

Risk factors for recurrence of stenosis in Crohn's disease

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Abstract. A major problem in Crohn's disease (CD) surgery is the high frequency of recurrence after bowel resection. Several factors are thought to influence this phenomenon. CD "phenotype" was identified as one of this factors and obstructing CD seems to be a low risk. We analysed the reoperation rate in patients operated for obstructing CD to identify risk factors for postoperative recurrence avoiding any bias due to an high risk phenotype. We reviewed the records of 120 patients treated for stenosing CD and survival analysis was performed using Kaplan-Meier method. Younger age, acute obstruction, emergency conditions, postoperative complications, small bowel disease, ileo-ileal anastomosis and type of suture resulted to be risk factors for CD recurrence.

Key words: Crohn's disease, postoperative recurrence, anastomosis

Background and aims

One of the most common problems in the surgical treatment of Crohn's disease (CD) is the high frequency of recurrence after bowel resection (1). CD recurrence may be evidenced as clinical relapse of symptoms, endoscopic findings or need of further surgical intervention (2). Several factors such as age, onset of disease, gender, site of disease, number of resections, symptomatic status at the time of surgery, length of small bowel resection, proximal margin length, microscopic margin histology, type of anastomosis, type of surgery, blood transfusions, family history and prophylactic treatment, were investigated for their supposed influence in this phenomenon (3). Since 1988 the "phenotype" of the disease, fistulizing or obstructing, have been identified as one of these risk factors. In fact, the obstructing pattern of disease seem to have an lower risk of recurrence compared to fistulizing pattern. Even if the Oxford group did not agree on this result (4-7) some recent studies from different centres confirmed this hypothesis (8, 9). The aim of this study is to analyse re-

currence rate after surgery in obstructing CD, a low risk phenotype. In this way we may identify risk factors that can play a role in the recurrence in CD without the bias of an high risk group such as fistulizing CD.

Materials and methods

Since 1980 to 2002, 224 consecutive patients have undergone bowel resection for CD in our department: 120 of them were treated for obstructing Crohn's disease. In this group the mean age was 37 ± 13 years and there were 68 males. Their mean follow up was 83 ± 72 months. We operated 14 patients for acute obstruction and 106 for chronic obstruction; 12 patients underwent operation in urgency and the other in elective conditions. CD was localised in small bowel in 26 cases, in large bowel in 16 cases and involved both in 78 cases. Multiple CD localisation, that needed more than one bowel resection during the same operation, were present in 20 patients. Patients characteristics are resumed in table 1.

Table 1. Patients characteristics

Total patients	120		
Sex	52 females	68 males	
Age	37+/-13 years		
Indications to surgery	14 acute obstruction	106 chronic obstruction	
Timing for surgery	12 urgency	108 elective	
Site of disease	26 small bowel	78 ileo-colonic	16 colon
Number of resection	100 single resection	20 multiple resection	
Operative duration	210+/-91 minutes		
Configuration of anastomosis	85 side-to-side	32 end-to-side	3 end-to end
Type of anastomosis	103 ileo-colonic	13 ileo-ileal	2 colo-colonic
Type of suture	80 hand-sewn	32 PCEEA	8 GIA
Postoperative hospital stay	12+/-7 days		
Hospital stay	18+/-10 days		
Postoperative course	12 complicated	108 uneventful	

We analysed the surgical recurrence rate in this group of patients according to gender, age at operation, site of disease, timing of operation, indication to operation, number of resection, configuration and type of anastomosis, type of suture and post-operative surgical complications (bleeding, obstruction anastomotic dehiscence, and fistulae). We assumed patients having a surgical recurrence when Crohn's disease bowel manifestations led to a re-operation. We considered as re-operation only further bowel resections excluding any perineal Crohn's disease manifestations.

The recurrence analysis was performed taking in exam the interval of time (expressed in months) between operation and further bowel resection. Recurrence rate are expressed after 60 months of follow up. Data were considered as complete when patients had a recurrence within this interval of time. Cumulative recurrence rates were compared using STATISTICA 5.0 software for survival analysis using F Cox test and cumulative re-operation-free interval curves were drawn and analysed using Kaplan-Meier method (multiple samples survival analysis and Chi-square analysis). Statistical significance was indicated by $p < 0.05$.

Results

During the follow up 23 (19.2%) patients referred a recurrence (defined as a further bowel resection)

meanly after 50 ± 27 months. We did not observe any significant difference of cumulative recurrence rate according to sex, number of resection and configuration of anastomosis.

Patients under 30 years referred significantly higher cumulative recurrence rate after a 5 year follow up than patients over 50 years (25% vs 0%, $p < 0.01$). Patients who suffered from postoperative complications were affected by an higher recurrence rate than patients who had an uneventful postoperative course (34% vs 21%, $p = 0.02$) (figure 1). Patients who underwent to ileo-colonic resection had a significant lower recurrence rate (13% after 5 years follow up)

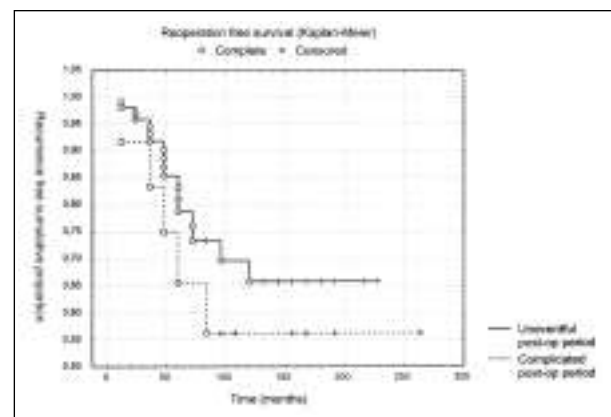


Figure 1. Patients who suffered from postoperative complications were affected by an higher recurrence rate than patients who had an uneventful postoperative course (34% vs 21%, $p = 0.02$).

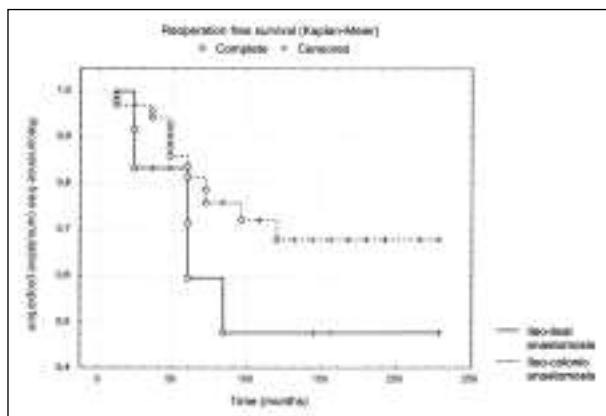


Figure 2. Ileo-ileal anastomosis are complicated by a higher recurrence rate than ileo-colonic anastomosis (40% vs 17%, $p=0.01$).

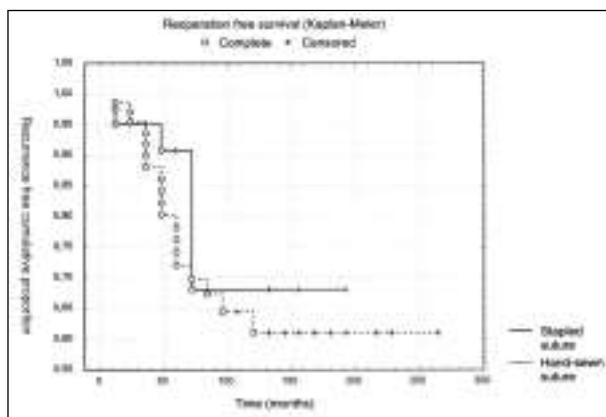


Figure 3. Stapled anastomosis obtained a significantly lower recurrence rate compared to hand-sewn anastomosis (9% vs 28%, $p=0.02$).

than simple small bowel (30%) or colonic (58%) resection ($p<0.01$ and $p=0.04$ respectively). Small bowel anastomosis are complicated by an higher recurrence rate than ileo-colonic anastomosis (40% vs 17%, $p=0.01$) (figure 2); colo-colonic anastomosis group was too scarce to be properly analysed. Stapled anastomosis obtained a significantly lower recurrence rate compared to hand-sewn anastomosis (9% vs 28%, $p=0.02$) (figure 3). Patients who were submitted to intestinal resection for acute obstruction or in emergency condition had a significantly higher recurrence rate after 5 year of follow up compared to patients who were operated in elective conditions or for chronic obstruction. Cumulative recurrence rates are described in table 2.

Discussion

The recurrence rate, defined by reoperation, of our group of patients with obstructive CD was 19.2% meanly after 50 ± 27 months and this result is similar to what described in the review by Borely et al. (10). As reported in literature, univariate analysis of risk factors evidenced that gender, number of resection and configuration of anastomosis have not any clear influence on CD recurrence (3, 10, 11). On the contrary, according to our data, acute obstruction, emergency conditions or bleeding and septic post-operative complications predispose the patient to a significantly higher risk of relaparotomy. All these parameters may reflect

Table 2. Factors influencing recurrence: cumulative recurrence rates are expressed at 5 years follow up. Cox F test indicates the significance in the difference between the recurrence rates.

Factors influencing recurrence	Recurrence rate	Recurrence rate	Significance
Sex: males vs females	12%	20%	P=0.15
Age: <30ys vs >50 ys	25%	0%	P<0.01
Site of disease: Ileo-colonic vs small bowel	13%	30%	P<0.01
Ileo-colonic vs colon	13%	58%	P=0.04
Indications to surgery: acute vs chronic	25%	18%	P=0.02
Timing for surgery: urgency vs elective	33%	21%	P=0.01
Post-op course: complicated vs uneventful	34%	21%	P=0.02
Number of resection: single vs multiple	26%	13%	P=0.39
Configuration of anastomosis: § S-S vs E-S	30%	6%	P=0.06
Type of anastomosis: # SB-SB vs SB-LB	40%	19%	P=0.01
Type of suture: stapled vs hand-sewn	9%	28%	P=0.02

§ S-S: side-to-side; E-S: end-to-side; #SB: small bowel; LB: large bowel

different aspects of an aggressive pattern of disease (12) even if this statement is still object of controversy (10). Younger age at operation in our study resulted to be at higher risk for further bowel resection but even if there are some evidence that confirm this data not all the authors agree on it (3, 10). Exclusive small bowel involvement and duodenal-jejunal, jejunal-ileal or ileo-ileal anastomosis resulted to have a worse recurrence rate than ileo-colonic CD probably because small bowel disease is a more diffuse process that may involve several areas in duodenum, jejunum and ileum with multiple lesions as suggested by Borely et al. (5). According to our data stapled anastomosis seem to be at low risk of recurrence. Similar results were obtained by Hashemi et al. in 1998 (13) and then confirmed by successive studies (14, 15). Anyway in our case the shorter follow up of stapled anastomosis compared to hand-sewn anastomosis did not permit, so far, to obtain a definitive conclusion.

Conclusions

In our experience younger age, small bowel disease and anastomosis, acute obstruction, emergency conditions and postoperative complications seem to increase the risk of recurrence after surgery for stenosing CD. A controlled randomised trial should be considered to confirm the role of the type of anastomosis (14).

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