

**RESULTS OF SURGICAL TREATMENT OF COLORECTAL CANCER****\*Tillyashayhov M. N., Rakhimov O. A., Adilkhodjaev A. A., Akhmedov O. M. and Mahkamov T. Kh.**

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Article Received on 09/11/2023

Article Revised on 19/12/2023

Article Accepted on 09/01/2024

**ABSTRACT**

**The aim** is to compare the clinical efficacy of laparoscopic surgery and open surgery for colorectal cancer by analyzing the long-term treatment results. In this study, the authors presented an evaluation of the comparative effectiveness of laparoscopic surgery and open surgery in the treatment of colorectal cancer. 92 patients with histologically verified colorectal cancer were included in this study. By randomization, patients were divided into the control group (open surgery, n = 46 cases) and the main group (laparoscopic surgery, n = 46 cases). The duration of surgery ( $122.54 \pm 14.85$ ) min and incision length ( $4.51 \pm 1.065$ ) cm were shorter in the main group compared to the control group. Intraoperative blood loss in the main group was ( $161.12 \pm 10.694$ ) ml, versus the control group ( $218.53 \pm 15.369$ ) ml ( $p < 0.05$ ). Patients in the main group had a higher five-year survival rate and a lower incidence of postoperative complications, compared to the control group (for all  $P < 0.05$ ). Thus, the use of laparoscopic surgery in the treatment of colorectal cancer has a better clinical effect than open surgery and is worthy of clinical application.

**KEYWORDS:** Laparoscopic surgery; open surgery; colorectal cancer.**INTRODUCTION**

Colorectal cancer is one of the most common malignant tumours in all economically developed countries of the world, occupying the third place in the structure of cancer morbidity and the fourth place in mortality.<sup>[1-5]</sup> It can affect the blind, ascending, transverse-obstetric, descending, sigmoid, rectum and other parts of the GI tract.<sup>[6]</sup> Ki-67 and its positive value are the expression of oncogene expression and the basis of malignant biological behaviour and histopathological changes of colorectal cancer. Surgical treatment is an effective method to inhibit the disease in patients. Different surgical methods affect the oncogenesis and prognosis of patients differently. Colorectal cancer is a malignant tumour that is frequently encountered in clinical practice. Patients with early colorectal cancer have only clinical symptoms such as abdominal bloating and dyspepsia, which rarely make patients pay attention to them. As a result, most patients seek hospitalization for treatment, and their condition progresses to a neglected stage, which poses a serious threat to the patient's life.

Despite the success of drug and radiation therapy, surgery remains the most effective way to treat colorectal cancer. In recent years, mainly laparotomy has been used to treat colorectal cancer, but this method of treatment is more traumatic for the patient.<sup>[7-9]</sup>

Patients experience multiple complications in the postoperative period, and the prognosis is not always satisfactory.<sup>[10,12]</sup> Therefore, active exploration of alternative treatments for colorectal cancer has become the focus of clinical research.<sup>[13-15]</sup>

In recent years, with the continuous development of minimally invasive techniques, laparoscopic surgery has been widely used in clinical treatment because of its less surgical traumatic nature, negligible bleeding, and rapid recovery of postoperative patients.<sup>[8,16,17]</sup>

The use of modern minimally invasive technologies in surgery made it possible to increase the efficiency of surgical treatment of patients with colorectal cancer on the one hand by minimising surgical trauma, and on the other hand by early rehabilitation of patients, which led to the creation of a multimodal program of early recovery or so-called "accelerated rehabilitation of patients" after surgery. The ideologist of this method was a Danish anesthesiologist Professor Henrik Kehlet. He was the first to propose the use of a protocol for accelerated rehabilitation in patients and conducted a systematic analysis of pa-tophysiological mechanisms of complications after elective surgical interventions.<sup>[19]</sup> It was a comprehensive program that included both preoperative preparation, surgery, and postoperative management of the patient. However, the clinical effect

of laparoscopic surgery in the treatment of colorectal cancer is still controversial.<sup>[21,22]</sup> In our study, we analyzed the clinical efficacy of open surgery and laparoscopic surgery for colorectal cancer and also performed a comparative analysis of the long-term results of both methods of surgical treatment of colorectal cancer.

**Purpose** - to compare the clinical efficacy of laparoscopic and open surgery for colorectal cancer by analyzing the long-term treatment results.

## MATERIALS AND METHODS

This study includes the results of the treatment of 92 patients with histologically verified colorectal cancer admitted to the endovascular oncosurgery department of the Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology for the period from 2015 to 2021. Patients were divided into the control group (open surgery, n = 46 cases) and the main group (laparoscopic surgery, n = 46 cases). The ethical committee of the centre approved the study.

### Inclusion criteria

- Age: 18 years to 75 years
- Histologically verified adenocarcinoma of rectum and colon with T1-T3, T4a N0-2, M0
- Absence of distant metastases
- Absence of primary-multiple malignant tumors
- ECOG status: 2 or lower
- ASA I, II, III
- Exclusion criteria:
- Age younger than 18 and older than 75 years
- Non-epithelial forms of tumours, neuroendocrine cancer of the colon and rectum
- Presence of synchronous colorectal tumors
- Complicated course of the disease
- Distant metastases
- Pregnancy and lactation
- ASA score IV or higher
- HIV infection
- Presence of mental illness

- Established diagnosis of diffuse familial polyposis or Lynch syndrome.

Patients in the control group underwent open surgical intervention. The patients of the main group underwent laparoscopic treatment. The specific procedure is as follows. First, an artificial pneumoperitoneum was applied, and the pressure in the pneumoperitoneum was maintained at about 12 mmHg (1 mmHg = 0.133 kPa). Laparoscopy and instrumentation were performed using the 5-well method; tumours were observed by laparoscopy to determine tumour localization. Then, the blood vessels around the tumour were clamped and transected using the surgical instrument, the tumour was removed (paying attention to the integrity of the colon and rectal mesentery during tumour removal), and the surrounding regional lymph nodes were cleared. The abdominal cavity area was flushed and a drainage tube was applied for drainage; if there was no bleeding, the abdominal cavity was closed layer by layer. Open surgery and laparoscopic surgery were used to compare and observe clinical efficacy, postoperative Ki-67 expression, as well as complications and 5-year survival.

Comparative analysis was performed using various methods of statistical analysis: Student's t-test, Mann-Whitney U-test, and  $\chi^2$  criterion. The level of statistically significant result was considered  $p < 0.05$ . Statistical processing of data was performed using StatPlus and IBM SPSS statistical programs.

## RESULTS

The mean age of patients in the main group was  $(56.71 \pm 4.33)$  years and the mean age of patients in the control group was  $(56.04 \pm 3.59)$  years. There was no statistically significant difference between the two groups ( $t = 0.803$ ,  $P = 0.424$ ). In the main group, there were 40 (86.96%) patients under the age of 60 years. In the control group, there were 38 (82.61%) patients whose age was below 60 years. There were 31 (67.39%) males in the main group and 33 (71.74%) males in the control group. There were no significant differences in age, or sex between the main and control groups ( $p > 0.05$ ) (Table 1).

**Table 1: Comparison of common patient characteristics.**

Parameters	Main group (n = 46)		Control group (n = 46)		P
	n	%	n	%	
Age group (years)					0,424
<60	40	86,96	38	82,61	0,562
>60	6	13,04	8	17,39	
Gender					
Male	31	67,39	33	71,74	0,65
Female	15	32,61	13	28,26	

The mean duration (Mean  $\pm$  SD) of surgery was  $122.54 \pm 14.85$  min in the main group and  $151.60 \pm 19.81$  min in the control group, respectively. The difference between the two groups was statistically significant ( $p < 0.05$ ). The mean intraoperative blood loss was  $161.12 \pm 10.694$  ml

in the main group and  $218.53 \pm 15.369$  ml in the control group. The difference between the two groups was statistically significant ( $t = -20.798$ ,  $p < 0.05$ ). The mean incision length in the main group was  $4.51 \pm 1.065$  cm and the mean incision length in the control group was

(13.14 ± 2.327) cm. The difference between the two groups was statistically significant ( $t = -22.891$ ,  $p < 0.05$ ). There were 4 (8.69%) cases of complications (incisional infection, pulmonary infection, bleeding from anastomosis and intestinal obstruction in 1 case) in the main group. In the control group, there were 4 cases of wound infection and 2 cases of pulmonary infection. There were 3 cases of bleeding from anastomoses, 2 cases of intestinal obstruction and 1 case of lower extremity venous thrombosis (26.08%). The difference between the two groups was statistically significant ( $p < 0.05$ ).

In the main group, 30 (65.22%) patients survived 5 years after surgery compared to 11 (23.91%) cases in the control group. The difference between the two groups was statistically significant ( $p < 0.05$ ).

There were 21 (45.65%) Ki-67 expression positive cases postoperatively in the main group versus 41 (89.13%) Ki-67 positive cases postoperatively in the control group. The difference between the two groups was statistically significant ( $p < 0.05$ ) (Table 2).

**Table 2: Analysis of clinical effects after surgery.**

Figures	Main group (n = 46)	Control group (n = 46)	p
Duration of operation (min)	122,54 ± 14,85	151,60 ± 19,81	<000,001
Intraoperative blood loss (ml)	161,12 ± 10,694	218,53 ± 15,369	< 0,001
Incision length (cm)	4,51 ± 1,065	13,14 ± 2,327	< 0,001
<i>Complications</i>			
Infection of the incision	1	4	0,028
Pulmonary infection	1	2	
Anastomotic bleeding	1	3	
Intestinal obstruction	1	2	
Lower extremity venous thrombosis	0	1	
Lower extremity venous thrombosis	0	1	
Without complications.	42	34	
<i>5-year survival rate</i>			
Yes	30 (65,22%)	11 (23,91%)	< 0,001
No	16 (34,78%)	35 (76,09%)	
<i>Ki-67</i>			
Positive	21 (45,65%)	41 (89,13%)	< 0,001
Negative	25 (54,35%)	5 (10,87%)	

## DISCUSSION

The pathogenesis of colorectal cancer is known to be mainly related to chronic inflammation of the colon, colorectal adenoma, and genetic factors. In recent years, minimally invasive access technologies using endoscopic techniques have gained increasing interest, which allows for improved efficiency of operative treatment due to better visualization and more precise work of the surgeon.<sup>[23]</sup>

However, in radical surgery, the specificity of the affected part must be considered to improve prognosis. Elimination of postoperative complications and recurrence rate negatively affects the quality of life of patients. The use of laparoscopic video-assisted surgery not only allows the detection of small masses that cannot be detected by open surgery but also has a comparative advantage in reducing the incidence of local recurrence and tumour surgery.<sup>[2]</sup>

The results of our study showed that the duration of surgery and incision length in the experimental group were shorter than in the control group, and the difference was statistically significant. The magnitude of intraoperative blood loss in the main group was lower than in the control group, and the difference was also

statistically significant. The results indicate that, compared to open surgery, the duration of surgery and the length of incision in laparoscopic surgery are shorter and the amount of intraoperative blood loss is less.

The results of this study also showed that the incidence of complications in the main group was lower than in the control group, and the difference was statistically significant. The results indicate that laparoscopic surgery is a safe method compared to traditional open surgery.

The 5-year survival rate in the main follow-up group was 65.22% (30/46) versus the same rates in the control group (23.91% (11/46)). The difference was statistically significant ( $p < 0.05$ ).

## CONCLUSION

Videoleparoscopic interventions in colorectal cancer are not inferior in clinical effectiveness to traditional interventions: they are characterized by decreased duration of surgery, decreased intraoperative blood loss and significantly reduced incidence of postoperative complications as well as the duration of hospital stay.

Indicators of the 5-year survival rate of patients after video-laparoscopic interventions in colorectal cancer

have a therapeutic effect and we consider it reasonable for further clinical advancement.

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