

**PREDICTIVE AND PROGNOSTIC FACTORS FOR SURGEONS TO PERFORM  
TEMPORARY ILEOSTOMY**Sohair Jbeili<sup>1\*</sup>, Aktham Kanjarawy<sup>2</sup> and Ali Alloush<sup>3</sup><sup>1</sup>MD, Department of Surgery, Tishreen University Hospital, Lattakia, Syria.<sup>2,3</sup>Professor, Department of Surgery, Tishreen University Hospital, Lattakia, Syria.**\*Corresponding Author: Sohair Jbeili**

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**ABSTRACT**

**Background:** Anastomosis leakage in various surgeries for rectal cancers remains the most important complication, which may increase morbidity and mortality, prolong hospitalization and affect the quality of life after surgery, as well as increase the risk of local relapse and decrease the long-term survival rate after leakage.

**Materials and Methods:** This was a prospective cross-sectional study involved 58 patients diagnosed with rectal cancer who underwent low anterior rectal resection at Department of General Surgery, Tishreen University Hospital, Lattakia, during the period between 2021-2023. Patients were divided into two groups: group I (19 patients) included patients who underwent ileostomy, and group II included patients who didn't undergo protective ileostomy (39 patients). **Conclusion:** The male sex, the distance of tumor from anus and adjuvant therapy (Radiotherapy or chemotherapy) are considered to be prognostic factors for the occurrence of anastomosis leakage, and they should be taken into account when performing temporary ileostomy.

**KEYWORDS:** Rectal cancer, Ileostomy, Anastomosis infusion.

**INTRODUCTION**

Currently, colorectal cancer ranks as the third most common cancer in the USA and is responsible for a significant percentage of cancer deaths, which is about 9% in males and 8% in females.<sup>[1,2]</sup> It is more common in industrialized countries, and is observed in males at a slightly higher percentage compared to females. The incidence begins to increase after the age of 35, increases significantly after 50 years and reaches the peak in the seventh decade, but is currently observed significantly in patients under the age of 50 in some high-income countries.<sup>[3]</sup>

Rectal cancer is considered one of the non-specific cancers, with several hypotheses that it is multifactorial, including environmental and genetic factors. Adenocarcinomas make up the vast majority of colorectal cancer cases (98%), and other cancers include: carcinoid (0.4%), lymphoma (1.3%) and sarcoma (0.3%).<sup>[4]</sup> Bleeding is the most common symptom of rectal cancer, which is observed in about 60% of patients with changes in defecation habits.<sup>[5]</sup> When determining the optimal treatment plan for rectal cancer patients, the goal of surgery should be taken into account, while maintaining anal retention and urogenital function. Surgery is considered the optimal treatment, the timing of surgery depends on the size, location, extension and degree of the tumor.<sup>[6]</sup>

There are a number of surgical interventions that can be used in rectal surgery, including: local resection, low anterior resection, perineal abdominal resection, and laparoscopic resection.<sup>[7]</sup> Low anterior rectal resection is performed in cases where the following criteria are met: invasive rectal cancer T2-4, the possibility of obtaining a margin of safety with passive anastomotic edges, with sufficient function of the rectal sphincter before surgery, this mode of resection is considered the standard surgical procedure for rectal cancer that allows preserving the function of the anal sphincter.<sup>[8]</sup>

Despite the advances in rectal surgery, anastomosis leakage remains one of the complications leading to death. The incidence of anastomosis leakage ranges from 3-11% in the upper and middle third anastomoses, and the percentage reaches 25% in the lower third anastomoses, so the protection of the anastomoses in the lower third is resorted to by performing a temporary ileostomy, especially when there is a previous history of exposure to radiotherapy. Anastomosis infusion is one of the important complications that affect the quality of life of patients and alarm especially morbidity, mortality, and functional disorders.<sup>[9,10]</sup>

**Objectives**

A comprehensive assessment of the role of temporary ileostomy in surgery for rectal cancers of various types in

the Prevention of anastomosis leakage and the resulting complications.

### Location and Duration of study

The study included 58 patients who were admitted and treated in the General Surgery Department for rectal cancer at Tishreen University Hospital from November 2021 to December 2023.

**Study design:** Prospective cross-sectional study.

### Inclusion criteria

All excisable rectal cancer patients admitted to the general surgery department at Tishreen University Hospital.

### Exclusion criteria

1. Patients with rectal cancer who have had a rectal-abdominal-perineal resection with a permanent ostomy with no preservation of the sphincter.
2. Rectal cancer patients who had surgery for an ambulatory reason.
3. Patients who died in the period around surgery for reasons other than the infusion of the anastomosis
4. Patients who have developed an infusion from a place other than the anastomosis line.

### Research plan

Patients were randomly selected and divided into two groups: **First:** low anterior rectal resection (LAR) manually or Stabler with ileostomy (in which all patients had a prophylactic ileostomy before the end of surgery). **Second:** low anterior rectal resection (LAR) manually or by Stabler without a protective ileostomy. The same protocol was followed in the drug treatment with antibiotics and the initiation of oral nutrition for both groups at the same time.

### Statistical analysis

- The statistical analysis was carried out using SPSS (version 20, IBM Corporation). The results were considered statistically significant when (P value<0.05).
- For categorical variables: frequency, percentages and graphs were relied on.
- For continuous variables: measures of centrality were used (arithmetic mean and standard deviation, range).
- Independent T student test were used to study the difference between the averages of two independent groups. The chi-square or Fisher test were used to study the relationship between qualitative variables.

## RESULTS

### 1. Distribution of the sample according to gender

**Table 1: The sample distribution by gender.**

Gender	N (N=58)	Percentage %
Males	38	65.5%
Females	20	34.5%

### 2. Distribution of the sample according to age

The age of the patients ranged from 45 to approximately 80 years with an average of 60.5±6.4 years.

**Table 2: The sample distribution by age.**

Age	40-49	50-59	60-69	70-79	≥80
Frequency	5	31	13	7	2
Percentage	8.6%	53.5%	22.4%	12.1%	3.5%

### 3. Distribution of the sample according to perform temporary Ileostomy

Rectal cancer patients were divided into two groups:

- ❖ Group I: low anterior rectal resection (LAR) with temporary ileostomy
- ❖ Group II: low anterior rectal resection (LAR) without temporary ileostomy.

**Table 3: The sample distribution by ileostomy procedure.**

	N	Percentage
With ileostomy	19	32.8%
Without ileostomy	39	67.2%

We noticed that the largest percentage of patients did not have temporary ileostomy (67.2%)

### 4. Distribution of temporary ileostomy patients according to gender

The number of rectal cancer patients who underwent a temporary ileostomy during surgery was 19.

**Table 4: Distribution of ileostomy patients by age.**

	Males (%)	Females (%)
With ileostomy	11 (47.9%)	8 (42.1%)
Without ileostomy	27 (69.3%)	12 (30.7%)

**5. Distribution of temporary ileostomy patients according to the location of rectal Tumor and Its distance from ileostomy**

**Group I:** The distance of tumor from the edge of the anus is less or equal to 5 cm

**Group II:** The distance of tumor from the edge of the anus is 5-10 cm

**Group III:** The distance of tumor from the edge of the anus is greater or equal to 10cm.

**Table 5: Distribution of patients according to the location of rectal tumor.**

Distance of tumor from the anus	Number of patients	With ileostomy	Without ileostomy
≤5 cm	36	8 (22.2%)	28 (77.8%)
5-10 cm	12	9 (75%)	3 (25%)
≥10 cm	10	2 (20%)	8 (80%)

- In group I, we noticed that the proportion of patients who did not have an ileostomy is about three times that of patients who had a prophylactic ostomy.
- In group II, the percentage of patients who did not have an ileostomy is three times higher than patients who had a preventive ileostomy.

- In group III, We noticed from the previous table that the percentage of patients without an ostomy procedure is four times higher than the patients who had a preventive ileostomy.

**6. Distribution of temporarily ileostomy patients according to adjuvant Radio/Chemotherapy**

**Table 6: Ileostomy Patients and Adjuvant therapy.**

Pre-surgical Radiotherapy/chemotherapy	N	Percentage
Present	10	17.2%
Absent	48	82.8%

**7. The Occurrence of anastomosis leakage according to the presence of temporary ileostomy**

**Table 7: Ileostomy and anastomosis leakage.**

Anastomosis leakage	With ileostomy n=19	Without ileostomy n=39
Present	1 (5.3%)	4 (10.3%)
Absent	18 (94.7%)	35 (89.7%)

We noticed from the previous table that the p value is approximately 0.1, which is greater than 0.05, and accordingly there are no statistically significant differences between the two groups in terms of leakage incidence.

**8. The occurrence of anastomosis leakage according to gender**

There were significant differences in terms of leakage between male and female patients, and it turned out that leakage was higher in males.

**Table 8: Anastomosis leakage according to gender.**

Gender Anastomosis leakage	Males N=38	Females N=20	P-value
Present	4 (10.5%)	1 (5%)	0.03
Absent	34 (89.5%)	19 (95%)	

**9. The occurrence of anastomosis leakage according to age**

It turned out through the research sample that there was only one male patient who had a leak from the anastomosis and he had a temporary ileostomy and he

was 71 years old, which is more than the average age with a non-significant sign, as noted from the previous table P-value =0.6 and this value is greater than 0.05, and this indicates that age does not affect the leak in the case of a temporary ileostomy.

**Table 9: Anastomosis leakage according to age.**

	Leakage with ileostomy		P-value
	Present	Absent	
Age	71±0	59.7±5.4	0.6

**10. The occurrence of anastomosis leakage according to the adjuvant therapy in temporary ileostomy patients:****Table 10: Anastomosis Leakage According and Adjuvant therapy.**

Group I with ileostomy (n=19)			
P-Value	Without adjuvant therapy (%)N	With adjuvant therapy (%)N	Leakage
0.002	0	1 (16.7%)	Present
	13 (100%)	5 (83.3%)	Absent

From the previous table, the p-value is approximately 0.002, which is less than 0.05, and this indicates that receiving preoperative adjuvant treatment in a group of temporary ileostomy patients increases the risk of anastomosis leakage, as the incidence of anastomosis leakage was absent in patients who did not undergo adjuvant treatment before surgery.

**11. The occurrence of anastomosis leakage according to the tumor distance from anus**

We noticed from the table that there is a statistically significant difference in all temporary ileostomy patients, regardless of the distance of the tumor from the anus, compared with patients who did not have a temporary ileostomy.

**Table 11: Anastomosis Leakage and The tumor distance from anus.**

Distance of tumor from the anus	Leakage	With ileostomy	Without ileostomy	P-value
≤5 cm	Yes	0	1 (3.6%)	0.03
	No	7 (100%)	27(96.4%)	
5-10 cm	Yes	1 (11.1%)	2 (33.3%)	0.009
	No	8 (88.9%)	1 (66.7%)	
≥10 cm	Yes	0	1 (12.5%)	0.01
	No	7 (87.5%)	2 (100%)	

**DISCUSSION**

The majority of patients were males and of advanced age, this can be explained by the increased risk of adenomatous polyps in males and with age and, consequently, the development of rectal cancer.

Preventive ileostomy was performed in 32.8% of patients (8 females and 11 males), while the largest percentage of Group B who did not have a preventive ileostomy was 67.2%, which is equivalent to double, due to the surgeon's decision, especially after testing the anastomosis during surgery, it is preferable not to perform a temporary ileostomy because this procedure requires another surgical operation to close it during a period and this carries an increase in the material cost and the duration of hospitalization in addition, the stoma is undesirable or even unacceptable for many patients.

Temporary ileostomy was performed in 8 patients from the sample of our study whose tumor is less than or equal to 5 cm from the edge of the anus by 22.2%, temporary ileostomy was performed in 10 patients whose tumor is more than 5 cm from the edge of the anus, while the largest percentage was for patients who did not have a preventive ostomy.

Our study found only 10 patients who underwent radiotherapy and/or chemotherapy before surgery with a

percentage of 17.2% The incidence of anastomosis leakage was less frequent in the ileostomy group without significant differences between the two groups ( $P=0.1 > 0.05$ ).

This can be explained by the fact that the number of patients who had an ileostomy was small in our study. The leakage rate was higher in patients who underwent radiotherapy and/or chemotherapy before surgery in both groups, both with a temporary ileostomy and without an ostomy and with statistically significant differences, where the  $p=0.002$  for the ostomy group and  $p=0.001$  for the group without an ostomy. That is, receiving adjuvant therapy before surgery is an isolated and predisposing risk factor for leakage both with and without an ostomy.

**CONCLUSION**

The male sex, the distance of tumor from anus and adjuvant therapy (radiotherapy or chemotherapy) are considered to be prognostic factors for the occurrence of anastomosis leakage, and they should be taken into account when performing temporary ileostomy.

**Ethical approval**

This research received approval from the scientific research ethics committee at Tishreen University and Tishreen University Hospital.

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