

Laparoscopic Colorectal Surgery: A Cohort Study in West Sumatera, Indonesia

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Abstract

Background: Traditionally, operation on the colon and rectum required a large abdominal and /or pelvic incision, which often required a lengthy recovery. The introduction of laparoscopic is an example of surgical innovation with a rapid implementation in many areas of surgery. A large number of studies have shown that laparoscopic colorectal surgery is associated with the same benefits than open surgery, including lesser pain, earlier recovery of bowel transit and shorter hospital stay. The use laparoscopic surgery for colorectal cancer still raises a number of concerns, particularly with the technique's complexity, learning curve and longer duration.

Methods: Medical record patients undergoing colorectal surgery were attempted between January 2014 and December 2015.

Results: There were 225 patients of which 117 we do laparoscopic and 108 with open technique. Use oral analgetic in laparoscopic group \pm 1, 9 (days) and 2, 2 (days) in open group. For hospital stay, 5 days in laparoscopic group and 7 days in open groups. The rate of recurrence was 18 cases (16%) in the laparoscopic group and 28 cases (25%) in the open surgery group. At 2 years after surgery, mortality rate was 19 cases (16%) in laparoscopic group and 27 cases (25%) in open surgery group. 10 cases (9%) was cancer-related in laparoscopic group and 21 cases (21%) in open group.

Conclusion: Proper laparoscopic colorectal surgery is safe and leads to excellent results in terms of recovery and short term outcomes.

Keywords: Laparoscopic, Colorectal, Colorectal surgery.

Introduction

Traditionally, operation on the colon and rectum required a large abdominal and/or pelvic incision, which often required a lengthy recovery. New instrumentation and techniques allow the surgeon to perform the procedure through several small incisions, what we now refer to as “minimally invasive”, “laparoscopic” or “laparoscopic-assisted” colorectal surgery.

Minimal invasive surgery can be successfully performed for variety of common benign and rectal conditions including diverticulitis, colon polyps, inflammatory bowel disease (Crohn's Disease and ulcerative Colitis), rectal prolapse and malignancy. It can be used to remove the entire colon and rectum or just portion, or segment, of the colon. Minimally invasive techniques can be used to create an ostomy. They may be either colostomy or an ileostomy. Also, minimally invasive techniques can be used to reconnect the intestine from a temporary ostomy. There are very few traditional abdominal colon and rectal procedure that cannot be performed in a minimally invasive manner.

Laparoscopic colorectal surgery refers to a technique where surgeon makes several small incisions, instead of a single large incision. For

most colon and rectal operation, 3-5 incisions are needed. Small tubes, called “trocars”, are placed through these incisions and into abdomen. Carbon dioxide gas is used to inflate the abdomen in order to give the surgeon room to work. This allows to surgeon to use a camera attached to a telescope to watch a magnified view of the inside the abdomen on operating room monitors.

Laparoscopic colorectal surgery is a significantly more challenging operation as it frequently involves often more than one abdominal quadrant, identification and transection of vascular structures, mobilization and resection of the bowel, retrieval of the surgical specimen and performing an anastomosis. The greater complexity of laparoscopic colectomy has been associated with longer operative times and long learning curve. Ileo-colic resection, segmental colectomy or anterior resection of the rectum for cancer, segmental colectomy for benign disease and rectopexy can perform laparoscopically.

Results are different for each procedure and each patient, some common advantages of minimally invasive colorectal surgery are shorter hospital stay, shorter recovery time, less pain from the incisions, faster return to normal diet, faster return to work or normal activity, better cosmetic healing. Many patients qualify for laparoscopic or minimally invasive surgery. However, some

conditions may decrease a patient's eligibility, such as previous abdominal surgery, cancer (in some situation), obesity, variations in anatomy or advanced heart, lung, or kidney disease.

The introduction of laparoscopy is an example of surgical innovation with a rapid implementation in many areas of surgery. A large number of studies have shown that laparoscopic colorectal surgery is associated with the same benefits than open surgery, including lesser pain, earlier recovery of bowel transit and shorter hospital stay. The use laparoscopic surgery for colorectal cancer still raises a number of concerns, particularly with the technique's complexity, learning curve and longer duration

Methods

We collect medical record patient undergoing colorectal surgery from January 2014 through December 2015. All of patient divided in to 2 group, laparoscopic surgery group and open surgery group. Patients have previously been screened for diagnosis and staging so that it was decided to do colorectal surgery.

All operations were performed in general anesthesia. Patients are prepared both in general condition and gastrointestinal tract. In all patients, bowel preparation was carried out the day before operation by intestinal wash out with an iso-osmotic solution. The evening before and the morning of the operation patients was given an enema. As antibiotic prophylaxis all patients received single dose of ceftriaxone (2gr) intravenously.

From medical record we collect data about use of analgesics dan length of hospital stay. Recurrence and mortality rate were asseince 2 years after post operatively.

Results

From January 2014 through December 2015, a total of 225 patients with colorectal cancer underwent colorectal surgery. Of these patients, 117 were assigned to undergo laparoscopic surgery and 108 patients to undergo open surgery. 15 cases are conversion from laparoscopic cases. Data were collected from two hospitals, M. Djamil Hospital and Siti Rahmah Islamic Hospital, Padang, West Sumatera. Age varied between 18 and 72 years. In the laparoscopic group, the mean age was 56, 6 years and open surgery group was 57,4 years. Sex ratio (male: female) in the two group was 48: 69 in laparoscopic group and 46 : 62 in open surgery group. Female patients are dominant. Emographics details are shown in table 1. Operative data are shown in picture 1. Mean operative time in laparoscopic group was 229 min ± 9 and 190 min ± 10 in open surgery group, but in varies depending on the kind of resection.

Table 1: Demographics details patients undergoing colorectal surgery.

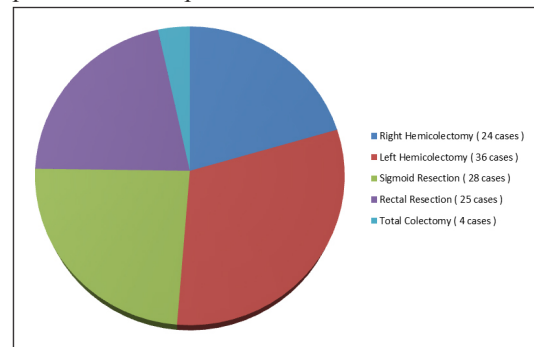
	Lap n = 117	Open n = 108
Age (years)	56,6	57,4
Gender M:F	48 : 69	46 : 62
Tumour stage		
I	22	18
II	37	32
III	43	47
IV	15	11
ASA Classification		
I or II	98	92
III	19	16

The need for analgesics in both of group has been shown in table 2. In laparoscopic group use of analgesic (oral or intravenously) for 3-5 days first post-operative. Reduced post-operative pain in the group resulted in reduced duration of analgesic.

Table 2: Use of analgesics post-operative

	Lap n=117	Open n=108
Oral analgesics (days)	1,9	2,2
Intravenous Analgesics (days)	3,2	4,6

Hospital stay for both of group including 5 days (5-6 days) in laparoscopic group and 7 days (6-10 days) in open surgery group. The shorter length of hospital stay provide reduced cost problem for both patients and hospital.



Picture 1: Details of Laparoscopic approach for colorectal cancer

At 2-years follow-up, data were available for 18 cases (16%) regarding recurrence in laparoscopic group. 12-18 months (15 months) was time to recurrence. From the data was found 1 case with port-site metastasis in laparoscopic group. (Details in table3)

Table 3: Recurrence details in colorectal surgery

	Lap n = 117	Open n = 108
Tumor recurrence	18 (16%)	28 (25%)
Type of recurrence		
Distant metastasis	7	9
Locoregional relapse	7	14
Peritoneal seeding	3	5
Port-site metastasis	1	0
Time to recurrence (months)	15	17
Surgical treatment of recurrence with curative intention	6 (33%)	9 (32%)

Table 4: Colorectal cancer survival

	Lap n = 117	Open n =108
Overall mortality	19 (16%)	27 (25%)
Cancer-related mortality	10 (9%)	21 (21%)
Causes of death		
Perioperative mortality	1	3
Tumor progression	9	18
Others	9	6

At 2 years, Mortality rate was 16 % (19 cases) in laparoscopic group which 1 cases patient was death perioperative. In open surgery group, mortality rate was 25% (27 cases) with 3 cases death perioperative.

Discussion

While the operative time for laparoscopic surgery is obviously more than that open surgery, there are several beneficial outcomes resulting directly from the use of laparoscopic as compared with open surgery [1, 2]. As there is no large abdominal incision, the corresponding postoperative pain and the ensuing need for analgesia is reduced [1-3].

Previous studies comparing laparoscopic and open surgery found a significant shorter hospital stay following laparoscopic [1, 2, 4]. In the present series, the lower post-operative complication rate combined with the earlier recovery of both bowel function and oral feeding may represent important determinants for the reduced length of stay in laparoscopic group. Other factors that could explain the shorter hospital stay following laparoscopic are the lower postoperative pain / consumption of analgesic drugs [2, 4].

Numerous studies have been carried out to determine whether laparoscopic is actually associated with an increased incidence of port site recurrences / metastasis [5, 6]. The possible mechanism which leads to port site metastasis was direct or indirect contamination, metabolic and hematogenous [7-10].

Conclusion

Proper laparoscopic colorectal surgery is safe and leads to excellent results in terms of recovery and short term outcomes. In conclusions, the laparoscopic technique resulted in a reduction of both the overall morbidity rate and length of hospital stay, and in a faster recovery of physical and social activity.

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