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**ORIGINAL ARTICLE**

# Laparoscopic Surgical Management of Rectal Cancer at Tertiary Care Hospital

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## ABSTRACT

**Objective:** To evaluate the consequent outcomes in the patients with rectal cancer endured laparoscopic surgical excision at Department of Surgery, Liaquat University of Medical and Health Sciences Jamshoro, Hyderabad and to review their curative resection and recurrence rates, postoperative morbidities and complete survival.

**Methods:** This prospective case series study was done at the Department of General Surgery of Liaquat University of Medical & Health Sciences, Jamshoro, Sindh, Pakistan. All patients of 30-65 years ages with rectal cancer and underwent diagnostic laparoscopy either of gender were included. After removing the tumor, the specimen pinned out on a flat surface and placed in fixative solution to allow the orientation of the specimen and assessments of the exact margins. As the specimens had acceptable clear margins and limited invasion to the submucosa, no further surgical procedure was proceeded. Data was collected via study proforma.

**Results:** A total of 40 patients were studied. Patients in the laparoscopic operation lost less blood with an amount of only 200mL during 190 minutes average operation time. The bowel functioning returned in 2 days averagely with 8 days average hospital stay. **Conclusion:** It is concluded that laparoscopic surgery for rectal cancer is an effective, safe and feasible approach in terms of less post-operative complications and recovery time as well as Hospital stay.

**Key words:** Rectal Cancer, laparoscopic surgery

## INTRODUCTION

Colorectal cancer is the malignant, which initiates in the rectum or colon and is considered as the fourth most frequently identified tumor according to GLOBOCAN as well as the second foremost cause of cancer demise in male and female combined throughout the world. It is also referred to as rectal adenocarcinoma that generally emerges from the large intestinal epithelial and glandular cells.[1] When particular epithelium cells attain a series of epigenetic or genetic mutations, it leads to confer the cancer consequently. Additionally, abnormally sensitive survival and replication, such as hyper-proliferative cells emerge to benign adenoma that often develop into metastasize and carcinoma. Standardly, the risks of lifetime colon cancer development are approximately 1/23 for male and female collectively but it varies broadly with respect to certain risk factors.[2] In 2018, around 1,096,000 new colon cancer diagnosed cases have been reported along with 704,000 cases of rectal cancer and comprise 1.8 million cases collectively. Rectal cancer is the most diagnostic cancer amongst males in 10/191 countries throughout the world but among females no country reported it as the most diagnosed malignance.[3] The incidence of rectal cancer is more in males as compared to females and 3 to 4-fold more frequent in developed as compared to developing countries. In the Southern and Northern Europe, New Zealand, North America, Australia and Eastern Asia are the regions of higher incidences of colorectal cancer. The Hungary with 70.6% among males and Norway with 29.3% among females per 100,00 population are the countries with the highest incidence of rectal cancer.[4] The minimally invasive methods were primarily familiarized for the treatment of internal disorders of the abdominal cavity in the late 1980s principally gallstone disorders. Rapid developmental indications could be observed for laparoscopic surgery within the last decade. The few surgeons of Canada, United States, Europe and Australia started to operate the patients with the bodily cancer inside the abdomen early after the development of such advanced procedure particularly colorectal cancer.[5] Meanwhile, there are still several solid reservations concerning with laparoscopic-supported colectomy among the global surgical societies with queries about the benefits of the laparoscopic approaches and an emphasis on worries regarding insufficient oncologic resection putting patients at risk of emerging premature reappearance.[6]

## MATERIAL AND METHODS

This prospective case series study was done at the Department of General Surgery of Liaquat University of Medical and Health Sciences, Jamshoro, Sindh, Pakistan during 2 years from May 2016 to April 2018. All patients of 30-65 years ages with rectal cancer and underwent diagnostic laparoscopy either of gender were included. All patients with diagnosis of advanced rectal carcinoma and those who were not agreeing to participate in the study were excluded. The sequence of clinical investigations was made for initial diagnostics of rectal cancer. The particularizes of operational process, procedural time and stay duration in the hospital were noted and under general anesthesia, operations were completed. The patient was put in the adapted Lloyd-Davies position and the sigmoid as well as left colon were mobilized.[7] The lesions of the middle and upper rectum were managed through an

anterior resection. The inferior mesenteric artery (IMA) was divided into distal or proximal for taking off the left colic artery. The division site depended upon the location of lesion along with bowel proportion required for safe anastomosis. In the avascular planes, the posterior rectum was mobilized using sharp dissection between the prostate or vagina and rectum immediately posterior to the IMA. At the sidewall of the pelvis, lateral dissection was made on the lateral rectal vessel's division and dissection continued to 4 cm below the tumor. It is considered significant to resist dissection near to the tumor during proceeds toward the pelvis also called coning. After accomplishing rectal mobilization, a determination was made to evaluate that any passable distal margin existed between the tumor and levators. The lesions of the lower rectum were managed with an abdominoperineal resection (APR) and transanal and coloanal excision. The lesions were evaluated with intrarectal ultrasound, which exhibits them as mobile, small sized of 3 cm diameter, and closed to 6 cm from the verge of the anus. In this method, the 1:100,000 diluted epinephrine solution infiltrated into the submucosal space to present the accurate surgical dissection plane and haemostasis maintenance. Using electrocautery, the lesions were excised by taking much care to keep intact the surrounding tissues and lesions throughout the excision.[9] After removed the tumor, the specimen pinned out on a flat surface and placed in fixative solution to allow the orientation of the specimen and an accurate assessment of the margins. As the specimen had acceptable clear margins and limited invasion to the submucosa, no further surgical procedure was proceeded. Data was collected via study proforma. Data analysis was done using SPSS version 20.

## RESULTS

A total of 40 patients were studied. Meana age of the patients was 48.23+8.12 years. Males were in the majority 33(66.0%) and females were 17(34.0%). Patients in the laparoscopic operation lost less blood with an amount of only 200mL during 190 minutes average operation time. The bowel functioning returned in 2 days averagely with 8.2+3.12 days average hospital stay. The completeness of the resection was positive macroscopically with circumferential resection margin about more than 2 mm was reported. The tumor distance in the margin of the distal resection was approximately 5 cm. Table.1

Table.1 Descriptive statistics of the study parameters n=50

| Variables | | Statistics |
|---|---|---|
| Age | (Mean+SD) | 48.23+8.12 years |
| Gender | Males | 33(66.0%) |
| | Females | 17(34.0%) |
| Operative time | (Mean+SD) | 190.23+34.2 minutes |
| Blood loss | (Mean) | 200ml |
| Hospital stay | (Mean+SD) | 8.2+3.12 days |

## DISCUSSION

In this study mean age of the patients was 48.23+8.12 years and males were in majority 33(66.0%). Consistently, Malik AI et al[10] reported that the average age of the patients was 43.6 years and out of 112 cases of rectal carcinoma males were 69 (61.6%) and females were 43 (38.4%) with a male/female ratio of 1.6:1. In this study in the laparoscopic operation lost less blood with an amount of only 200mL averagely and operations took 190 minutes on average and functioning of bowel returned as soon on 2 days average with shorter hospital stay of 8 days averagely. Similarly, in the study of Chand M et al[11] stated that the compared to open surgery, laparoscopic resection may result in fewer blood transfusions, less surgical trauma, less severe inflammatory response, quicker return of gut function, and a shorter hospital stay, all of which contribute to a quick recovery in most of the cases. Alternatively, in a meta-analysis of Dai J et al[12] reported that the operation time did not differ significantly between the laparoscopic and open surgery groups, however the time to solid intake, the duration of the hospital stay, loss of blood, and the rate of complications of the laparoscopic group were much lower compared to the open surgery group. The completeness of the resection was positive macroscopically with circumferential resection margin about more than 2 mm was reported. The tumor distance in the margin of the distal resection was approximately 5 cm. Anesthesiologic risks and rectum tumor location were assessed by the classification of the American Society of Anesthesiologists, which exhibited zero percent probabilities on the average.[13] The additional postoperative and intraoperative data disclosed significant benefits in favor of laparoscopy as compared to open surgery with respect to several aspects including intraoperative transfusions incidents, necessity for postoperative stay in the intensive care unit (ICU), and rate of typical and general invasive complications like postoperative ileus, wound infections and bleeding.[14] According to different scientific views and pathologic studies, the maximum recorded microscopic tumour expansion in the distal gut wall is 5 mm in the absence of a poor or extensively differentiated tumour.[15] With any distal border more than 1 cm, clinical studies have shown identical effects. As a result, a margin of more than 2 cm appears to be sufficient. Transanal excision is a possibility for certain lesions.[16] Rectal cancer is still best treated with laparoscopic surgery. Preoperative planning, executing a suitable and safe procedure, and postoperative care all have a role in good outcomes. The anatomic location of the lesion determines which procedure is performed.[17] Early proximal vascular ligation, anatomic resection, and minimal tumour manipulation are all important operational oncologic principles. As all the surgeries and their physiologic implications differ.[18] Laparoscopic surgical management has the potential to diminish the specimen trauma by reducing inadvertent handling, but it is important to avoid overusing the instruments of the laparoscopy, which have the potential to traumatize tissue. The rectum and mesorectum are gently displaced from side to side during laparoscopic surgery. With illumination of the field of view, the camera can operate in a very confined space in the pelvis.[10] There were many strong limitations of the current study and also a very small sample size. Hence, further large-scale studies should be done on this subject.

## CONCLUSION

It is concluded that laparoscopic surgery for rectal cancer is an effective, safe and feasible approach in terms of the less

post-operative complications and recovery time as well as Hospital stay. Due to several limitation of the study further large-scale studies, are recommended to explore the proper outcome including survival.

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