The Impact of Anastomosis on Crohn's Disease Recurrence: Conventional vs. Wide Lumen Anastomosis

CROHN HASTALIĞINDA ANASTOMOZ ÇAPININ NÜKSE ETKİSİ: NORMAL VE GENİŞ LÜMENİN KARŞILAŞTIRILMASI

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Abstract

Objective: It is well recognized that Crohn's disease recurs after surgical resection. There are many factors leading to recurrence. Among them, the diameter of the anastomosis is the only variable that may be controlled. The aim of this study was to determine whether a wide-lumen anastomosis provides better outcome than conventional anastomoses.

Material and Methods: Between 2003 and 2004, a total of 18 patients (15 M, 3 F; mean age 37.0 ± 10.8; range 19-55) underwent 19 ileal, ileocolic, or colonic resections due to Crohn's disease complications. The patients were divided into two groups. In the first group, conventional hand-sewn end-to-end or end-to-side anastomoses with a 3 cm diameter were fashioned in 9 patients. In the second group, 10 wide lumen anastomoses with a diameter of 9 cm, hand-sewn or stapled, were constructed in 9 patients. Independent variables were age, gender, localization, phenotype and the type of anastomosis. Dependent variables were recurrence, reoperation, and disease-free survival. Chi-square, Fisher's exact, Student's t, and Mann-Whitney U tests were used for statistical analyses.

Results: Mean follow-up period was 30.2 ± 5.8 months (range: 18.7-40.6). There were four recurrences in the conventional group of patients and two of them underwent reoperation. None of the wide-lumen group of patients recurred. The difference in recurrence rate between the two groups was statistically significant (p= 0.033). There were no significant differences between the two groups with respect to age, gender, localization, phenotype of disease and follow-up period.

Conclusions: Our results suggest that wide lumen anastomosis is as safe as conventional anastomosis, and results in a lower recurrence of Crohn's disease without increasing morbidity. Well-designed prospective randomized studies are necessary for further evaluation.

Key Words: Crohn disease, anastomosis, surgical, recurrence

Özet

Amaç: Crohn hastalığı cerrahi sonrası yüksek oranda nüks etmektedir. Nükse yol açtığı düşünülen bazı faktörler vardır. Bunlar arasında anastomozun çapı kontrol edilebilen tek parametredir. Bu çalışmanın amacı, normal anastomozlardan daha geniş yapılan anastomoz çapının nüksü azaltıp azaltmadığının araştırılmasıdır.

Gereç ve Yöntemler: 2003-2004 yılları arasında Crohn hastalığı komplikasyonları nedeniyle 18 hastaya (15 erkek, 3 kadın; ortalama yaş 37.0 ± 10.8; 19-55) toplam 19 ileal, ileokolonik veya kolonik rezeksiyon yapıldı. Birinci grupta 9 hastaya normal anastomoz uç-uca veya uç-yan şeklinde ortalama 3 cm çapında yapıldı. İkinci grupta ise 9 hastaya 10 adet yan-yana ve 9 cm çapında olacak şekilde stapler veya elle geniş anastomoz yapıldı. Araştırmanın bağımsız değişkenleri yaş, cinsiyet, lokalizasyon, fenotip ve anastomoz şekli; bağımlı değişkenleri nüks, reoperasyon ve hastalıksız izlem süresidir. İstatistiksel analiz için ki-kare, Fisher kesin ki-kare, Student's t ve Mann-Whitney U testleri kullanıldı.

Bulgular: Ortalama izlem süresi 30.2 ± 5.8 ay (18.7-40.6) idi. Normal grupta 4 hastada nüks gelişti ve iki tanesi tekrar opere edildi. Geniş anastomozlu grupta nüks olmadı. İki grup arasında nüks açısından istatistiksel olarak anlamlı fark saptandı (p= 0.033). Gruplar arasında yaş, cinsiyet, lokalizasyon, fenotip ve izleme süresi açısından istatistiksel olarak anlamlı fark saptanmadı.

Sonuç: Bu çalışmanın sonuçları, geniş lümenli anastomozun Crohn hastalığında morbiditeyi arttırmadan, konvansiyonel anastomoz kadar güvenle kullanılabilecek; daha az nükse yol açan bir teknik olduğu yönündedir. Bu konuda prospektif-randomize çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Crohn hastalığı, anastomoz, nüks

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Patients with Crohn's disease who undergo surgical resection have a significant risk for recurrence. Potential factors leading to recurrence are cigarette smoking, extent of disease, disease phenotype (stricturing or fistulizing), number of previous resections, and the type of the anas-

tomosis constructed (conventional end-to-end or end-to-side vs. wide lumen side-to-side).[1-3] The aim of this study was to investigate the impact of the anastomosis diameter on the outcome since anastomosis is the only known controllable variable.

Material and Methods

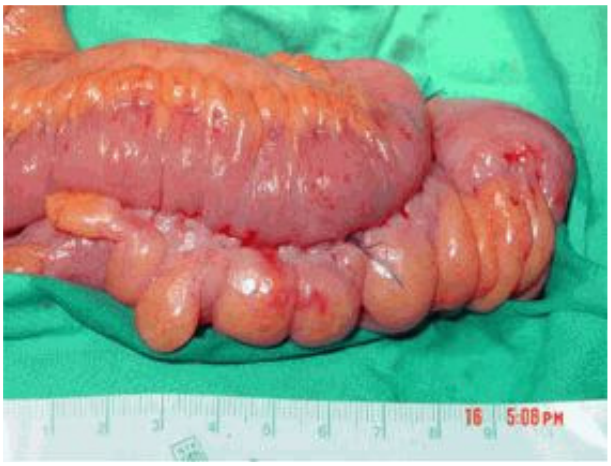
Between 2003 and 2004, a total of 18 patients underwent 19 ileal, ileocolic, or colonic resections due to Crohn's disease complications. Conventional hand-sewn end-to-end or end-to-side anastomoses with a 3 cm diameter were fashioned in 9 patients. Ten wide lumen anastomoses with a diameter of 9 cm, hand-sewn or stapled, were constructed in 9 patients. (Picture 1). Patients were not randomized and the selection of the anastomosis type was left to the surgeon's preference. All patients were given prophylactic medical therapy postoperatively and were controlled in a mean follow-up period of 30.2 ± 5.8 months (range: 18.7-40.6).

Recurrence was clarified by the appearance of symptoms and signs as well as laboratory and endoscopic investigations in the follow-up period. The independent variables of the study were age, gender, localization and phenotype of the disease. The dependent variables were recurrence, reoperation, and disease-free survival.

Data obtained from the patients was analyzed with SPSS for Windows 10.0.1 version. Chi-square and Fisher's exact tests were used in cross tables, Student's t test for comparing two groups' means in parametric variables and Mann-Whitney U test for non-parametric variables. $p < 0.05$ was considered statistical significance.

Results

Patient characteristics are summarized in Table 1. Mean age at operation was 39.6 ± 9.3 (range: 27-52) for the conventional lumen and 34.7 ± 11.9 (range: 19-55) for the wide lumen group with no significant difference (p= 0.340). There was no statistically significant difference between two groups with regard to gender (p= 0.087).



Picture 1. Wide lumen 9 cm anastomosis.

Table 1. Patient characteristics.

Characteristics	Anastomosis Type: Conventional (n: 9)	Anastomosis Type: Wide lumen (n: 10)	p
Age			
Year	39.6 ± 9.3	34.7 ± 11.9	0.340
Range	(27-52)	(19-55)	
Gender	9 M	6 M/3 F	0.087
Mean follow-up period (months)	32.4 ± 4.2	28.2 ± 6.4	
Range	(27.9-40.6)	(18.7-40.5)	0.109
Localization			
Ileum	4	6	
Ileocolon	3	3	0.711
Colon	2	1	
Phenotype			
Stricturing	3	7	0.179
Fistulizing	6	3	
Recurrence	4 (44.4%)	0	0.033
Reoperation	2 (22.2%)	0	0.211

Disease was localized at the terminal ileum in 10 patients (52.6%), at ileum and colon in 6 patients (31.6%), and at colon in 3 patients (15.8%). The difference between the two groups with regard to localization was not statistically significant (p= 0.711).

Most patients (63.6%) were stricturing type in the wide group, while fistulizing type was dominant (66.7%) in the conventional group with no significant difference (p= 0.179). There were no statisti-

cally significant differences between the two groups with respect to operation time, overall complication rate, return to normal bowel movements, hospital stay, and disease-free follow-up period.

There were four recurrences (44.4%) in the conventional anastomosis group during the follow-up period. Two of the recurring patients required re-operation. The remaining patients who had clinical symptoms received medical treatment. Inflammatory lesions were visualized endoscopically at the distal part of the anastomosis in 1 patient in the wide lumen group, eight months after the operation. He had no symptoms and the lesions were detected during routine follow-up.

While the difference between the two groups with respect to recurrence rate was statistically significant (p= 0.033), necessity of re-operation was not significant (p= 0.211).

Discussion

Crohn's disease recurrence usually occurs at the site of the anastomosis or the pre-anastomotic bowel segment.[4,5] The features of recurrence follow a sequence of endoscopically identifiable lesions, followed at various intervals by clinical symptoms. Fecal stasis and bacterial overgrowth are recognized as factors contributing to recurrence and wider anastomotic lumen may reduce the risk of obstruction.[6-12] Yamamoto et al. compared 123 patients performing stapled wide lumen anastomosis in 45 patients and conventional sutured anastomosis in 78 patients.[13] In the stapled group, only 1 patient required re-operation for ileocolonic anastomotic recurrence, while 26 needed re-operation in the sutured group. The cumulative 1-, 2-, and 5-year ileocolonic anastomotic recurrence rates requiring surgery were 0%, 0%, and 3% in the wide lumen group, which were significantly lower than the 5%, 11%, and 24% in the conventional group.

In our study, four patients in the conventional group presented with clinical symptoms at 11, 12, 16 and 22 months after the surgery, respectively. One of the patients had abdominal discomfort with nausea while the other patient had abdominal pain and bloating. These 2 patients had undergone small bowel resection for stricturing ileitis and radiology revealed narrowing at the anastomosis and pre-anastomotic site of the neo-terminal ileum. They were successfully treated with corticosteroids and no surgery was required. The third patient underwent emergent surgery in another center due to perforation of the diseased neo-terminal ileum. The fourth patient had enterocutaneous fistula with abdominal pain. Medical treatment was unsuccessful and he underwent ileo-colonic resection for anastomotic stricture after 28.5 months from the primary operation. In the wide lumen group, 1 patient had endoscopic lesions without symptoms. He had undergone subtotal colectomy with ileorectal anastomosis due to Crohn's colitis. We think that inflammation was due to colitis in the remaining colon rather than recurrence.

The pattern of recurrence is similar to the pre-operative activity.[14] Patients with fistulizing type (acute perforation, abscess, and fistula) tend to recur in the same pattern, while non-fistulizing disease remains. Four recurrent patients in our conventional group had the same phenotype observed before the surgery.

Since most of the physicians prefer conservative resection, the anastomosis is performed at the macroscopically normal bowel segment after resection. This bowel segment may be compromised by vasculitis and surgery may add to the already existing ischemic insult. This situation may increase recurrence. Re-operation rates as high as 40% at five years and 55% at ten years were reported.[15-17] Although the major limitation of the present study is the short follow-up period, endoscopically visualized lesions may appear within three months. These lesions were shown to be highly predictive of subsequent symptomatic recurrence.[18]

In conclusion, our results suggest that wide lumen anastomosis is as safe as conventional anastomosis, and results in a lower recurrence of Crohn's disease without increasing the morbidity. Well-designed prospective randomized studies are necessary for further evaluation.

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