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Examination of Oncological Results of Laparoscopic and Open Surgical Method in Rectosigmoid Tumors

Rektosigmoid Tümörlerde Laparoskopik ve Açık Cerrahi Yöntemin Onkolojik Sonuçlarının İncelenmesi

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Öz

Amaç: Kolorektal kanser cerrahisinde minimal invaziv teknik kullanımı oldukça yaygınlaşmış olup bizim bu çalışmadaki amacımız en sık görülen lokalizasyon olan rektosigmoid bölge tümörlerinde laparoskopik ve açık yöntemin onkolojik sonuçlarının karşılaştırılmasıdır.

Gereç ve Yöntem: 2015-2019 yılları arasında rektosigmoid tümör nedeniyle tek merkezde opere edilen hasta dosyaları taranarak çalışmaya dahil edildi. Laparoskopik ve açık olarak yapılan vakalar 2 ayrı gruba ayrılmıştır. Çalışmada ameliyatın yöntemi, çıkartılan tümörün boyutu, çıkartılan lenf nodu sayısı, hastanın takip süresi, TNM evresi, şayet gelişmişse komplikasyon, nüks gibi durumları kaydedildi.

Bulgular: Çalışmaya toplam 71 hasta dahil edilmiş olup 28'i (%39,4) laparoskopik, 43'ü (%60,6) açık yöntemle opere edilmiştir. Açık opere olanların takip süresi 14,7±9,23 ay bulunurken, laparoskopik yöntemle ameliyat olanların takip süresi ise 19,46±9,41 ay olarak saptanmıştır(p=0,04). Çıkartılan lenf nodu sayılarına bakıldığında ise açık grupta 17,23±4,46, laparoskopik grupta14,21±3,55 lenf nodu çıkartılmıştır (p=0,001). Açık gruptaki 43 vakanın 7'sinde (%16,2) nüks gözlenirken, laparoskopik gruptaki 28 vakanın 2'sinde (%7,6) nüks gözlenmiştir (p=0,008).

Sonuç: Laparoskopik olarak tecrübeli olan cerrahi ekiplerce rektosigmoid bölge tümörlerinin cerrahisinde laparoskopik yöntemin onkolojik açıdan açık yöntem ile benzer sonuçlar verdiğini ve güvenle kullanılabileceğini düşünmekteyiz.

Anahtar Kelimeler: Açık cerrahi, laparoskopik cerrahi, onkolojik sonuçlar

Abstract

Introduction: The use of minimal invasive technique in colorectal cancer surgery has become widespread and our aim in this study is to compare the oncologic results of laparoscopic and open methods in rectosigmoid region tumors which is the most common localization.

Materials and Method: Patients who were operated for rectosigmoid tumor in a single center between 2015-2019 were included in the study by scanning their files.Laparoscopic and open surgery cases were divided into two groups. The method of surgery, the size of the tumor removed, the number of lymph nodes removed, the follow-up period of the patient, the stage of TNM, complications if developed and recurrences were recorded.

Results: A total of 71 patients were included in the study and 28 (39.4%) were operated by laparoscopic and 43 (60.6%) were operated by open method. The follow-up period was 14.7 ± 9.23 months for the open operated and 19.46 ± 9.41 months for the ones operated with laparoscopic method (p = 0.04). When looking at the removed lymph node numbers, while it is 14.21 ± 3.55 in the laparoscopic group, 17.23 ± 4.46 in the open surgery group. (p = 0.001). While recurrence was observed in 7 (16.2%) of 43 cases in the open surgery group, recurrence was observed in 2 (7.6%) of 28 cases in the laparoscopic group (p = 0.008).

Conclusion: We believe that laparoscopic method gives similar results with the oncologically open method and can be used safely in the surgery of rectosigmoid region tumors by laparoscopy experienced surgical teams.

Keywords: Laparoscopic surgery, open surgery, oncologic outcomes

Introduction

Rectosigmoid region cancer is a common type of cancer worldwide and is observed 2 or 3 times more frequently in men than in women(1). Although minimal invasive techniques and laparoscopic methods were first reported in 1991, nowadays, they have become a frequently used and popular method in the surgical treatment of colorectal cancer(2). The short-term results are presented in the literature showing laparoscopic surgical procedure have many advantages over open surgery method such as quality of life, length of hospital stay, return to daily work and cosmetic advantages(3-5). However, oncological principles, careful performing of tumor, mesorectum and mesocolic excision are the one of the most important principles and there are very few publications about laparoscopic and open surgery that can show their supremacy against each other by comparing them(6). The aim of this study was to compare the oncological effects of laparoscopic and open surgical methods in rectosigmoid region tumors and to share our experience with the literature.

Materials and Methods

Patients who were operated for rectosigmoid tumor in a single center between 2015-2019 were included in the study by scanning their files.Laparoscopic and open surgery cases were divided into two groups. The cases that started laparoscopic then transitioned to open surgery were excluded from the study. The cases which were not malignant in pathology result and which were performed urgently were excluded from the study.

In addition to demographic data, the method of surgery, the size of the tumor removed, the number of lymph nodes removed, the patient's follow-up period, the stage of TNM (tumor, node, metastasis), complications if developed, recurrence and metastasis were recorded and the two groups were compared statistically.

Permission was taken fromLocal Ethics Committee for this study(Date: 27/09/2019, Ethics No: 59387).The study was conducted in accordance with the principles of the Declaration of Helsinki.

Statistical Analysis

SPSS 25 (IBM Corp. in the review of data Released 2017. IBM SPSS Statisticsfor Windows, Version 25.0. Armonk, NY: IBM Corp.) statistical package program was used to evaluate the data. Variables were expressed using mean ± standard deviation, percentage and frequency values. The variables were evaluated after checking the prerequisites for normality, homogeneity of variance (ShapiroWilk and Levene Test). While performing the data analysis, for comparison of two groups Independent 2 groups t test (Student's t test) was used and Mann Whitney-U test was used when the prerequisites cannot be provided. Categorical data were analyzed by Fisher's Exact test and Chi-Square test.In cases where the expected frequencies are less than 20%, the evaluation was performed with "Monte Carlo Simulation method" because these frequencies must be included in the analysis. $p<0.05$ and $p=0.01$ values were accepted as the significance level of the tests.

Results

A total of 71 patients were included in the study and 40 (56.3%) were male and 31 (43.7%) were female. While 28 (39.4%) of the cases were operated by laparoscopic method, 43 (60.6%) were operated by open surgery method. The mean age of those who underwent laparoscopic surgery was 67.14±11.97 years, while the mean age of open operated patients was 63.72±11.46 years. The mean follow-up period was 14.7±9.23 months for the open operated and 19.46±9.41 months for the ones operated with laparoscopic method (p=0.04). The tumor size was 3.69±1.39 cm in the open surgery group and 2.96±1.58 cm in the laparoscopic group(p=0.04). When looking at the removed lymph node numbers, while it is 14.21±3.55 in the laparoscopic group, 17.23±4.46 lymph nodes were removed in the open surgery group (p=0.001). While the mean length of hospital stay was 5.51±1.83 days in the open surgery group, 7.32±4.5 days in the laparoscopic group (p=0.049) (Table 1).

Table 1: Oncological data and watch times

	Laparoscopic	Open	P
	n=28	n=43	
Age	67.14±11.97	63.72±11.46	0.230
Watch Time (month)	19.46±9.41	14.7±9.23	0.040
Tumor size (cm)	2.96±1.58	3.69±1.39	0.040
Lymphnode	14.21±3.55	17.23±4.46	0.001
Hospitalization (day)	7.32±4.5	5.51±1.83	0.049

n: number of patients

In the study, no statistically significant difference was found between laparoscopic and open surgery group in TNM classification and staging. Also, no statistically significant difference was observed in complications developed in both groups' surgeries. While recurrence was observed in 7 (16.2%) of 43 cases in the open surgery group, recurrence was observed in 2 (7.6%) of 28 cases in the laparoscopic group (p=0.008) (Table 2).

Table 2. Stage, complication and recurrence

			Laparoscopic	Open	Total	P
Gender	Male	N	14	26	40	0.385
		%	35.0%	65.0%	100.0%	
	Female	N	14	17	31	
		%	45.2%	54.8%	100.0%	
Local	Rectum	N	10	12	22	0.487
		%	45.5%	54.5%	100.0%	
	Sigmoid	n	18	31	49	
		%	36.7%	63.3%	100.0%	
T	1	n	8	10	18	0.253
		%	44.4%	55.6%	100.0%	
	2	n	12	11	23	
		%	52.2%	47.8%	100.0%	
	3	n	6	14	20	
		%	30.0%	70.0%	100.0%	
	4	n	2	8	10	
		%	20.0%	80.0%	100.0%	
N	0	n	17	26	43	0.755
		%	39.5%	60.5%	100.0%	
	1	n	8	10	18	
		%	44.4%	55.6%	100.0%	
	2	n	3	7	10	
		%	30.0%	70.0%	100.0%	
Stage	1	n	11	14	25	0.779
		%	44.0%	56.0%	100.0%	
	2	n	6	12	18	
		%	33.3%	66.7%	100.0%	
	3	n	11	17	28	
		%	39.3%	60.7%	100.0%	
Complication	No	n	23	33	56	0.586
		%	41.1%	58.9%	100.0%	
	Yes	n	5	10	15	
		%	33.3%	66.7%	100.0%	
Recurrence	No	n	26	36	62	0.008**
		%	41.9%	58.1%	100.0%	
	Yes	n	2	7	9	
		%	22.2%	77.8%	100.0%	
Total		n	28	43	71	
		%	39.4%	60.6%	100.0%	

n: number of patients, T: Primary Tumor, N: Regional lymph nodes,

Discussion

Colorectal cancers are the third most common type of cancers in the world and their incidence is increasing every year(7). The definitive treatment of colorectal cancer surgery is, as known, surgery and the use of laparoscopic method is increasing today(2). Although laparoscopic colectomy is accepted as an effective treatment with good quality of life, there are few studies and different assertions about whether or not mesorectal excision can be performed safely by laparoscopic method, especially in narrow areas such as pelvic reflection(8, 9). In this study, we planned to investigate the oncological outcomes of rectosigmoid region tumors and compared the patient groups performed by the same surgical team. Most of the studies in the literature are early stage studies and they report positive results of laparoscopic surgery on the quality of life(5). In their study, Nishikawa et al. (10) said there was no significant difference between the oncologic results in laparoscopic and open colorectal surgical procedures, but there was a possibility of open surgical region dissection in the pelvic region, especially in rectal cancer surgery. A large scale Japanese randomized controlled trial reported that the effect of laparoscopic resection on survival in N2 and T4 tumors yielded poor outcomes compared to open surgery(11). In our study, no statistically significant difference was found between the two groups in N2 and T4 tumors, whereas the recurrence rates were determined to be lower in the laparoscopic group than in the open surgery group. While T4 tumor is a relatively contraindication for laparoscopy, we think that this may be due to which surgical method is more conveniently performed by the surgical team, the conditions of the adjuvant treatment of the postoperative patients(12).

Complete mesocolic action and central vascular ligation have become a standard routine in colorectal surgery in terms of oncological principles(13,14). Kim et al. (15) performed a complete mesocolic excision on patients with colon cancer followed for an average of 36 months, while more lymph nodes were removed in the open group, no significant difference was found between the 2 groups between 3-year surveys and recurrences. In our study, similar to this study, more lymph nodes were removed in the open surgery group.

However, the recurrence rate was 16.2% in the open surgery group, while the recurrence rate was 7.6% in the laparoscopic group. We think that central vascular ligation cannot be performed in laparoscopic cases better than in open surgery cases without gaining more experience in laparoscopic cases and that this method develops as the education curve increases. In our study, although the recurrence rate in laparoscopic cases seems to be lower than in open surgery cases, the study is retrospective and we cannot fully trust this rate since randomization cannot be achieved completely.

In conclusion, laparoscopic surgery has many advantages over open surgery in terms of quality of life, length of hospital stay, postoperative recovery and cosmetic. There are studies in literature that show it provides safe oncologic results in experienced hands since it can be provided comfortable operation in the region above pelvic reflection and adequate mesocolic dissection can be provided(16,17). However, since the pelvic reflection is a narrow study site, it may be difficult to perform central vascular ligation and adequate lymph node dissection by laparoscopic method in tumors in this region. There are few studies comparing the long-term oncologic outcomes of these tumors with laparoscopic and open surgery methods. We believe that laparoscopic method gives similar results with the oncologic open surgery method and can be used safely in the surgery of rectosigmoid region tumors by the surgical teams experienced in laparoscopy. We recommend performing prospective, randomized controlled studies.

Study Limitations

One of the biggest limitations of our study is that the study is a retrospective study. Patients could not be randomized according to their stages and patients who did not receive adjuvant therapy in the postoperative period and the adjuvant treatment protocols they received were not completely clear by file scan.

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