Surgical treatment of inflammatory bowel diseases in northwestern Italy: a multicentric study by the G.S.M.I.I.

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Surgery plays a key role in the management of Inflammatory Bowel Disease (IBD), both in ulcerative colitis and in Crohn's disease. Over the last few years, important technical changes have been introduced in the surgical approach to IBD patients. In ulcerative colitis, the goal of preserving a normal sphincter function has led to the development of sphincter-saving operations such as ileal-pouch anal anastomosis (1-2). In Crohn's disease, the changes were the result of a 'philosophical' shift from an aggressive surgical approach aimed at removing as much of the inflamed bowel as possible to a less aggressive attitude aimed at sparing tissue by conservative operations such as stricturoplasty (3).

However, the extent to which these new operations are adopted in clinical practice and the indications for which they are used is poorly defined.

The aim of this multicentre retrospective study was to evaluate the surgical approach (indications, timing and type of operation) to chronic inflammatory bowel disease in Northern Italy, and the impact of the new surgical techniques introduced in the late eighties to treat these diseases.

Abstract

Background and aims: *Improved medical therapy and bowel sparing and sphincter saving techniques have changed surgery for UC and CD. Collaboration between gastroenterologists and surgeons is necessary to uniform the indications for surgical treatment reducing emergency operations.*
GISMII multicentric study aimed to show indications, timing and impact of surgery, through retrospective analysis of cases observed between 1992 to 1996.
Methods: *Data were obtained by 16 departments of General Surgery.*
Results: *102 UC and 376 CD patients were analized.*
In UC patients surgery was performed for failure of medical therapy in 54%, complications in 28.4%, cancer or dysplasia in 10% of cases, 83.3% elective procedures. 30.4% ileo-anal pouch, 30.4% total procto-colectomies with definitive ileostomies, 32.4% total colectomies with ileo-rectal anastomosis, 6.8% segmental resections, were performed.
In CD patients surgery was performed in 21% for medical therapy failure, in 79% for complications. 53.4% of patients were submitted to 1 operation, 84% elective procedures. Reoperations were performed in 46.6% of patients, 70.3% elective procedures. In the first operation bowel resection was performed in 79.1%, stricturoplasty in 14.3%; in the subsequent operations bowel resection 62.8%, stricturoplasty 21.7%, increasing number of temporary or definitive ileostomies.
Conclusions: *Collaboration between gastroenterologists and surgeons is necessary to obtain optimal results, reducing the incidence of emergency surgery, and complications. The short period observed between diagnosis and operation (21.4 months) is due to the increasing tendency of gastroenterologists to anticipate a surgical procedure when young patients with a chronic disease need a prolonged medical therapy.*
Key words: Inflammatory bowel disease, retrospective multicentric study.

Abbreviations:

IBD: Inflammatory Bowel Disease
UC: Ulcerative Colitis
CD: Crohn's Disease
IC: Indeterminate Colitis
GSMII: Inflammatory Bowel Diseases Study Group

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Riassunto

INTERVENTI CHIRURGICI PER MALATTIE INFIAMMATORIE DELL'INTESTINO NEL NORD ITALIA. STUDIO MULTICENTRICO DEL G.S.M.I.I.

Il miglioramento della terapia medica, l'impatto di tecniche "bowel sparing" e "sphincter saving" hanno cambiato la chirurgia della rettocolite ulcerosa (RCU) e del morbo di Crohn (MdC). La collaborazione tra gastroenterologi e chirurghi è necessaria per uniformare le indicazioni del trattamento chirurgico e per ridurre gli interventi eseguiti in urgenza.
L'obiettivo di questo studio multicentrico è fotografare le indicazioni, il timing ed il tipo di interventi chirurgici, attraverso l'analisi retrospettiva di casi osservati nel Nord Italia dal 1992 al 1996.
Metodi: *i dati sono stati ottenuti da 16 Divisioni di Chirurgia Generale del Nord Italia.*
Risultati: sono stati analizzati 102 Pz con RCU e 376 con MdC. Nei pazienti con RCU gli interventi chirurgici sono stati eseguiti per: 54% fallimento della terapia medica, 28.4% complicanze, 10% tumore o displasia; 83.3% delle procedure sono state eseguite in elezione. In totale sono state eseguite 30.4% ileo-anal pouch, 30.4% procto-colectomie totali con ileostomia definitiva, 32.4% colectomie totali con anastomosi ileo-rettale, 6.8% resezioni segmentarie.
Nei pazienti con MdC gli interventi chirurgici sono stati eseguiti per: 21% fallimento della terapia medica, 79% complicanze. Il 53.4% dei pazienti è stato sottoposto ad un intervento, in elezione nell'84% dei casi. Reinterventi sono stati eseguiti nel 46.6% dei pazienti, in elezione nel 70.3% dei casi. Nel primo intervento le resezioni intestinali sono state eseguite nel 79.1%, stricturoplastiche nel 14.3%; nei reinterventi le resezioni intestinali sono state eseguite nel 62.8%, le stricturoplastiche nel 21.7%, con aumento del numero di stomie temporanee o definitive.
Conclusioni: *la collaborazione tra gastroenterologi e chirurghi è necessaria per ottenere risultati ottimali, con riduzione degli interventi in urgenza e delle complicanze. Il breve lasso di tempo trascorso tra diagnosi ed intervento (21.4 mesi) è determinato dalla maggiore tendenza dei gastroenterologi ad anticipare l'intervento chirurgico, soprattutto in caso di pazienti giovani affetti da malattia cronica sottoposti ai possibili effetti collaterali di una terapia medica prolungata.*
Parole chiave: Malattie infiammatorie croniche intestinali, studio prospettivo multicentrico.

Materials and methods

The study was conducted in 16 surgical divisions in Lombardy and Piedmont to which IBD patients seen at the Gastroenterology Centers members of the G.S.M.I.I. (Inflammatory Bowel Diseases Study Group) are referred for operation.
Data collection was standardized by developing a "Case Report Form" which focused on the characteristics of the disease prior to the operation, the indications for surgery and the type of operation performed. The Case Report Form consisted of 4 sections: a) personal data, b) history of disease, c) indications for surgery with pre-operative diagnostic tests, and d) type of surgery and intra-operative findings, histopathological findings, morbidity and mortality.
The diagnosis of ulcerative colitis, Crohn's disease or indeterminate colitis was made in accordance with the Lennard-Jones criteria (4). The extent of the ulcerative colitis was determined endoscopically; an extent not exceeding 15 cm from the anus was defined as proctitis. The severity of the disease was classified in accordance with the Truelove and Witts criteria (5). The extent and characteristics of Crohn's disease were determined by endoscopic or radiological techniques and confirmed by laparotomy and subsequent histological examination, while the activity of disease was quantified with the Crohn's Disease Activity Index (CDAI) (6-7).
Data were collected about patients operated on during the five-year period between 1992 and 1996 inclusive. The data return from the various centers was very variable; some divisions only sent forms for patients suffering from CD or UC, while others sent forms for both diseases. The number of forms sent ranged between a minimum of 2 and a maximum of 119.
A clear distinction was made between the number of patients and the number of operations, because some patients underwent more than one operation during the 5-year period in question or were operated on before or after that period (for example, total proctocolectomy with pouch is an operation which is generally completed in more than one stage).
UC cases were broken down in accordance with the extent of the disease, and CD cases on the basis of the site and pattern of the disease (inflammatory, fibrostenotic or fistulizing). This classification was compared with the histopathological findings on surgical specimens, completed by a description of the intra-operative findings. This allowed the accuracy of the pre-operative diagnosis to be evaluated.
The indication for surgery was defined as the onset of complications (abscess, fistula, stenosis, cancer or hemorrhage) or failure of medical treatment, which in turn was defined as failure to respond to steroids or immunosuppressive drugs, steroid dependence, side effects of drugs, retarded development or growth, serious extra-intestinal symptoms, or severe anemia persisting despite adequate treatment. Patients who underwent emergency or elective operations were analyzed separately.
The findings for patients suffering from UC and CD were analyzed separately, using analysis of variance, and considering each variable as independent. The level of statistical significance was set at $p < 0.05$ (8).

Results

Four hundred eighty-one patients were recruited in the study, as shown in Table I.

Table I – DEMOGRAPHIC CHARACTERISTICS OF THE PATIENTS

	Total (%)	*Male (%)*	*Female (%)*	*Age (years)*
CD	376 (78.5)	218 (45.3)	158 (32.9)	41.4
UC	102 (21.2)	64 (13.3)	38 (7.9)	42.5
IC	3 (0.7)	3 (0.6)	0 (0)	35.3
Total (%)	481 (100)	285 (59.2)	196 (40.8)	41.7

A) Ulcerative colitis

One hundred and two patients, 64 men (62.7%) and 38 women (37.3%), with a mean age of 42.5 years (range 18-63), underwent a total of 146 operations for UC during the study period. The extent of the disease at the time of the operation is shown in Table II: although pancolitis was present in the majority of cases, more than 20% of patients had proctitis or proctosigmoiditis. The mean duration of the disease before surgery was 31.4 months, with a range of 4 to 60 months.

The indications for surgery are illustrated in Table III and IV: overall, failure of medical treatment was the most common, while cancer or dysplasia represented about 10% of cases. Emergency operations were performed in 17 cases, while the remaining 85 underwent elective interventions. Indications for surgery in the two above mentioned situations were different: complications were the most prevalent indications for emergency operations, while failure of medical treatment represented the majority in electively operated patients ($p < 0.001$).

Eight patients (7.8%) were operated on for cancer and 2 (1.9%) for dysplasia; the tumors were located in the right colon in 3 cases, the transverse colon in 1 case and the sigma-rectum in 4 cases.

In the emergency situation, *the type of operation* was total colectomy in 13 cases (76.4%), proctocolectomy in 2 cases (11.8%), and subtotal colectomy and drainage of a presacral abscess in the pouch in 1 case each (5.9%) (Table V). Table V also shows the types of operations which were performed electively.

Patients operated in urgent conditions were submitted to more procedures (first total colectomies, followed by restorative procedures): more surgical operations than patients have been registered in the collected data. At the end of the surgical process, 31 patients (30.4%) had an ileo-anal anastomosis with pouch, 31 (30.4%) a permanent ileostomy and 33 (32.4%) an ileo-rectal anastomosis, while the other 7 (6.8%) underwent segmental colon resections. 30 of the 31 patients who underwent ileo-anal anastomosis with pouch had a protective ileostomy.

There was no peri-operative mortality. Surgical compli-

Table II – ULCERATIVE COLITIS - EXTENT OF DISEASE AT TIME OF OPERATION (FOR PATIENTS WITH MORE THAN ONE OPERATION, THE EXTENT OF THE DISEASE AT THE TIME OF THE FIRST OPERATION IS GIVEN

Site	*Number*	*%*
Pancolitis	64	62.7
Left-sided colitis	11	10.8
Proctosigmoiditis	19	18.6
Proctitis	2	1.9
Proctitis of rectal stump	6	5.8

Table III – ULCERATIVE COLITIS - SURGICAL INDICATIONS FOR ELECTIVE AND EMERGENCY OPERATIONS

Indication	*Total*		*Emergency*		*Elective*	
	N°	*%*	*N°*	*%*	*N°*	*%*
N° of patients	102	100.0	17	100.0	85	100.0
Failure of medical treatment	55	54.0	4	23.6	51	60.0
Complications	33	32.3	13	76.4	20	23.5
– Hemorrhage	13	12.7	4	23.5	9	10.6
– Megacolon	9	8.8	7	41.2	2	2.3
– Acute abdomen	2	2.0	2	11.7	0	0.0
– Fistulas	5	4.9	0	0.0	5	5.9
– Stenosis	4	4.0	0	0.0	4	4.7
Cancer	8	7.8	0	0.0	8	9.5
Dysplasia	2	2.0	0	0.0	2	2.4
Ostomy take-down	4	4.0	0	0.0	4	4.7

Table IV – SURGICAL INDICATIONS FOR SCHEDULED OPERATIONS (85 PATIENTS), BASED ON THE EXTENT OF THE DISEASE. *DYSPLASIA 2, OSTOMY TAKE-DOWN 4.
FMT: FAILURE OF MEDICAL TREATMENT

	FMT	*Haemorrhage*	*Megacolon*	*Acute abdomen*	*Cancer*	*Stenosis*	*Fistulas*	*Other*
Pancolitis	36	4	2	0	4	0	1	4
Left-sided colitis	9	1	0	0	2	0	3	2
Proctosigmoiditis	4	1	0	0	2	2	0	0
Proctitis	1	1	0	0	0	0	0	0
Proctitis of rectal stump	1	2	0	0	0	2	1	0

Table V – ULCERATIVE COLITIS - TYPES OF OPERATION PERFORMED IN THE EMERGENCY AND ELECTIVE SITUATION

Operation	*Total*	*Emergency (%)*	*Elective (%)*
Total colectomy	50 (34.2)	13 (76.5)	37 (28.6)
Proctocolectomy	35 (23.9)	2 (11.7)	33 (25.6)
Proctectomy	15 (10.3)	0	15 (11.6)
IAA-pouch	34 (23.3)	0	34 (26.3)
Subtotal colectomy	3 (2.1)	1 (5.9)	2 (1.6)
Left hemicolectomy	2 (1.4)	0	2 (1.6)
Segmental resection	4 (2.7)	0	4 (3.1)
Other	3 (2.1)	1 (5.9)	2 (1.6)

cations were recorded in 11.7% of cases, the most frequent being anastomotic leak (60%). Only one patient underwent removal of the ileal pouch during the observation period.

B) Crohn's disease

Three hundred seventy-six patients (218 men, 158 women, mean age of 41.4 years, range 16-70) with CD were operated on during the study period. The location of the disease was jejuno-ileal in 191 cases (50.7%), ileo-colic in 119 (31.6%), colonic in 47 (12.5%), and perianal in 19 (5.2%); the latter figures underestimate the clinical reality, because many proctologic operations are performed on an outpatient basis, and therefore not registered in the inpatient records.

The pattern of the disease, based on the clinical pre-operative assessment was inflammatory in 17.8% of patients, fistulizing 33.7% and fibro-stenotic in 48.5% (Table VI). When compared with the intra-operative evaluation, this assessment proved to be very accurate for the fistulizing forms, while the clinical evaluation tended to classify some inflammatory forms as fibro-stenotic (Table VI). This was because in some cases the narrowing of the lumen observed at endoscopy or on x-ray films was due to edema or extrinsic compression and not to a fibrotic thickening of the wall.

Table VII shows the correlation between disease location and pattern. The inflammatory pattern was found in about 1/5 of patients, regardless of location. The fibrostenotic pattern was prevalent in jejunal-ileal and ileo-colic locations, while the fistulizing pattern was seen in 2/5 of colo-rectal and in 100% of perineal locations.

The indication for surgery was the presence of a complication in 79% of cases [stenosis (43.5%), fistulas (15%), abscesses (5.6%), bowel perforation (8.7%), or not clearly specified 6.2%], and failure of medical treatment in 21% of cases. Of the 376 patients operated on, 84 underwent emergency surgery (22.3%) and 292 elective operations (77.7%). Two hundred and one patients (53.4%) underwent one operation, 130 (34.6%) had two operations and 45 (12.0%) had 3 or more operations; the majority of the latter patients had a fistulizing pattern and were young at the time of onset of the disease. Emergency interventions were less frequent among first operations (16%) than among subsequent operations (29.7%, p = 0.002; Table VIII).

The average time between diagnosis and the first operation was 21.4 months; the mean interval between the first and second operations was 88 months. The first operation performed on the patients studied was resection in 79.1% of cases and stricturoplasty in 14.3%. Resections accounted for 62.8% of subsequent operations and stricturoplasty for 21.7% (p = 0.028), with an increase in atypical and derivative operations (colostomies and ileostomies) (Table IX).

Table IX shows the findings relating the type of surgery performed with the pattern of the disease; it demonstrates that appendectomies were only performed in the inflam-

Table VI – CROHN'S DISEASE - COMPARISON BETWEEN PRE-AND INTRA-OPERATIVE ASSESSMENT OF THE PATTERN OF DISEASE

	Pre-operative (%)	*Intra-operative (%)*
Inflammatory	67 (17.8)	98 (26.2)
Fistulizing	127 (33.7)	125 (33.1)
Fibrostenotic	182 (48.5)	153 (40.7)

Table VIII – CROHN'S DISEASE - DISTRIBUTION OF EMERGENCY AND ELECTIVE INTERVENTIONS AMONG FIRST AND SUBSEQUENT OPERATIONS

	Elective (%)	*Emergency (%)*	*Total (%)*
First operation	169 (84.0)	32 (16.0)	201 (100.0)
Subsequent operations	123 (70.3)	52 (29.7)	175 (100.0)
Total	292 (77.7)	84 (22.3)	376 (100.0)

Table VII – CROHN'S DISEASE - CORRELATION BETWEEN LOCATION AND PATTERN OF THE DISEASE

Site	*No. (%)*	*Inflammatory (%)*	*Fistulizing (%)*	*Fibrostenotic (%)*
Jejunum-ileum	191 (50.7)	51 (26.8)	58 (30.3)	82 (42.9)
Ileo-colic	119 (31.6)	37 (31.1)	28 (23.5)	54 (45.4)
Colon-rectum	47 (12.5)	10 (21.3)	20 (42.6)	17 (36.1)
Perineum	19 (5.2)	0	19 (100.0)	0

Table IX – CROHN'S DISEASE - TYPE OF INTERVENTIONS PERFORMED AT FIRST AND SUBSEQUENT OPERATIONS

Type of operation	*1st operation (%)*	*Subsequent operations (%)*	*Total (%)*
Resection	159 (77.2)	110 (64.7)	269 (71.5)
Stricturoplasty	29 (14.1)	38 (22.4)	67 (17.8)
Lysis of adhesions	0 (0)	4 (2.3)	4 (3.9)
Ileostomy/colostomy	2 (0.9)	6 (3.5)	8 (2.2)
Appendectomy	11 (5.3)	0	11
Fistulectomy	5 (2.5)	12 (7.1)	17 (4.6)
Total	206 (54.8)	170 (45.2)	376 (100)

Table X – CROHN'S DISEASE - CORRELATION BETWEEN TYPE OF SURGERY PERFORMED AND PATTERN OF DISEASE

Operation	*Inflammatory*	*Fistulizing*	*Fibrostenotic*	*Total*
Resection	69	86	114	269
Stricturoplasty	17	21	29	67
Lysis of adhesions	0	0	4	4
Appendectomy	11	0	0	11
Ileostomy/colostomy	1	4	3	8
Fistulectomy	0	14	3	17

matory form of the disease, and that stricturoplasties were uniformly distributed.

There was no peri-operative mortality, while 21.4% of patients presented post-operative complications, due to anastomotic leak in 11.6% of cases. Complications were greatest among immunodepressed patients and those who underwent emergency operations. The incidence of complications did not differ according to the pattern of the disease; anastomotic leak increased in the case of emergency operations using hand-stitching techniques.

Tumors (3 colonic and 2 ileal) were found in 5 patients; in 3 cases the tumor was diagnosed before operation, and in two cases it was an intra-operative finding. The colon tumors were observed on healthy mucosa, while one of the ileal tumors was located on diseased mucosa.

During the observation period, clinical recurrences of the disease were observed in 55 patients (14.6%): the location was juxta-anastomotic in 54.5% of cases, ileal in 60% and colonic in 40%.

Discussion

A) Ulcerative colitis

The data presented evaluate the indications and type of operation undergone by a group of patients suffering from UC in the period studied.

The indications for surgery can be subdivided into three categories: emergency, scheduled and prophylactic. 16.6% of patients underwent emergency operations and 81.5% scheduled surgery; only two patients received "prophylactic" surgery for dysplastic disease.

The incidence of severe acute complications leading to an emergency operation is comparable with that found in other studies (9). This is especially true for toxic megacolon, which develops in 10-20% of cases and can be rapidly complicated by bowel perforation, which significantly aggravates the prognosis (10), and severe haemorrhage, which is a relatively infrequent complication in UC, but still accounts for 10% of emergency colectomies (11).

In this series of patients, the short interval between the onset of the symptoms and the operation is noteworthy. This is only partly explained by the severity of the forms referred to the surgeon; it is probably also due to the fact that gastroenterologists rapidly opt for surgery in the case of young patients with chronically active disease requiring continuous steroid treatment or the use of immunosuppressant drugs, because total colectomy cures the disease.

In the patients we studied, there was a high incidence of operations for cancer and dysplasia, namely 10 cases out of 102 patients (9.8%). However, this was a selected surgical sample from which no findings as to the incidence of cancer in ulcerative colitis can be extrapolated. In contrast with the findings reported in the literature, a very short period elapsed between the onset of the disease and the appearance of cancer, and there was a high incidence of cancer in distal colitis (Table IV). These findings apparently disagree with those most frequently reported (12), but are partly confirmed by a recent GISC-GSMII multicentric study (13), in which tumors were located in the right colon only in 17% of cases, extending beyond the transverse colon in 48% of cases.

The low frequency of emergency operations demonstrates the efficacy of the medical treatment received by the patients and of the follow-up conducted in specialized

IBD units able to choose the most appropriate timing for a rapid operation. As a result of this collaboration, there was a low incidence of post-operative complications and no mortality.

As regards the types of operation performed, there seems to be no satisfactory reason for the 7 segmental colon resections which were not followed by a standard total colectomy.

The anastomoses and ileo-anal pouches were mainly hand-sewn. The choice of pouch configuration depends on hospital policy and the patient's specific anatomy. The groups involved in the study preferred the S-pouch. The results recently published by the two hospitals which provided the largest number of pouch cases indicate that the total incidence of complications is around 12% (14). The heterogeneity of the patients studied prevents us from making any surgical comment on the type of pouch, or whether the hand-sewn type is stronger than the stapled type.

Among the patients studied there was a 30.4% incidence of permanent ileostomies, while the percentage of ileo-rectal anastomoses (32.4%) is high compared with other countries. If our findings are compared with those of Tonelli (15), one can observe that there was a higher incidence of permanent ileostomies but the same 1:1 ratio between ileo-anal and ileo-rectal anastomoses, confirming that Italian surgeons tend to prefer rectum-sparing techniques.

Ileorectal anastomosis is certainly simpler, and can be performed with good results in any coloproctological surgery unit, but requires continuous post-operative topical treatment and strict monitoring of the rectal stump. During the observation period, removal of the rectum was necessary in 5 patients who had undergone IRA surgery (14.7%), confirming the findings made by Serio, who reported that 30-35% of patients followed up over the long term required another operation, involving a permanent ileostomy or ileal pouch (16).

B) Crohn's disease

Surgical treatment of CD presents specific indications which can be summarised a follows: a) failure of medical treatment, and b) complications, namely occlusion, sepsis, haemorrhage, bowel perforation and fistulas. These indications were followed in the hospitals participating in this study, as surgery was required in 21% of cases due to failure or inefficacy of medical treatment, and in 79% of cases as a result of complications, mainly stenosis.

The accuracy of pre-operative diagnoses of the pattern of the disease was high, especially as concerning the fistulizing form. Pre-operative radiological and endoscopic investigations sometimes failed to differentiate between stenosis caused by extrinsic compression or bending of the bowel, thus explaining why the diagnosis of fibrostenotic disease is less accurate. In our opinion correct identification of the pattern of the disease is very important, because it allows a sub-group of patients suffering from the fistulising form to be selected for a further attempt at medical treatment with anti-TNF. This treatment seems to lead to closure of the fistulas and to reduce the intensity and extent of inflammation, thus leading to a saving of intestinal tissue when the next operation is carried out (17).

The fact that patients were treated by units specialized in the study of IBD probably reduced the number of cases of failure of medical treatment. However, if surgery is rapidly chosen in view of poor results, the patients who undergo a scheduled operation will be in a reasonably good condition as regards nutrition and bleeding, which reduces peri-operative complications. Optimisation of the timing of surgery is demonstrated by the low incidence of first operations performed on an emergency basis (22%). The time elapsed between the diagnosis and the first operation was 21.4 months, and 88 months between the first and second operation.

The higher incidence of emergency surgery among operations other than the first suggests that both patients and doctors were reluctant to embark on another operation. However, in a study of quality of life, 74% of patients said they would prefer an earlier operation, the reasons given being the possibility of eating normally, post-operative comfort, and discontinuance of medical treatment (18).

Resections accounted for 71.5% of operations, and stricturoplasties for 17.8%. The first codified applications of this latter operation date from the early nineties (3), the period to which our study relates. The number of stricturoplasties reported in our study is wholly comparable with those reported by Cavallari (19) and Tonelli (20), namely 13.2% and 19.3% respectively. In agreement with the data reported in the literature, the number of stricturoplasties increases in subsequent operations, in an attempt to minimise the occurrence of short bowel syndrome.

There was a great deal of debate in the Eighties as to whether appendectomy was indicated in CD (21), and the risk of fistulization it involved. 15 appendectomies were performed on the patients we studied, all of them on patients presenting an inflammatory pattern. Eight of them were re-operations. The association between acute appendicitis and inflammatory pattern seems to be important, and in our view confirms the usefulness of classifying CD into sub-groups.

We are unable to tell whether the pattern of the disease varies over time; in the patients who underwent more than one operation, we do not know the pattern of the disease at the time of the first operation, because this classification was not made before 1992.

Morbidity and post-operative complications were similar to those reported in the major published series, especially as regards anastomoses.

There seems to be a preference for end-to-end or wide side-to-side anastomoses without leaving long cul-de-sacs.

Clinical recurrences of the disease showed an annual post-operative incidence of 10% (22); endoscopic juxta-anastomotic recurrences amounted to 72% within 1 year of the resection, 88% of them in the neo-terminal ileum (23). Further surgery was required in 16-65% of cases within 10 years after the first operation (23, 24, 25, 26). In our study, the incidence of recurrences in the short follow-up period was 14.6%, and the location was juxta-anastomotic in 54.5% of cases.

We do not have sufficient follow-up data, and in any event it was not among the objectives of our study, to establish whether surgical recurrence is affected by the type of surgery (resection or bowel-sparing). On the basis of data recently published by colleagues who contributed a large number of patients to our survey, surgical recurrences do not appear to be correlated with the type of surgical technique used, but with the duration of the disease (27, 28). Although the prevalence of CD is lower than that of UC, CD patients present a relative risk of developing ileal tumors which is 6 times greater than that of the general population, and a 4-20 times higher risk of colon tumors as compared with the general population. The mean age of onset is much lower than that of sporadic cancer (29). The duration of the disease and the distribution of the lesions are considered to be the main risk factors. In our patients, however, the disease was of short duration (7 years), and there were two cases of ileal tumors, observed 11 and 24 months after the onset of the disease.

Concluding remarks

– The small number of cases of indeterminate colitis recorded on histological examination of the biopsy tissue confirms the diagnostic accuracy of the hospitals that participated in the study.

– The epidemiological data relating to the same geographical area present a higher incidence of IBD than previously reported (30). The higher incidence of UC was matched by a higher frequency of surgery for CD. Candidates for UC operations are sent to specialist centres, whereas operations for CD are performed in all big general surgery centres.

– We confirm the usefulness of classifying patients suffering from CD into sub-groups by disease pattern. It would be interesting to study whether these patterns vary in the course of the disease.

– This multicentric study demonstrates that the surgical treatment undergone by patients suffering from chronic inflammatory bowel disease conformed to the international guidelines, and the results in terms of morbidity and mortality were highly satisfactory.

The high quality of the results is due to close collaboration between gastroenterologists and surgeons, which has enabled the timing of the operation to be optimised.

– In view of the high tumor risk observed, we agree with Riegler (13) that the monitoring protocols used for UC patients should be extended to those suffering from CD, and that other risk factors such as family history and age should be taken into account when deciding on an earlier follow-up.

– As regards UC, despite the high percentage of ileo-rectal anastomoses reported, there is a tendency for this operation to decline in favour of those which remove the whole of the rectum but preserve the sphincters.

– As regards CD, there is a tendency to use sparing techniques right from the first operation, and extend them to ileocolic and anastomotic stenosis.

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