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INCIDENCE AND RISK FACTORS FOR SURGICAL RECURRENCE OF CROHN'S DISEASE FOLLOWING PRIMARY BOWEL RESECTION

Faisal Masood[1], Maryam Hidayat[2*], Muhammad Husnain Ashiq[3], Talal Tariq[4], Muhammad Umair Raheem Awan[5], Iffa Zafar[6], Hosam Alazazzi[7], Kamel J. K. Walwil[8], Jumana Abdelrahman Diab[9]

[1]Medical Officer, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Pakistan
[2*]General Surgeon, General Surgery, Northwest Hospital, Peshawar, Pakistan
[3]General Surgery Resident, Aziz Bhatti Shaheed Teaching Hospital, Gujrat, Pakistan
[4]General Surgery Resident, Aziz Bhatti Shaheed Teaching Hospital, Gujrat, Pakistan
[5]Department of Trauma and Surgery, DHQ Hospital, Mandi Bhauddin, Pakistan
[6]Medical Officer, Mohayudin Teaching Hospital, Mirpur, Azad Kashmir
[7,8,9] Royal College of Surgeons in Ireland, Bahrain

***Corresponding Author:** Maryam Hidayat
*General Surgeon, General Surgery, Northwest Hospital, Peshawar, Pakistan
Email: maryamsyed111@gmail.com

ABSTRACT

Aim: The aim of the current study was to determine the incidence and risk factors for surgical recurrence of Crohn's disease following primary bowel resection.

Patients and Methods: A Prospective clinical study investigated 52 patients having Crohn's disease (CD) in the General Surgery and Gastroenterology Department of Tertiary Care Hospitals of Pakistan from January 2022 to April 2024. Crohn's disease patients with primary anastomosis and bowel resection were included. Detailed demographic data, clinical characteristics, preoperative parameters, disease duration, and different outcomes associated with anastomosis were recorded. SPSS version 26 was used for descriptive statistics.

Results: The overall mean age was 32.4±6.8 years. There were 34 (65.4%) male and 18 (34.6%) female. Based on location of disease, the incidence of ileum, colonic, ileocolonic, and upper gastrointestinal tract was 16 (30.8%), 4 (7.7%), 28 (53.8%), and 4 (7.7%), respectively. Ileojejuno, ileocolic, and colocolic were different location of anastomosis where 15 (29%), 32 (61%), and 5 (10%), respectively. Smoking and jejunoileal anastomosis contributed significantly in increased surgical recurrence risk. Contrarily, the surgical recurrence risk was reduced with laparoscopy, anastomotic stoma, and anastomosis.

Conclusion: The present study observed that jejunoileal anastomosis and smoking are the two significant risk factors that contributes to higher incidence of surgical recurrence following primary bowel resection.

Keywords: Crohn’s disease, Risk factors, Incidence, surgical recurrence

INTRODUCTION

Crohn’s disease (CD) refers to inflammatory disease that impact any gastrointestinal tract related segment. The incidence of symptoms developed outside the intestinal tract varies from 20% to 40% [1, 2]. Historical data show that the disease often fluctuates between relapses and remission. Majority of cases developed complications such as ulcers, fistulas, and bleeding leading to disability. Based on statistics, about 80% CD patients undergo surgery every year [3]. However, a recent investigation reported decreased rate of surgery in CD patients over the past few decades [4]. Early diagnosis, following standard guidelines, different treatment, and immunomodulatory are various factors that reduced the rate of bowel surgery. An earlier study reported that incidence risk associated with surgical intervention in CD patients was 28.7% [5]. Postoperative recurrence (POR) rate was higher due to the nature of the disease. The rate of symptoms appearance and endoscopic recurrence increased from 37% and 84% after surgery to 85% and 100% after 3rd years, respectively [6, 7].

Surgical recurrence, endoscopic recurrence, and hospital-based recurrence are various postoperative recurrence types in Crohn's disease (CD) [8]. Following the initial surgery in CD patients, requirement of additional resection usually refers to revision surgery. Disease duration, smoking, upper gastrointestinal lesions, invasive disease, type of anastomosis, and smoking are the various factors affecting CD patient’s clinical recurrence as reported by an earlier investigations [9]. The symptom’s clinical recurrence precedes by endoscopic recurrences whereas surgical recurrence is the requirement of second intervention [10].

METHODOLOGY

A Prospective study investigated 52 Crohn’s disease (CD) patients in the General Surgery and Gastroenterology Department of Tertiary Care Hospitals of Pakistan from January 2022 to April 2024. Crohn’s disease patients with primary anastomosis and bowel resection were enrolled. Anastomosis associated outcomes includes disease duration, demographic and clinical details, and preoperative parameters were recorded. For active CD, an increased frequency of urinary, symptoms, and abdominal pain on posterior bowel resection defined as surgical recurrences. All the eligible patients were grouped based on their disease behavior, age groups, preoperative abdominal abscess drainage presence, disease location, appendectomy, and postoperative complications. SPSS version 26 was used for descriptive statistics. The Cox proportional hazards model was used for multivariable analysis. Hazard ratios (HR) and 95% confidence intervals (CI) were calculated to determine the risk of postoperative recurrence.

RESULTS

The overall mean age was 32.4±6.8 years. There were 34 (65.4%) male and 18 (34.6%) female. Age-wise distribution of patients was as follows: 5 (9.6%) in ≤15 years, 36 (69.2%) in 16-30 years, and 11 (21.2%) >30 years as shown in Figure-1. Based on location of disease, the incidence of ileum, colonic, ileocolonic, and upper gastrointestinal tract was 16 (30.8%), 4 (7.7%), 28 (53.8%), and 4 (7.7%), respectively as demonstrated in Figure-2.

Ileojejuno, ileocolic, and colocolic were different location of anastomosis where 15 (29%), 32 (61%), and 5 (10%), respectively as illustrated in Figure-3. Table-I represents the baseline and clinical details of patients. Univariate analysis was used for various clinical variables as shown in Table-II. Smoking and jejunoileal anastomosis contributed significantly in increased surgical recurrence risk. Contrarily, the surgical recurrence risk was reduced with laparoscopy, anastomotic stoma, and anastomosis.

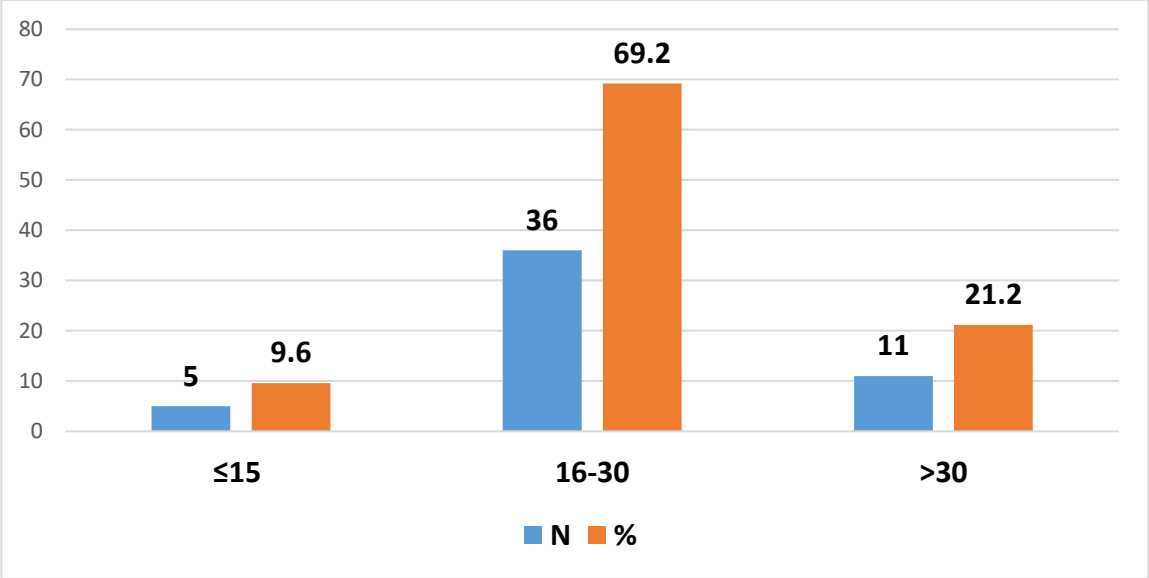

Figure-1 Age groups (years) (N=52)

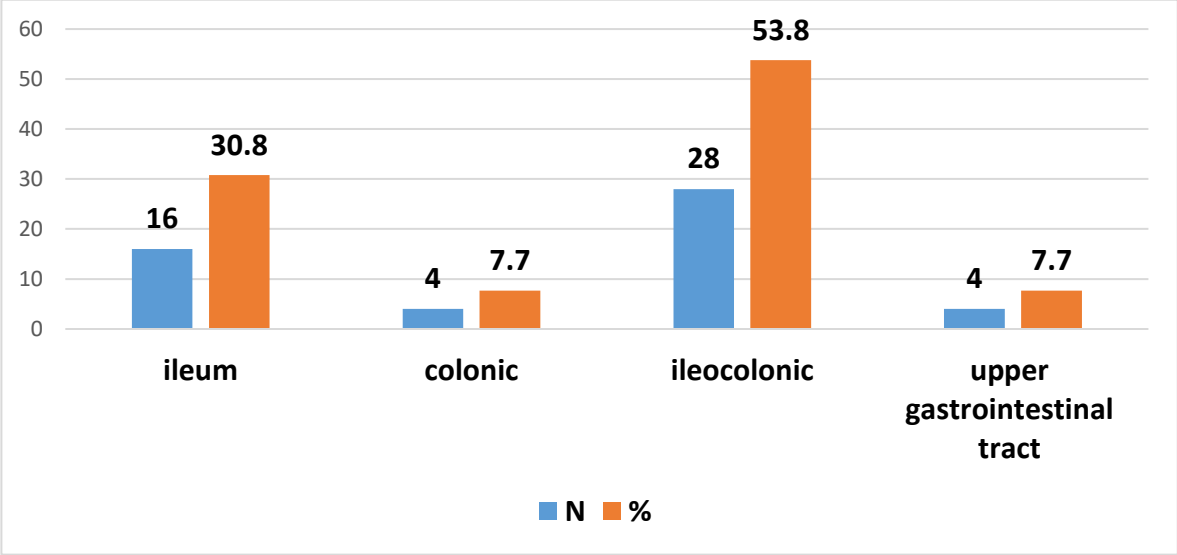

Figure-2 Disease's location (N=52)

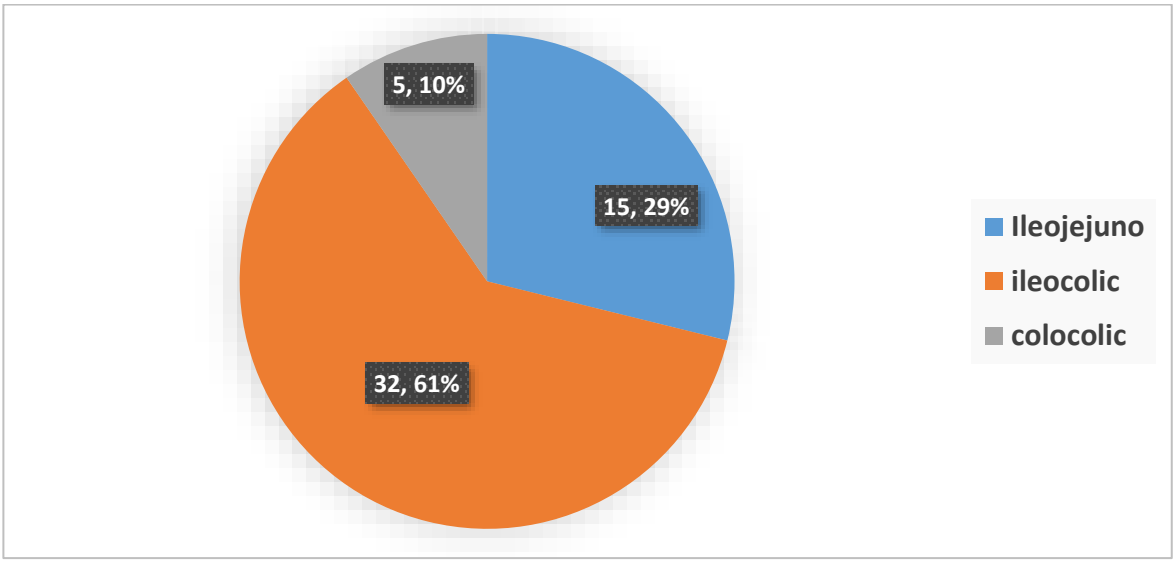

Figure-3 location of anastomosis

Table-I Baseline and clinical details of patients

Parameters	**Value N (%)**
Age (years)	32.4±6.8
Gender	
Male	34 (65.4%)
Female	18 (34.6%)
Smoking status	
Current	4 (7.8%)
Ex-smoker	5 (9.6%)
Never	43 (82.7%)
Disease's duration (months)	
≤6	8 (15.4%)
>6	44 (84.6%)
Anastomosis types	
side-to-side anastomoses (SSA)	30 (57.7%)
end-to-side anastomoses (ESA)	32 (42.3%)
Anastomosis Width (mm)	
≤30	21 (40.4%)
>30	31 (59.6%)
Length of bowel resection (cm)	
<100	46 (88.5%)
≥100	6 (11.5%)
Preoperative appendectomy	13 (25%)
Preoperative abdominal abscess drainage	9 (17.3%)
Surgical approach	
Open	29 (55.8%)
Laparoscopy	33 (44.2%)
Postoperative complications	5 (9.6%)

Table-II Univariate analysis for various clinical variables

Parameters	**Coefficient**	**HR (95% CI)**	**P-value**
Gender			
Male	0.259	1.29 (0.61-2.79)	0.49
Female	0	1	
Smoking status			0.021
Current	0	1	
Ex-smoker	0	1	
Never	-1.142	0.319 (0.11-0.79)	
Disease's duration (months)			0.89
≤6	-0.059	0.89 (0.36-2.48)	
>6	0	1	
Anastomosis types			0.051
side-to-side anastomoses (SSA)	-0.739	0.48(0.21-1.02)	
end-to-side anastomoses (ESA)	0	1	
Anastomosis Width (mm)			0.09
≤30	1.22	3.37 (1.34-8.48)	
>30	0	1	
Length of bowel resection (cm)			0.89
<100	0.057	1.059 (0.32-3.51)	
≥100	0	1	
Preoperative appendectomy	0	1	0.05
Preoperative abdominal abscess drainage	0	1	0.29
Surgical approach			0.011
Open	1.79	6.38 (1.51-27.12)	
Laparoscopy	0	1	
Postoperative complications	0	1	0.559

DISCUSSION

The present study mainly focused on the incidence and risk factors associated with Crohn's disease surgical recurrence. Gender was not found to be a factor associated with recurrence of Crohn's disease (CD) after surgery. Previous studies showed no consensus effect of family history effect on postoperative recurrence 166 patients underwent emergency surgery; others underwent elective surgery, possibly due to patient selection in this study. Patients undergoing emergency surgery at our center rarely have a primary anastomosis. These two factors were not included in the survival analysis due to insufficient number of positive data regarding opportunities for surgery and family history of IBD [11-14]. Yang et al. Early surgical intervention has been associated with an increased risk of second bowel resection [15].

Kim et al. found that shorter disease duration after ileocolic resection in Crohn's disease (CD) patients was a significant risk factor [16]. Interestingly, lesion differences did not affect recurrence again in their study, contradicting the findings of many other studies. Another study showed that differentiating lesions increase postoperative recurrence and clinical risk [17]. These conflicting results attributed to differences in treatment protocols.

Postoperative complications, such as intermittent infection, did not increase the risk of recurrence, consistent with the findings of a study by Valibouze et al. [18] however; the impact of these variables on postoperative recurrence remains controversial. An earlier study concluded that preoperative appendectomy is a risk factor for CD recurrence [19]. However, in our study, we found that preoperative appendectomy and preoperative abdominal dissection were not associated with disease recurrence. Currently, there is little consensus on the impact of preoperative disease on postoperative recurrence, possibly due to differences in disease subtypes.

The risk of smoking relapse was 3.6-fold increase compared with non-smokers, consistent with the findings of several literature reports [20, 21]. Smoking is consistently associated with an increased risk of secondary surgery in patients with CD, whereas smoking cessation is associated with decreased disease activity and consistently with a lower risk of recurrence after surgery. Smoking cause's local venous thrombus formation in the intestinal mucosa impairs circulation and contributes to disease progression [22].

Patients who underwent laparoscopic surgery showed better recurrence and median recurrence-free survival (RFS) compared with those who underwent open abdominal surgery [23]. These differences could be due to patient's selection bias, as individuals who underwent laparoscopic surgery had less severe conditions. In addition, another study showed that patients with CD who underwent laparoscopic surgery tended to recur. Furthermore, laparoscopic surgery was associated with faster recovery of bowel function, reduced complications and shorter postoperative hospitalization [24].

Recurrences were observed mainly around the anastomotic stoma, and fecal bacteria were found to be contributory. A side-to-side anastomosis helps open the bowel and reduces the risk of fluid retention and spontaneous stoma narrowing. Therefore, it is preferable to recommend the use of a one-way connection with stoma width [25].

CONCLUSION

Jejunoileal anastomosis and smoking are the two significant risk factors that contributes to higher incidence of surgical recurrence after primary bowel resection. Laparoscopy, unilateral anastomosis, and anastomotic stoma were protecting elements against postoperative recurrence.

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