Sexual function after proctectomy in patients with inflammatory bowel disease: A prospective study

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ABSTRACT

Background/Aims: Inflammatory bowel diseases (IBD), Crohn's disease (CD) and ulcerative colitis (UC) show a multifactorial impact on patients' quality of life, including sexual function (SF). The need for surgical intervention remains high, whereas proctectomy is frequently required in these patients. We tried to evaluate the impact of pelvic dissection during proctectomy in IBD patients' SF.

Materials and Methods: We conducted a prospective study, examining the pre- and postoperative (at 6 months) SF of 57 IBD patients that underwent proctectomy in our surgical department, in the period between 2010 and 2016. The 5-item International Index of Erectile Function (IIEF-5) and the Female Sexual Function Index were our research tools for men and women, respectively. We tried to evaluate the impact of gender, age, type of the disease, and surgical procedure on postoperative outcome.

Results: Ileal pouch-anal anastomosis (IPAA) was offered to 45 patients, whereas 12 patients underwent total proctocolectomy with permanent end ileostomy (TPC). Men showed a non-significant improvement in median IIEF-5 score after proctectomy (22.0 vs 23.0, p=0.152). The majority of men had no erectile dysfunction either before (56.4%) or after (51.3%) surgery (p=0.599). Changes remained insignificant for subgroup analysis according to age, disease and surgical procedure. Female patients had also a non-significant improvement in overall median score (23.0 vs 24.1, p=0.856). Women's score remained below the cut-off value of 26.5 for almost every subgroup analyzed.

Conclusions: Proctectomy did not affect SF of IBD patents six months after surgery. Female patients seem to face more frequently a poor SF compared to men.

Keywords: Sexual function, inflammatory bowel disease, proctectomy, Crohn's disease, ulcerative colitis

INTRODUCTION

Inflammatory bowel diseases (IBD), ulcerative colitis (UC) and Crohn's disease (CD) have shown an increasing prevalence globally in the past few years. In the last few decades, a remarkable increase in these conditions has been documented in those countries that have adopted a westernized lifestyle (1). Chronic inflammation of the gastrointestinal tract has a multifactorial impact on the patients' quality of life (QoL). A number of studies have tried to evaluate several aspects of QoL in patients with IBD, whereas others have attempted to highlight the effect of various treatment options that may favorably modify the QoL status (2-4).

Sexual function (SF) is likely to be impaired in IBD patients (5). According to recent data, sexual dysfunction (SD) in female patients is more frequent than in males, with reported rates of 40-60% and 10-50%, respectively (6,7). Disease severity seems to affect several aspects of SF, although the previous data do not consistently correlate disease activity with SD (8-10). Similarly, the literature provides conflicting evidence on the correlation of disease duration and IBD medication (such as steroids or biologics) with SD (9). On the other hand, depression being strongly related to impaired sexual function for both males and females is a common and consistent finding (9,11).

The surgical intervention rates for IBD, although reduced in the past few decades, still remain high; 47% of CD patients and 16% of UC patients need surgery within 10 years after their initial diagnosis (12). In general, SF seems not to be affected by surgical procedures, regardless of the type of intervention (11). On the other hand, SD is a frequent complication after proctectomy, as pelvic dissection may result in injury to the autonomic nerves (13). Evidence suggest that proctocolectomy may have a beneficial effect on SF in both male and female patients (14,15).

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Since data from prospective cohorts that examined both the postoperative and the preoperative SF are limited (9,11), we conducted this study in order to assess the impact of proctectomy on the patients' SF by examining the postoperative outcome according to gender, age, type of IBD, and surgical procedure.

MATERIALS AND METHODS

Between 2010 and 2016, 84 IBD patients underwent proctectomy either for UC or CD in our surgical department. In patients with UC, the surgical procedure was either restorative proctocolectomy with ileal pouch-anal anastomosis (IPAA) or total proctocolectomy with permanent end ileostomy (TPC). On the other hand, all patients with CD who were included in our study underwent TPC.

We prospectively evaluated the SF of these patients via validated questionnaires that were completed by the patients before proctectomy (on hospital admission) procedure and at 6 months postoperatively, after obtaining informed consent from each participant. The exclusion criteria were: patient age of <18 years, patients with prior pelvic dissection (e.g. prostatectomy, hysterectomy, IPAA), and patients who were taking medication that may have possible effects on SF (e.g., anti-hypertensive drugs, contraceptives, ointments, antidepressants, and phosphodiesterase type 5 inhibitors) or may display important co-morbidities with an impact on SF (e.g depression, diabetes, atherosclerosis). Finally, 57 patients who met the inclusion criteria were included for questionnaire distribution.

All operations were performed as open procedures by the same consultant colorectal surgeon. Rectal dissection was performed in the total mesorectal excision plane (TME) posterolaterally, combined with a close rectal dissection (posterior to Denonvillier's fascia) anteriorly. For IPAA procedures, a J-shaped ileal pouch was constructed and a stapled or hand-sewn ileo-anal anastomosis was performed. As for TPC, the rectal dissection was performed similarly to the IPAA procedure, whereas the perineal dissection was performed in the intersphincteric plane. The proctectomy for IPAA was performed within the framework of either a three-stage procedure (subtotal colectomy with end ileostomy, followed by a proctectomy and J-shaped IPAA with a diverting ileostomy) or a two-stage procedure (proctocolectomy with J-shaped IPAA and diverting ileostomy). All diverting ileostomies were reversed 3 months after the IPAA surgery.

The Greek translation of the 5-item International Index of Erectile Function (IIEF-5) was used to assess the men's sexual function. The IIEF-5 questionnaire consists of 5 questions, each of which can have a response that is scored from 0 or 1 to 5. Thus, the total score ranges from 1 to 25, with higher values indicating better SF. Moreover, erectile dysfunction (ED) is characterized according to the total score as severe (score 1-7), moderate (score 8 to 11), mild-moderate (score 12 to 16), mild (score 17 to 21), and absent (score 22 to 25) (16). As for women, the validated Greek version of the Female Sexual Function Index (FSFI) was our research tool. The FSFI consists of 19 questions with a scoring scale of 0 or 1 to 5 for each question. As with IIEF-5, a higher total score is associated with better SF. The FSFI questions are further divided into 6 categories: desire, arousal, lubrication, orgasm, satisfaction, and pain (17,18). A total score of <26.5 indicates abnormal sexual function (19).

Statistical analysis

Categorial variables were presented as absolute and relative frequencies (%). The normality of distribution for quantitative variables was evaluated using the Kolmogorov-Smirnov test. The mean value (±standard deviation) was used to describe normally distributed variables, whereas non-normally distributed variables were presented as median (25^{th}-75^{th} interquartiles). The Pearson's chi-square test or Fisher's exact test were used to compare categorical variables and the independent samples t-test was used for normally distributed continuous data. The McNemar-Bowker test was used to assess paired nominal variables (pre and postoperatively). Since the distributions of questionnaire scores were non-normal, we used the non-parametric Wilcoxon sign-ranked test for comparison of the paired preoperative and postoperative scores. All p-values were 2-sided, and p-values of <0.05 were considered statistically significant.

All calculations were performed on Statistical Package for Social Sciences version 23.0 (IBM Corp.; Armonk, NYC, USA).

RESULTS

The baseline characteristics of 57 patients included in this study are presented in Table 1. The patient age ranged from 18-60 years, with a mean age of 34.9 years (35.1 years for males, 33.3 years for females). The majority of patients were men (39/57, 68.4%). Ulcerative colitis was the predominant disease for both males (89.7%) and females (72.2%). Similarly, restorative proctocolectomy was the most frequently undergone surgical procedure;

the majority of males (84.6%) and females (66.7%) underwent IPAA. Two-stage IPAA was offered in 66.7% of men and 83.3 of women, whereas hand-sewn anastomosis was performed in only 1 male patient.

Impact of gender on SF

Since the questionnaires were different for male and female patients, we conducted a comparison between the sexes according to whether there was deterioration, stability, or improvement in the postoperative questionnaire scores. Deterioration was recorded in 38.5%, improvement in 25.6%, and no change in the total score in 35.9% of male patients. For female patients, the rates were 50%, 38.9%, and 11.1%, respectively (Table 2). Although female patients seemed to face deterioration more frequently than men, no statistical significance was reached (p=0.149).

Table 1. Baseline characteristics of patients

Sex	Male (n=39)	Female (n=18)	p
Age (Mean±SD)	35.1±12.2	33.3±10.7	0.819
Disease			
Ulcerative colitis	35 (89.7%)	13 (72.2%)	
Crohn's disease	4 (10.3%)	5 (27.8%)	0.260
Surgical procedure			
IPAA	33 (84.6%)	12 (66.7%)	
Stapled vs Hand-sewn	32 (97%) / 1 (3%)	12 (100%) / 0 (0%)	
Two-stage vs Three-stage	22 (66.7%) / 11 (33.3%)	10 (83.3%) / 2 (16.7%)	
TPC	6 (15.4%)	6 (33.3%)	0.165

IPAA= ileal pouch-anal anastomosis; TPC= total proctocolectomy; n=number of patients.

Table 2. Gender and SF

Sexual Function	Sex		
	Male (n=39)	Female (n=18)	p
Deterioration	15 (38.5%)	9 (50%)	0.149
Stable	14 (35.9%)	2 (11.1%)	
Improvement	10 (25.6%)	7 (38.9%)	

SF= Sexual Function; n=number of patients.

Table 3. Severity of ED before and after surgery

Severity of ED	Preoperative	Postoperative	
	n (%)	n (%)	p
Severe	1 (2.6%)	2 (5.1%)	p=0.599
Moderate	1 (2.6%)	3 (7.7%)	
Mild-moderate	4 (10.3%)	5 (12.8%)	
Mild	11 (28.2%)	9 (23.1 %)	
Absent	22 (56.4%)	20 (51.3%)	

ED=erectile dysfunction; n=number of patients.

Male sexual function

Severe ED was recorded in 2.6% of patients before pelvic dissection. Moderate, mild-moderate, and mild ED was found in 2.6%, 10.3%, and 28.2% respectively. ED was absent in 56.4% of males. Six months after the surgery, the number of patients with mild or absent ED had decreased (23.1% and 51.3%, respectively), whereas the frequencies of mild-moderate, moderate, and severe ED had increased (12.8%, 7.7%, 5.1%, respectively). Nevertheless, this trend for worse postoperative outcome was not significant (p=0.599) (Table 3). Interestingly, the majority of the men had no ED either before (56.4%) or after (51.3%) the surgery.

The IIEF-5 median score before and after proctectomy was not recorded as significantly improved (22.0 vs 23.0, p=0.152). Similarly, neither males with UC showed significant changes, nor those with CD. When the type of operation was considered, we also found that changes were not statistically significant for either the IPAA or the TPC group. Median values remained above the cut-off value of 21, pre and postoperatively, in all of the subgroups examined above. On the contrary, although the changes in SF did not reach statistical significance in any subgroup, when our sample was divided according to age, it was found that older males (51-60 years) seemed to face ED pre and postoperatively. Interestingly, men aged 31-40 years presented a marginally insignificant deterioration in SF (22.0 years vs 18.5, p=0.084) (Table 4).

Female sexual function

Using the cut-off score of 26.5 for the discrimination of females with impaired SF, we found abnormal SF in 12 (66.7%) patients pre and postoperatively (data not shown). The median score was not significantly different either for the total score (23.0 vs 24.1, p=0.856), or for the category-based comparisons (desire, arousal, lubrication, orgasm, satisfaction, and pain) (Table 5). Further analyses that divided the female patients according to their age, disease, and surgical procedure could not indicate statistically significant changes for the overall scores or the distinct categories of female SF (Table 6). An interesting finding was that, as opposed to men, the median total scores remained under the cut-off value of 26.5 in all subgroups examined in the pre and postoperative pe-

Table 4. Male IIEF-5 score before and after surgery

		n	Preoperative (Median, 25th – 75th IQR)	Postoperative (Median, 25th – 75th IQR)	p
- Overall		39	22.0 (18.0-25.0)	23.0 (16.0-25.0)	0.152
- Age-specific	≤20	6	23.0 (20.0-25.0)	24.5 (19.0-25.0)	0.655
	21-30	11	24.0 (18.0-25.0)	24.0 (14.0-25.0)	0.916
	31-40	8	22.0 (15.5-24.0)	18.5 (10.3-24.0)	0.084
	41-50	9	24.0 (18.0-25.0)	20.0 (19.0-25.0)	0.344
	51-60	5	18.0 (10.5-21.0)	13.0 (8.0-20.5)	0.588
- Disease-specific	UC	35	22.0 (18.0-25.0)	23.0 (14.0-25.0)	0.151
	CD	4	22.5 (17.3-24.8)	21.5 (16.8-24.8)	0.990
- Surgery-specific	IPAA	33	22.0 (18.0-25.0)	23.0 (15.5-25.0)	0.221
	TPC	6	22.5 (15.5-25.0)	21.5 (14.0-25.0)	0.713

IIEF-5= 5-item International Index for Erectile Function; UC= Ulcerative Colitis; CD= Crohn's Disease; IPAA= Ileal Pouch-Anal Anastomosis; TPC= Total proctocolectomy; n=number of patients; IQR= interquartile range.

Table 5. Female FSFI scores before and after surgery

	n	Preoperative (Median, 25th – 75th IQR)	Postoperative (Median, 25th – 75th IQR)	p
- Overall	18	23.0 (6.5-28.0)	24.1 (6.8-27.0)	0.856
- Desire	18	3.6 (2.1-4.8)	3.9 (2.4-4.8)	0.305
- Arousal	18	3.9 (0.9-4.9)	3.9 (0.9-4.9)	0.875
- Lubrication	18	4.4 (0.9-5.1)	3.9 (0.9-4.9)	0.306
- Orgasm	18	4.0 (0.9-4.5)	4.0 (0.9-4.5)	0.959
- Satisfaction	18	4.0 (1.1-4.8)	4.0 (1.1-5.2)	0.752
- Pain	18	3.0 (0.9-4.5)	3.2 (0.9-4.8)	0.950

FSFI= Female Sexual Function Index; n= number of patients; IQR= interquartile range.

riod, except for the postoperative IPAA subgroup. However, the improvement was not statistically significant. Moreover, conducting a statistical analysis according to age was feasible only for the subgroups of ages 21-30 years and 31-40 years (Table 5, 6).

DISCUSSION

Several studies have tried to evaluate the SF of IBD patients after surgery, but only a few of them were designed in a prospective setting that took into account not only the postoperative but also the preoperative status (9, 11). In this prospective cohort, we tried to highlight the impact of pelvic dissection during proctectomy on the SF of IBD patients in a short postoperative period.

Our findings suggest that SF for both male and female patients is not significantly affected by proctectomy at 6 months after surgery. We cannot confirm the results of Wang's prospective cohort in 2011 (n=66), in which men reported significant improvement in the field of 'Erectile Function' in the 15-item IIEF (15). Since our research tool was the simplified IIEF-5, other areas of male SF such as orgasmic function, desire, intercourse, and overall satisfaction could not be estimated. Moreover, in this study, women seemed to benefit less than men in the different areas of FSFI, reporting only increased 'Desire' at 6 months after proctectomy (15). We could not reproduce this finding, even though in the other fields of female SF (arousal, lubrication, orgasm, satisfaction, pain) as well as the total score, we found no significant change in the postoperative period.

The relatively young mean age of our sample (35.1 years for men, 33.3 years for women) reflects the fact that IBD onset reaches its peak between 20-40 years (20). In our cohort, approximately 50% of male patients (19 out of

Table 6. Female FSFI scores according to age, disease and operation

		n		Preoperative (Median, 25th – 75th IQR)	Postoperative (Median, 25th – 75th IQR)	p
- Age-specific	≤20	1	- Overall	NA	NA	NA
	21-30	6	- Overall	25.6 (13.5-28.7)	26.1 (18.4-28.9)	0.893
		6	- Desire	3.3 (2.6-4.4)	3.6 (2.6-4.8)	0.539
		6	- Arousal	4.2 (1.6-5.1)	4.2 (2.7-5.1)	1.000
		6	- Lubrication	4.9 (3.2-5.4)	4.5 (2.9-5.0)	0.581
		6	- Orgasm	4.0 (2.4-4.2)	4.2 (3.0-6.0)	0.285
		6	- Satisfaction	4.2 (2.0-5.1)	5.0 (3.5-5.4)	0.343
		6	- Pain	4.6 (1.8-4.9)	3.8 (1.2-5.7)	0.893
	31-40	8	- Overall	25.3 (9.4-28.4)	23.3 (7.8-26.5)	0.944
		8	- Desire	3.6 (1.5-4.8)	4.5 (2.7-5.3)	0.526
		8	- Arousal	3.9 (1.2-5.0)	3.9 (1.2-5.0)	1.000
		8	- Lubrication	4.5 (1.8-5.1)	3.8 (1.2-5.0)	0.343
		8	- Orgasm	4.2 (1.8-4.8)	3.6 (1.2-4.7)	0.197
		8	- Satisfaction	4.4 (1.2-5.1)	3.4 (1.2-4.9)	0.498
		8	- Pain	3.0 (1.5-3.9)	3.2 (1.2-3.6)	0.746
	41-50	1	- Overall	NA	NA	NA
	51-60	2	- Overall	NA	NA	NA
- Disease-specific	UC	13	- Overall	23.6 (10.2-27.5)	24.2 (6.4-28.6)	0.929
		13	- Desire	3.6 (2.7-4.8)	4.2 (2.1-4.8)	0.622
		13	- Arousal	3.9 (0.6-4.7)	3.9 (0.6-4.1)	0.720
		13	- Lubrication	4.5 (1.8-5.3)	3.9 (0.6-5.3)	0.573
		13	- Orgasm	4.0 (1.4-4.6)	4.0 (0.6-4.6)	0.905
		13	- Satisfaction	4.0 (1.0-4.8)	4.0 (1.0-5.0)	0.929
		13	- Pain	2.4 (1.2-4.2)	3.2 (0.6-4.8)	0.990
	CD	5	- Overall	21.8 (4.6-28.4)	19.2 (7.6-26.9)	0.998
		5	- Desire	2.4 (1.2-3.9)	3.6 (2.4-4.8)	0.273
		5	- Arousal	3.9 (0.6-5.1)	2.7 (0.6-4.4)	0.180
		5	- Lubrication	3.9 (0.6-5.0)	2.1 (0.6-4.5)	0.180
		5	- Orgasm	4.0 (0.6-4.8)	3.6 (0.6-4.6)	0.317
		5	- Satisfaction	3.6 (1.0-4.8)	4.0 (1.0-5.2)	0.180
		5	- Pain	3.6 (0.6-5.0)	3.6 (0.6-5.0)	1.000
- Surgery-specific	IPAA	12	- Overall	23.9 (7.3-27.8)	27.7 (9.8-29.4)	0.721
		12	- Desire	3.6 (2.6-4.8)	4.5 (3.2-4.8)	0.201
		12	- Arousal	3.9 (0.3-4.7)	4.2 (1.0-5.3)	0.512
		12	- Lubrication	4.4 (0.9-5.3)	4.4 (0.9-5.0)	0.858
		12	- Orgasm	3.8 (0.7-4.7)	4.0 (0.8-4.7)	0.574
		12	- Satisfaction	4.0 (0.9-4.8)	4.2 (1.3-5.1)	0.645
		12	- Pain	3.0 (0.6-4.3)	3.2 (0.4-4.8)	0.838
	TPC	6	- Overall	22.7 (5.9-28.2)	14.4 (6.8-26.6)	0.528
		6	- Desire	3.0 (1.2-4.4)	3.0 (2.1-4.8)	0.786
		6	- Arousal	3.6 (0.9-5.1)	2.0 (0.9-4.0)	0.109
		6	- Lubrication	4.4 (0.9-5.1)	1.7 (0.9-4.4)	0.109
		6	- Orgasm	4.0 (0.9-4.6)	2.4 (0.9-4.3)	0.180
		6	- Satisfaction	3.8 (1.1-4.6)	2.6 (1.1-5.2)	0.910
		6	- Pain	3.0 (0.9-4.9)	2.4 (0.9-4.7)	0.461

FSFI= Female Sexual Function Index; UC= Ulcerative Colitis; CD= Crohn's Disease; IPAA= Ileal Pouch-Anal Anastomosis; TPC= Total Proctocolectomy; n= number of patients; IQR= interquartile range.

39) and the majority of female patients (14 out of 18) had been operated upon this timeframe. Although the assessment of the fertility status was out of the scope of this study, we could speculate that SD could be an aggravating factor for couples in the reproductive age, and could directly affect fertility in some cases (21). The age-related male subgroup analysis showed that ED was present before and after proctectomy in patients >50 years of age, although this was insignificantly affected by surgery. Male patients between the ages of 31 years and 40 years showed a trend for lower IIEF-5 scores, below the cut-off value of 21 postoperatively, with borderline significance (p=0.084). Similarly, women in different age groups were not significantly affected by proctectomy; our findings suggest that proctectomy had no significant impact on different age groups.

We showed that there was no notable change on SF when our sample was divided according to the surgical procedure. IPAA is the procedure of choice for UC surgical treatment, showing a beneficial effect on the patients' QoL (22-24). In our cohort, there was a non-significant trend for improved outcomes in both male and female SF at 6 months after the IPAA. The previous scientific data are inconsistent regarding this issue; a Canadian prospective cohort (n=59) that included only patients undergoing IPAA demonstrated no effect on either male or female sexuality 6 months after surgery. A re-evaluation of SF 12 months postoperatively within this cohort revealed significantly improved results only for the female patients (14). Further, a prospective study by Berndtsson (n=43), performed without the use of validated instruments and without assessing SF 6 months after IPAA, also reported improvement in overall sexual satisfaction 1 year after restorative proctocolectomy (25). On the contrary, Wang et al. (15) reported significant improvement in the total IIEF score 6 months postoperatively. Since the 'erectile function' field of the 15-item IIEF was not significantly changed, we could assume Wang et al. (15) concordance with our results. Interestingly, we found that desire was the most improved category in female SF (3.6 before vs 4.5 after IPAA) that failed to reach statistical significance; this could be attributed to the small sample size. In Wang's cohort, desire was the only significantly improved factor in women's SF (2.4 before vs 4.2 after IPAA). The preoperative median score was remarkably lower in that cohort as compared to our study.

In our cohort, the majority of TPC procedures were performed on CD patients (4 out of 6 for men and 5 out of 6 for women); all of the CD patients previously suffered from severe perianal CD with abscesses and complex fistulas. Nevertheless, preoperative SD (according to questionnaires' cut-off values) was present only in women with CD. According to our findings, TPC seemed to offer a non-significant deleterious effect on both men and women. One could assume that the permanent end ileostomy in this subgroup could negatively affect several aspects of social life, self-estimation, and body image, leading to impaired SF of patients and/or their partners (26-28). We could not confirm this speculation, even though a small proportion of our sample (n=12) underwent TPC with permanent end ileostomy. Our results are in accordance with a previous prospective cohort study (15).

On the other hand, all patients who underwent IPAA surgery had undergone a temporary ileostomy for a period of 3-6 months. The subgroup of 'three-stage procedure' patients completed their preoperative questionnaires before the completion proctectomy and under the presence of an end ileostomy, whereas the postoperative data were retrieved after the closure of the diverting ileostomy. A limitation for further analysis and interpretation of the results was the absence of data regarding the precolectomy sexual status in the aforementioned subgroup. Nevertheless, the SF of the IPAA group was not significantly affected by proctectomy either for the 'three-stage' or the 'two-stage' subgroup (data not shown). Recently, Sunde et al. (29) found that sexual dysfunction in women is associated with poor pouch function. Correlation of SF with pouch function was out of the scope of our cohort.

Another issue that should be highlighted is the fact that our surgical team performed rectal dissection for all the patients in the TME plane posterolaterally, staying closer to the rectal wall anteriorly. A recent study by Hicks et al. (30) examined the impact of dissection plane (intramesorectal vs TME) on bowel and sexual function and found that SF was not affected by the type of dissection, even if fecal continence was impaired in the TME group. The theoretical advantage of close rectal dissection during intramesorectal excision is that it can reduce the risk for autonomic nerve injury, leading to better pelvic organ function after surgery. However, this advantage should be outweighed against the risk for bleeding and the presence of dysplasia or cancer (30). Our results indicate that dissection in the TME plane during IPAA as well as TPC does not affect SF. Another technical aspect is that almost all IPAAs were performed using circular staplers; only 1 male patient who had ultra-low, high-grade dysplasia underwent rectal mucosectomy with hand-sewn anastomosis. Thus, the impact of hand-sewn anastomo-

sis on SF could not be subjected to further analysis. Data from a recent retrospective study showed no superiority of one type of anastomosis over the other with regards to SF and fertility (31).

Different questionnaires for male and female patients made the comparison between the sexes difficult. At present, there are no validated SF questionnaires in the Greek language for both men and women. However, we tried to examine the impact of proctectomy according to whether there was an improvement in the total scores between the preoperative and postoperative period. About 50% of the women and 38.5% of the men showed deterioration, although statistical significance was not reached. Interestingly, using the cut-off values of each questionnaire, we found that the majority of men had no ED either before or after surgery, even after examining the median total scores of IIEF-5 that were recorded over 21 in almost every subgroup. On the other hand, the majority of women had impaired SF, both in the pre and postoperative period, with median scores of FSFI under 26.5 in almost every subgroup that was analyzed. These findings could indicate a trend of worse SF among women with IBD, although our study showed that proctectomy did not have a clear effect on the sexual life of these patients. A number of studies have also reported that poor SF is faced more frequently in female patients with IBD (11,32,33).

Although this study had a prospective design considering the baseline preoperative SF, it did have some limitations. First, the sample size was relatively small, which could be attributed partly to the strict inclusion criteria, which were set as an attempt to reduce the potential confounding factors and exclude patients with co-morbidities affecting SF. Thus, this highly selected sample was amenable to selection bias. Secondly, till date, the IIEF-5 questionnaire has not been validated in the Greek language. Thirdly, the follow-up period was kept short, even though long-term results may have demonstrated a clear impact of proctectomy on the SF of IBD patients. Although data regarding long-term follow-up are limited, we believe that, given the fact that surgery seems to offer beneficial effects on various aspects of QoL and shows no deleterious effect on high-quality preoperative relationships between patients and their partners (34-36), the SF during long-term follow-up may not deteriorate. Furthermore, since the evidence suggests that medical treatment could dramatically improve SD after proctectomy (37), proper consultation from specialized physicians is strongly recommended in all patients with post-proctectomy SD. Thus, we could speculate that proper management may improve the sexual status in the majority of IBD patients in a prolonged follow-up period.

In conclusion, this study showed that proctectomy did not affect the SF of patients with IBD 6 months after surgery. This finding was consistent regardless of the age, type of surgery, or type of disease. Female patients seem to face more frequently poor SF compared to men, although proctectomy shows no effect in the sexual life of both sexes. Careful nerve-sparing rectal dissection by experienced colorectal surgeons should be the cornerstone for IBD patients requiring proctectomy.

Ethics Committee Approval: Ethics committee approval for this study was received from the Scientific Committee of the Aretaieion University Hospital.

Informed Consent: Written informed consent was obtained from all patients who participated in this study.

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