

Original Article

Low rectal resection without a diverting stoma.

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ABSTRACT

Background: A diverting stoma is a usual practice after low and ultralow rectal resections in a fear to minimize the morbidities related to anastomotic leak. We tried to explore not to use a prophylactic diverting stoma and to assess the rate of leak.

Methods: Patients undergoing total proctocolectomy (18%)/ low anterior resection of rectum (LAR) (59%)/ ultralow LAR (18%) and intersphincteric LAR (5%) for colorectal adenocarcinoma were analyzed. In all the cases, total mesorectal excision (TME) approach was used. CT/ MRI was used for proper staging and clinically locally advanced tumors were subjected to neoadjuvant chemoradiation (23%). Anastomosis was performed using circular stapler for colorectal or ileorectal anastomosis (94%) and hand-sewn for coloanal anastomosis (6%). Integrity and adequate vascularity of anastomosis was checked using air leak test and excising epiploica at the region of anastomosis.

Results: Seventeen patients with mean age of 52 years were analyzed. Mean distance of tumor from the anal verge was 7 cm. Open and Laparoscopic resections were done in 82% and 18%, respectively. Average height of anastomosis was 3.5 cm from the anal verge. Superficial surgical site infection, intraabdominal abscess requiring prolonged intravenous antibiotics and urinary retention were observed in 41%, 6%, and 6%, respectively. There was one anastomotic leak (6%), which led to post operative death of the patient.

Conclusion: low rectal resections may be carried out without a diverting stoma with an acceptable anastomotic leak rate. In a well-performed ileorectal/ colorectal/ coloanal anastomosis with a good vascularity at the site of anastomosis, routine use of diverting stoma may not be justified, though a randomized controlled trial with larger sample is needed.

Keywords: rectal cancer; low anterior resection; TME.

Introduction:

Low anterior resection of rectum (LAR), ultra LAR, intersphincteric resection of rectum (ISR) and total proctocolectomy with ileal pouch anal anastomosis (IPAA) either alone or in combination of multimodality treatment carry the best chance of cure for middle/ lower rectal malignancy and colorectal malignancy. But anastomotic leak is a serious potential complication after such procedures and has been reported to occur in 5-20% cases.¹⁻⁸ When it occurs, the associated post operative mortality is increased to between 6 and 22%.⁸ Recent randomized controlled trials have shown that diverting stoma does reduce the incidence of symptomatic leak after LAR.⁹⁻¹⁰

But routine use of diverting stoma may not be needed

in another large group of patients, who never develop leak. We performed a prospective analysis of patients undergoing low rectal resection without a diverting stoma and analyzed the incidence of anastomotic leak, morbidity and mortality due to anastomotic leak.

Methods:

Patients with mid - low rectal cancer were studied prospectively. Mid rectal tumor was defined as the lower limit of the tumor from 6 to 10 cm above the anal verge. Low rectal tumor was defined as the lower limit of tumor from 3 to 5 cm above the anal verge. The measurement of lower limit was done with digital rectal examination and rigid endoscope. Resectability of tumor was assessed with CT of abdomen with or without MRI. Synchronous

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colonic malignancy with mid or low rectal cancer was also included.

Patients with localized tumors were directly subjected to surgery and if final pathological report showed node positivity, they underwent adjuvant chemoradiation as well. Patients with locally advanced lesions underwent neoadjuvant chemoradiation. Six-eight weeks after completion of chemoradiation, they underwent surgery.

Surgical procedure:

Abdomen was approached through midline laparotomy. A lateral to medial dissection along with TME was done. Inferior mesenteric artery was either ligated at the origin or after the origin of left colic artery. Descending colon and splenic flexure was mobilized generously. Distal rectal stump was stapled and divided. Sigmoid colon along with rectum and nodes were excised en block. End to end colorectal anastomosis was done with circular stapler. In case of intersphincteric resection, mucosa of anal canal was incised at dentate line entering into intersphinctering plane. The lower rectum along with internal sphincter (partial excision) was done from below and hand-sewn coloanal anastomosis was performed.

In laparoscopic LAR, medial to lateral dissection was done in standard fashion. At the end, a minilaparotomy was performed and anastomosis was secured with circular stapler through open approach.

Table 1. Basic parameters.

Parameters	n	%
Presenting complaints		
Abdominal pain	15	88
Bleeding PR	17	100
Male	8	47
Female	9	53
Location of tumor		
Mid rectum	11	65
Lower rectum*	5	29
Pancolon + lower rectum	1	6

* One patient had synchronous polyposis coli

Before performing the anastomosis, the vascularity of proximal limb was confirmed by excising a part of epilpoica. Absence of tension in anastomosis was

confirmed. Complete doughnuts were assured and a negative leak test was verified.

Results: seventeen patients underwent TME LAR/ total proctocolectomy without a diverting stoma. Mean age of patients was 51 years. Basic parameters have been shown in table 1.

Average distance of the tumor from the anal verge was 7 cm. Upfront surgery was performed in 10 (59%) cases. Four patients (23%) underwent neoadjuvant chemoradiation followed by surgery. Three patients (18%) underwent surgery followed by adjuvant chemoradiotherapy. Mean intraoperative blood loss was 221 ml (60-610 ml). Mean postoperative hospital stay was 11 days. Details of surgical procedures have been shown in table 2.

Table 2. Surgical procedures.

Procedure	n	%
Approach		
Open surgery	14	82
Laparoscopic	3	18
Procedure		
LAR	10	59
Ultralow LAR	3	18
Intersphincteric LAR	1	5
Total proctocolectomy with IPAA	3	18
Anastomotic technique		
Circular stapler	16	94
Hand sewn	1	6

Out of three patients who underwent total proctocolectomy with IPAA, one patient had synchronous polyposis coli, second patient had synchronous multiple colorectal malignancies and third patient had prior history of right hemicolectomy (12 years back for cancer of caecum) and limited splenic flexure resection (3 years back for cancer of splenic flexure). This third patient had received 12 cycles of adjuvant chemotherapy after second surgery and presented with metachronous mid rectal cancer. This patient underwent upfront surgery. Average height of anastomosis was 3.5 cm (2-5 cm) from the anal verge.

Final pathological staging has been shown in table 3.

Table 3. Final pathological stage.

Stage	n	%
I	6	35
IIa	1	6
IIIa	3	18
IIIb	3	18
IIIc	4	23

Superficial surgical site infection was noted in 7 (41%) cases. Intrabdominal abscess was noted in one patient (6%). All these cases were managed conservatively. The patient who had cancer of caecum and splenic flexure in past and had undergone surgeries twice before developed anastomotic leak, which eventually led to the postoperative death. This patient had received adjuvant chemotherapy after second surgery and underwent total proctocolectomy with IPAA for metachronous mid rectal cancer.

Discussion:

Anastomotic leak is a serious potential complication after LAR for rectal cancer, and has been reported to occur in 5% to 20% of cases.¹⁻⁸ when it occurs, the associated risk of post operative mortality is increased to between 6 and 22%.⁸ several studies have suggested various risk factors for anastomotic leak, including sex, obesity, smoking, steroid use, poor bowel preparation, blood transfusion, preoperative chemoradiation, location of tumor, level of anastomosis and absence of diverting stoma. 1,2,4,6,11 Multicentric RCT by Matthiessen et al was first to show a significant difference in leak rates, with 28% in patients without defunctioning stoma compared with 10.3% in those who had been defunctioned.⁹ A metaanalysis undertaken by Huser et al. including 15538 patients demonstrated significantly decreased clinically relevant anastomotic leaks (OR=0.32, CI: 0.17-0.59) and decreased need for re-operation (OR=0.27, CI: 0.14-0.52).¹⁰ In another metaanalysis including 11429 patients, Tan et al demonstrated a lower clinical anastomotic leak rate (RR=0.39, CI: 0.23-0.66, p<0.001) as well as lower re-operative rate (RR=0.29, CI: 0.23-0.53, p<0.001).¹² But, in the both metaanalyses, the criteria for creation of diverting stoma were not standardized. Reasons varied between studies, including surgeon's preference, defective doughnuts (without mention of leak test), poor bowel preparation, prior pelvic radiation and technical challenges. Therefore, whether stoma should

be constructed routinely for every patient remains controversial.

In a multicentric cohort study of 936 patients undergoing LAR, rate of symptomatic leak rate was 13.2% in stoma group vs. 12.7% in cases without stoma (p=0.84). But relaparotomy was required in 1% of stoma group vs. 7.4% of non-stoma group (p<0.001). Hence, the authors concluded, stoma reduced the need of urgent relaparotomy.¹³

However, a stoma presents challenges for patients, including diet and clothing, the potential impact on particular line of work, problems with sexual activity and physical and psychological impact.¹⁴⁻¹⁶ High stoma output with resultant dehydration and electrolyte disturbances, acute renal failure, peristomal herniation, skin irritation, obstruction and stomal prolapse are common morbidities after stoma.¹⁷ Furthermore, an additional operation is needed in order to restore intestinal continuity, adding additional morbidity and cost to the management of these patients.¹⁸ Overall morbidity following operation for stoma closure was found to be 17.3% in a review of over 6000 such procedures by Chow et al.¹⁹ The study recommended patients at low risk for anastomotic leak not receive a defunctioning stoma to avoid this extra morbidity.

A non-randomized review of 1078 patients over a 10-year period at a single institution found that the rates of clinical anastomotic leak after LAR or ultra LAR were no different (4%) between the diverted and non-diverted groups.²⁰

Nisar et al retrospectively examined 1862 patients, 28% of whom underwent neoadjuvant therapy. In those patients who received neoadjuvant radiation therapy, there was trend toward increase leak rates (8% vs. 5.7%, p=0.06) and greater use of defunctioning stoma (87% vs. 44%, p<0.001). However, on multivariate analysis, the use of radiation was not independently associated with anastomotic leak (OR=1.44, CI: 0.85-2.46), and a use of defunctioning stoma did not reduce the occurrence of anastomotic leak (OR=0.75, CI: 0.44-1.28).²¹ Similarly, Messaris et al found no difference in mortality and infectious complications between stoma and no-stoma groups after neoadjuvant chemoradiation followed by LAR in 1406 patients of mid-high rectal cancer.²²

Moreover, 6 to 32 % patients never undergo closure of temporary stomas due to many reasons e.g. cancer recurrence, anastomosis site-related complications and unsatisfactory anorectal functions.²³⁻²⁸ In a large multicenteric setting, den Dulk et al, analyzed a subgroup of Dutch patients undergoing LAR from 1996 to 1999, and found that 19% of defunctioning stomas became permanent after a median follow up of 7 years.²⁹

In our study, there was only one leak, which eventually led to the death of patient. This was patient after two previous surgeries and chemotherapy with a metachronous tumor in the lower rectum and the patient had undergone total proctocolectomy with IPAA. The anastomotic height in our study was 3.5 cm only, which suggested a truly low location of the anastomosis. Other minor complications were managed successfully. We could avoid unnecessary diverting stoma in 94% cases, which we think is extremely relevant for a developing nation like Nepal, where there are various economic constraints and difficulties in obtaining the good quality stomal appliances. There have been various limitations of our study, mainly low number of patients and non-randomized nature of the study.

Based on several upcoming studies including ours, the routine use of diverting stoma should be questioned and the protocol should be re-evaluated. In a well-performed tension free anastomosis without any vascular compromise at anastomotic ends, with circumferentially intact anastomosis and negative leak test, diverting stoma may not be needed.

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