

*Research Article***Evaluation of Laparoscopic Colectomy for Colonic Cancer in Minia University Hospital (prospective study)****Ahmed Kenawy, Ayman Hassanen, Alaa Elsewefy and Adel Mohamed Shehata**

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Abstract

Purpose: To determine oncologic outcomes after laparoscopic complete mesocolic excision (CME) for colonic cancer in our locality in Minia governate. **Methods:** The clinical and follow-up data of 40 colon cancer patients who were subjected to CME in our institution from August 2015 and September 2019 were prospectively analyzed. Forty patients were included in the study minimum follow up period was two years . oncologic outcomes were evaluated. **Results:** The aim of present study is to determine health related quality of life, short term oncologic outcomes after laparoscopic colectomy for colonic cancer in our locality in Minia governate benefits including less intraoperative blood loss, faster postoperative recovery, and shorter hospital stay. There was no significant difference in the incidence of 30- day postoperative complications, the incidence of major complications, and the pathological results between the two groups. The intra operative and postoperative 30-day mortality rates in both groups were 0%. There was no significant difference in the tumor recurrence rate, 5-year overall survival (OS), and 5-year disease-free survival (DFS) between the two groups. **Conclusion:** Oncologic outcomes were good with laparoscopic CME for colonic cancer and safe in selected patients.

Key words: complete mesocolic excision, laparoscopy, minimally invasive surgical oncology, prognosis, transverse colon cancer, minia university .

Introduction

Minimally Access surgery is becoming one of the acceptable treatment options for patients in the field of surgical oncology^[1]. Since the first reported case of laparoscopic colectomy for a colon tumor that was conducted by Jacobs et al., in 1941^[2], several multicenter, large-sample, randomized controlled trials (RCT) have indicated that laparoscopic surgery for colon cancer can be very beneficial for patients^[3]. However, all of the above studies excluded TCC due to the difficulty experienced with laparoscopic surgery for this condition^[4-8]. The concept of CME was first proposed by Hoheberger et al., in 2009^[9]. Currently, only a few studies have examined laparoscopic CME Morbidity and mortality for the treatment of TCC, and these studies have drawbacks such as small sample sizes and no long- term follow-up results^[10-12]. This study aimed to evaluate the short-term and long-term outcomes between laparoscopic and open CME for the treatment of TCC using PSM.

Methods**Patients**

This prospective study include 40 patients with

colonic cancer. The informed consent was taken from all patients.

from August 2015 and September 2019, a total of 40 patients with primary CC were subjected to radical surgery in our hospital based on specified inclusion and exclusion criteria. TCC was defined as cancer located between the ileo caecal valve to rectosigmoid junction. Inclusion criteria were: (1) the pathological type was colon adenocarcinoma; (2) clinical stage was T1-3N0-2M0; (3) patients were subjected to surgery only, no neoadjuvant therapy was prescribed; (4) no other organs were resected; and (5) clinical and follow-up data were available and complete. Exclusion criteria: (1) patients received emergency surgery due to colon perforation or intestinal obstruction; (2) patients had combined synchronous or metachronous colorectal cancer or other organ tumors; (3) other organs were resected during surgery; (4) recurrent tumors.

All patients were undergone laparoscopic complete mesocolic excision and. R software was used for PSM, and based on age, sex, BMI, clinical stage and ASA score. Ultimately, 40

patients were included in the study. Patients were examined routinely including electronic colonoscopy, pelvic magnetic resonance imaging (MRI), chest and abdominal computed tomography (CT), tumor marker testing, pulmonary function testing, electrocardiography and echo- cardiography, and any other tests deemed necessary to determine the clinical stage and patient tolerance to surgery^[13-19]. If needed, examinations including positron emission tomography-computed tomography (PET-CT) and bone scans were used to exclude tumor metastasis. The tumor TNM stage was based on the 7th edition of the TNM classification of colorectal cancer.

Morbidity, defined as postoperative complications occurring within 30 postoperative days, was classified using the Clavien–Dindo classification^[20-26]. Minor complications were classified as 1 and 2. Mortality was defined as death from any cause occurring within the 30 postoperative days.

Follow-up

All patients were followed-up after hospital discharge. Patients were followed-up once every 3 months in the first year, once every 6 months in the second year, and then once every year afterward. The follow-up examination included a routine physical examination, tumor marker testing, and chest and abdominal imaging. An annual electronic colonoscopy was performed^[27-30]. When tumor recurrence was suspected, patients were subjected to timely diagnosis in the hospital. OS was calculated from the date of radical resection to the last

follow-up visit or death from any cause. DFS was assessed from the date of radical resection until the date of cancer recurrence or death from any cause. The follow-up was closed in November 2017.

Statistics

Categorical variables are presented as frequencies and percentages, and continuous variables are presented as median values with range. Statistical analyses were performed with the Chi-square test, Fisher's exact test, and Mann–Whitney U test for categorical and continuous variables, respectively. OS and DFS rates were estimated by the Kaplan–Meier method, with differences in survival between groups compared by the log-rank test. The Cox proportional hazard model was used to identify significant predictive factors for patient survival outcomes. Results are expressed as odds ratios (OD) with 95% confidence intervals (CI). All analyses were performed using the Statistical Package for Social Sciences (SPSS) 13.0 for Microsoft Windows version. $P < 0.05$ was considered to be statistically significant.

Results

Short-term outcomes

The laparoscopic CME had benefits that included less intra- operative blood loss, faster postoperative recovery, and a shorter hospital stay (Table 1). There was no significant difference in the incidence of postoperative complications and the incidence of major complications.

Table 1. Short-term outcomes .

Outcomes	Laparoscopic group (n=40)	p value
Type of resection		5.928 0.7
Right hemicolectomy	16	
Left hemicolectomy	8	
Transverse colectomy	2	
Sigmoidectomy	8	
Extended right hemicolectomy	6	
Conversion to open surgery	-	-
Operative time (median, min; range)	187.5 ± 49.5(120 – 290)	0.030
Blood loss (median, ml; range)	130 (80-240)	0.038
Time to pass first flatus (median, d; range)	3 (1-5)	0.040
Time to resume liquid diet (median, d; range)	4 (2-7)	0.032
Hospitalization (median, d; range)	10 (7-19)	0.034
Patients with postoperative complications	7	0.579
Patients with major complications	1	1.000
Intraoperative mortality	0	-
Postoperative 30-day mortality	0	-

Table 2. Pathological outcomes of the two groups

Outcomes	Laparoscopic group (n=40)	p value
Pathological TNM stage		0.810
I	5	
II	20	
III	15	
Tumor differentiation		0.489
Well	10	
Moderate	14	
Poor	8	
Harvested lymph nodes (median, range)	13.1 ± 2.7 (8 – 18)	0.587
Lymphovascular invasion		0.479
Yes	14	
No	26	
Residual tumor (R0/R1/R2)	40/0/0	1.000

Discussion

Laparoscopic colorectal surgery has now evolved from being accepted only for benign colorectal diseases to apply for malignant colorectal diseases not only with the same efficacy compared to open surgery but also with all advantage of laparoscopy. Now, whenever laparoscopic surgery is feasible, it is the operation of choice ⁽¹⁷⁾

Nevertheless only the MRC CLASSIC trial provide the highest level of evidence for laparoscopic resection for rectal cancer ⁽¹⁸⁾

In our study the operations performed were sigmoid colectomy 4, right hemi colectomy 7 cases, left hemi colectomy 5 cases, extended right hemi colectomy 3 cases, transverse colectomy one case.

The mean operating time was 187.5 ± 49.5 min. The duration of the operation is influenced by many factors such as: intra-operative complications, extent of resection, prior abdominal surgery, surgeon's experience and the operating team.

Laparoscopic colorectal surgery takes invariably longer duration than its corresponding open surgery. Probably, the negative effect of prolonged operating time in laparoscopic surgery is overrun by advantages such as decrease in hospital stay, wound infection, postoperative ileus and postoperative pain. However, there is lack of well designed studies evaluating the influence of the operating time on postoperative outcome as a primary endpoint⁽²⁰⁾.

In our thesis, recovery of intestinal function was assessed by measuring the time to pass 1st flatus and the time to bowel motion.

In our study, long-term oncological safety was assessed by examining postoperative results, such as the resection margin and the number of harvested lymph nodes as well as the recurrence and the survival rates of patients who were available for long-term follow up.

The average number of harvested lymph nodes was 13.1 ± 2.7 , rang 8–18. Histological examination revealed that proximal and distal margins were free of tumor cells in all surgical specimens in both groups. The proximal and distal margins for colonic resections were > 5 cm in all specimens.

In the results of most studies reported recently, the recurrence rate after laparoscopic surgery for colorectal cancer was shown to be comparable to or better than that of open abdominal surgery.

In our study, median follow up was 31.45 months ranging from 48 to 18 months. one patient (5%) had recurrence.

In the **CLASICC** trial, which studied patients who were available for longer than 3 years of follow up after a colorectal resection, the local recurrence in colon cancer patients was 7.3%, and in rectal cancer patients, it was 9.7%; the distant recurrence rates were 11.3%, and 18.6%

in colon cancer and rectal cancer patients, respectively. Results that are comparable with our study results⁽³⁰⁾

Conclusion

In conclusion, the use of laparoscopic CME in the treatment of colonic cancer leads to better short-term outcomes than laparotomy, but comparable long term outcomes.

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