



LAPAROSCOPIC RECTAL CANCER SURGERY AT A LOW VOLUME CENTER IN GUJARAT

Dr. Sachin Kadam*	Dept of Surgical Oncology, Vedant Cancer and Multispeciality Hospital, Mumbai. *Corresponding Author
Dr. Jignesh Shah	Dept of General Surgery, Govt Medical college and New Civil Hospital, Surat, Gujarat.
Dr. Tejaswini Kadam	Dept of Ophthalmology, Conwest & Jain Superspeciality Eye Hospital, Mumbai
Dr. Hardik Astik	Dept of General Surgery, Govt Medical college and New Civil Hospital, Surat, Gujarat

ABSTRACT **INTRODUCTION:** Laparoscopic surgery for rectal cancer is now practiced widely and it has proven short-term benefits for patient recovery. At the beginning of the laparoscopic era, some concerns were raised regarding the oncological outcome of this approach in the treatment of rectal cancer. However, data from randomized trials and meta-analyses have established that laparoscopic rectal surgery is at least equivalent to open surgery. The short-term benefits of laparoscopic surgery includes less post-operative pain, earlier restoration of bowel function, early mobilisation, shorter hospital stay, less morbidity from blood loss, respiratory complications, wound infections, incisional hernias. Still worldwide there is hesitancy for performing laparoscopy surgery for rectal cancers as compared to colon cancers because there is always a fear of circumferential resected margin positivity.

MATERIALS & METHODS It is a retrospective study of 25 cases of rectal cancer who underwent laparoscopic surgeries (Abdomino-perineal resection (APR), Low anterior resection (LAR), Anterior resection (AR) during the period from January 2009 to December 2011 at Government Medical College and New Civil Hospital, Surat, Gujarat, India. These patients were followed till December 2015. The purpose of this study was to know the role of laparoscopic surgery in rectal malignancies and also morbidity and mortality associated with this surgery. Patients with biopsy proven and operable rectal cancers were included in the study. Patients with locally advanced and metastatic rectal cancers and also any patient died of any other cause and not followed were excluded. Histopathology reports were collected on 7th or 8th postoperative day and according to the report adjuvant treatment was given in Lion's Cancer Detection Centre (LCDC) which is attached to new civil hospital, Surat.

RESULTS In our study, the males outnumbered females in the ratio of 1.7:1. The most common age group involved is 51-60yrs (48%). There was no significant post operative morbidity except wound infection [2 cases (8%)], hypokalemia [2cases (8%)], nausea & vomiting [3cases(12%)]. Lymph nodes were found positive in 7 (28%) cases. No re-exploration was required in any case. The mean blood loss was around 162.5ml and average duration of operative time was 3.36 hours. During follow up 3 patients had recurrences. Two patients, who had undergone APR and LAR respectively, had developed unresectable pelvic recurrences. Both had received palliative chemotherapy after diagnosed with recurrence. One patient had recurrence at anastomotic site post AR surgery. Patient was operated and recurrence site excised and end colostomy done. But patient's general condition was not good so no adjuvant treatment given and only supportive care was advised.

CONCLUSION: There are still more important issues including long term oncological outcome for advanced colorectal cancer, cost effectiveness & the impact on quality of life of patients with colorectal cancer. This study suggests that laparoscopic resection of colorectal cancer is safe and effective procedure of choice in selected patients. Morbidity and mortality are in acceptable limits.

KEYWORDS : Rectal Cancer, Laparoscopy, Low, Anterior Resection,

INTRODUCTION

According to Globocan, Colorectal cancer is the third most common cancer in men and the second in women. Worldwide, an estimated 1.4 million cases of colorectal cancer occurred in 2012 [1]. In India, the annual incidence rates (AAR) for rectal cancer in men is 4.1 per 100000. The AAR for rectal cancer in women is 3.9 per 100000. Rectal cancer ranks 9th among men. For women, rectal cancer does not figure in the top 10 cancers.

In the 2013 ICMR report, in India the highest AAR in men for CRCs was recorded in Thiruvananthapuram (4.1) followed by Bengaluru (3.9) and Mumbai (3.7). The highest AAR in women for CRCs was recorded in Nagaland (5.2) followed by Aizwal (4.5) [2].

Laparoscopic surgery for rectal cancer is now practiced widely and it has proven short-term benefits for patient recovery. At the beginning of the laparoscopic era, some concerns were raised regarding the oncological outcome of this approach in the treatment of rectal cancer. However, data from randomized trials and meta-analyses have established that laparoscopic rectal surgery is at least equivalent to open surgery.

The short-term benefits of laparoscopic surgery includes less post-operative pain, earlier restoration of bowel function, early mobilization, shorter hospital stay, less morbidity from blood loss, respiratory complications, wound infections, incisional hernias [3].

The disadvantages of laparoscopic surgery includes an incision which is usually only 4-5cm in length unless the tumour is large. Retrieval bags may be used to help minimise the length of this incision. Conversion rates from laparoscopic to open have been reported in

between 11-23% of colon cancer surgery [4]. Obesity and adhesions results in a higher conversion rate due to technical difficulty [5]. Still worldwide there is hesitancy for performing laparoscopy surgery for rectal cancers as compared to colon cancers because there is always a fear of circumferential resected margin positivity [6].

MATERIALS & METHODS

It is a retrospective study of 25 cases of rectal cancer who underwent laparoscopic surgeries (Abdomino-perineal resection (APR), Low anterior resection (LAR), Anterior resection (AR) during the period from January 2009 to December 2011 at Government Medical College and New Civil Hospital, Surat, Gujarat, India. These patients were followed till December 2015. The purpose of this study is to know the role of laparoscopic surgery in rectal malignancies and also morbidity and mortality associated with this surgery

Patients with biopsy proven and operable rectal cancers were included in the study. Patients with locally advanced and metastatic rectal cancers and also any patient died of any other cause and not followed were excluded. Permission from the ethical committee taken for the study. All the demographic details of the patients, case history were retrieved from Medical Record Section. In the preoperative period all patients were evaluated with clinical examination (including Digital Rectal Examination) followed by CEA (Carcino Embryonic Antigen), colonoscopy, CECT Thorax and abdomen with MRI of pelvis. The type of surgery (APR, AR, LAR) was decided depending upon the tumor location. All surgeries were done by only one surgeon.

Histopathology reports were collected on 7th or 8th Postoperative day and according to the report adjuvant treatment was given in Lion's Cancer Detection Centre (LCDC) which is attached to new civil hospital

,Surat. All statistical analyses were performed using SPSS version 14.0 for Windows.

Steps in Low Anterior Resection (LAR)

- Insertion of ports: 10-mm umbilical , 12-mm right iliac fossa; 5- mm right upper quadrant; 5-mm left upper quadrant; 5-mm left iliac fossa.
- Patient rotation to the right and Trendelenburg.
- Laparoscopic assessment, and small bowel and omentum mobilization toward right upper quadrant.
- Inferior mesenteric artery pedicle identification and dissection. Left ureter identification and inferior mesenteric artery division near origin. (Fig. 1)
- Medial-to-lateral mobilization of left colon and division of inferior mesenteric vein.
- Lateral paracolic mobilization of left colon toward splenic flexure and splenic flexure mobilization.
- Rectal mobilization. Dissection behind rectum down presacral plane. (Fig. 2)
- Division of peritoneal attachments on right and left side of rectum, and anterior mobilization beginning at peritoneal reflection.
- Rectum stapling at pelvic floor and division. (Fig. 3)
- In Abdominoperineal Resection (APR), rectal mobilization was done up to pelvic floor. Open perineal dissection followed by completion of rectal resection, and removal of specimen through perineum and then closure of perineal wound.

RESULTS

In our study, 75% of patients were presented with mass per rectal with altered bowel habits (88%) as a predominant symptom. (Table 1). The males outnumbered females in the ratio of 1.7:1. The most common age group involved is 51-60yrs (48%). The Mean Age of presentation is - 52.75 Yrs. Depending upon the location of the tumor, surgeries were planned i.e. Laparoscopic APR/AR/LAR . All patients had undergone upfront surgery. Total number of patients undergone Lap APR, lap LAR and lap AR were 16, 7 and 2 respectively (Table 2). There was no significant post operative morbidity except wound infection [2 cases (8%)] , hypokalemia [2cases (8%) , nausea & vomiting [3cases(12%)] (Table 3). Morbidity was graded with Clavin Dindo grading and it was only Grade I. It was managed with conservative measures.

Lower rectum was involved in 13 (52 %)cases, mid rectum involved in 5 (20%) cases and rectosigmoid with upper rectum was involved in 7 (28%) cases. Lymph nodes were found positive in 7 (28%) cases. Pathological staging showed, Stage I- 14 (56%) cases, Stage IIA - 4 (16%) cases and Stage IIIA- 7(28 %) cases (AJCC 8th). No re-exploration was required in any case. The mean blood loss was around 162.5 ml and average duration of operative time was 3.36 hours (Table 4).

DISCUSSION

More than 1,45,000 new cases of colorectal cancer are diagnosed annually in the united states and more than 55,000 patients die of this disease each year. In India also incidence is in increasing trends. The predominant risk factor with incidence rising steadily after age 50yrs. More than 90% of cases diagnosed are in people older than 50 yrs of age. In our study also the predominant age group involved is between 51-60 yrs (48%). About sex distribution the incidence is similar in men and women & has remained fairly constant over the past 20yrs. But in our study Male outnumbered (13) the female, and male to female ratio is 1.7:1

Patients with colorectal cancer most commonly presents with significant change in bowel habits, rectal bleeding, melena, unexplained anaemia and weight loss. In our series we found that the predominant symptom was altered bowel habits (88%) & next to it was significant weight loss (40%).

Ashok mathur [7] et al and Staudacher [8] et al have done the same study with number of cases 20 and 70 respectively. We are having only one case where laparoscopy converted to open but it was because of technical errors (Table 5). As compared with these studies our average blood loss and mean operative duration is in acceptable level. Early ambulation was done within 24 hrs and where anastomosis was not done early enteral feeding was started.

11 patients had received adjuvant treatment. All patients were followed every 3 monthly for first 2 years and our follow up protocol was clinical

examination with ultrasound of abdomen and pelvis with chest X- ray every 6 monthly and CECT – Thorax ,abdomen, pelvis with colonoscopy annually. In our study , average hospital stay for these 25 cases was 8.2 days.

As our our case selection involved only early stage rectal cancers that may be the reason for better survival and less morbidity. In case of advanced rectal cancers where sometimes extended lymphadenectomy may required, survival with laparoscopy is still unclear [9]

During follow up 3 patients had recurrences. Two patients had unresectable pelvic recurrences. They had not received adjuvant treatment post surgery. Both had received palliative chemotherapy after diagnosed with recurrence. One patient had recurrence at anastomotic site post AR surgery. Patient was operated and recurrence site excised and end colostomy done. But patient's general condition was not good so no adjuvant treatment given and only supportive care advised.

Our Overall Survival (OS) rate is 77.8 % and Disease Free Survival rate (DFS) is 51.9 % for the Median Follow up Period of 85.7 months (Fig. 4 and Fig. 5).

CONCLUSION

Laparoscopic surgery has widely accepted as less invasive procedure for colorectal cancer in western countries and Japan. Many randomized controlled trials demonstrate that laproscopic surgery for colorectal cancer is feasible, safe & has many short term benefits including reduction in peri-operative morbidity and mortality. There are still more important issues including long term oncological outcome for advanced colorectal cancer, cost effectiveness & the impact on quality of life of patients with colorectal cancer. This study suggests that laparoscopic resection of colorectal cancer is safe and effective procedure of choice in selected patients. Morbidity and mortality are in acceptable limits.

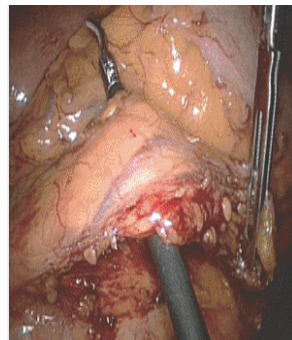


Fig.1. Preparing The Inferior Mesenteric Artery For Division

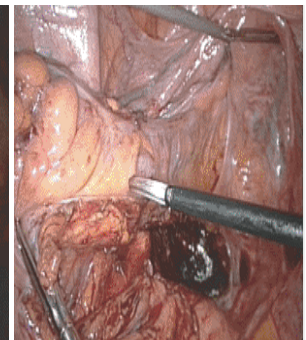


Fig. 2. The Rectosigmoid Junction Is Defined For Rectal Transection.



FIG. 3. The upper rectum is divided with endoscopic staplers.

Table 1. Presenting Symptoms

SYMPTOMS	TOTAL CASES	PERCENTAGE
ALTERED BOWEL HABBIT	22	88
SIGNIFICANT WT. LOSS	10	40
BLEEDING PER RRECTUM	7	28
LUMP IN ABDOMEN	1	5

Table 2. Operation Statistics

SURGERY	MALE	FEMALE	TOTAL	PERCENTAGE
LAP APR	12	4	16	64

LAP LAR	5	2	7	28
LAP AR	2	0	2	8
	19	6	25	100

Table 3. Postoperative Morbidity

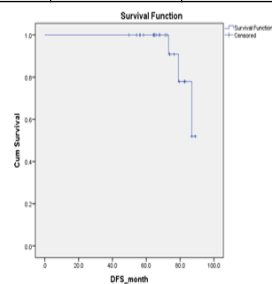
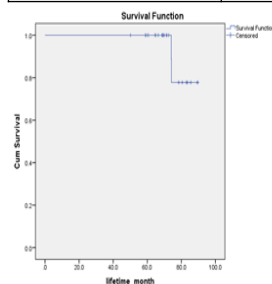
MORBIDITY	NO OF CASES	PERCENTAGE
WOUND INFECTION	2	8
PARALYTIC ILIEUS	3	12
HYPOKALEMIA	2	8
NAUSEA & VOMITTING	3	12

Table 4. Blood Loss And Operative Duration

	RANGE	MEAN
MEAN BLOOD LOSS	100 ml – 300 ml	162.5 ml
MEAN OPERATIVE DURATION	3 hrs – 4.3 hrs	3.6 hrs

Table 5. Study Comparison

	Ashok Mathur et al (2008)	Staudacher et al (2010)	Present study
No of cases	20	70	25
Conversion	01	Not mentioned	01 (4%)
Re- exploration	2 (10%)	Nil	Nil
Mortality (Postoperative)	03	Nil	Nil
Morbidity			
1.Anastomotic leakage	Nil	14.8%	Nil
2.Wound infection	3 (15%)	4.6%	2 (10%)
3.Colostomy complications	1 (5%)	Nil	Nil
4.Post operative intestinal obstruction	2 (10%)	Nil	Nil
Mean Operative duration	335min (5.58 hours)	Not mentioned	216 min (3.36 hours)
Mean Blood loss	250 ml	Not mentined	162.5 ml
Positive lymph nodes	5 (25%)	Not mentioned	7 (35%)
Recurrence	Not mentioned	Not mentioned	3 (15%)

**Fig 4. Overall Survival Curve Fig. 5. Disease Free Survival Curve****REFERENCES**

- [1]. Global cancer facts and figures, 3rd edition, 2012; Section of cancer surveillance (11/8/2016)
- [2]. Consensus document for management of colorectal cancer, ICMR, 2014 ; Chapter 1.; 1-11
- [3]. Veldkamp R, Kuhry E, Hop WC, et al.Laparoscopic surgery versus open surgeryfor colon cancer: short-term outcomes of a randomised trial. *Lancet Oncol* 2005;6:477-84.
- [4]. The Clinical Outcomes of Surgical Therapy Study Group. A comparison of laparoscopically assisted and open colectomy for colon cancer. *N Engl J Med* 2004; 350: 2050-2059.
- [5]. Parvais A, Krysa J, Longman RJ, Kennedy RH. Laparoscopic resection for colorectal cancer – predicting operative difficulty. *Colorectal Dis* 2002; 4: 56.
- [6]. Ukla, Savio G, Barreto, Rohini Hawaldar1, Mandar Nadkarni, Gajanan A. Kanitkar, Rajendra Kerkar2, Shailesh V. Shrikhande Feasibility Of Laparoscopic Abdomino-perineal Resection For Large-sized Anorectal Cancers: A Single-institution Experience Of 59 Cases; *Indian J Med Sci*, Vol. 63, No. 3, March 20
- [7]. Ashok K Mathur, Sameer Gupta, Nisar Ahmed, Asit Arora, Akshay Sharma Laparoscopic Surgery for Rectal Carcinoma— An Experience of 20 Cases in a Government Sector Hospital *World Journal of laproscopic surgery*, September-december 2008; 1(3) 53-57
- [8]. Carlo Staudacher, Andrea Vignali Laparoscopic surgery for rectal cancer: The state of the art *World J Gastrointest Surg* 2010 September 27; 2(9): 275-282 ISSN 1948-9366 (online)
- [9]. Seigo Kitano1, Masafumi Inomata1, Akihiro Sato2, Kenichi Yoshimura3 and Yoshihiro Moriyama4 Randomized Controlled Trial to Evaluate Laparoscopic Surgery for Colorectal Cancer: Japan Clinical Oncology Group Study JCOG 040Jpn *J Clin Oncol* 2005;35(8)475–477 doi:10.1093/jco/hy124