

COMPARATIVE STUDY BETWEEN LAPAROSCOPIC AND OPEN SURGERY IN COLORECTAL CANCER

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ABSTRACT

Background: Colorectal cancer is one of the most common cancers in the developed world. Surgical removal of the primary tumor with adequate margins and lymphadenectomy provide the best chance of long-term disease-free and overall survival.

Objective: Throwing some light on use of laparoscopy and its value in colectomy in comparison with open methods of colectomy as a treatment of early colorectal cancers.

Patient and methods: A prospective study on 30 patients suffering from operable colorectal cancers (stage I-III), an age of at least 18 years and fit for elective surgery during the period from(1/1/2014) to (30/6/2016). Fifteen patients were operated upon by laparoscopic technique, and the other 15 patients were operated upon by open technique. Both groups were evaluated for operative data and early postoperative outcome.

Results: For laparoscopic colectomy, oncological results were at least as good as those of open surgery with clear advantages have been demonstrated for the laparoscopic approach in term of decreased intra-operative blood loss, faster postoperative recovery , return of bowel function, decreased pain and decreased hospital stay.

Conclusion: Laparoscopic colon resection is a feasible and safe alternative to the open approach, with some short-term advantages.

Key words: Laparoscopy, colectomy, colon cancer, rectal cancer.

INTRODUCTION

Standard oncologic surgery consists of en bloc bowel resection with appropriate proximal and distal resection margins and more than 12 harvested lymph nodes (Baxter et al., 2005).

The use of laparoscopic colectomy for colon cancer is now an acceptable treatment not only for early colon cancer, but also for advanced cases because of its oncological safety and feasibility (Lacy et al., 2002).

The laparoscopic colectomy showed comparable oncologic results to the open colectomy group and even better survival rates in the patients with stage III disease. These results were later confirmed on long term follow-up (Lacy et al., 2008).

The laparoscopic approach for colon resection is widely accepted, but its definitive role in rectal tumors is still controversially debated due to technical difficulties and missing long-term results. Tumor size and volume and pelvic dimensions may influence intraoperative and/or immediate outcome, Furthermore,

the good exposure of the pelvic cavity by laparoscopy and the magnification of anatomical structures seem to facilitate pelvic dissection (Künzli et al., 2010).

The aim of the present work was comparison between laparoscopic-assisted colectomy and open colectomy for colorectal cancer as regard to short-term outcome.

PATIENTS AND METHODS

This study was a prospective study on 30 patients suffering from operable colorectal cancers (stage I-III), an age of at least 18 years and fit for elective surgery admitted in Al-Azhar University Hospitals during the period from January 2014 to June 2016. A written informed consent was obtained from all subjects of the study, and the study was approved by the Ethics Committee of Faculty of Medicine, Al-Azhar University. Fifteen patients (group A) were operated upon by laparoscopic-assisted technique in which the colon dissection and freely mobilization was done, then it was withdrawn through an extension of port site at the umbilicus and the colon came out of the wound easily. The resection of a segment of the colon, and the anastomosis are accomplished extra corporeally using a staplers then the completed anastomosis was dropped back into the abdominal

cavity. The other 15 patients (group B) were operated upon by open technique. Certain parameters were assessed during the operative (amount of blood loss and operative duration) and early postoperative periods (lymph node harvest and recovery) for evaluating the procedure. Analysis of data was done using SPSS (statistical program for social science) with description of quantitative variables as mean \pm SD, t-test was used to compare two groups as regard a quantitative variable and P value $<$ 0.05 was significant.

RESULTS

Amount of blood loss was higher among open group (370.0 ± 133.18 cc) compared to laparoscopic group (267.5 ± 89.26 cc) with statistically significant difference between both groups as regard to intraoperative blood loss. But laparoscopic colectomy take more time (135.3 ± 25.4 min) as compared to open colectomy (118.0 ± 24.1 min) with statistically significant difference between both groups as regard to operative duration. Lymph node harvest in laparoscopic colectomy (14.30 ± 2.03) was adequate as that of open colectomy (15.35 ± 2.27) with no statistically significant difference between both groups as regard to number of L.Ns (Table 1).

Table (1): Comparison between both groups as regard to intraoperative blood loss, Operative duration and number of L.Ns (Mean \pm SD).

Parameters \ Groups	Group A	Group B	t-test	P value
Blood loss (ml)	267.5 \pm 89.26	370.0 \pm 133.18	2.48	0.010
Time (min)	135.3 \pm 25.4	118.0 \pm 24.1	1.91	0.033
L.N number	14.30 \pm 2.03	15.35 \pm 2.27	1.33	0.096

There was statistically significant difference between both groups as regard to postoperative ileus (3.90 ± 0.79 days in laparoscopic, 4.55 ± 0.76 days in open colectomy) and highly significant difference as regard to parenteral analgesia

(2.55 ± 0.83 days in laparoscopic, 4.20 ± 0.89 days in open colectomy) and hospital stay (6.5 ± 1.73 days in laparoscopic, 11.20 ± 2.48 days in open colectomy - Table 2).

Table (2): Comparison between both groups as regard to recovery (Mean \pm SD).

Parameters \ Groups	Group A	Group B	t-test	P value
Ileus duration (days)	3.90 ± 0.79	4.55 ± 0.76	2.30	0.015
Parenteral analgesia (days)	2.55 ± 0.83	4.20 ± 0.89	5.25	<0.0001
Hospital stay (days)	6.5 ± 1.73	11.20 ± 2.48	6.02	<0.0001

DISCUSSION

Our results showed that blood loss was significantly lower in the laparoscopic group than in the open group. This finding is consistent with the results by **Braga and his Colleagues (2002)**.

In our study, we found that there was significant difference in the operative time between patients undergoing laparoscopic and open colectomies . More operative time was needed for laparoscopic procedures with a median of 135min. for the laparoscopic group compared to 118min. median time for the open group, and that was the same as noted by **Ohtani and his Colleagues (2011)**, they reported that the operative duration for laparoscopic colorectal surgery was significantly longer than for open colorectal surgery.

This was also the observation of **Gandy and his Colleagues (2004)** as they stressed that operative times are longer for laparoscopic colorectal resections than for the equivalent open procedures but

he further hypothesized that these differences will decrease with increasing experience and are likely to reach equivalence.

Detailed pathological studies of the resected specimens revealed no statistically significant difference in the number of lymph nodes harvested and the adequacy of the margins during laparoscopic colon resections and their corresponding conventional counterpart attesting to the ability to fulfill the rationale of radical resections in both groups . A recent study documented available data for laparoscopic versus open colectomy showed that both procedures commonly yield about thirteen lymph nodes a finding that is in accordance with our findings (**Stracci et al., 2015**).

In our study , we used the ability to resume oral diet as an indicator of resolution of postoperative ileus . We found that there was a significant

difference in the period needed to resume oral diet being less in the laparoscopic group. The same finding has been reported by **Milson and his Colleagues (2001)**.

In this study, there was a statistically highly significant reduction of postoperative pain judged by the time patients needed to control their pain by parenteral analgesics between the open and laparoscopic groups. **Gandy and his Colleagues (2004)** emphasized that laparoscopic surgery has shown us that conventional large incisions can be more traumatic than the small one and contribute to adverse metabolic responses seen in the perioperative period.

There was a highly statistically significant decrease in hospital stay in cases having laparoscopic colorectal resections when compared to those undergoing open resections. This result was in harmony with similar several studies in literature. We would contribute this to the longer period of postoperative ileus and control of postoperative pain with parenteral analgesics in the open group. **Patel and Bergamaschi (2003)** stressed that length of hospital stay may depend more on preoperative counseling, discharge criteria, social arrangements, patient's health literacy, or type of health system than the means of surgical access.

CONCLUSION

Laparoscopic colon resections were feasible technically with a comparable efficacy of resection of tumor bearing segments with its lymph nodal basin to the corresponding open standard colon resections. Furthermore, short term outcome

findings of this study can be critically appraised as findings directly related to patient's acceptance of the technique. The most valuable short term advantage for laparoscopic colon resection was the hospital stay time and less need to parenteral analgesia.

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دراسة مقارنة بين استخدام منظار البطن والفتح الجراحي فى حالات سرطان القولون و المستقيم

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خلفية البحث: يعتبر سرطان القولون والمستقيم من أكثر أنواع السرطان شيوعا فى الدول المتقدمة ، كما أن أفضل فرصة للتخلص من هذا المرض هو استئصال الورم بقدر كافي مع الغدد اللمفاوية التابعة له ، وبعد أن أصبح استخدام منظار البطن الجراحي أمرا مسلما به فى الإصابات الحميدة فإن استخدامه فى حالات سرطان القولون و المستقيم لا يزال محل خلاف حيث أن استخدامه فى استئصال الورم لا بد أن يكون طبقا للمعايير الخاصة بذلك وأن يعطى نتائج على الأقل مماثلة لتلك الناتجة عن الفتح الجراحي بل إنه على المدى القصير فإن العديد من الدراسات أوضحت فوائد منظار البطن عن الفتح الجراحي.

الهدف من البحث: هو توضيح دور وأهمية استخدام منظار البطن مقارنة بالفتح الجراحي فى الحالات المبكرة لسرطان القولون و المستقيم.

المرضى وطرق البحث: أجريت هذه الدراسة على (30) مريضا من الذين يعانون من سرطان القولون أو المستقيم فى مرحلة مبكرة ، تم تقسيمهم إلى مجموعتين الأولى تضم (15) مريضا ويتم معالجتهم باستخدام منظار البطن والثانية تضم (15) مريضا ويتم معالجتهم باستخدام الفتح الجراحي.

النتائج: قد توصلت الرسالة الى أن نتائج منظار البطن على الأقل بنفس القدر الكافي الناتج عن الفتح الجراحي بل يفوقه فى قلة الدم المفقود أثناء العملية وسرعة عودة الأمعاء لوظيفتها مع قلة الإحساس بالألم بعد العملية وتقليل مدة الإقامة بالمستشفى.

الاستنتاج: يفضل استخدام منظار البطن فى الحالات المبكرة لسرطان القولون والمستقيم إذا توافرت الخبرة والإمكانيات اللازمة لذلك.