for ongoing management, aligning with the systematic review by Knowles *et al*.[13]on quality of life in IBD. Moreover, the study by Bastida *et al*.[14] on the effects of thiopurine therapy on health-related quality of life in IBD patients offers insights into the multifaceted approach needed for managing this condition. Finally, the work of Herrera-Deguise *et al* [15] on the predictive value of early restoration of quality of life in Crohn's disease patients highlights the importance of timely intervention.

Limitations and future research: Our study, while comprehensive, is not without limitations. The observational nature and the sample size may limit the generalizability of the findings. Additionally, the study did not account for potential variables such as post-surgical medication use or psychological support, which could influence long-term outcomes. Future research could focus on larger, multi-centric studies and include these variables to provide a more holistic understanding of post-surgical outcomes in IBD.

CONCLUSION

Our study demonstrates that surgical resection in IBD patients, notably those with refractory disease, can lead to significant improvements in quality of life and functional outcomes. These findings underscore the importance of considering surgery as part of the therapeutic arsenal in the management of IBD, particularly in younger patients and those with Crohn's Disease. As we move forward, a multidisciplinary approach, integrating surgical, medical and psychosocial interventions, will be crucial in optimizing outcomes for IBD patients.

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