Surgical outcome after laparoscopic proctectomy in rectal cancer Our experience in 300 cases

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Abstract

Introduction

Minimally invasive surgery is being increasingly performed to treat colorectal cancer. This study aimed to evaluate surgical outcome after laparoscopic proctectomy in rectal cancer.

Methods

This cross sectional study was conducted on 300 patients who underwent laparoscopic proctectomy with Transanal (175 cases, 58.3%) or transabdominal rectal resection (72, 24.0%) and abdominoperineal resection (53 cases, 17.7%) after preop radiochemotherapy from 2010 to 2017. Surgical complications and mortality were evaluated.

Results

The most common complication (i.e., pre-sacral collection) was observed in 12 (14.0%) patients, and 10 (3.3%) patients had postoperative obstructions. Moreover, peritonitis and abdominal sepsis were observed in 5 (1.7%) cases, and bleeding was reported in 4 (1.3%) patients. In addition, urologic complication and rectovaginal fistula were observed in 2 (0.7%) and 2 (0.7%) patients, respectively. In total, 2 (0.7%) patients suffered from iatrogenic intestinal injury, and 29 (9.7%) cases required reoperation (14 [48.3%] and 15 [51.7%] patients underwent laparotomy and relaparoscopy, respectively). Regarding mortality rate, 2 (0.7%) cases of postoperative mortalities were detected in this study.

Conclusion

Laparoscopic proctectomy is safe and good procedure in patient with rectal cancer.

Introduction

Colorectal cancer is the third most common cancer in the United States of America and the second leading cause of death due to malignancy in Western countries. Different factors such as preventive programs, supportive care, and surgery method are involved in prognosis of this cancer (1).

Considering that the main and definitive method of treatment is surgery, finding surgical procedures with the least complication is one of the today's concerns of scientists. Nowadays, laparoscopic surgery is performing all over the world (2–4).

Factors such as gender, history of previous radiotherapy, body mass index (BMI), hypoalbuminemia, and the presence or absence of ostomy are the factors which have been reported in previous studies as effective factors in the complication of surgery and the resulting anastomosis (5).

Complications of anastomosis occur with various frequency after the surgery of colon cancer. Among these complications, leakage from anastomosis site with a relative prevalence of 1.8–12% and 5%,

respectively (6, 7). This study aimed to evaluate the surgical outcomes in patients with rectal cancer who underwent laparoscopic surgery.

Materials And Methods

The populations of this sectional Study were patients with rectal cancer that underwent surgery by one surgeon from 2010 to 2017 in Omid, Ghaem, and Razavi hospitals were selected and included in this study.

It should be noted that all patients underwent a period of chemoradiation for one month before surgery followed by computerized tomography scan and magnetic resonance imaging before surgery. The patients with metastasis and peritoneal seeding were excluded from the study.

The first group (A) underwent rectal removal, which was withdrawn using transanal technique (80 cases had no protective ostomy and the rest had protective ostomy). The rectal removal was performed through the abdomen with Pfannenstiel incision in second group (B) (all patients in this group had protective ostomy), moreover the third group(C) included the patients who underwent abdomino-perineal surgery. The results of surgery have been studied in these patients. The patients were followed up for postoperative complications and mortality.

Finally, descriptive statistics were utilized to describe the data and inferential statistical such as Fisher's exact test and Pearson's chi-squared test, were employed to compare the qualitative variables. A p-value less than 0.05 was considered statistically significant.

Results

This study included 300 Patients who underwent laparoscopic proctectomy from 2010 to2017 with the mean age of 55.1 ± 12.6 (age range: 16–91) years. The majority of the patients were male ($n = 180$, 60.0%). The patients were divided into three groups: transanal group A (175 cases, 58.3%), transabdominal group B (72 cases, 24.0%) and abdominoperineal group C (53 cases, 17.7%).

Table 1 summarizes the demographic and tumor characteristics of the patients. The mean operative time was obtained at 199.9 ± 19.6 (range: 160–290) min. According to the results, 5 (1.7%) patients (all from group A) had peritonitis and abdominal sepsis, and they were managed with reoperation; however, the difference was not significant among the groups ($P = 0.291$).

Table 1
Demographic and tumor characteristics of the patients in this study

Characteristics	Group1†	Group2‡	Group3¥	P
Age ,mean ± SD	51.8 ± 12.3	57.3 ± 11.4	63.7 ± 11.6	< 0.001*
operation time,mean ± SD	206.4 ± 16.1	197.1 ± 21.8	182 ± 14.3	< 0.001*
Sex, N (%)				0.243
Male	104(59.4)	38(52.8)	35(66)	
Female	71(40.6)	34(47.2)	18(34)	
Postoperative TNM stage, N (%)				0.312
pCR	52(29.7)	22(30.6)	15(28.3)	
T1,2	44(25.1)	14(19.4)	5(9.4)	
T3,4	33(18.9)	17(23.6)	13(24.5)	
N positive	44(25.1)	19(26.4)	18(34)	
Missing	2(1.1)	0	2(3.8)	
Tumor location, N (%)				< 0.001*
Low	126(72)	17(23.6)	52(98.1)	
Mid	35(20)	30(41.7)	1(1.9)	
Upper	14(8)	25(34.7)	0	
†transanal resection ‡transabdominal resection ¥ abdomino-preneal resection pCR = pathological complete response				
*significance at α = 0.05				

Moreover, pre-sacral collection was observed in 9 (75.0%), 2 (16.7%), and 1(8.3%) patients from groups A, B, and C, respectively (in total, 12 [4.0%] cases); however, there was no significant difference among the groups in this regard (P = 0.514). Subsequently, 4 (7.5%) patients were managed with presacral drainage, and the others underwent ostomy and drainage.

Regarding postoperative obstructions, 9 (75.0%), 1 (8.3%), and 2 (16.7%) cases from groups A, B, and C, respectively, had postoperative obstructions (in total, 12 [4.0%] patients), of whom 3 (1.0%) patients were managed with medical therapy, and the others needed reoperation. Furthermore, bleeding was observed in 4 (1.3%) patients, of whom 2 (50%) cases were managed with packing and conservative therapy, and the other 2 (50%) cases were reoperated. In addition, rectovaginal fistula was observed in 2 (0.7%) patients who were belonged to group A.

Urologic complication, as well as ureteral and urethral injuries were observed in 2 (0.7%), 1 (50.0%), and 1 (50.0%) patients, respectively. In total, 2 (0.7%) patients had iatrogenic intestinal injury, and 29 (9.7%) cases required reoperation (14 [48.3%] and 15 [51.7%] patients underwent laparotomy and relaparoscopy, respectively). Totally, 2 (0.7%) cases of postoperative mortalities were detected, and cause of death in two patients was bleeding from pelvic sepsis.

Discussion

Colorectal cancer surgeries, as all procedures, have their own complications that recognition of these complications and their risk factors can lead to find the necessary approaches to reduce them. According to the performed studies, these complications, because according to the performed studies, these complications have a significant impact on quality of life and hope of the patient after the operation, and even the person's perception of himself (8). The complications of colorectal cancer surgeries include the following:

Anastomosis failure

The risk of anastomosis varies from 12–30%. Different factors such as leukocytosis, kidney failure, steroids use, surgery duration, abdominal drainage, septic shock during or after the operation, individual BMI, preoperative radiotherapy, preoperative hypoalbuminemia are as the risk factors for occurring of this event. If there are 2 of these risk factors, this percentage reaches to 38% and if there are 3 of these factors, this percentage will reach to 50% (5, 6, 9, 10).

Moreover, the presence of leakage from anastomosis site has a significant impact on the quality of life of the individual (7, 11), and these persons report a lot of mental and psychological burden on them (12). In our patients, anastomosis failure and peritonitis were in five patients that all needed reoperation.

Preoperative radiotherapy and low rectal anastomosis during surgery have been shown to be associated with increased postoperative intestinal complications (35).

The risk of permanent ostomy in people with anastomosis leakage is higher (56%) compared to those without leakage (11%), suggesting that half of patients who have permanent osteomy had symptomatic anastomic leakage after surgery in the past (13). In our patients, 22 cases needed permanent osteomy, Risk factors for permanent stoma were identified anastomosis-related complication (15 cases).

According to the performed studies, the prevalence of this complication was not significantly different between laparoscopic surgery and open surgery (14). Some studies have shown that anastomic leakage and septic complications after surgery, especially if prolonged, will have significant effect on tumor recurrence (14).

Some type of anastomosis failure is presacral collection, and there were 12 patient with this condition in this study. The majority of them were from group A since rectal resection and anastomosis were created

at pelvis in this group.

Fecal incontinence

Fecal incontinence is another complication of colorectal cancer surgeries with an incidence of 27% (15). In the performed studies, this complication has a significant effect on the morale and emotions of the patient after surgery and the quality of life in long-term (32, 33, 16). In our patients, among 68(22.6%) patients in group A and B who complained of incontinence, 23 cases (37%) had the score of 1 to 5, 22 (32.3%) had the score of 5 to 10, 12 (17.6%) had the score of 10 to 15, and only 11 (16.1%) suffered from severe incontinence.

Other problem which may be seen along with fecal incontinence can be gas incontinence of (17). Some studies have shown that Neoadjuvant therapy and anal endoscopic microsurgical surgery (TEM) have no effect on prevention of this complication (17). It is sometimes stated that these complications have the highest prevalence during the first 6 months and gradually decreases, although some of these complications not be completely resolved and persist for many years (34).

Urological complications

Urological complication is one of the relatively most common postoperative complications of rectal cancer (11, 18).

In general, urological complications have the prevalence of 23.7%, and no relationship was found between these complications and the pyelographic involvement of the tumor before surgery (19), nevertheless, the risk factors such as BMI of patient have a great influence on the complications of urinary system after these surgeries (5).

Bladder infections and inflammation and even kidney failure have been reported following radical surgery of colorectal cancers. Prevention of these complications requires careful monitoring of the patient after surgery and attention to the smallest urinary symptoms of the patient (20).

Of course, a skillful surgeon can have a significant effect on reducing the risk of this complication (21) and can reduce the urological complications which occur during surgery. In our patients, one case had ureteral injury and another case had urethral injury. The patient with ureteral damage recovered after a course of treatment with a double J-catheter, but the patient suffered from urethral injury required additional surgeries to reconstruct the urethra.

Postoperative bleeding

Postoperative bleeding is another postoperative complication of colorectal cancer (11, 1).

It has a prevalence of 2.3% (8) which is not a high, compared to other complications of this type of surgery; however, it can be a life-threatening condition if it occurs, and it is considered as one of the major complications of such surgeries that can increase the patient's hospitalization time after surgery (22).

According to the studies, the prevalence of this complication is not related to the type of surgery, and there was no significant difference between the patients who underwent laparoscopic surgery and those who underwent open surgery (4, 14, 23). In our study, bleeding was observed in 4 cases, re-operation was required in two patients that both two cases recovered by laparoscopic surgery, and two patients required packing.

Wound site infection

Wound site infection is one of the most common complications with prevalence of about 8.1% (8). This complication is more prevalent in the elderly (12.1%), and this higher prevalence leads prolonged hospitalization, increased costs and higher rate of mortality in this group (24).

The factors which can affect this complication are the surgical site, the amount of blood loss during the operation, the presence of tachycardia, and blood transfusion during surgery (25, 26). In a study published in the World Journal of surgery in 2017, the use of wound cover was effective to prevent wound infection in elective surgeries of gastrointestinal tract (27).

Obstruction

Intestinal obstruction with a prevalence of about 16% (29) can appear as the first manifestation of colorectal cancer or a postoperative complication (28). Surgical stent placement is one of the methods discussed in the literature to prevent this complication (30). Some oppose stent placement and state that this method not only has no effect on postoperative mortality, but also increases the risk of tumor recurrence and perforation that can be a source of mortality in long-term (29). In the studies, one of the most important risk factors for postoperative obstruction is metastasis to more than 3 lymph nodes (31). In our study, postoperative obstruction was observed in 12 cases that re-operation was required in 9 patients, and the cause of obstruction in these patients was adhesion after surgery, more due to adhesion of the intestine in pelvis, and the other 3 patients responded to medical treatment.

Declarations

Conflict of interest:

None.

Ethical Statement/Informed Consent

All investigations on human subjects must include a statement that the subject gave informed consent and patient anonymity should be preserved.

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