



Short Term Outcome of Sphincter Saving Procedure in Low Rectal Cancer

**Mohamed Salah Abdelhamid¹, Tamer Mohamed El-Gaabary^{2*},
Ahmed Mohamed Rashad¹ and Amr Mohamed Ali Bekheet¹**

¹Department of Surgery, Beni-Suef Faculty of Medicine, Beni-Suef University, Beni-Suef, Egypt.

²Surgery Department, Faculty of Medicine, El Fayoum University, Egypt.

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 TMEG and AMR managed the analyses of the study. Author AMAB managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

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: Aim of the work is to evaluate the oncological and functional outcome of sphincter saving procedures.

Patients: 10 patients who meet the criteria of ISR possibility and candidates for sphincter saving procedures this study was conducted at Beni Suef University hospital between January 2019 and 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

*Corresponding author: E-mail: drtamerelgaabary@hotmail.com;

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.
Results: Results showed that out of 10 patients underwent ISR, 6 patients were highly satisfied with Grade I continence according to Kirwan's grade. While 4 patients were Grade II, i.e.: Incontinent to flatus. 30% rate of recurrence.
Conclusion: In low rectal cancer, the sphincter saving appears to have acceptable oncologic outcome. However, patients with sphincter saving have certainly demonstrated an indisputable faire functional outcome, in terms of stoma avoidance and adequate continence.

Keywords: ISR; rectal cancer; sphincter; Kirwan's grade.

1. INTRODUCTION

The principle of the ISR technique is based on the facts that rectal tumors expand into the visceral structures, i.e. proximally the rectum and distally the internal anal canal; and that there is an embryonic plane of fusion between the visceral structures and the surrounding somatic skeletal muscles of the pelvic floor. The aim is to remove the viscus without damaging the skeletal muscles [1]. Heald and his colleagues.1982 included this issue in his study and suggested that distal spread more than 2 cm could occur in the mesorectum [2]. This was confirmed by Scott and his colleagues who found 4 out of 20 specimens had metastatic deposits in the mesorectum distal to the tumor [3]. Heald, thus recommended to removal of the mesorectum down to the pelvic floor and this can be 'shaved-off' the wall of the rectum, so the rectum is divided 2 cm distal to the tumor allowing sphincter sparing. This is what is called 'total mesorectal excision '(TME) [2]. Whether abdominoperineal resection or a sphincter-sparing resection is used, it seems they don't differ in the amount of the lateral tissue removed [4]. So, it is to be expected that survival and local recurrence rates are similar after either procedure [4,5]. Surgeons performing pelvic lymphadenectomy claim a survival benefit, but no controlled trials exist to confirm this [6].

2. PATIENTS

This study has been conducted at Beni-Suef University Hospital – Beni-Suef University between January 2019 till March 2020 and diagnosed with low rectal cancer (extraperitoneal) with clinical stages II (cT3-4, N0, M0) and III (cT1-4, N+, M0).

2.1 Inclusion Criteria

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

- 2- Disease stage: stage II and stage III.
- 3- Satisfactory preoperative sphincter function and continence

2.2 Exclusion Criteria

- 1- Unsatisfactory preoperative sphincter function and continence.
- 2- Disease stage: stage I

2.3 Indications of ISR

- 1- Low rectal tumors: with distal tumor edge at a distance ranging from 3 to 6 cm from the anal verge.
- 2- Local spread restricted to rectal wall or internal anal sphincter (IAS) (i.e. T2).
- 3- Satisfactory preoperative sphincter function and continence.
- 4- Absence of distant metastases.

2.4 Contraindications of ISR

- 1- T4 lesions (tumors invading the visceral peritoneum or adjacent organs or structures: including puborectalis).
- 2- Unsatisfactory preoperative sphincter function and continence.
- 3- Tumors invading the external anal sphincter (EAS) (i.e. T3).

3. METHODS

3.1 Preoperative Concomitant Chemo-radiotherapy (CCRT)

3.1.1 Surgical technique

3.1.1.1 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 Schiessel and his colleagues [1,7].

4. RESULTS

4.1 Recurrence of Malignancy (One Year Follow Up)

We did 10 cases, 3 of them showed recurrence within one year, while the other 7 showed no recurrence.

5. DISCUSSION

Determination of optimal treatment plan for patients with rectal cancer involves a complex decision-making process. Strong considerations should be given to the intent of surgery, possible functional outcome, and preservation of anal continence and genitourinary functions. The first step involves achievement of cure because the risk of pelvic recurrence is high in patients with rectal cancer and locally recurrent rectal cancer has a poor prognosis. Functional outcome of different treatment modalities involves restoration of bowel function with acceptable anal continence and preservation of genitourinary functions. Preservation of both anal and rectal reservoir function in treatment of rectal cancer is highly preferred by patients. Sphincter-sparing procedures for rectal cancer are now to considered the standard of care [8,9]. The use of perioperative chemoradiotherapy (CRT) for rectal

Table 1. Recurrence ratio

Recurrence		Operative technique	
		Sphincter saving technique	
Follow up 1 year	No recurrence	Count	7
		% within operative technique	70.0%
	Recurrence	Count	3
		% within operative technique	30.0%

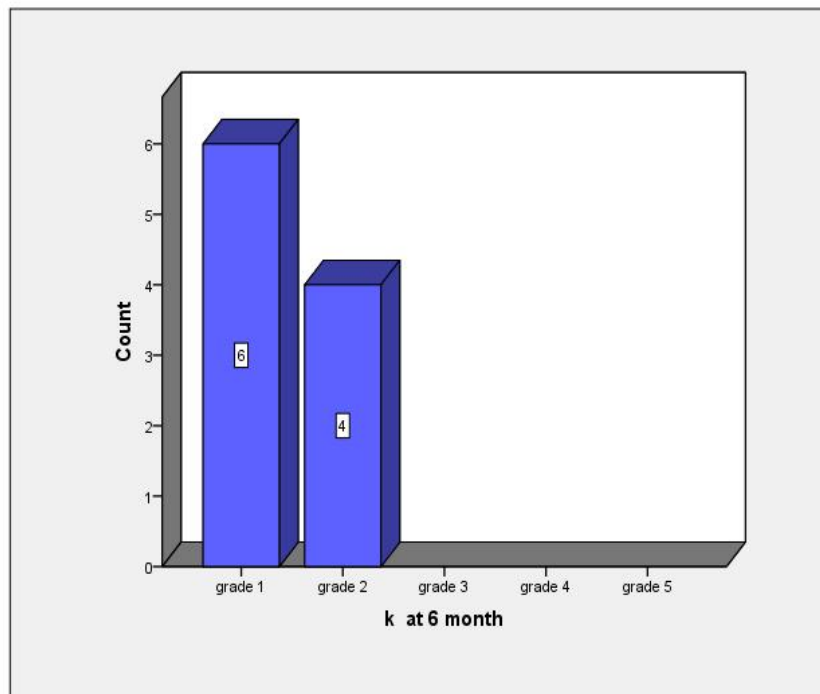


Fig. 1. Continence grade according to Kirwan's

cancer continues to evolve. Based largely on the results of two multicenter trials, the 1990 NIH Consensus Conference on rectal cancer recommended postoperative chemoradiation for patients with transmural and/or node positive rectal cancer. Although postoperative therapy for stage II/III rectal cancer remains a reasonable option, many centers have adopted a treatment strategy of using preoperative chemoradiation therapy. The benefits of neoadjuvant chemoradiotherapy have been well documented, and include tumor regression and downstaging associated with increased tumor respectability and a higher rate of sphincter preservation [10,11]. The main aim of the ISR technique is to provide a better quality of life keeping the patient continent compared to the permanent stoma in APR.

Assessment of the continence after ISR was done using Kirwan's grade and the results showed that out of 10 patients underwent ISR, 6 patients were highly satisfied with Grade I continence according to Kirwan's grade. While 4 patients were Grade II, i.e. Incontinent to flatus. This result was not the same during the first 5 months owing to the presence of protective stoma which was usually closed within three months maximally and the patients needed a period for physiotherapy to regain their anal sphincter function. In Gawad and his colleagues' study, 70% of patients were Kirwan's grade one, 20% were Grade II, while 10% were Grade 4 with frequent major soiling. The above mentioned results were obtained after 12 months post stoma closure [12]. Another subjective study conducted by Bujko and his colleagues which included 100 patients after ISR who subjected into a questionnaire about the continence, anal stenosis, the need to use enema, feeling of incomplete defecation and the overall life quality reduction due to incontinence, the results should that that 44% were highly satisfied with their life style after the operation, 38% reported slight reduction in their quality of life, while 18% reported a "very much reduction" in their quality of life according to their own words [13].

In our study, the follow up of the patients that was done every three months up to one year showed 30% recurrence. For the ISR, 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. Gawad and his colleagues had a rate comparable to ours [12]. 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 [14]. Oncological outcomes after intersphincteric resection for low rectal cancer were acceptable with diverse often imperfect functional results. These data will aid the clinician when counselling patients considering an intersphincteric resection for management of low rectal cancer [15]. The LR rate after ISR is higher in poorly selected cases of pT3 with no previous RT, due to accidental tumor spillage into the intersphincteric space or positive CRM. A lower LR rate has been reported with stapled coloanal anastomosis than for ISR even in T1-T2 patients. As expected, after trans anal endoscopic microsurgery, intramural recurrence is the most common type of LR [16].

6. CONCLUSION

In low rectal cancer, the sphincter saving appears to have fair oncologic outcome. However, patients with sphincter saving have certainly demonstrated an indisputable good functional outcome, in terms of stoma avoidance and adequate continence.

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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