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Full Length Article

Safety and feasibility of laparoscopic colo-rectal surgery for cancer at a tertiary center in a developing country: Egypt as an example

Anwar Tawfik Amin [a,*], **Badawy M. Ahmed** [a], **Salah Mabrouk Khallaf** [b]

[a] *Department of Surgical Oncology, South Egypt Cancer Institute, Assiut University, Egypt*
[b] *Department of Medical Oncology, South Egypt Cancer Institute, Assiut University, Egypt*

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KEYWORDS

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Abstract *Background:* Laparoscopic colectomy has been shown to have significant short- and long-term benefits compared to open approach. The incorporation of laparoscopy in developing countries is challenging, due to the high costs of equipment and lack of expertise. The aim of this study was to evaluate the safety and feasibility of laparoscopic colorectal surgery for cancer that could be performed in developing countries under different circumstances in developed countries.
Methods: Thirty-seven patients (23 males and 14 females) with colorectal cancer with a median age of 46 years (39–72) have been enrolled for laparoscopic colo-rectal surgery in a tertiary center in Egypt (South Egypt Cancer Institute) with the trend of reuse of some disposable laparoscopic instruments.
Results: The median operative time was 130 min (95–195 min). The median estimated blood loss was 70 ml (30–90 ml). No major intra-operative complications have been encountered. Two cases (5.5%) have been converted because of local advancement (one case) and bleeding with unavailability of vessel sealing device at that time (one case). The median time for passing flatus after surgery was 36 h (12–72 h). The median hospital stay was 4.8 days (4–7 days). The peri-operative period passed without events. Pathologic outcome revealed that the median number of retrieved lymph nodes was 14 (range 9–23 lymph node) and all cases had free surgical margin.
Conclusion: Laparoscopic colorectal surgery for cancer in developing countries could be safe and feasible. Safe reuse of disposable expensive parts of some laparoscopic instruments could help in propagation of this technique in developing countries.

* Corresponding author. Tel.: +20 88242 1204; fax: +20 88 234 8609.
E-mail address: anwar71@oita-u.ac.jp (A.T. Amin).
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Introduction

Background

Laparoscopic colectomy has been shown to have significant short- and long-term benefits compared with the open approach [1–5]. Despite the evidence from multiple, prospective, randomized trials, the adoption rate of laparoscopic colectomy has been reported to be low. In a recent study by Robinson et al., of all colorectal surgeries performed in high volume hospitals, only 7.3% have been performed using minimal invasive surgery (MIS). They found a significant socioeconomic disparity in the use of MIS [6].

The incorporation of laparoscopic techniques in developing countries has been challenging, due in particular to the high costs of equipment and lack of expertise [7]. However; many laparoscopic procedures, including appendectomy, cholecystectomy, hysterectomy and splenectomy have been successfully performed in developing countries [8–10].

Demonstrating oncologic outcomes similar to those achieved in a developed setting will further support and encourage the continued growth of laparoscopy for cancer in developing countries [2,11–14]. There are currently limited data referring to the surgical safety and the oncologic feasibility of laparoscopic colorectal surgery for cancer in the situation of limited equipment in developing settings [15].

Therefore, the aim of this study was to evaluate the safety and feasibility of laparoscopic colorectal surgery for cancer that could be performed under different circumstances in developed countries in a tertiary center in Egypt as an example of developing countries.

Patients and methods

This is a feasibility and safety, phase I/II clinical non randomized study. The study was conducted at South Egypt Cancer Institute, Assiut University, Egypt. Thirty-seven patients (23 males and 14 females) have been enrolled for laparoscopic colo-rectal surgery for colorectal cancer in the period of March 2011 to March 2014. The diagnosis of colorectal cancer was confirmed with colonoscopy and biopsy. Preoperative workup has included blood tests, chest X-ray and serum carcino-embryonic antigen (CEA). CT pelvic-abdominal scan was a routine. The study was approved by the ethics committee at South Egypt Cancer Institute. The surgical approach was decided with the consent of the patients after a thorough discussion on the advantages and risks of the approach.

Inclusion criteria were histologically proven carcinoma of the colon or upper half of the rectum, T1 to T3 tumors according to TNM classification, no evidence of extra-colonic or extra-rectal extension or distant metastasis by means of CT, abdominal ultrasound and postero-anterior chest radiograph. Patients with large, fixed tumors with invasion to other organs or patients with distant metastasis were excluded from the laparoscopic trial.

The patients have received mechanical bowel preparation the day before surgery and prophylactic intravenous antibiotics were administered at the time of induction of anesthesia. A urinary catheter was inserted after the patient was put under general anesthesia. Naso-gastric tube was not used as a routine.

The patients were placed in a supine head down position for right hemi-colectomy and lithotomy with head down position for left hemi-colectomy and sigmoidectomy.

For economic causes, we usually use reusable laparoscopic instruments. For disposable instruments, we reuse it several times after proper sterilization, provided that it works efficiently. The only disposable laparoscopic instrument that has been used for several times in this study was the vascular sealing device. All other surgical instruments used in this study were reusable.

At the beginning of the procedure, the peritoneal cavity was accessed through an insufflations' needle and carbon dioxide was insufflated to maintain the intra-abdominal pressure at 10–12 mmHg. For all cases, trans-umbilical 10 mm port was used for the camera. For right colon cancer another 2 to 3 ports of either 5 or 10 mm size were positioned so that convenient and safe dissection could be done as shown in Fig. 1a. For left colon and recto-sigmoid cancer, the ports were placed as in Fig. 1b. Dissection was performed in the majority of

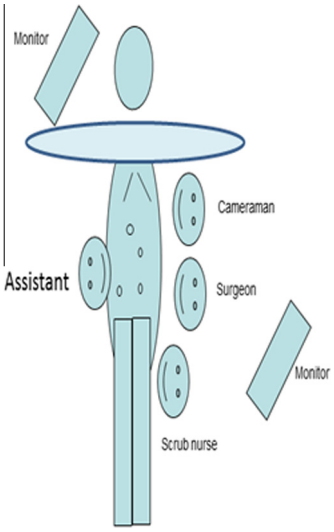

Figure 1a Patient positioning and ports distribution for right hemicolectomy.

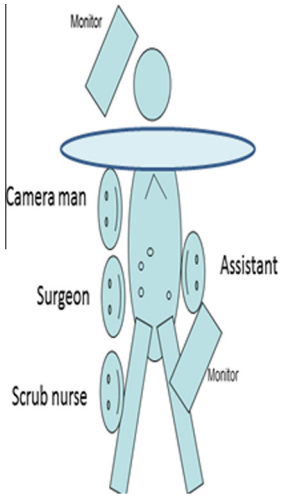

Figure 1b Patient positioning and ports distribution for left hemicolectomy and recto-sigmoid resection.