

## **Surgical Outcome of Anterior Resection with or without Stoma for Patients with Rectal Cancer at Soba University Hospital from January 2014 to January 2019**

**Omer Elfaroug H Salim<sup>1\*</sup>, Rugia Awad Mohamed Elfaki Ahmed<sup>1</sup>, Mohamed A Abdeen<sup>2</sup>, Osman S Abdelhamed<sup>3</sup>, Rawan SE Hassan<sup>4</sup>, Anas E Elsheikh<sup>5</sup>, Rayan Salah Eddin Abdalla Numan<sup>6</sup>, A H Widatalla<sup>7</sup>, Hilmi Doud<sup>7</sup>, Walid Al Hag<sup>7</sup> and Suleiman Hussein Suleiman<sup>8</sup>**

<sup>1</sup>*Sudan Medical Specialization Board, Sudan*

<sup>2</sup>*Associate Professor of Surgery, Faculty of Medicine, University of Khartoum, Sudan*

<sup>3</sup>*MBBS, University of WadiAlneil, Sudan*

<sup>4</sup>*MBBS, Faculty of Medicine, University of Gezira, Sudan*

<sup>5</sup>*Faculty of Medicine, Omdurman Islamic University, Sudan*

<sup>6</sup>*MBBS, University of Khartoum, Sudan*

<sup>7</sup>*Assistant Professors, Faculty of Medicine, University of Khartoum, Sudan*

<sup>8</sup>*Professors, Faculty of Medicine, University of Khartoum, Sudan*

**\*Corresponding Author:** Omer Elfaroug H Salim, Sudan Medical Specialization Board, Sudan.

**Received:** May 06, 2021; **Published:** November 18, 2021

### **Abstract**

**Background:** Colorectal Cancer is a major cause of morbidity and mortality worldwide. One of the options of management of rectal cancer is Low Anterior Resection (LAR) with or without stoma. Common disadvantage of LAR without stoma is anastomotic leak; while disadvantages of LAR with stoma are: stoma related complications and the need for a second surgery. In this study, we compare the magnitude of complications of those two modalities.

**Objective:** To study the surgical outcome of Anterior Resection with or without stoma for patients with rectal cancer.

**Methods:** This is single-center cross sectional retro-prospective study, conducted among 53 patients diagnosed with rectal cancer and underwent LAR. Patients were categorized into two groups: LAR with stoma and LAR without stoma. An abstraction form was used for data collection. Analysis was done with SPSS version 21.

**Results:** Fifty one percent were male, 49% were females. Fifty three percent of patients underwent LAR without stoma versus 47.2% underwent LAR with stoma. Rate of complications among LAR with stoma group versus without stoma group (28% versus 10.7%, p.value 0.68). In form of surgical site infection (16% versus zero, p.value 0.07), anastomotic leak (4% versus zero, p.value 0.15) among LAR with stoma group versus without stoma group respectively, while adhesive intestinal obstruction (7.2% versus zero, p.value 0.17), deep infection (3.6% versus zero, p.value 0.16) among LAR without stoma group versus with stoma group respectively. Stoma related complications were: parastomal hernia 4%, and stomal prolapsed 4%.

**Conclusion:** From this study we concluded that management of rectal cancer LAR without stoma has a comparable result, and lower complication rate than LAR with stoma but they are statistical insignificant. So, LAR without stoma can be considered as valid procedure for management of rectal cancer.

**Keywords:** Colorectal Cancer; Low Anterior Resection (LAR); Anterior Resection; Stoma

## Background

Colorectal Cancer is a major cause of morbidity and mortality worldwide, but has a good outcome in the developed world. Unfortunately, huge numbers of patient with colorectal cancer die because they live in developing countries, and therefore have no or limited access to hospital for early management or cannot even afford to pay for their management.

Surgical treatment of rectal cancer includes: abdominoperineal resection and anterior resection. Anterior resection is the general term used to describe resection of the rectum from an abdominal approach to the pelvis with no need for a perineal, sacral, or other incision. Three types of anterior resection have been described: High Anterior Resection, Low Anterior Resection, and Extended Low Anterior Resection.

## Patients and Methods

This is a single-center cross-sectional retrospective study, at Soba University Hospital (SUH) in a period between January 2014 - January 2019, in which 53 patients diagnosed with rectal cancer and underwent anterior resection were included. Patients were categorized into two groups: anterior resection with stoma and anterior resection without stoma. An abstraction form was used for data collection. Analysis was done with SPSS version 21.

## Results

In this study, the total number of patients is 53, 27 (51%) of them were males, and 26(49%) were females. Male: Female ratio is 1.03:1, mean age 50.33 (18 - 78 yrs). The majority of the patients (77.3%) were residents in central Sudan. Eighty five percent of the patients did not have metastasis at the time of presentation, whereas 15% had metastasis at presentation (Table 1).

Presence of metastasis	Frequency	Percent %
Present	8	15
Absent	45	85
Total	53	100

**Table 1:** Shows that 85% of the patients did not have metastasis at the time of presentation, whereas 15 % had metastasis at presentation.

The majority of patients (64%) had a hemoglobin level ranging between (10 - 12) g/dl (Table 2).

Hemoglobin Level (g/dl)	Frequency	Percent %
7-9	6	11
10-12	34	64
13-15	13	25
Total	53	100

**Table 2:** Shows that the majority of patients (64%) had a hemoglobin level ranging between (10 - 12) g/dl.

The preoperative CEA level was (0 - 10 ng/dl) in 52.8% of patients, (11 - 20 ng/dl) in 24.5%, (31 - 40 ng/dl) in 17%, and (21 - 30 ng/dl) in 5.7% (Table 3).

Preoperative CEA (ng/dl)	Frequency	Percent
0 - 10	28	52.8
11 - 20	13	24.5
21 - 30	3	5.7
31 - 40	9	17
Total	53	100

**Table 3:** Shows that the preoperative CEA level was (0 - 10 ng/dl) in 52.8% of patients, (11 - 20 ng/dl) in 24.5%, (31 - 40 ng/dl) in 17%, and (21 - 30 ng/dl) in 5.7%.

The macroscopic appearance of the tumor was ulcerative in 49% of patients, annular in 15.1%, polypoid in 13.2%, infiltrative in 13.2%, circumferential in 5.7%, and fungating in 3.8%. 83% of the patients received neo-adjuvant therapy, while 17% did not.

52.8% of patients underwent anterior resection without stoma and 47.2% underwent anterior resection with stoma (Table 4).

Type of surgery	Frequency	Percent %
Anterior resection without stoma	28	52.8
Anterior resection with stoma	25	47.2
Total	53	100

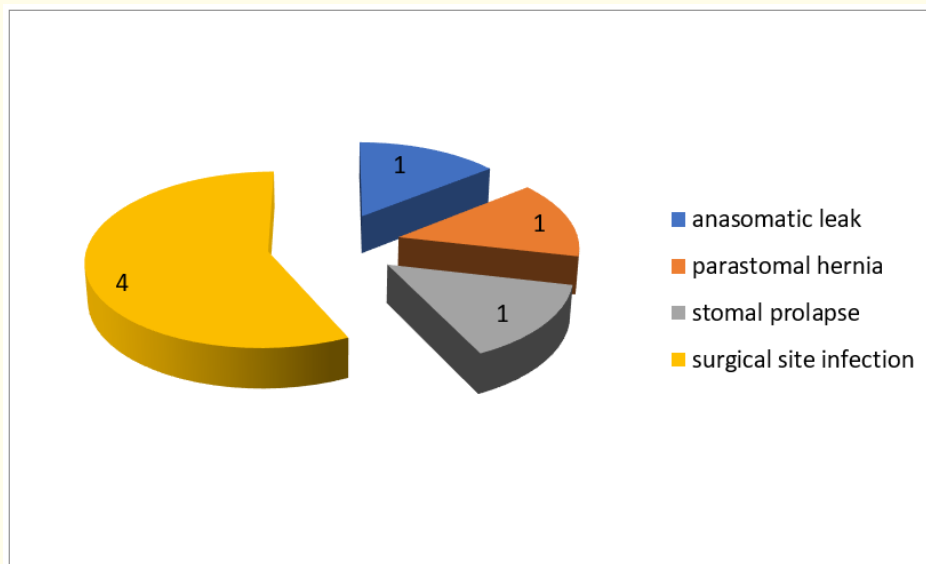
**Table 4:** Shows that 52.8% of patients underwent anterior resection without stoma and 47.2% underwent anterior resection with stoma.

The majority of patients (83%) did not have any complication, and 17% developed complications. Frequency of complication among patients with stoma was 28% and only 10.7% for those who underwent anterior resection without stoma (Table 5).

Group	Total number of patient	Frequency of complication	Percent %
Anterior resection without stoma	28	3	10.7%
Anterior resection with stoma	25	7	28%

**Table 5:** Shows that frequency of complication among patients with stoma was 28% and only 10.7% for those who underwent anterior resection without stoma.

Complications among patient underwent anterior resection with stoma include: surgical site infection in 4 patients (16%), anastomotic leak in one patient (4%), parastomal hernia in one patient (4%), and stomal prolapsed in one patient (4%) (Figure 1).



**Figure 1:** Shows that complications among patient underwent anterior resection with stoma include: surgical site infection in 4 patients (16%), anastomotic leak in one patient (4%), parastomal hernia in one patient (4%), and stomal prolapsed in one patient (4%).

Complications among patient underwent anterior resection without stoma includes adhesive intestinal obstruction in two patients (7.2%) and deep infection in one patient (3.6%).

About 20% of patients had well differentiated adenocarcinoma, 56.6% had moderately differentiated adenocarcinoma, and 22.6% had poorly differentiated adenocarcinoma. About 52% of patients had stage B Duke's criteria, 35.9% had stage C, 9.4% had stage A, and only 1.9% had stage D.

## **Discussion**

This study was conducted by reviewing 53 patients who underwent low anterior resection (LAR) for rectal cancer at Soba University Hospital (SUH) to evaluate the surgical outcome of patients who underwent LAR with vs. without stoma, during the period of January 2014 - January 2019.

In this study, 51% were males, 49% were female. Male: Female ratio 1.03:1, mean age 50.33 (18 - 78 yrs). It is similar to local study in which 50.7% were males, 49.3% were female, Male: Female ratio 1:1.02 [1,2].

Regarding the demographic background of patients in the study about 77% were from the center of Sudan, which could be due to non availability of advanced services in the periphery, or preference of the patients seeking advice in the central hospital. Previous local study reported about 40% of patients from central Sudan [2].

In this study LAR without stoma group were 28 (52.8%) patients, age (30 - 78), M:F ratio (1:1), 26 (92.6%) patients presented early while 7.4% presented with metastasis. 57.2% of patients stage 2 (Duck's B), 21.4% Duck's A and 21.4% Duck's C. Macroscopic appearance 50% ulcerative, 17.9% polypoid, 17.9% annular, 7.1% infiltrative, 3.6% circumferential and 3.6% fungating. 78.6% of patients received adjuvant chemo-radiotherapy.

While LAR with stoma group were 25 (47.2%) patients, age (18 - 69), M:F ratio (1.08:1). Nineteen (76%) patients presented early, while 24% presented with metastasis. (44% of patients stage 2 (Duck's B), 36% Duck's C, 12% Duck's A and 8% Duck's D). Macroscopic appearance 48% were ulcerative, 20% infiltrative, 16% polypoid, 8% annular and 8% circumferential. Eighty percent of patients received adjuvant chemo-radiotherapy

Concerning to metastasis majority of patients 85% presented early without metastasis, 15% with metastasis lower in comparable to a regional study done in KSA revealed that 40% of patients having advanced cancer [3]. This is could be due to increasing awareness about malignant diseases. and this study conducted in specialized tertiary center with availability of investigations and modalities that diagnose and treat cancer early.

Most of patients (75.5%) hemoglobin had mean level of 12 g/dl at time of presentation, while CEA level was more than 2.5 ng/dl among 83% of patients.

Standard preoperative evaluation was done to all patients to assess their preoperative stage either by CT scan or MRI, or both. Duke's B (stage 2) was reported in 52.8% of the patients, Duke's C (stage 3) 35.9%, Duke's A (stage 1) 9.4% and Duke's D (stage 4) 1.9% and postoperative pathological staging showed similar figures to imaging stage. Similar to global study yield that Duke's B was reported in 31.4% of the patients, Duke's A 26.6%, Duke's C 25.6% and Duke's D 16.3% [4]. And local conducted in Wad Medani showed that 58.3% Duke's C, 41.7% Duke's B [5].

Macroscopic appearance of the tumor manifested as ulcerative type in 49% of patients, annular in 15.1%, infiltrative in 13.2%, polypoid in 13.2%, circumferential in 5.7%, and fungating in 3.8%. Gordan., *et al.* report in their study similar results, ulcerative type in 44.9% of patients, annular in 36.5%, infiltrative in 13.2%, polypoid in 16.3% [4].

Total of patients received neo-adjuvant therapy 83% in the form of chemo-radiotherapy. Higher when compared to global study in which 27.4% patients received neo-adjuvant chemo-radiotherapy [6].

This helps in a good outcome by term of reducing local recurrence rate. Perhaps this could explain that we observed only one patient presented with local recurrence one year after surgery.

The surgical modalities used in the management of rectal cancer patients were anterior resection without stoma 52.8% versus 47.2% with stoma (22.6% with ileostomy and 24.5% with colostomy). Similar to Indian study revealed that patients underwent anterior resection without stoma were 50.8% versus 49.2% with stoma [7]. Global study showed that defunctioning stoma was the surgical modality of choice after anterior resection in 69% of cases [8].

Postoperatively, the most common histopathological findings were moderately differentiated adenocarcinoma in 56.6% of patients, while well differentiated adenocarcinoma was 20.8% and poorly differentiated adenocarcinoma 22.6%. Similar to global study revealed that moderately differentiated adenocarcinoma 57.1%, well differentiated adenocarcinoma 30.4% and poorly differentiated adenocarcinoma 12.2% [4]. So, the dominant histopathological type was adenocarcinoma, mainly moderately differentiated adenocarcinoma, which contributed in better outcome.

Despite refinements in surgical techniques, bowel preparation methods, prophylactic antibiotics, and postoperative care, in recent decade colorectal surgery is still associated with serious complications.

In this study the rate of complication among patients with LAR with stoma was 28% versus 10.7% for those without stoma (p. value = 0.68), compared to Japanese study conducted the complication rate was higher in patients with diversion stoma (p = 0.003) [9].

In this study surgical site infection (16% versus zero, p.value 0.07) among patients underwent LAR with or without stoma respectively. Comparable with regional study conducted wound infection rate was 22.7% among patients underwent anterior resection with stoma [10]. This possibly due to soiling. Deep infection was a complication of one case who underwent LAR without stoma, while no deep infection in whom underwent LAR with stoma. (3.6% versus zero respectively, p.value 0.16).

Anastomotic leak in stoma group (one patient) (4% versus zero, p.value 0.15) among group without stoma. Comparable with study done in Japan conducted anastomotic leak among stoma versus without stoma group (11.43% versus 10.18% respectively) [9]. Another study conducted to compare the outcome of LAR with or without diverting stoma in term of anastomotic leak the outcome was better among stoma group (p. value 0.00001) [11]. Another global study confirmed that the use of stoma associated with less anastomotic leak [12]. The patient diagnosed with anastomotic leak at the first week postoperative, diagnosed with barium study, treated conservatively on regular follow up and planned for reversal of colostomy.

Adhesive intestinal obstruction were developed among patients underwent LAR without stoma only (7.2% versus zero, p.value 0.17). Both patients of adhesive intestinal obstruction treated non surgically. First one developed obstruction 4 months and the second one year after first surgery.

Stoma related complications include: parastomal hernia in 4%, and stomal prolapse in 4% relatively smaller when compared to a regional study that showed stoma related complications developed in 19% of patients [8]. Another regional study showed the rate of complications after stoma was 2.9% in term of parastomal hernia and peristomal dermatitis [10].

## **Conclusion**

Management of rectal cancer with low anterior resection without stoma has a good outcome, without need for a second surgery. Complication rate of low anterior resection without stoma is lower than that of anterior resection with stoma. Accurate preoperative assessment could be contributing in lowering complication rate.

## **Bibliography**

1. Taha Mohamed, *et al.* "Pattern and presentation of colorectal cancer in central Sudan, a retrospective descriptive study, 2010-2012". *African Health Sciences* 15.2 (2015): 576-580.
2. Gado Ahmed, *et al.* "Colorectal cancer in Egypt is commoner in young people: Is this cause for alarm?" *Alexandria Journal of Medicine* (2013).
3. Albalawi A., *et al.* "Emergency presentation of colorectal cancer in northwestern Saudi Arabia". *Saudi Medical Journal* 38.5 (2017): 528-533.
4. Gordon T Deans, *et al.* "Colorectal carcinoma importance of clinical and pathological factors in survival". *Annals of the Royal College of Surgeons of England* 76.1 (1994): 59.
5. Ahmed A Abdalla, *et al.* "Neoadjuvant chemoradiation for rectal cancer analysis of clinical outcomes for patients treated in Wad Medani teaching hospital and national cancer institute (Sudan) in the period 2006-2011.
6. Schiffmann L, *et al.* "Intensified neoadjuvant radiochemotherapy for rectal cancer enhances surgical complications". *BMC Surgery* 13 (2013): 43.
7. Garg PK, *et al.* "Protective Diversion Stoma in Low Anterior Resection for Rectal Cancer". *Visceral Medicine* 35.3 (2019): 156-160.
8. Emmanuel A, *et al.* "Defunctioning stomas result in significantly more short term complications following low anterior resection for rectal cancer". *World Journal of Surgery* 42.11 (2018): 3755-3764.
9. Wang L, *et al.* "Diverting Stoma Versus No Diversion in Laparoscopic Low Anterior Resection: A Single-center Retrospective Study in Japan 33.6 (2019): 2125-2131.
10. Wu X, *et al.* "Comparison of protective ileostomy and transverse colostomy through specimen extraction auxiliary incision following laparoscopic low anterior resection for rectal cancer". *Zhonghua Wei Chang Wai Ke Za Zhi* 22.10 (2019): 961-965.
11. Phan K, *et al.* "Does a stoma reduce the risk of anastomatic leak and need for re-operation following low anterior resection for rectal cancer: systematic review and meta-analysis of randomized controlled trials". *Journal of Gastrointestinal Oncology* 10.2 (2019): 179-187.
12. Mentedori A, *et al.* "Covering ileo- or colostomy in anterior resection for rectal carcinoma". *Cochrane Database of Systematic Reviews* 5 (2010): CD006878.

**Volume 8 Issue 12 December 2021**

**©All rights reserved by Omer Elfaroug H Salim, *et al.***