JANUARY - MARCH 2014

MEDICAL CHANNEL

Original Article

LAPAROSCOPIC SURGERY FOR RECTAL CANCER – AN EARLY EXPERIENCE FROM PAKISTAN

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ABSTRACT

Objective: To determine the feasibility and short term outcome of laparoscopic rectal cancer surgery in a third world country like Pakistan.

Methodology: This prospective study was conducted at Department of Surgery from January 2009 to December 2011.All the operable and fit cases of rectal cancer who consented for laparoscopic surgery were included in study. The exclusion criteria were locally advanced disease, distant metastases and patients with comorbids.

Results: Total no of cases were 31. Age ranged from 20 to 70 years. There were 21 males and 10 females. Abdominoperineal resection (APR) was performed in 21 cases and 10 cases had anterior resection (AR). The diverting ileostomy was made in 02 cases of anterior resection. The mean anastomosis time was 241.71+6.44 (200 to 300 minutes). Three cases (02 APR and 01 AR group) were converted to open approach.

The postoperative recovery was uneventful and patients were started oral fluids on second postoperative day. Injectable analgesia requirement was only 2-3 doses. The median length of hospital stay was 9.45+1.6 (3 to 14 days). The complications were anastomosis leak in one case, and anastomosis stricture in one case of AR. Colostomy complications were in 6 cases out of 21 cases of APR group. Urinary and sexual problems were found in three cases of APR .There was no peroperative or 30 days postoperative mortality.

Conclusion: The laparoscopic resection of rectal cancer is safe, feasible with early postoperative recovery, better cosmesis with minimal postoperative complications and zero mortality.

Keywords: Rectal Cancer, Laparoscopy, APR, Anterior resection, Outcome

INTRODUCTION

Laparoscopy has been applied in almost all abdominal surgeries. Colorectal surgery is no exemption. First successful application of laparoscopic techniques for resection of colon was performed by Jacobs et al in 1991[1]. After that several groups have attempted to use this approach for colorectal resections[2-4]. There are several advantages of laparoscopic colorectal surgery like less postoperative pain, shortened postoperative ileus, short period of hospital stay, better cosmesis and favorable effects on cytokine and hormonal responses[5]. In spite of the fact that laparoscopic rectal cancer surgery is being performed more frequently, still it is not as widely accepted. The controversial issues regarding the laparoscopic rectal cancer surgery are its oncologic feasibility and efficacy, in part due to technically demanding nature of the pelvic dissection[6]. In the pelvis, surgeons encounter restrictive bony landmarks and other vital structures which results in significant learning curve limiting the volume of evidence on the use of laparoscopy for the treatment of rectal cancer.

Despite these limitations some experts feel strongly that laparoscopic surgery allows

better view of pelvic cavity because of higher magnification, helping the surgeon to stay in the correct anatomical planes.

Several authors published their experience recently in support of laparoscopic rectal cancer surgery[7-10].

The aim of our study is to ascertain the feasibility and short term outcome of laparoscopic surgery for rectal cancer in a third world country like Pakistan where laparoscopic surgery is still in infancy.

METHODOLOGY

This prospective study was carried out at surgical department of Liaquat university of Medical & Health Sciences Jamshoro Pakistan. From January 2009 to December 2011, 31 patients who are diagnosed to have operable rectal cancer were selected to undergo curative resection for rectal cancer and they are consented for laparoscopic surgery. The exclusion criteria were locally advanced disease, presence of distant metastasis and patients with comorbids.

All patients were evaluated preoperatively by abdominal ultrasound scan and colonoscopy, CT scan of abdomen was routinely performed. Preoperative preparation of the patient included a mechanical bowel preparation day before the operation, systematic prophylactic antibiotics and deep venous thrombosis prophylaxis. Urinary catheter and nasogastric tube were routinely placed in every patient.

The surgical procedure performed was Laparoscopic abdominoperineal resection (LAPR) in patients who have carcinoma of lower 1/3 of rectum (21 cases) and lapraroscopic anterior resection (LAR) in patients who have carcinoma of upper 1/3 and middle 1/3 of rectum (10 cases).

Surgical Technique

Four ports were placed with supra-umbilical port (10 mm) for telescope by open technique. Right lower quadrant port (10mm) as right hand working port and right upper quadrant (5mm) as left hand working port. Finally left upper quadrant port (5mm) made for retraction.

We follow a standard laporoscopic approach with medial to lateral dissection. The ureter is identified and vascular pedicle is divided. The colon is mobilized up to the splenic flexure of colon for tension free anastomosis.Total mesorectal excision (TME) done up to the pelvic floor.

ANTERIOR RESECTION: The rectum is divided using a linear stapler by double stapling technique. The tumour free distal margin of 5 cm. is kept for anterior resection. The specimen containing the tumour is resected through the small Pfannesteil incision extracorporeally. The anvil of the circular stapler is inserted in to the proximal bowel. Intestines are reduced back to the peritoneal cavity and pneumoperitoneum is re-established. Intracorporeal anastomosis is done through the circular stapler.

ABDOMINOPERINEAL RESECTION: The left lower quadrant port extended and descending colon transected extracorporeally and end colostomy made. Conventional perineal dissection was done and specimen was removed through the perineal wound.

STATISTICAL ANALYSIS

Demographic details and other data were statistically analyzed on SPSS version 14.

RESULTS

During the 3 year period, 31 patients were operated for carcinoma of rectum. The age ranged from 20-70 years. There were 21(67.7%) males and 10(32.3%) females.

All interventions were done with curative intent. The tumor location was high in upper third of rectum in 5(16.1%) cases, low in rectum in 26(83.9%) patients.

The ten patients diagnosed with high rectal cancer underwent laparoscopic anterior resection. Twenty one patients with low rectal cancer underwent laparoscopic resection with TME; an abdominoperineal resection with creation of a permanent colostomy (TABLE 1).

Most of our cases were in Dukes stage B and C. There was no circumferential margin (CRM) in 30 cases and only in one case (3.2%) there was involvement of CRM (TABLE II). The mean anastomosis time for Laparoscopic abdominoperineal resection was 177.74 minutes and for Laparoscopic anterior resection was 241.71 minutes. Conversion was required in 3 patients (one LAPR and two LAR) due to technical difficulty in obese patient and due to tumor infiltration and adherence.

There was no intraoperative complication in any patient. The postoperative recovery was smooth/uneventful and patients were started oral fluids on second postoperative day. Intravenous analgesia requirement was only 2-3 doses (TABLE III).

The postoperative complications were noted in 11 cases. Anastomotic leak occurred in one (3.25%) case and anastomotic stricture in one (3.25%) case of laparoscopic anterior resection. Urinary and sexual problems were found in three cases of laparoscopic abdominoperineal resection. There were six out of 26 cases of laparoscopic abdominoperineal resection who came back with colostomy complications.

TABLE NO. 1
DEMOGRAPHIC DETAILS OF THE PATIENTS
(N = 31)

Gender distribution:	
Male	21(67.7%)
Female	10(32.3%)
Age (in years), Mean + SD (Range)	47.48 + 2.6 (20 to 70 years)
Tumor location:	
Upper 1/3	4(12.9%)
Middle 1/3	6(19.3%)
Lower 1/3	21(67.7%)

Results are expressed as Mean + Standard Deviation (Range)

TABLE NO. II
HISTOPATHOLOGY OF RESECTED SPECIMENS
(N = 31)

Dukes	
A	5(16.1%)
B	20(64.5%)
C	6(19.35%)
D	0
CRM Involvement :	
R0	30(96.7%)
R1	01(3.2%)
Mean nodal sample	18 (2 to 30 number)

TABLE NO. III
SURGICAL OUTCOME DATA (N = 31)

Surgical outcome data	
Operative time (in minutes), Mean + SD (Range)	241.71+6.44 (200 to 300 minutes)
Mean blood loss (ml), Mean + SD (Range)	260+110 (50 to 550 ml)
Defunctioning ileostomy	2(6.45%)
Conversion rate	3(9.67%)
Hospital stay (in days), Mean + SD (Range)	9.45+1.6 (3 to 14 days)
Gastrointestinal recovery rate (days), Mean + SD (Range)	4.2+1.3 (2 to 7 days)
Re-admission	1(3.2%)
Re-operation	1(3.2%)
Mortality	0

TABLE NO. IV
FREQUENCY OF POSTOPERATIVE COMPLICATIONS (N = 31)

Postoperative complications	
Anastomotic leak	01(3.2%)
Anastomotic bleed	01(3.2%)
Anastomotic stricture	01(3.2%)
Ostomy complications	06(19.35%)
Urinary and sexual problems	03(9.67%)
Prolonged ileus	02(6.45%)
Small bowel obstruction	01(3.2%)

There was no per operative or 30 days postoperative mortality (TABLE IV).

DISCUSSION

In the treatment of colorectal cancer, laparoscopic resection has been shown to have comparable advantages of minimally invasive surgery, in terms of better immediate and early postoperative recovery[11]. The real challenge of this laparoscopic technique lies in its oncological safety. Although several studies have been published with excellent outcomes, laparoscopic rectal cancer resection is still controversial[12].

Abdominoperineal resection was the operation preferred in the early laparoscopic protectomy because of many advantages. In our study we also had more i.e. 21 cases of abdominoperineal resection. It is not because of its advantages in comparison with other colorectal procedures but due to the fact that we encounter more low rectal tumors. However, most of the experts suggested laparoscopic TME for upper rectal cancer as limited vision and maneuverability in the narrow confines of pelvis made it challenging for low rectal cancer, especially if sphincter preservation is needed[13]. Laparoscopic abdominoperineal resection is relatively easy for the abdominal surgeon, as dissection below the deep peritoneal reflection is largely done by the perineal surgeon.

One aspect of rectal cancer surgery is the importance of clear resection margins. Our short-term outcomes show that both upper and lower rectal cancers can be safely removed laparoscopically with low circumferential positive margin rates. The circumferential positive margin rate in our series was 3.2%, which compares favorably with other published studies[14-16]. The positive margins occurred in patient with T4 tumor. In non-randomized comparative studies, laparoscopic and open excision of rectal cancer was found to be equivalent in achieving distal and radial negative margins[17]. Laparoscopic surgery has been shown to have a statistically significant advantage over open surgery in terms of intraoperative blood loss, number of blood transfusions, mean operating time, hospital stay, gastrointestinal recovery rate, postoperative morbidity and 30-day mortality[18, 19]. Our operating time (Mean= 241.71 min) and intraoperative blood loss (Mean=260 ml) was higher compared to other data[18-21]. This is because of our limited experience during this initial period but we believe that as we gain more experience we can reduce operation time and blood loss. Our mean Length of hospital stay was = 9.45 days which we consider is high as compared to other studies[14]. This is because of the fact that many of our patients had stomas and they required to be competent in managing their stomas before leaving the hospital.

Despite being an initial experience, this case series shows encouraging results for laparoscopic resection for rectal cancer. The conversion rate was 9.67% which compares well with rates of 6.1-12.7% in other recent studies[16, 22, 23]. The postoperative 30-day mortality of 0% and our low anastomotic leak rate of 3.2% are similar to that reported by others[22,24,25]. A defunctioning ileostomy seemed to have no advantage in terms of avoiding reintervention following anastomotic leakage, which probably reflects the current practice of using enemas rather than preoperative bowel preparation. The major concern in rectal cancer resection, especially with more male patients in our study was postoperative genitourinary function. The results of our study were consistent with many other studies. Although our follow-up was short and the experience was limited, we can consider that our results were quiet satisfying.

CONCLUSION

The laparoscopic resection of rectal cancer is safe, feasible and has minimal morbidity with acceptable short term oncological outcomes.

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