



Oncologic Outcome of Sphincter Saving Procedure vs Abdominoperineal Resection

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Authors' contributions

This work was carried out in collaboration among all authors. Author MSA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AZA and AEMMM managed the analyses of the study. Author MA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Intersphincteric resection of low rectal tumors is a surgical technique extending rectal resection into the intersphincteric space. This procedure is performed by a synchronous abdominoperineal approach with mesorectal excision and excision of the entire or part of the internal sphincter.

Aim of the Work: Work is to evaluate the oncologic outcome of sphincter sparing procedures compared to classic abdominoperineal resection. Patients: Group A patients (10 patients): Who meet the criteria of ISR possibility and candidates for sphincter preserving procedures Group B patients (10 patients): Who didn't meet the criteria to do ISR, were subjected to APR. This work was conducted at Beni Suef university hospitals between January 2019 till March 2020.

Methods: Total ISR involves complete excision of the internal sphincter. The cut line is at the intersphincteric groove. B. Subtotal ISR involves partial excision of the internal sphincter. The cut line is between the dentate line and the intersphincteric groove. C. Modified partial ISR the cut line is below the dentate line on one side of the tumor. On the opposite side of the tumor, the cut line is

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above the dentate line. D Partial ISR the cut line is at or above the level of the dentate line.

Results: Showed that no significant difference in the rate of recurrence between the two groups.

Conclusion: In low rectal cancer, sphincter saving appears to have nearly the same oncologic outcome compared to APR and in need for larger number of cases in order to support that outcome.

Keywords: Outcome; abdominoperineal resection; sphincter; gastrointestinal tract.

1. INTRODUCTION

Advances in surgical technique with the use of either advanced stapling or manual coloanal anastomoses have allowed for achieving continuity of the gastrointestinal tract at levels closer to the anal verge than those achieved historically [1]. The advent of adjuvant and neoadjuvant. Chemoradio-therapy has also increased local control of disease [2] and in some instances has led to increased survival [1].

Neoadjuvant (preoperative) concomitant chemoradiotherapy (CCRT) has become a standard treatment of locally advanced rectal adenocarcinomas. The clinical stages II (cT3-4, N0, M0) and III (cT1-4, N+, M0). Neoadjuvant CCRT is effective in reducing local recurrence. It is associated with tumor downstaging, hence increases the rate of sphincter saving surgery & tumor resect ability [3]. In the 1980s, a distal margin of 5 cm was required. In the ensuing decades, the “2-cm-rule” was accepted and adopted [4]. This rule has been challenged, however, and currently there are some suggest that a distal margin of 1 cm is appropriate for optimal oncologic outcome [5]. This provides a greater proportion of rectal cancer patients with the possibility of sphincter preservation [6]. Recently, adequacy of the circumferential resection margin is being considered of greater importance in the risk of local recurrence of rectal cancer [7].

In recent years, intersphincteric resection (ISR) has been proposed to offer sphincter preservation in patients with very low rectal lesions, as an alternative to APR [1].

Intersphincteric resection of low rectal tumors is a surgical technique extending rectal resection into the intersphincteric space. This procedure is performed by a synchronous abdominoperineal approach with mesorectal excision and excision of the entire or part of the internal sphincter [4].

1.1 Patients

This study has been conducted at Beni-Suef university hospital – Beni-Suef University

between January 2019 and March 2020 and diagnosed with low rectal cancer (extraperitoneal) with clinical stages II (cT3-4, N0, M0) and III (cT1-4, N+, M0).

1.2 Inclusion Criteria

Low rectal cancer: Distal tumor edge within 3-6 cm from the anal verge.

Disease stage: Stage II and stage III.

Satisfactory preoperative sphincter function and continence.

1.3 Exclusion Criteria

Unsatisfactory preoperative sphincter function and continence.

Disease stage: Stage I.

1.4 Indications of ISR

Low rectal tumors: with distal tumor edge at a distance ranging from 3 to 6 cm from the anal verge.

Local spread restricted to rectal wall or internal anal sphincter (IAS) (i.e. T2). Satisfactory preoperative sphincter function and continence. Absence of distant metastases.

1.5 Contraindications of ISR

T4 lesions (tumors invading the visceral peritoneum or adjacent organs or structures: including puborectalis).

Preoperative sphincter function and continence. 3- Tumors invading the external anal sphincter (EAS) (i.e.T3).

Accordingly, patients were categorized preoperatively as follows:

Group A patients (10 patients) who meet the criteria of ISR possibility and candidates for sphincter preserving procedures.

Group B patients (10 patients) who didn't meet the criteria mentioned above to do ISR, were subjected to APER.

2. METHODS

2.1 Preoperative Concomitant Chemoradiotherapy (CCRT)

2.1.1 Surgical technique

2.1.1.1 ISR candidates

Total ISR involves complete excision of the internal sphincter. The cut line is at the intersphincteric groove. B. Subtotal ISR involves partial excision of the internal sphincter. The cut line is between the dentate line and the intersphincteric groove. C. Modified partial ISR the cut line is below the dentate line on one side of the tumor. On the opposite side of the tumor, the cut line is above the dentate line. D Partial ISR the cut line is at or above the level of the dentate line [4].

Surgery was done after an interval period of about 6-8 weeks after the end of chemoradiation allowing the maximum response of CCRT to be obtained. Surgical procedures (ISR for the 10 ISR candidates after CCRT were performed according to the methods described by Schissel and his colleagues [8,9].

3. RESULTS

3.1 Recurrence of Malignancy (One Year follow up)

As shown in Table 1 out of 10 cases of APR 2 cases showed recurrence, while among 10 of ISR 3 cases showed recurrence.

4. DISCUSSION

The improvement in surgical techniques alongside neoadjuvant chemoradiation enabled more patients with low rectal cancer to have sphincter saving. In our study we aimed to compare the oncologic and functional outcome in patients with low rectal cancer treated by intersphincteric resection (ISR) against those who underwent abdomino-perineal resection (APR). Westhues 1934 found 1 in 74 cases with intramural proximal spread. However, Connell and Rottino 1949 reported 4 of 9 cases with intramural spread (thus led Quer and hisacolleagues.1953 and Grinnell 1954 to reassess the problem. They concluded that distal intramural spread does occur and that a minimum of 5 cm distal free margin is a must to avoid recurrence. Thus, was born the '5-cm rule' [10]. A meticulous follow up of 556 patients after low anterior resection at Mayo clinic by Wilson and Beahrs(1976) found that patients with a 2- to 3- cm distal margin passed just in long term as those had wider margins [11]. Williams and hisacolleagues.1983 confirmed this [10].

In our study, the follow up of the patients that was done every three months up to one year showed non-significant recurrence rates between both groups of the study. For the ISR group, 3 cases showed recurrence during the 1st year follow up postoperative period without distant metastasis, while 7 patients did not witness recurrence during this period. On the other side 2 out of 10 patients of the APR group showed local recurrence, one of them with distant metastasis. Our statistical data analysis showed insignificant p value.

Gawad and his colleagues stated in their study that the recurrence rate of both compared group was also statistically insignificant (p = 0.107, and 0.948, for ISR and APR groups respectively). [12].

Table 1. Recurrence ratio

| | | Operative technique | | Total |
|------------------|---------------|----------------------------------|-----------------------------|-------|
| | | Sphincteric preserving technique | Abdomino-perineal resection | |
| Follow up 1 year | no recurrence | Count | 7 | 8 |
| | | % within operative technique | 70.0% | 80.0% |
| | | % of Total | 35.0% | 40.0% |
| | Recurrence | Count | 3 | 2 |
| | | % within operative technique | 30.0% | 20.0% |
| | | % of Total | 15.0% | 10.0% |

Non-significant P value 0.606

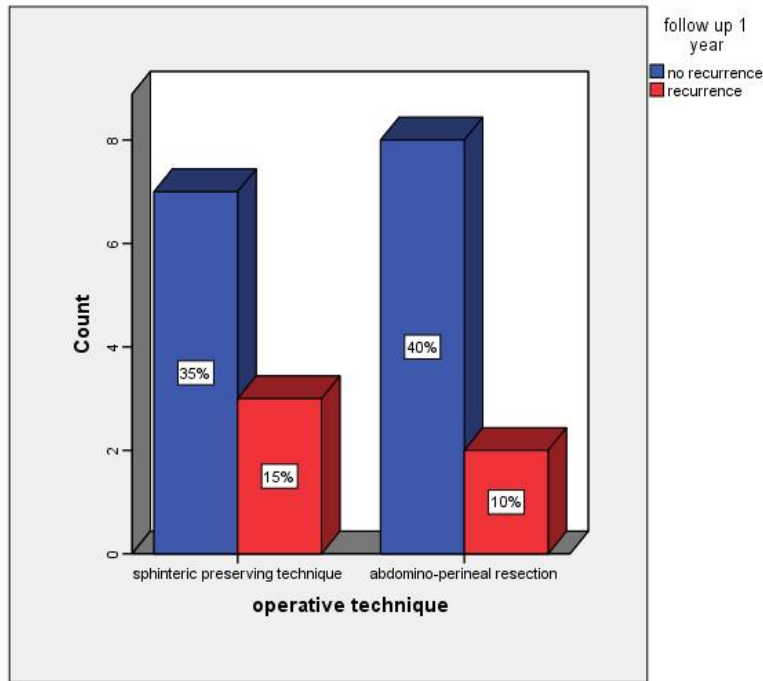


Fig. 1. Operative technique

In a series of 61 patients Urban and his colleagues. [13] proved that MRI was able to predict sphincter infiltration with high sensitivity and specificity. Holzer and his colleagues. showed the excellent correlation between preoperative MRI and histological findings in patients treated with intersphincteric resection [14].

Infiltration of the sphincter apparatus occurred only in tumors extending into the anal canal, infiltration of the external sphincter was present only in 5% of the cases of sphincter infiltrating tumors, all others (28%) were confined to the internal sphincter [15]. ISR does not increase local or distant recurrences. For T1-T2 tumors, meticulous dissection and irrigation after closure of the distal stump allows local control without radiotherapy. With T3 tumors, preoperative therapy should be considered if resection margins are estimated to be insufficient [16].

5. CONCLUSION

In low rectal cancer, sphincter saving appears to have nearly the same oncologic outcome compared to APR and in need for larger number of cases in order to support that outcome.

CONSENT AND ETHICAL APPROVAL

We got approval from the ethical committee in our faculty prior to start the study with a written informed consent from every patient.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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