

## Anterior Perineal Plane Technique in Low Rectal Cancer

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**Background:** Rectal cancer is a common gastrointestinal cancer. It is tried to use sphincter preservation methods due to the location of the tumor and its proximity to the anal sphincter.

**Objectives:** In this study, a new method of rectal resection through perineum is introduced.

**Patients and Methods:** In this study, 15 patients with lower rectal cancer were enrolled from 2009 to 2011. After chemoradiation, releasing of the rectum and sigmoid through the abdomen were performed by open surgery or laparoscopy, then, the tumor was removed through perineal incision and anastomosis was performed.

**Results:** There were eight women and seven men. The mean age of patients was 55 years. All patients had some degrees of stool incontinence. Eight patients had a score of 15-18, and seven below 15 according to the Cleveland criteria. The score of patients' satisfaction was 8 from 10. Complications including infection, abscess or leak were not observed.

**Conclusions:** Sphincter preservation method in lower rectal cancer through perineum is possible which is associated with low complications.

**Keywords:** Rectal Neoplasms; Sphincter Preservation; Perineum

### 1. Background

In recent years, sphincter preservation surgery has decreased the need for abdominoperineal resection. In this method in which anal anastomosis is performed with hand or stapler, the aim is to completely remove the tumor and to control the tumor locally (1). In lower rectum tumors, sphincter preservation is possible through performing preoperative chemoradiation and tumor resection. Preoperative chemoradiation is often associated with good response of tumor and the possibility of sphincter preservation is increased in these patients and then, in the surgery, tumor local control is well done and there is no need for abdominoperineal resection (2). The anterior perineal Plane for Ultralow Anterior Resection of the Rectum (APPEAR) technique is a new method in the treatment of lower rectal cancer. In this method, in addition to sphincter preservation, local treatment of tumor is well done and the tumor is removed with definite margin free of the tumor. Using this method, surgeon removes the tumor under direct vision and anastomosis is completely controlled (3).

APPEAR technique is an alternative technique for sphincter preservation in lower rectal cancer, which is performed by open surgery or laparoscopy. Laparoscopy

is the preferred option because of easier performance. This technique can decrease the need to permanent ostomy; also, anastomosis is performed under direct vision. The other advantage of this method is for patients with large tumors of the lower rectum or for those with small pelvis in which the surgeon has vision limitations and this approach would provide surgeon with direct vision and suitable margins of the tumor (4).

### 2. Objectives

The aim of the present study is to present patients with lower rectal cancer who have undergone surgery by APPEAR method.

### 3. Patients and Methods

Fifteen patients underwent surgery by APPEAR method from 2009 to 2011. The study participants included cases with lower rectal tumors and tumor distance from the anal verge less than 5 cm, and absence of distant metastasis. All the patients were treated initially with chemoradiation and then APPEAR method was performed by open surgery or laparoscopy. In this method, after releasing of

#### Implication for health policy/practice/research/medical education:

This study presented patients with lower rectal cancer who have undergone surgery by the Anterior Perineal Plan for Ultralow Anterior Resection of the Rectum (APPEAR) technique. It indicates the possibility of sphincter preservation method in lower rectal cancer through perineum with low complications.

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the left colon and sigmoid and then rectum and performing total mesorectum excision (TME), the patient was placed in lithotomy position and then the rectum was exposed by incision in the perineum and after releasing the rectum and rectal excision, anastomosis was performed through the perineum using a circular stapler 21 to 28.

All patients had protective ileostomy and their ostomy was closed after 6 weeks. They were followed during the course of disease for symptoms such as defecation incontinence and frequency or tumor recurrence. Pathology of samples was evaluated and tumor distance from distal margin was studied.

#### 4. Results

There were eight women and seven men. The mean age of patients was 55 years. In all cases, patients had received preoperative chemoradiation. Tumor distance from the anal verge was less than 4 cm.

Regarding the disease stage, four patients were in stage I, five patients in stage II, and six patients in stage III. The mean operative time was 200 minutes and the mean blood loss was 250 mL. In pathology report after the tumor resection, the mean distance of distal margin of the tumor was 1.5 cm and no involved margin was reported in any cases.

All patients had some degrees of incontinence. Eight patients had a score of 15-18, and seven below 15 according to the Cleveland criteria. In these patients, the score was decreased for 1-2 degrees in 3 to 6 months intervals. Patients were also evaluated for the number of defecation; the mean of defecation was 7 times per day in the first month and 5 times per day in the third month. Two cases of impotency were observed in men.

The score of patients' satisfaction was 8 from 10. No complications of infection, abscess or leakage were observed. The patients were followed up for CEA, chest x-ray, colonoscopy, and liver ultrasound and no case of tumor recurrence was observed during the follow-up for a mean of 23 (12-36) months. There was no intraoperative or postoperative mortality.

#### 5. Discussion

Treatment of low rectal cancer is one of the most controversial issues, because its proximity to the sphincter leads to difficulties in sphincter preservation. On the other hand, tumor removing with adequate margins should be properly performed. Methods such as intersphincteric removing of lower rectal cancer could be helpful in some patients. This method is an effective approach for sphincter preservation in low rectal cancer. Tumors with distance of at least 2 to 3 cm of the anal verge could be treated with this method (5). Moreover, APPEAR technique which is an alternative method in the treatment of lower rectal cancers, can treat rectal cancer with sphincter preservation; in these patients, minimum distance of

the anal verge is 4-5 cm (6).

The other procedure performed for patients with lower rectal cancer is preoperative chemoradiation. Neoadjuvant chemoradiation is performed in cases of rectal cancer. It has been observed that if these patients responded well to the treatment, the 5-year survival would be more than 90%. It has been found that the rate of local recurrence and distant metastasis is decreased in these cases. Therefore, in cases of local advance tumors, preoperative chemoradiation is recommended (7). Preoperative chemoradiation was also performed for all of our patients and it seems that in those which tumor gets smaller in size, performing surgery with sphincter preservation is possible. In lower rectal cancer, laparoscopy is well used. We also used laparoscopic technique for seven patients. In this method, in addition to the good vision of the surgeon, surgery is also easy to perform. This method is very effective and applied for lower rectal cancers rather than middle rectal ones. The number of removed lymph nodes in this method is averagely 13 and the mean time for return of the bowel activity is clearly less (8). Robotic technology has also been used in patients with low rectal cancer. The technique is appropriate regarding performing surgery with sphincter preservation and is associated with acceptable side effects. This technique is also appropriate regarding the length of surgery and has been followed with few recurrence rates in short follow-up periods (9).

Control of bowel movements in this technique is well and our patients had good bowel movement control. In a study, sphincter function was evaluated after surgery by manometry and the mean Wexner's scoring was 5.5 in this group. In these patients, the maximum sphincter pressure in the condition of pressure was 224 and the maximum pressure in the state of resting was 42. No cases of recurrence were observed during the follow-up period in these patients and, urinary function disorder was not detected (6). One of the side effects of this technique is frequency in defecation; mean of defecation in our patients was 7 times per day at first and after 3 months, decreased to averagely 4 to 5 times per day. In another study, patients were assessed regarding the number of defecation per day; the mean of defecation per day was 3 (range: 1-18) times. This technique requires high surgeon's skill and is associated with reduced complications (10).

APPEAR technique by laparoscopy is easily performed with a high quality. Its advantages are short operation time and low rate of intraoperative bleeding (11). Seven of our patients were operated by laparoscopy, patient's comfort after surgery facilitates starting nutrition from the third day and most patients are discharged at seventh day. Patients who have undergone surgery by laparoscopy, specimen extraction (exiting of the colon sample) from ostomy site needs no additional incision (12). Although, in patients who have undergone surgery by APPEAR technique, the tumor and colon are removed from

the perineal area and there is no need to additional abdominal incision for exiting of the colon sample.

In laparoscopic approach due to the high quality of surgeon's vision and more accuracy of the technique, pelvic autonomic nerves are well preserved; therefore, complications such as urinary incontinence or impotency are less expected. Moreover, in this method, complete removal of rectum tumor is performed and mesorectum resection is well done (13, 14).

With repair of the anal sphincter, which is partially removed for tumor resection, a good continence is expected for patients. In a study, more than 80% of patients who underwent surgery after chemoradiation and anal sphincter repair was performed after tumor resection, had good sphincter function (15). Recurrence rate in these patients was lower than those undergone radical resection and the mean of recurrence was 9.5%. Complications such as anastomotic leakage were observed in these patients (a mean of 10.5%) (16). In our patients, no cases of tumor recurrence and anastomotic leakage were found. One of the causes of tumor recurrence is inappropriateness of distal tumor margin. In our study, the mean distal margin was 1.5 cm. In a study performed on patients with lower rectal cancer undergone the intersphincteric method, the mean distal margin was 1.6 cm (17).

In conclusion, sphincter preservation method in low rectal cancer through perineum is possible and is associated with low complications.

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## Authors' Contribution

Azizi and Abdollahi were involved in the study concept and design, drafting of the manuscript, critical revision of the manuscript, and study supervision; Behboo and Abdollahi were in charge of data acquisition, analysis and interpretation of data, and drafting of the manuscript.

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