EARLY OUTCOMES OF LAPAROSCOPIC RECTAL SEGMENTAL RESECTION WITH PRIMARY ANASTOMOSIS IN THE TREATMENT OF RECTAL CANCER AT VIET TIEP FRIENDSHIP HOSPITAL

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SUMMARY

Objective: Describe the clinical and paraclinical characteristics of patients who underwent laparoscopic anterior resection with immediate anastomosis for rectal cancer at Viet Tiep Friendship Hospital from January 2023 to September 2025. Evaluate the early outcomes of laparoscopic anterior resection with immediate anastomosis in this patient cohort.

Patient and methods: A retrospective and prospective descriptive study of 39 patients diagnosed with rectal cancer who underwent laparoscopic anterior resection with immediate anastomosis at Viet Tiep Friendship Hospital.

Results: The male-to-female ratio was 1.17:1. The mean age was 67.38 ± 9.81 years. The prevalence of comorbidities was 48.7%. Clinical symptoms included mucus–bloody stool in 71.8% of patients, lower abdominal and perineal pain in 100%, and altered bowel habits in 53.8%. Colonoscopy revealed tumor location in the upper rectum (>10 cm) in 12.8%, mid rectum (>5 cm) in 61.5%, and lower rectum (≤5 cm) in 25.7%. Computed tomography (CT) detected rectal tumors in 97.4% of cases. The mean operative time was 193.2 ± 38.43 minutes. Low anterior resection accounted for 82.1%, anterior resection for 5.1%, and ultra-low anterior resection for 12.8%. The mean number of harvested lymph nodes was 6.3 ± 3.9. Postoperative complications occurred in 15.4% of patients. The mean distal resection margin was 3.09 ± 1.06 cm. The mean postoperative hospital stay was 11.13±2.61 days. Postoperative pathological staging showed stage I in 23.1%, stage II in 43.6%, and stage III in 33.3%. Overall outcomes were good in 84.6% of cases and moderate in 15.4%.

Keywords: Rectal cancer.

1. INTRODUCTION

Rectal cancer is a common malignancy, ranking fourth in incidence and fifth in cancer-related mortality in Vietnam. According to GLOBOCAN 2022, among 180,480 newly diagnosed cancer cases in Vietnam, colorectal cancer accounts for 9.3%, corresponding to 16,835 cases. The management of rectal cancer requires a multimodal approach, including surgery, radiotherapy, chemotherapy, and targeted therapy, among which surgical intervention plays a pivotal role, particularly in curative treatment. In the 1970s–1980s, advances in surgical technology, including the development of modern stapling and anastomotic devices, were increasingly applied

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in rectal cancer surgery. These innovations significantly improved the feasibility of low and ultra-low anterior resection in the confined pelvic space, thereby reducing the need for permanent colostomy and shortening operative time. In recent years, Viet Tiep Friendship Hospital has routinely implemented laparoscopic rectal segmental resection with primary anastomosis in the treatment of rectal cancer, achieving favorable clinical outcomes and demonstrating satisfactory surgical proficiency.

2. PATIENT AND METHOD

A total of 39 patients diagnosed with rectal cancer who underwent laparoscopic rectal segmental resection with primary anastomosis at Viet Tiep Friendship Hospital from January 2023 to September 2025 were included in this study. Data were collected using a pre-designed medical record form. Statistical analysis was performed using SPSS software version 22.0, applying standard methods of medical statistics.

3. RESULTS

3.1. Clinical characteristics

General characteristics

Age: The mean age was 69.03±6.64 years (range: 60–83 years). The male-to-female ratio was 1.17:1.

One patient had a history of prior abdominal surgery. Comorbid medical conditions were present in 53.8% of patients.

3.2. Clinical presentation

3.2.1. Reason for hospital admission

Table 1. Reasons for Hospital Admission (n=39)

Reasons for Hospital Admission	Number of patients (n=39)	Percentage%
Mucus-bloody stool	26	66.7
Hypogastric pain	25	64.1
Defecation disorders	3	7.7

3.2.2. Duration of Disease Progression

02 patients (5.1%) had a prolonged disease course before presenting to the hospital, with the longest duration being approximately 1 year. The majority of patients (66.7%) presented within less than 1 month after the onset of symptoms.

3.2.3. Functional Symptoms

Table 2. Clinical Functional Symptoms (n=39)

Symptom	Number of patients (n=39)	Percentage%
Mucus-bloody stool	28	71.8
Change in stool shape (thin, flattened)	2	5.1
Hypogastric and perineal pain	39	100
Defecation disorders	21	53.8
Constipation	7	17.9
Vomiting	2	5.1

3.2.4. Systemic symptoms

Systemic manifestations in patients with rectal cancer were generally mild. Anemia was observed in 12.8% of cases.

3.2.5. Physical examination findings

Digital rectal examination is an essential procedure in patients with rectal cancer. In this study, a palpable tumor was detected in 46.2% of patients, and blood on the examining glove was observed in 41% of cases.

** Characteristics of Tumors on Digital Rectal Examination*

Table 3. Characteristics of Tumors on Digital Rectal Examination (n=18)

Characteristics	Number of patients (n=18)	Percentage %
Tumor location from anal verge (AV)		
Low rectum (3-5 cm)	6	33.3
Mid rectum (>5 cm)	12	66.7
Tumor mobility		
Good mobility	5	27.8
Limited mobility	13	72.2

4.3. Paraclinical Characteristics

4.3.1. Endoscopic Characteristics of Tumors

A total of 22/39 patients underwent complete colonoscopy. Synchronous colorectal polyps were identified in 36.4% of these cases.

Table 4. Endoscopic Tumor Characteristics (n=39)

Characteristics	Number of patients (n=39)	Percentage (%)
Tumor location from anal verge (AV)		
Upper rectum (11-15 cm)	9	23.1
Mid rectum (6-10 cm)	24	61.5
Lower rectum (3-5 cm)	6	15.4
Circumferential involvement		
< 1/2 circumference	12	30.8
1/2 - 3/4 circumference	12	30.8
> 3/4 circumference	15	38.4
Macroscopic appearance		
Exophytic (polypoid)	1	2.6
Ulcerative	1	2.6
Mixed (ulcerative + exophytic)	37	94.8
Complete colonoscopy		
Yes	22	56.4
No	17	43.6
Total	39	100

4.3.2. CEA Levels and Hematological Parameters

- Among the 39 patients, 26 underwent carcinoembryonic antigen (CEA) testing. Elevated CEA levels (>5 ng/mL) were observed in 46.2% of cases, with the highest recorded value being 55.46 ng/mL.

- Most patients had normal red blood cell counts (82.1%) and hemoglobin levels (71.8%). The lowest recorded hemoglobin concentration was 88 g/L.

4.3.3. Diagnostic Imaging Results

** Abdominal and Pelvic CT Scan Results*

Table 5. Abdominal and Pelvic CT Findings (n = 39)

CT results	Number of patients (n=39)	Percentage (%)
Rectal tumor detected	38	97.4
Suspected regional lymph node metastasis	24	61.5
Suspected distant metastasis	0	0

** CT-based T Staging*

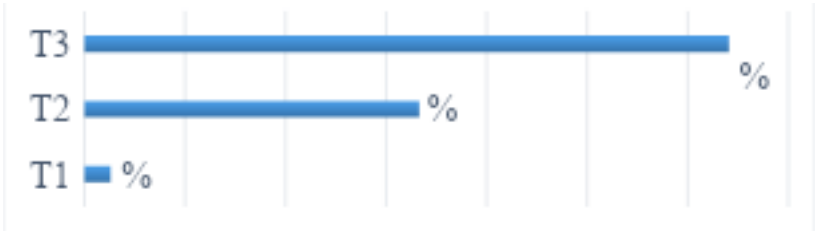

Chart 1. CT-based T staging (n = 39)

** Pelvic MRI Findings*

Table 6. Pelvic MRI Findings (n=10)

MRI findings	Number of patients (n=10)	Percentage %
Rectal tumor detected	10	100
Suspected regional lymph node metastasis	2	20
Suspected distant metastasis	0	0

4.3.4. Preoperative Clinical Staging

Table 7. Preoperative Disease Stage (n=39)

Preoperative stage	Number of patients (n=39)	Percentage %
Stage I	1	2.6
Stage II	18	46.2
Stage III	20	51.2

5. SURGICAL OUTCOME

5.1. Intraoperative Results

5.1.1. Operative time

The mean operative time was 193.2±38.43 minutes. The shortest operative time was 120 minutes, while the longest was 280 minutes.

5.1.2. Association between Operative Time and Gender

Table 8. Relationship between Operative Time and Gender (n=39)

	Gender	Number of patients (n=39)	Mean operative time (minutes)	p
Operative time	Female	18	190±36.8	0.636
	Male	21	196±40.5	

5.1.3. Intraoperative Pathological Stage

Table 9. Intraoperative Disease Stage (n=39)

Intraoperative stage	Number of patients (n=39)	Percentage %
Stage II	13	33.3
Stage III	26	66.7
Total	**39**	**100**

5.1.4. Surgical Approach

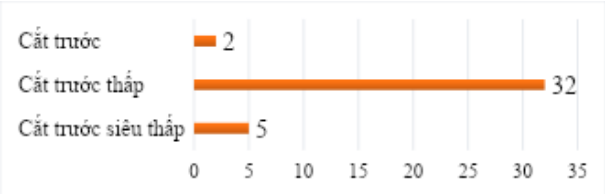

Chart 2. Characteristics of Surgical Procedures (n=39)

5.1.5. Number of Harvested Lymph Nodes

The mean number of harvested lymph nodes was 6.3 ± 3.9 (range: 1–15 nodes). In the subgroup with ≥12 harvested lymph nodes, the rate of lymph node positivity was 50%, which was higher than that observed in the group with <12 harvested lymph nodes (31.4%).

5.2. Postoperative Outcomes

5.2.1. Postoperative Recovery

The mean duration of postoperative analgesic use was 2.69 ± 1.36 days. The mean time to first flatus was 3.48 ± 1.17 days. The mean postoperative hospital stay was 11.13 ± 2.61 days. The mean time to removal of the anal drainage tube was 5.3 ± 2.85 days, ranging from 2 to 17 days.

5.2.2. Postoperative Complications

Table 10. Characteristics of Postoperative Complications (n=39)

Early Postoperative Complications (within the first month)	Number of patients (n=39)	Percentage %
Localized anastomotic leakage (no reoperation required)	0	0
Anastomotic bleeding	1	2.6
Subileus	3	7.7
Surgical site infection	2	5.1
No complications	33	84.6

5.2.3. Classification of Postoperative Complications

Table 11. Classification of Postoperative Complications (n=6)

Complication grade	Number of patients (n=6)	Percentage %
Grade I	2	33.3
Grade II	4	66.7
Total	6	100

5.2.4. Histopathological Characteristics After Surgery

- All cases (100%) were diagnosed as adenocarcinoma on histopathological examination.

- The majority of tumors were moderately differentiated (94.9%), and no well-differentiated tumors were identified.

** Tumor Invasion Depth*

Table 12. Tumor Invasion Depth (n=39)

pT stage	Number of patients (n=39)	Percentage %
pT2	9	23.1
pT3	13	33.3
pT4	17	43.6
Total	39	100

5.2.5. Postoperative Pathological Stage

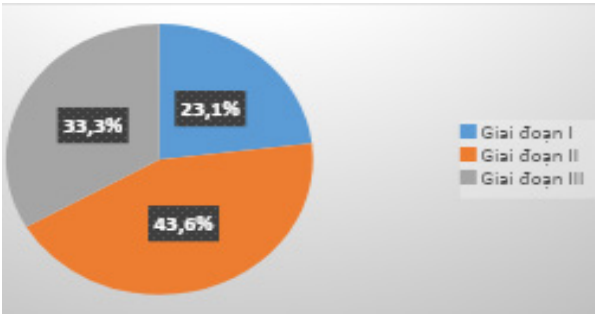

Chart 3. Postoperative Pathological Stage (n=39)

5.2.6. Surgical Resection Margin

The mean distal resection margin was 3.09 ± 1.06 cm, ranging from 1.5 cm to 5 cm. All cases achieved a negative distal margin (R0 resection), with no residual tumor cells detected at the resection margin.

6. DISCUSSION

6.1. General characteristics

Age: The mean age in our study was 69.03 ± 6.64 years (range: 60–83 years). This result was slightly higher compared with the study by Nguyễn Quang Huy (2023) at Hospital 115, which included 51 patients with a mean age of 63 years [60], and the study by Cao Minh Tiệp (2022) conducted at Military Hospital 103 and K Hospital, which reported a mean age of 58.88 ± 12.1 years in 88 patients.

The male-to-female ratio in our study was 1.17:1, with 54% male and 46% female patients (Figure 3.2), indicating a higher prevalence of rectal cancer in males. This finding is consistent with Lê Quốc Tuấn, who reported a male-to-female ratio of 1.15:1, and with the meta-analysis by Akagi Y et al., which included 14 studies on sphincter-preserving surgery for low rectal cancer and demonstrated a male predominance ranging from 1.3 to 2.5.

Regarding medical history, one patient had a previous history of abdominal surgery, and 53.8% of patients presented with comorbidities. This proportion of comorbid conditions was higher than that reported by Cao Minh Tiệp (2022), who documented 26 patients with associated diseases, including hypertension in 11.3%, diabetes mellitus in 2.3%, and multiple comorbidities in 5.7%.

6.2. Clinical Characteristics

6.2.1. Reason for hospital admission

In our study (n = 39), as shown in Table 1, the main reasons for hospital admission were hypogastric pain in 25/39 patients (64.1%), mucus-bloody stool in 26/39 patients (66.7%), and defecation disorders in 3/39 patients (7.7%). These findings are consistent with the study by Lê Quốc Tuấn (2020), in which mucus-bloody stool accounted for 89.3% of admission reasons, and the study by Phạm Cẩm Phương (2013), which also reported mucus-bloody stool as the predominant presenting symptom in 90.9% of patients.

6.2.2. Duration of disease progression

Two patients (5.1%) had a prolonged symptomatic period before hospital admission, with the longest duration being approximately 1 year. The majority of patients (66.7%) presented within less than 1 month after symptom onset. Our results indicate earlier hospital presentation compared with other studies. Lê Quốc Tuấn

(2020) reported a mean duration of 4.1 months, while Phạm Văn Bình reported a mean interval from symptom onset to hospital admission of 3.8 ± 1.2 months, with 75.6% of patients presenting within 6 months.

6.2.3. Functional symptoms

In our study, the most common symptoms included hypogastric pain (100%), mucus-bloody stool (71.8%), defecation disorders (53.8%), vomiting (5.1%), change in stool shape (5.1%), and constipation (17.9%). These findings are consistent with previous studies. Cao Minh Tiệp (2022) reported mucus-bloody stool in 81.8%, constipation in 20.5%, and vomiting in 1.1% among 88 rectal cancer patients. Mai Đức Hùng reported mucus-bloody stool in 72.5% of 138 patients, while Trần Anh Cường (2017) reported rectal bleeding in 93.1%, abdominal pain in 81.9%, changes in bowel habits in 75.9%, and increased stool frequency in 70.7% of patients.

6.2.4. Systemic symptoms

Systemic manifestations in rectal cancer patients were generally mild. Anemia was observed in 12.8% of cases.

6.2.5. Physical examination findings

Digital rectal examination is a mandatory clinical procedure in patients with rectal cancer. In our study, a palpable tumor was detected in 46.2% of patients, while blood on the examining glove was observed in 41% of cases. These results were higher than those reported by Cao Minh Tiệp, who found palpable tumors in 29.5% and blood on glove in 31.8% of 88 patients, but lower than those reported by Lê Quốc Tuấn, who identified palpable tumors in 78.6% and blood on glove in 92.9% of cases, likely due to differences in tumor location and patient selection criteria across studies.

6.3. Paraclinical Characteristics

6.3.1. Endoscopic tumor characteristics

Among 39 patients, 22 underwent complete colonoscopy. Synchronous colorectal polyps were detected in 36.4% of cases. These findings are generally consistent with previous studies reporting the presence of associated colorectal lesions in patients with rectal cancer. Mai Đức Hùng (2012), in a study of 138 cases (84.8% mid-rectal cancer), reported a mean tumor size of 9.28 ± 2.61 cm. Other authors such as Mai Đình Điểu also reported tumor distribution across lower, middle, and upper rectum at rates of 43.8%, 40.4%, and 15.8%, respectively, reflecting variability in patient selection and tumor location across studies.

6.3.2. CEA levels and hematological parameters

- Among 39 patients, 26 underwent CEA testing, of whom 46.2% had elevated CEA levels (>5 ng/mL), with a maximum value of 55.46 ng/mL.

- Most patients had normal red blood cell counts and hemoglobin levels, accounting for 82.1% and 71.8%, respectively. The lowest recorded hemoglobin level was 88 g/L, indicating that anemia was present but not common in the study population.

6.3.3. Diagnostic Imaging Results

All 39 patients underwent abdominal and pelvic CT scans, with rectal tumors detected in 97.4% of cases. This demonstrates that CT remains an important first-line imaging modality for detecting primary rectal tumors, particularly in provincial hospitals or centers without MRI availability. One case was not detected on CT due to an early-stage lesion with ulcerative morphology and minimal wall thickening. Our detection rate was higher than that reported by Lê

Quốc Tuấn (55.4%) and comparable to Nguyễn Tuấn Cảnh (2023), who reported a detection rate of 97.1% (34/35 patients).

6.3.4. Preoperative Staging

Based on Table 11, most patients were classified preoperatively as stage II (46.2%) and stage III (51.2%), while stage I accounted for only 2.6%. Preoperative staging was based on clinical examination, endoscopic findings, tumor location, and CT and/or pelvic MRI results. Similar to other studies relying on MRI-based staging, such as that by Nguyễn Tô Hoài et al. at Military Hospital 108, stage III disease was also predominant (87.1%), followed by stage II (12.9%), highlighting the high proportion of locally advanced disease in rectal cancer patients at diagnosis.

7. SURGICAL RESULTS

7.1. Intraoperative outcomes

7.1.1. Operative time

The mean operative time was 193.2±38.43 minutes, ranging from 120 to 280 minutes. This result was higher than that reported by Nguyễn Quang Huy (2023) at Hospital 115 (mean 241.84 ± 65.66 minutes in 51 patients), lower than Lê Quốc Tuấn (2020), who reported a mean operative time of 113.4 ± 16.1 minutes (range: 90–160 minutes), and comparable to Nguyễn Tuấn Cảnh (2023), who reported a mean operative time of 210.06 ± 35 minutes (range: 150–290 minutes).

7.1.2. Association between operative time and gender

According to Table 12, the mean operative time was 190 ± 36.8 minutes in females (n=18) and 196 ± 40.5 minutes in males (n=21), with no statistically significant difference between the two groups ($p = 0.636 > 0.05$). This may be explained by the nearly balanced sex distribution (male/female ratio 1.17/1), as well as tumor location and pelvic anatomy. Although male patients generally have a narrower pelvis, which may increase surgical difficulty and operative time, in our study the difference was not significant. This finding is consistent with Cao Minh Tiệp (2022), who also reported no significant difference in operative time between males and females (157.9 vs 145.8 minutes, $p = 0.175$).

7.1.3. Surgical procedures

In our study, 82.1% of patients underwent low anterior resection (LAR), 12.8% underwent ultra-low anterior resection (ULAR), and 5.1% underwent standard anterior resection (AR). The proportion of standard anterior resection was relatively low compared with other studies, as surgeons tended to prefer sphincter-preserving low anterior resection even for higher rectal tumors to ensure adequate resection margins and reduce local recurrence risk. Consequently, the rate of low anterior resection (84.6%) was higher than that reported by other authors. For example, Nguyễn Tô Hoài (2023) reported LAR in 74.3% of 70 patients undergoing total mesorectal excision, while Cao Minh Tiệp (2022) reported rates of AR, LAR, and ULAR at 34.1%, 52.3%, and 13.6%, respectively.

7.1.4. Number of harvested lymph nodes

The mean number of harvested lymph nodes was 6.3 ± 3.9 (range: 1–15 nodes). In the subgroup with ≥12 harvested lymph nodes, the rate of lymph node positivity was 50%, higher than that observed in the group with <12 nodes (31.4%). Our results were higher than those reported by Nguyễn Quang Huy (2023), who found a mean of 4.50±4.26 nodes, but lower than Lê Quốc Tuấn (2020), who reported a mean of 11.1±4.9 nodes (range: 3–24 nodes).

7.2. Postoperative Outcomes

7.2.1. Postoperative recovery

The mean duration of postoperative analgesic use was 2.69±1.36 days. The mean time to first flatus was 3.48±1.17 days. The mean postoperative hospital stay was 11.13±2.61 days. The mean time to removal of the anal drainage tube was 5.3 ± 2.85 days, ranging from 2 to 17 days.

7.2.2. Postoperative complications

Among 39 patients, the overall rate of early postoperative complications (within 30 days) was 15.4%, including anastomotic bleeding in 1/39 cases (2.6%), subileus in 3/39 cases (7.7%), and surgical site infection in 2/39 cases (5.1%). No cases of anastomotic leakage were recorded in our study. This outcome was more favorable compared with Lê Quốc Tuấn, who reported 1/56 cases (1.8%) of anastomotic leakage; however, the leakage was localized, managed conservatively, and healed without reoperation. Nguyễn Quang Huy (2023) reported a 5.9% rate of early postoperative complications in 51 patients, including 2 cases (3.9%) of anastomotic leakage requiring surgical intervention. Similarly, Trịnh Đức Hoàng (2021) reported 1 case of anastomotic leakage (1.3%) and 6 cases of surgical site infection among 76 patients.

7.2.3. Histopathological characteristics

All tumors (100%) were adenocarcinomas. The majority were moderately differentiated (94.9%), with no well-differentiated tumors identified. These findings are consistent with Nguyễn Tuấn Cảnh (2023), who reported 82.8% moderately differentiated tumors, 14.3% poorly differentiated, and 2.9% well differentiated, and higher than those reported by Cao Minh Tiệp (2022), where adenocarcinoma accounted for 86.4% and moderate differentiation was predominant (71.1%).

** Tumor invasion depth*

Postoperative pathological staging showed pT2 in 23.1%, pT3 in 33.3%, and pT4 in 43.6%, meaning approximately 77% of patients had T3–T4 disease. In comparison, preoperative CT assessment showed T3 in 64.1%, T2 in 33.3%, and T1 in 2.6%. The discrepancy between imaging and pathological staging is due to the limited sensitivity and specificity of CT in assessing rectal wall invasion compared with MRI.

7.2.4. Postoperative stage

Postoperative staging showed stage I in 23.1%, stage II in 43.6%, and stage III in 33.3%, with no stage 0 or stage IV cases according to AJCC 2018 criteria [14]. These results were more favorable compared with Trương Vĩnh Quý, who reported 71.2% stage I–II and 28.8% stage III–IV in 52 patients, and Cao Minh Tiệp, who reported 53.7% stage I–II and 46.3% stage III–IV in 88 patients.

7.2.5. Surgical resection margin

The mean distal resection margin was 3.09 ± 1.06 cm, ranging from 1.5 cm to 5 cm. All cases achieved a negative distal margin (R0 resection), with no residual tumor cells detected at the resection margin. This result was lower than that reported by Cao Minh Tiệp, who found a mean distal margin of 4.438 ± 2.06 cm (minimum 1.5 cm), with 100% negative margins on pathological examination. Similarly, Mai Đức Hùng reported distal resection margins ranging from 2 cm to 9 cm, with a mean of 4.59 ± 1.44 cm in laparoscopic low anterior resection for rectal cancer. Nguyễn Hoàng Bắc also reported a mean distal margin of 4.19 ± 1.6 cm (range: 2–10 cm).

7.2.6. Treatment outcomes

Overall, good outcomes were achieved in 84.6% of patients, while 15.4% had moderate outcomes. All patients were discharged in stable

condition. These results were comparable to Cao Minh Tiệp (2022), who reported 83.0% good outcomes, 15.9% moderate outcomes, and 1.1% poor outcomes, and similar to Mai Đức Hùng (2014), who reported 89.9% good outcomes, 10.1% moderate outcomes, and no poor outcomes.

8. CONCLUSION

8.1. Clinical and paracinical characteristics of patients with rectal cancer undergoing laparoscopic anterior resection with primary anastomosis

- The study included patients with a mean age of 67.38 ± 9.81 years (range: 45–86 years), with a male-to-female ratio of 1.17:1.

- The main reasons for hospital admission were abdominal pain (64.1%), mucus-bloody stool (66.7%), and defecation disorders (7.7%).

- The most common clinical manifestations included mucus-bloody stool (71.8%), hypogastric and perineal pain (100%), changes in stool form (5.1%), defecation disorders (53.8%), and constipation (17.9%).

- On digital rectal examination, a palpable tumor was detected in 46.2% of patients, and 27.8% of tumors showed good mobility.

- Colonoscopy findings showed tumor distribution mainly in the mid rectum (>5 cm) in 61.5% of cases, followed by upper rectum (>10 cm) in 12.8% and lower rectum (≤5 cm) in 25.7%. The majority of tumors (94.8%) were mixed ulcerative–polypoid in morphology, while pure ulcerative and polypoid types accounted for 2.6% each. Complete colonoscopy was achieved in 56.4% of patients, and synchronous colorectal polyps were present in 36.4%.

- CT imaging detected rectal tumors in 97.4% of cases.

- Preoperative staging showed that most patients were in stage III (51.2%), followed by stage II (46.2%), and stage I (2.6%).

8.2. Results of laparoscopic anterior resection with primary anastomosis

- The mean operative time was 193.2 ± 38.43 minutes (range: 120–280 minutes).

- The surgical procedures included low anterior resection in 82.1% of patients, standard anterior resection in 5.1%, and ultra-low anterior resection in 12.8%. The mean number of harvested lymph nodes was 6.3 ± 3.9 nodes.

- The mean duration of postoperative analgesic use was 2.69 ± 1.36 days (range: 1–7 days). The mean time to first flatus was 3.48 ± 1.17 days (range: 2–6 days). The mean time to removal of the anal drainage tube was 5.3 ± 2.85 days (range: 2–17 days).

- The mean distal resection margin was 3.09 ± 1.06 cm (range: 1.5–5 cm), and all cases achieved negative distal margins (R0 resection), with no residual tumor cells detected.

- All tumors were adenocarcinomas (100%), with the majority being moderately differentiated (94.9%).

- The mean distal resection margin was 3.09 ± 1.06 cm (range: 1.5–5 cm), and 100% of cases achieved negative distal margins with no residual tumor cells detected.

- Postoperative staging showed stage I in 23.1% of patients, stage II in 43.6%, and stage III in 33.3%.

- Overall outcomes were classified as good in 84.6% and moderate in 15.4% of patients. All patients were discharged in stable condition.

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