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Evaluation of indications for Colectomy in IBD Patients

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Abstract | **Original Research Article**

Colectomy in IBD may be necessary in several conditions, the main cause being the acute severe colitis (ASC). The aim of this work is to study the role of surgery in the management of IBD, in particular colectomy, and to determine its main indications. This is a retrospective study conducted over a 5-year period from July 2018 to July 2023 involving 424 patients followed up for IBD. We included in our study patients of both sexes, with documented Crohn's disease (CD) or ulcerative colitis (UC) and who benefited from colectomy, we excluded patients whose follow-up could not be ensured. Of the 45 patients (10.61%) colectomized, the mean age at colectomy was 35 years [18-56], the predominance was female with an F/H sex ratio of 1.25, 34 patients had UC (75.5%) and 11 followed for CD (24.5%). The main indication for surgery was corticoresistant ASC in 31 patients (46.5%). Other indications were: 5 strictures (11.1%), 4 occlusions (8.8%), 3 colonic fistulas (6.6%) and 2 abscesses (4.4%). There were no immediate postoperative deaths. Anastomotic leakage occurred in 4 patients (8.8%) and small bowel stenosis in 2 patients (4.4%). In patients with CD, the flare-up subject to surgery was inaugural in 2 patients (18.18%); the mean period between the onset of symptoms and surgery was 3 years and 2 months. In the case of UC, 10 patients (29.41%) had a flare-up at the start of surgery, with an average delay of 6 years and 1 month. At follow-up, 5 patients (11.1%) had a recurrence or exacerbation of the disease. This was the most frequent indication for a subsequent protectomy or permanent ileostomy during the follow-up period. Collaboration between the gastroenterologist and the surgeon is essential to recognize the optimum time to propose surgery, so as not to increase patient morbidity and mortality.

Keywords: Inflammatory Bowel Disease, Colectomy, Ulcerative colitis, Crohn's disease, Indications, IBD.

INTRODUCTION

Total colectomy cures the intestinal manifestations of hemorrhagic ulcerative colitis (UC). This is not the case for Crohn's disease (CD), which is more likely to recur. The timing of surgery during the course of the disease will influence the choice of operation, the frequency of post-operative complications and long-term functional results. Surgery is divided into urgent and elective procedures. Subtotal colectomy eliminates much of the disease and restores the patient's health.

Surgery for inflammatory bowel disease (IBD) has lagged behind due to challenges associated with tissue fragility, as well as patient-related factors such as malnutrition and immunosuppression and the effects of steroids and biologics, preoperative opioid use and psychosocial factors not generally seen in the general colorectal population [1].

The aim of this work is to study the place of surgery in the management of IBD, in particular colectomy, and to determine its main indications.

PATIENTS AND METHODS

Participants and Data Collection

This is a descriptive retrospective study conducted over a 5-year period from July 2018 to July 2023 involving 424 patients followed for IBD. We included in our study patients of both sexes, with documented CD or UC and who underwent colectomy during their disease, we excluded patients with an undocumented diagnosis of IBD and patients lost to follow-up, whose follow-up could not be ensured, and patients aged under 18 years.

Data were collected from patients' medical files, which included a wide range of parameters, such as demographic data, duration of disease, family history, smoking history, clinical data, indications for colectomy, treatments received, postoperative complications and patients' evolutionary profile.

In the present study, the diagnosis of IBD was established based on standard clinical, endoscopic, radiological and histological criteria. In addition, patients were classified according to the Montreal classification, which includes three parameters: age of disease onset, disease location and disease phenotype. Age of disease onset was classified as A1 (diagnosed at 16 years of age or less), A2 (diagnosed between 17 and 40 years of age) and A3 (diagnosed at over 40 years of age), respectively. In CD, location was classified as L1 (terminal ileal), L2 (colonic), L3 (ileocolic) and L4 (upper gastrointestinal), and disease phenotype was classified as B1 (non-stricturing, non-penetrating), B2 (stricturing) and B3 (penetrating). Ano-perineal lesions did not constitute penetrating disease but were considered a modifier of disease behavior (p). In the case of UC, the extent of disease was described as E1 (ulcerative proctitis), E2 (left UC) or E3 (pancolitis UC).

Statistical Analysis:

Data were entered into Microsoft Excel version 2016. Descriptive statistical analysis was performed using SPSS 25.0 software. Qualitative data were expressed as numbers and percentages, and quantitative data were expressed as mean and standard deviation (mean ± SD). Data normality was assessed using the one-sample Kolmogorov-Smirnov test. Qualitative data were expressed as numbers and percentages and compared using the chi-square ($\chi 2$) test or one-way analysis of variance (ANOVA). A P value of <0.05 was considered statistically significant.

RESULTS

1. Epidemiological data

A total of 424 patients were identified followed up for IBD. After applying the inclusion criteria, data were collected from 45 (10.61%) colectomy patients, between July 2018 and July 2023. The mean age at colectomy was 35 years [18-56], the predominance was female with an F/H sex ration of 1.25 (25 women vs. 20 men), only one patient was a smoker (2.2%) and no patient had a family history of IBD, two patients were diabetic (4.4%), one patient hypertensive (2.22%), one patient had adrenal insufficiency (2.2%) and 2 patients were cholecystectomized (4.4%).

34 patients had UC (75.5%) and only 11 patients were being followed for Crohn's disease (24.5%).

Mean BMI of patients was 21.12 Kg/m2. Demographic data are described in more detail in Table 1.

Table 1: Epidemiological characteristics of patients

Variable	CD (*n*=11)	UC (*n*=34)	Total	*P*
Age at onset of the disease (Mean +/- SD)	37.23±11.65	33.19±9.28	35±14.82	0.058#
BMI (Mean +/- SD)	21.23±0.38	21.07±0.49	21.12±0.45	0.071#
Gender (%)				
Male	4 (36.36)	16 (47.05)	20 (44.44)	0.021*
Female	7 (63.63)	18 (52.94)	25 (55.55)	
Smoking (%)				
Smoker	1 (9.09)	0 (0)	1 (2.22)	0.239*
Non-Smoker	9 (81.81)	34 (100)	43 (95.55)	
Ex-Smoker	1 (9.09)	0 (0)	1 (2.22)	
Family history	0 (0)	0 (0)	0 (0)	1.000*
Comorbidities (%)				
Hypertension	0 (0)	1 (2.94)	1 (2.22)	0.095*
Mellitus diabetes	1 (9.09)	1 (2.94)	2 (4.44)	
Adrenal insufficiency	0 (0)	1 (2.94)	1 (2.22)	
Cholecystectomy	2 (18.18)	0 (0)	2 (4.44)	

#One-way ANOVA test, *Chi-squared test

2. Clinical data

CD was ileal in 3 patients (27.77%), ileocolic in 3 patients (27.27%), colonic in 5 patients (45.55%), ano-perineal in 2 patients (18.18%), stenosing in 8 patients (72.72%), and penetrating in 3 patients (27.27%), no patient had an inflammatory phenotype, 2 patients (18.18%) had associated upper involvement (Table 2).

Table 2: Clinical data for patients followed for CD according to the Montreal classification

Variable	Classification	N	(%)	*P*
Age of disease onset	A1 (<17 years)	0	0	0.338
	A2 (17–40 years)	8	72.72	
	A3 (>40 years)	3	27.27	
Disease location	L1 (ileal)	3	27.27	0.762
	L2 (colonic)	3	27.27	

Variable	Classification	N	(%)	*P*
	L3 (ileocolonic)	5	45.45	
Disease behavior	B1 (inflammatory)	0	0	0.171
	B2 (stricturing)	8	72.72	
	B3 (penetrating)	3	27.27	
Upper IG modifier	L4 (upper disease) yes	2	18.18	0.103
	L4 (iupper disease) no	0	0	
Perianal disease modifier	P (yes)	2	18.18	0.518
	P (no)	0	0	

UC was pancolitis in 31 cases (91.17%), left sided colic in 3 cases (8.82%) and proctitis in none, and all patients had severe UC (Table 3).

Table 3: Clinical data for patients followed for UC according to the Montreal classification

Variable	Classification	N	(%)	*P*
Age of disease onset	A1 (<17 years)	0	0	
	A2 (17–40 years)	21	61.76	0.383
	A3 (>40 years)	13	38.23	
Extent	E1 (proctitis)	0	0	
	E2 (left sided colitis)	3	8.82	0.810
	E3 (pancolitis)	31	91.17	
severity	S0 (UC in clinical remission)	0	0	
	S1 (mild UC)	0	0	0.975
	S2 (moderate UC)	0	0	
	S3 (severe UC)	34	100	

3. Therapeutic data:

Overall, 60% of the patients received either biological or immunosuppressive therapy.

Table 4: Therapeutic data of patients:

Concomitant treatments, n [%]	CD, 11 [24.44%]	UC, 34 [75.55%]	Total, 45	p
Steroids	7 [63.63%]	19 [55.88%]	26 [57.77]	<0.01
Immunosuppressives	1 [9.09%]	5 [14.70%]	6 [13.33%]	0.55
Biological therapy	6 [54.54%]	15 [44.11%]	21 [46.66%]	0.02

4. Surgery Indication

The main indication for surgery was corticoresistant acute severe colitis (ASC) in 31 patients (46.5%). In the remaining patients, the indications were: 5 strictures (11.1%), 4 occlusions (8.8%), 3 colonic fistulas (6.6%) and 2 abscesses (4.4%) Figure 1.

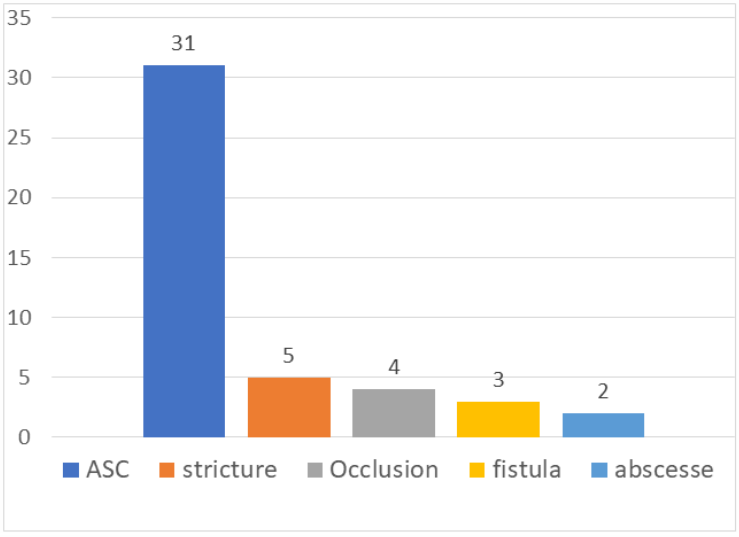

Figure 1: Distribution of indications for colectomy in patients

5. Delay between diagnosis and colectomy

In patients with CD, the flare-up subject to surgery was inaugural in 2 patients (18.18%); the mean period between the onset of symptoms and surgery was 3 years and 2 months, with extremes of 15 years and a few days.

In the case of UC, 10 patients (29.41%) had a flare-up at the start of surgery, with an average delay of 6 years and 1 month, ranging from a few days to 28 years.

6. Post-operative follow-up

There were no immediate postoperative deaths. Anastomotic leakage occurred in 4 patients (8.8%) and small bowel stenosis in 2 patients (4.4%).

At follow-up, 5 patients (11.1%) had a recurrence or exacerbation of the disease. This was the most frequent indication for a subsequent protectomy or permanent ileostomy during the follow-up period.

DISCUSSION

Approximately 20% of patients with chronic ulcerative colitis (UC) and 80% of patients with Crohn's disease (CD) will require surgery during their lifetime [2]. In a systematic review of 30 population-based studies, the risk of surgery at 1, 5, and 10 years after diagnosis was 16.3%, 33.3%, and 46.6%, respectively, for CD and 4.9%, 11.6%, and 15.6% for UC, respectively [3]. However, over the past 6 decades, the risk of surgery among patients with inflammatory bowel disease (IBD) has decreased, although the incidence of both UC and CD increased in many regions across the world (up to 20 per 100,000 individuals) [4]. Patients with IBD in the 21st century may experience fewer operations. This reduction in surgery may be attributed to earlier disease detection, introduction of practice guidelines, continuing medical education, reduction in colectomy for dysplasia or colorectal cancer (CRC), and increasing and earlier use of immunomodulators [5, 6]. In a nationwide cohort of patients with IBD in Denmark from 1979-2011, an increased use of azathioprine and tumor necrosis factor alpha (TNF-α) blockers over time paralleled a decrease in the use of 5-aminosalicylic acid (ASA) and local steroids and a decrease in need of major and minor surgery [7]. However, a convincing surgery-sparing effect of the use of newer medications was not found. In accordance with our study, 60% of our patients were on immunosuppressive or anti-TNF therapy.

Indications for surgery for IBD are intractability of the disease, disease complications, or both. There is little question that the timing of intervention is a key issue for proper surgical management of patients with IBD [8]. In our study, the main indication for surgery was corticoresistant acute severe colitis (ASC) in 31 patients (46.5%).

The overall mortality of patients with IBD is comparable to that of the general population. The 3-year mortality in an analysis of the Oxford region (UK) was significantly lower for patients who underwent elective colectomy for IBD than for those who needed emergency colectomy [8].

Interestingly, in patients admitted for UC and CD who had no surgery, most deaths occurred between 6 and 36 months after admission. The decision to operate should be made after careful evaluation of all clinical factors and in close discussion between the gastroenterologist, surgeon, and patient.

The risk for surgery for UC is high within the first year of diagnosis because patients who present with fulminant colitis need immediate attention. Which is in accordance with our study. In contrast, at 5 years after diagnosis, the indication for surgery is more often due to corticosteroid dependence or unrelenting disease. Ten years after the diagnosis, dysplasia or cancer begins to drive the need for proctocolectomy. The cumulative probability of colectomy from the time of diagnosis was 13.1% at 5 years, 18.9% at 10 years, and 25.4% at 20 years in a population-based cohort in Olmsted County, MN. Male sex (hazard ratio = 2.1) and diagnosis in 2000-2004 (hazard ratio = 3.7) were significantly associated with colectomy risk [8]. Although the incidence rate of hospitalization has decreased over the past 4 decades, early need for corticosteroids (hazard ratio = 1.8) was an independent predictor of hospitalization after 90 days of illness [9] and the short-term colectomy rates of patients hospitalized with severe CUC has remained stable at 27% [10].

CONCLUSION

Colectomy in IBD may be necessary in several conditions, the main cause being ASC, followed by stenosis, occlusion, fistula and abscess. Collaboration between the gastroenterologist and the surgeon is essential to recognize the optimum time to propose surgery, so as not to increase patient morbidity and mortality.

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