

## The Evaluation of Intestinal and Extra Intestinal Surgeries in Patients with IBD

George Mantzouranis<sup>1</sup>, Maria Saridi<sup>2\*</sup>, Eleni Albani<sup>3</sup>, Georgios Glantzounis<sup>4</sup>, Konstantinos H Katsanos<sup>5</sup> and Dimitrios K Christodoulou<sup>5</sup>

<sup>1</sup>PhD (Candidate), University of Ioannina, Medical School, Greece

<sup>2</sup>Director of Nursing, General Hospital of Korinthos, Greece and Research Fellow, Faculty of Social and Educational Sciences, University of Peloponnese, Corinth, Greece

<sup>3</sup>Assistant Professor of Pediatric Nursing, Department of Nursing, TEI of Western, Greece

<sup>4</sup>Associate Professor, Division of General Surgery, Medical School, University of Ioannina, Greece

<sup>5</sup>Associate Professor Department of Gastroenterology, Medical School of Ioannina, Greece

**\*Corresponding Author:** Maria Saridi, Director of Nursing, General Hospital of Korinthos, Greece and Research Fellow, Faculty of Social and Educational Sciences, University of Peloponnese, Corinth, Greece.

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### Abstract

**Background:** In IBD patients, the surgical approach may be considered only after all the other means of treatment have failed, in order for the disease to be manageable; sexual dysfunction, on the other hand, may be due to psychological or biological factors.

**Aim:** The aim of the present study was to examine all the data regarding IBD patients who were being monitored and were diagnosed with ileus and were treated surgically or not.

**Methodology:** The retrospective quantitative study took place in patients monitored at the Gastroenterology Dept. of the University Hospital of Ioannina, Greece, and the 'Hadzikostas' General Hospital of Ioannina, between 1982 - 2015 and had been diagnosed with ileus (n = 37).

**Results:** Regarding surgical operations, 66.7% of the patients diagnosed with Crohn's Disease (CD) were males, and 33.3% females. The average age of CD patients was 50.4 ( $\pm$  20.9) years, the youngest being 27 and the oldest 86 years old, while the average age of ulcerative colitis (UC) patients was 66.8 ( $\pm$  17.7), the youngest being 28 and the oldest 86. From our sample, 56.3% of the UC patients were men and 43.8% women. 33.3% of the patients with CD and 43.8% of those with UC had full-blown ileus which was investigated with endoscopy or surgical operation, one patient had subileus, and one toxic megacolon. From our sample, 88.4% of the patients had had no extra-intestinal surgical operations prior to the diagnosis, while 92.8% of them had had no intestinal operations at all. Moreover, 97.1% of the patients had had no extra-intestinal operations after the diagnosis, and 96.7% of them had had no intestinal operations at all. Regarding other surgical operations of the participating patients, 85.7% of CD patients had had no previous operation on the abdomen, compared to 93.8% of the UC patients. From those suffering from CD, 9.5% were submitted to endoscopy and surgery, compared to 12.5% of UC patients who had had endoscopy and then surgery. 4.8% of the CD patients had had a CT scan after the endoscopy, while 6.3% of the UC patients had had the CT scan before the endoscopy and 6.3% after it. In total, 28.6% of CD patients and 37.5% of UC patients were submitted to CT scan. Also, 23.8% of CD patients and 37.5% of UC patients were submitted to surgery.

**Conclusion:** Surgical operations on IBD patients, be it ileostomies or any of other kind, could potentially lead to physical disabilities. Surgical operations qualify as debilitating side-effects. More investigation and interdisciplinary management is needed.

**Keywords:** Inflammatory Bowel Disease; Crohn's Disease; Ulcerative Colitis; Ileostomy; Surgical Treatment

### Abbreviations

IBD: Inflammatory Bowel Disease; CD: Crohn's Disease; UC: Ulcerative Colitis; IBDU: Inflammatory Bowel Disease-Unclassified

## Introduction

In IBD, the surgical approach is normally considered only after all the other options and methods have failed [1-3]. Surgical interventions in IBD carry a rate of surgical mortality up to 3%. Surgical approach in patients with Crohn's Disease (CD) can reach 70% of all cases, especially in patients whose small intestine has been affected [4,5].

The indications for surgical operation or intestinectomy in CD patients vary according to the affected point, while intestinal obstruction is the most common reason [6,7]. In case of obstruction and not full blockage strictureplasty may be employed, a method of treating small obstructions without resections [4-6]. Ileocolic anastomosis has a rate of surgical relapse ranging from 25% to 60% per 5 years, while the respective rate for colocolic anastomosis is 8.5 - 42%. An ileostomy may be permanent or temporary and is preferred instead of classic intestinectomy in high risk patients, in patients who do not need proctocolectomy and in patients with widespread disease with limited ectomy [7,8].

In cases of Ulcerative Colitis (UC) a surgical operation may be needed if there is an uncontrollable hemorrhage, blockage due to obstructions, free perforation, toxic megacolon, carcinoma, or the pharmaceutical approach simply failed. Regarding UC, the most common operation is total colectomy with ileostomy or without removing the rectum which can be performed urgently or after schedule, and may also be combined with proctectomy with or without a pouch [9-11].

It is noteworthy that the psychological and emotional support of IBD patients eligible for surgery, is a crucial factor for both their treatment and rehabilitation. It seems that these patients have the highest risk of post-operative depression compared to patients with other IBD-related symptoms [12]. Also the risk seems to vary according to the disease (CD/UC) and the stomy (ileostomy/colostomy), while it is considerably lower than that of intestinal cancer patients [13,14]; nevertheless, it is related to the emergence of mental or emotional disorders in IBD patients who were submitted to a surgical operation [13-15].

## Aim of the Study

The aim of the present study was to investigate the data regarding IBD patients that underwent surgery before or after the diagnosis, and also patients diagnosed with ileus and received surgical treatment or not.

## Material and Methods

The study took place in Epirus, one of the 13 administrative regions in Greece, and the two neighboring islands of Corfu and Lefkada. The region covers an area of 9.203 km<sup>2</sup> and has a population of 336 856 (2011 census). Corfu has an area of 592 km<sup>2</sup> and a population of 104.371 inhabitants, and Lefkada 325 km<sup>2</sup> and 25.720 inhabitants respectively. The population of the region was born there, had an age of 1 - 89 years old, and most of the people were from urban and rural areas with similarly varying cultural traits. According to the most recent census, the total population of the region was 336.856 people.

The study included the patients who had been treated in the Gastroenterology Dept. of the University Hospital of Ioannina and the 'Hadzikostas' General Hospital of Ioannina between 1982 - 2015, as well as those diagnosed with ileus. Thus, it is a retrospective study through the patient records of the Gastroenterology Dept. of the University Hospital of Ioannina.

Initially, data were gathered from all the patients that had undergone surgery before or after the diagnosis with IBD. In total, 1137 patients with IBD were included, while there had been 278 surgical operations before the diagnosis and 109 after it. We also included all the patients diagnosed with ileus, their demographics, the disease (CD, UC, IBDU (Inflammatory Bowel Disease-Unclassified)), how many underwent surgery or received pharmaceutical treatment, type of surgery, other disease-related or not surgical operations, surgical findings, diagnostic approach (endoscopy/CT) and their findings. Finally, the patients' course and outcomes were also included.

## Ethics

We followed the guidelines of Good Clinical Practice, and anonymity and confidentiality regarding the patients' data was observed.

**Statistical analysis**

The SPSS 25 was used for the statistical analysis and processing. Mean and median values were used, as well as standard deviations and interquartile ranges were used for the description of quantitative variables. Absolute (n) and relative (%) frequencies were used to describe the qualitative variables.

**Results**

The total sample was n = 1137, the majority were males (61.6%), and the average age was 64.98 years. The majority of the sample had UC (74.6%), 21.3% had CD and the remaining 4.1% were suffering from IBDU.

88.4% of the patients hadn't undergone any extra-intestinal surgeries prior to the diagnosis, while 92.8% hadn't undergone any intestinal surgery before the diagnosis of IBD. After the diagnosis with IBD, 97.1% of the patients didn't undergo any extra-intestinal surgeries, while 96.7% didn't undergo any intestinal surgery (Table 1).

Extra-intestinal surgeries before IBD diagnosis			Extra-intestinal surgeries after IBD diagnosis		
	N	%		N	%
1	86	7,6	1	23	2,0
2	33	2,9	2	8	,7
3	11	1,0	3	1	,1
4	1	,1	4	1	,1
5	1	,1			
None	1005	88,4	None	1104	97,1
Total	1137	100,0	Total	1137	100,0
Intestinal surgeries			Intestinal surgeries		
	N	%		N	%
1	71	6,2	1	25	2,2
2	9	,8	2	6	,5
3	2	,2	3	3	,3
None	1055	92,8	4	2	,2
Total	1137	100,0	26	1	,1
			None	1100	96,7
			Total	1137	100,0

**Table 1:** Total number of surgeries before and after IBD diagnosis.

In total, IBD patients were submitted to 278 surgical operations before the diagnosis and 109 after it had been set, while 387 operations in total took place on these patients before and after the diagnosis (Table 2).

	Yes		No	
	N	%	N	%
1° Surgery before diagnosis	190	16,7	947	83,3
2° Surgery before diagnosis	69	6,1	1068	93,9
3° Surgery before diagnosis	19	1,7	1118	98,3
1° Surgery after diagnosis	71	6,2	1066	93,8
2° Surgery after diagnosis	29	2,6	1108	97,4
3° Surgery after diagnosis	9	0,8	1128	99,2

**Table 2:** Surgeries before and after IBD diagnosis.

Among the patients diagnosed with ileus, 66.7% of those with CD were men and 33.3% females. Respectively, 56,3% of the males suffered from UC and 43.8% of the females, while the average age of CD patients was 50.4 ( $\pm$  20.9) years, and that of UC patients was 66.8 (17.7).

Regarding the location in CD patients, it was mainly terminal ileitis (n = 2), terminal ileus (n = 2), large intestine ileus (n = 1), small intestine ileus (n = 1), ileocolitis (n = 1), while for UC patients the location was mainly in the left side (n = 3), pancolitis (n = 3) and the sigmoid colon (n = 1).

We also recorded the hospitalizations of the patients diagnosed with terminal ileus during the year following the diagnosis. One CD patient was admitted to the hospital two times in the year following the diagnosis of ileus, while another patient five times. No UC patient was hospitalized for the same duration. According to the records, 2 patients (9.5%) with CD stayed in the hospital for 5 days because of ileus, while only 1 patient (6.3%) with UC stayed in for 23 days because of ileus. After the ileus the patients received conservative treatment, while only 1 patient (6.3%) underwent surgery.

Regarding patients with ileus, 33.3% of CD patients and 43.8% of UC patients had complete ileus, and they received further investigation (endoscopy) or treatment (surgery), one patient had incomplete ileus and one toxic megacolon. Regarding frequency, during their treatment, one patient had ileus 7 times, another 8 times, but no UC patient had ileus (Table 3).

Disease		N	%
CD	Final Ileus	7	33,3
	Incomplete Ileus	1	4,8
	Toxic Megacolon	1	4,8
	None	12	57,1
	Total	21	100,0
UC	Final Ileus	7	43,8
	Incomplete Ileus	1	6,3
	None	8	50,0
	Total	16	100,0
<b>Frequency of ileus</b>			
Disease		N	%
CD	0	19	90,5
	7	1	4,8
	8	1	4,8
	Total	21	100,0
UC	0	16	100,0

**Table 3:** Causes, for investigation, treatment and frequency of ileus.

Regarding the surgical treatment prior to or after the diagnosis of ileus (Table 4):

- CD patients received total colectomy (1 patient), sigmoidectomy with end anastomosis (1 patient), loop colostomy (1 patient), Loop ileostomy with restoration and recovery (1 patient).
- UC patients received total colectomy (1 patient), subtotal colectomy with ileorectal anastomosis (2 patients), left hemicolectomy (1 patient), Hartmann sigmoidectomy (1 patient).

**Discussion**

Studies on CD patients who were treated surgically, have shown that the main reasons for surgery were: the chronic disease itself (21%), the abscesses (25%), perianal disease (23%), toxic colitis and toxic mega colon (19%), and intestinal obstruction (12%) [7,16,17]. Ileostomy is a permanent or temporal surgical intervention that has an impact on the patient’s body image and their emotional status as well [7,16,17]. Regarding UC, the most common surgical operation is total colectomy with ileostomy or with the rectum preserved which may take place pre-scheduled or as an emergency procedure [10,11].

Disease		N	%
CD	Total Colectomy	1	4,8
	Sigmoidectomy with end-to-end anastomosis	1	4,8
	Loop colostomy	1	4,8
	Restoration of temporary colostomy	1	4,8
	Total	4	19,2
	None	17	80,8
	Total	21	100,0
UC	Total colectomy	1	6,3
	Subtotal colectomy with ileorectal anastomosis	2	12,5
	Subtotal colectomy Left	1	6,3
	Sigmoidectomy Hartman Procedure	1	6,3
	Total	5	31,5
	None	11	68,5
	Total	16	100,0

Table 4: Surgical treatment.

In our study, data was drawn from all the patients who had undergone surgery before or after the diagnosis of IBD. We included 1137 IBD patients, 278 of whom had undergone surgery. 16.7% of the patients had undergone a surgery before the diagnosis, usually unrelated to the disease, while 9% had been submitted to at least one operation after the diagnosis. In what regards patients diagnosed with terminal ileus, location varies between those with CD and UC. The types of surgery performed on IBD patients were more often disease-related for those with CD compared to those with UC, while 3 patients with CD and 2 with UC had had one surgery before the appearance of ileus. Endoscopy and CT scan were the most important means of checking the status of the ileus (28.6% of CD patients and 37.5% of those with UC had had endoscopy, and 19% of CD patients and 25% of UC patients received CT scans). Finally, after the diagnosis of ileus, 23.8% of CD patients and 37.5% of UC patients were submitted to surgery.

In a Greek study of IBD patients, 4.3% of those with UC had to undergo an emergency surgery due to bleeding and toxic megacolon, while the CD patients made up the 19% of an emergency surgery mainly due to ileus [18]. A prior study of IBD patients with UC showed higher incidence (13.5%) of emergency surgery [19] while another more recent study including CD patients found that the emergency surgeries were more often (20%) [20], which is in contrast with our findings that fewer patients (3.3%) had to be submitted to intra-intestinal surgery. Also, in our study only one case was submitted to emergency surgery, a quite lower percentage compared to other studies [18-20]. The most recent studies have concluded that the number of patients admitted to ER's and hospitals in general has been increasing, and the same goes for their duration of hospital stay [21-24]. Another noteworthy finding is that the patients' age range is lower, which could mean that they are better-informed and there are better methods of diagnosing and treating the disease [25].

Surgical procedures on IBD patients could lead to physical disability or higher mortality rates. Ileostomy, or for that matter any kind of stoma, is a selective intervention which is not the perfect cure for all patients, and the surgeons try to avoid or combine newer techniques [26-28]. The deterioration of the symptoms, along with timely clinical and laboratory exams can lead to direct interventions before the end ileus emerges and the surgical operation can be avoided [29-31].

**Limitations**

Regarding surgical operations on IBD patients, as well as those admitted with ileus, this study is original because of using a big sample of systematically monitored patients. Yet, a future study that could use an even wider sample from all over the country could be more reliable.

## Conclusion

Surgical operations on IBD patients, be it ileostomies or any of other kind, could potentially lead to physical disabilities. Those surgeries of course vary according to the disease (CD/UC) and the timing of the diagnosis. But in any case, the patients' situation may be aggravated if they are urgently admitted with terminal ileus.

IBD patients have to deal with several implications that make their daily lives hard. More encompassing inter-scientific approaches and better techniques are needed in order for these patients to be treated by lowering the possibility of disabling implications.

## Conflict of Interest

There is no conflict of interest of any of the authors.

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