Original Article

Comparison of Complications and Outcomes of Very Low Anterior Resection (VLAR) Versus Intersphentric Resection (ISR) In Patients with Rectal Cancer

Seyed Vahid Hosseini [1], Khadije Gorgi [1], Sara Shojaei-Zarghani [1], Adel Zeinalpour[2], Armin Mohammadi[1,3*]

1. Colorectal Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
2. Department of General Surgery, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Department of Surgery, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

***Corresponding Author:**

Dr. Armin Mohammadi

Department of Surgery, School of Medicine, Colorectal Research Center, Shahid Faghihi Hospital, Shiraz University of Medical Sciences, Shiraz, Iran

Email: armin_my_4804@yahoo.com

Received: 6/8/2024
Accepted: 18/11/2024

ABSTRACT

Background: Colorectal cancer is a cancer that starts in the colon or rectum, which are part of the digestive system. Intersphincteric resection (ISR) and very low anterior resection (VLAR) are surgical procedures used in rectal malignancy. We aimed to compare postoperative complications and recurrence after VLAR and ISR techniques in patients with rectal cancer.

Methods: In this retrospective study, 80 rectal cancer patients who underwent VLRA and ISR in Shahid Faghihi, and Abu-Ali Sina Charity Hospitals, Shiraz, Iran from 2019 to 2023 were enrolled. Eligible patients were divided into two groups based on the type of operation. One group underwent VLAR (n=40) and the second group of patients underwent ISR(n=40). Postoperative complications and outcomes were compared between the two groups.

Results: The mean age in VLAR and ISR groups was 52.8±14.3 and 54.3±11.6 years, respectively. Low anterior resection syndrome was not significantly different between the two groups (P=0.39). Postoperative fecal incontinence was observed in 27.5% and 22.5% of VLAR and ISR groups, respectively. This difference was not statistically significant (P=0.91). Rectovaginal fistula was reported in 2.5% of patients in both groups (P=0.61).

Conclusion: There was no difference in postoperative complications in VLAR and ISR techniques. Considering the lack of significant difference in the complications of the two surgical groups, it is suggested to choose the surgical method based on the location of the tumor.

KEYWORDS
Colorectal cancer; Intersphincteric resection (ISR); Very low anterior resection (VLAR); Complication

Please cite this paper as:
Hosseini SV, Gorgi K, Shojaei-Zarghani S, Zeinalpour A, Mohammadi A. Comparison of Complications and Outcomes of Very Low Anterior Resection (VLAR) Versus Intersphentric Resection (ISR) In Patients with Rectal Cancer. World J Plast Surg. 2024;13(3):92-95.
doi: 10.61186/wjps.13.3.92

INTRODUCTION

Colorectal cancer is the third most common cancer overall in the United States and the second deadliest [1]. Rectal cancer has distinct environmental factors and genetic risk factors different from colon cancer[2]. Despite major advances in the multidisciplinary management of rectal cancer, radical surgical treatment remains the most basic approach to treating patients with rectal cancer [3, 4].

Intersphincteric resection (ISR) and very low anterior resection (VLAR) are surgical procedures used in rectal malignancy [5]. ISR was first introduced about two decades ago as an anus-sparing procedure for very low-grade rectal cancer[6]. ISR is the ultimate anus-preserving method for the surgical treatment of low rectal cancer [7].

VLAR is a procedure to remove part of the left side of the colon including the entire rectum. It also involves removing the supporting tissue of the bowel, including the lymph nodes draining to that section. A junction (anastomosis) is created, connecting the remainder of the left colon to the top of the anal canal[4, 8].

Although there are conflicting results in the literature, studies on functional outcomes suggest that rectal function is satisfactorily maintained in most cases after ISR[6, 9, 10]. There is very limited studies about complications after VLA surgery[11].

Due to the increasing number of rectal cancer surgeries and the lack of studies comparing ISR and VLAR methods in Iran, we decided to conduct a study with the aim of comparing postoperative complications and recurrence after VLAR with ISR in patients with rectal cancer.

MATERIALS AND METHODS

In this retrospective study, 80 rectal cancer patients randomly-selected who underwent VLAR and ISR in Shahid Faghihi, and Abu-Ali Sina Charity Hospitals, Shiraz, Iran from 2019 to 2023 were enrolled. Inclusion criteria were age 18 to 70 years, definite diagnosis of rectal cancer and candidacy for ISR and VLAR surgery.

Exclusion criteria were any concurrent malignancy, evidence of metastatic disease before or during surgery, rectal cancer associated with inflammatory bowel disease or hereditary rectal cancer, and patients with incomplete records.

Eligible patients were divided into two groups based on the type of operation. One group underwent VLAR (n=40) and the second group of patients underwent ISR(n=40). A questionnaire was designed to collect information, which included demographic characteristics, length of hospitalization, duration of surgery, and the outcome and complications of the operation.

The ethics committee of Shiraz University of Medical Sciences approved this study (IR.SUMS. REC.1402.602).

STATISTICAL ANALYSIS

Statistical analysis was performed by SPSS software Version 22 (IBM Corp., Armonk, NY, USA). The quantitative and qualitative variables were indicated as mean±SD and number (percentage), respectively. Kolmogorov–Smirnov and, Shapiro–Wilk tests were used to test for the distribution. Differences were compared by using the t-test or Mann–Whitney U test as appropriate. *P*-value less than 0.05 was considered statistically significant.

RESULTS

A total of 80 patients were enrolled. The mean age in VLAR and ISR groups were 52.8±14.3 and 54.3±11.6 years. In VLAR and ISR groups, 60% and 67.5% percent were female, respectively, and there was no significant gender difference in the two groups(*P*=0.44). The duration of hospitalization was not different in the two groups of patients (*P*=0.07). The mean duration of Surgery in VLAR and ISR groups were 190.5±38.3 and 170.2±25.5 minutes, and the surgery time was significantly less in the ISR group than in the VLAR group (*P*=0.03) (Table 1).

Based on Table 2, low anterior resection syndrome was not significantly different between the two groups (*P*=0.39). Postoperative fecal incontinence was observed in 27.5% and 22.5% of VLAR and ISR groups, respectively. This difference was not statistically significant (*P*=0.91). Rectovaginal fistula was reported in 2.5% of patients in both groups (*P*=0.61).

Table 1: Demographic characteristics of the both group

Variable		VLAR group (n=40)	ISR group (n=40)	*P* value
Age (mean±SD),year		52.8±14.3	54.3±11.6	0.31
Sex, n (%)	**Male**	24 (60)	27 (67.5)	0.44
	Female	16 (40)	13 (32.5)	
Hospital stay (mean±SD),day		6.8±3.3	7.6±4.1	0.07
Duration of Surgery(mean±SD), minute		190.5±38.3	170.2±25.5	0.03

Table 2: postoperative complications and outcomes of two surgical methods

Variable	VLAR group (n=40)	ISR group (n=40)	*P* value
Low anterior resection syndrome, n (%)	3(7.5)	4(10)	0.39
Fecal incontinence, n (%)	11 (27.5)	9 (22.5)	0.91
Fecal incontinence, (mean±SD)	12.2±1.9	10.9±2.2	0.79
Rectovaginal fistula	1 (2.5)	1 (2.5)	0.61
Recurrence, n (%)	4 (10)	5 (12.5)	0.13

DISCUSSION

There are various treatment methods for patients with colorectal cancer, among which the removal of the affected part is the main and quite significant method[12, 13].

Based on our results, low anterior resection syndrome (LARS) was not significantly different between the two groups. Postoperative fecal incontinence was observed in 27.5% and 22.5% of VLAR and ISR groups, respectively, however this difference was not statistically significant. Rectovaginal fistula was reported in 2.5% of patients in both groups.

Similar to our results, the findings of the study by Kim et al showed that there was no significant difference in the recurrence rate of ultralow anterior resection (uLAR) and ISR in colorectal patients [14].

LAR syndrome is difficult to define. Patients may have a combination of symptoms including frequency, urgency, incontinence, and constipation which may last longer than an initial adaptive period[15, 16]. In our study, LAR syndrome was not significantly different between the two groups. Contrary to our results, in the study by Gori et al., LARS was higher in ISR group compared to ULAR group[17].

In study by Gori et al. major incontinence was found in 5.6% versus 33% after ULAR and ISR, respectively, and it was significantly higher in the ESR group[17], while in our study, fecal incontinence was not significantly different between the two groups. The difference in sample size may be the cause of this discrepancy.

In the study by saito et al. the mean fecal incontinence score did not differ between the two groups of ISR and partial external sphincter resection (PESR) groups[18].

In the study of Bozbıyık et al, which aimed to investigate the outcomes of patients with rectal cancer who underwent ISR, the mean score of fecal incontinence in 20 patients who still had a functional anastomosis was 8.35, while 65% of patients had a good control status[19]. Overall, this study reported favorable fecal incontinence in the ISR method.

Retrospective, and small sample size of the participant are major limitations of the present study. Another limitation is that the assessment time of the patients was not homogeneous since the present study evaluated the current functional status of the patients, and the follow-up durations were different among the patients. The strengths of the study are the multi-center study design and the first examination of the difference between these two surgical methods in Iran.

CONCLUSION

There was no difference in postoperative complications in VLAR and ISR techniques. Considering the lack of significant difference in the complications of the two surgical groups, it is suggested to choose the surgical method based on the location of the tumor. Further multicenter studies with higher sample size are recommended to confirm these results.

ACKNOWLEDGMENTS

The Shiraz University of Medical Sciences financially supported this study.

CONFLICT OF INTERESTS

There are no conflicts of interests.

REFERENCES

1. Stitzenberg KB, Barnes E. Advances in Rectal Cancer Surgery. *Clin Colorectal Cancer* 2022 Mar;**21**(1):55-62. doi: 10.1016/j.clcc.2022.01.008.
2. Roshandel G, Ghasemi-Kebria F, Malekzadeh R. Colorectal Cancer: Epidemiology, Risk Factors, and Prevention. *Cancers (Basel)* 2024 Apr 17;**16**(8):1530. doi: 10.3390/cancers16081530.
3. Yamada K, Saiki Y, Takano S, Iwamoto K, Tanaka

M, Fukunaga M, Noguchi T, Nakamura Y, Hisano S, Fukami K, Kuwahara D, Tsuji Y, Takano M, Usuku K, Ikeda T, Sugihara K. Long-term results of intersphincteric resection for low rectal cancer in Japan. *Surg Today* 2019 Apr;**49**(4):275-285. doi: 10.1007/s00595-018-1754-4.

4. Martin ST, Heneghan HM, Winter DC. Systematic review of outcomes after intersphincteric resection for low rectal cancer. *Br J Surg* 2012 May;**99**(5):603-12. doi: 10.1002/bjs.8677.
5. Amirbeigi A, Nikshoar MR, Ghaedamini H, et al. Low Anterior and Very Low Anterior Resection in Patients with Rectal Cancer with or without Diverting Colostomy: A Comparison. *Archives of Advances in Biosciences* 2021;**12**(1):37-44. doi.org/10.22037/aab.v12i1.34474.
6. Shirouzu K, Murakami N, Akagi Y. Intersphincteric resection for very low rectal cancer: a review of the updated literature. *Ann Gastroenterol Surg* 2017;1(1):24-32. doi: 10.1002/ags3.12003.
7. Piozzi GN, Kim SH. Robotic intersphincteric resection for low rectal cancer: technical controversies and a systematic review on the perioperative, oncological, and functional outcomes. *Annals of coloproctology* 2021;**37**(6):351, doi: 10.3393/ac.2021.00836.0119.
8. Fleshman JW, Smallwood N. Current concepts in rectal cancer. *Clin Colon Rectal Surg* 2015 Mar;**28**(1):5-11, doi: 10.1055/s-0035-1545064.
9. Cipe G, Muslumanoglu M, Yardimci E, Memmi N, Aysan E. Intersphincteric resection and coloanal anastomosis in treatment of distal rectal cancer. *Int J Surg Oncol* 2012;**2012**(1):581258. doi: 10.1155/2012/581258.
10. Sun G, Lou Z, Zhang H, et al. Retrospective study of the functional and oncological outcomes of conformal sphincter preservation operation in the treatment of very low rectal cancer. *Tech Coloproctol* 2020;**24**(2):1025-34. doi: 10.1007/s10151-020-02229-2.
11. Casciola L, Ceccarelli G, Bartoli A, et al. [Laparoscopic approach versus laparotomy for suspected acute appendicitis]. *G Chir* 2002 Nov-Dec;**23**(11-12):440-4.
12. Xie Y-H, Chen Y-X, Fang J-Y. Comprehensive review of targeted therapy for colorectal cancer. *Signal transduction and targeted therapy* 2020;**5**(1):22. doi: 10.1038/s41392-020-0116-z.
13. Sakata S, Larson DW. Targeted therapy for colorectal cancer. *Surgical Oncology Clinics* 2022;**31**(2):255-64. doi: 10.1016/j.soc.2021.11.006.
14. Kim JC, Yu CS, Lim SB, Kim CW, Park IJ, Yoon YS. Outcomes of ultra-low anterior resection combined with or without intersphincteric resection in lower rectal cancer patients. *Int J Colorectal Dis* 2015 Oct;**30**(10):1311-21. doi: 10.1007/s00384-015-2303-x.
15. Seo SI, Yu CS, Kim GS, et al. The role of diverting stoma after an ultra-low anterior resection for rectal cancer. *Annals of coloproctology* 2013;**29**(2):66. doi: 10.3393/ac.2013.29.2.66.
16. Ridolfi TJ, Berger N, Ludwig KA. Low anterior resection syndrome: current management and future directions. *Clin Colon Rectal Surg* 2016;**29**(03):239-45. doi: 10.1055/s-0036-1584500.
17. Gori J, Kazi M, Rajkumar B, et al. Comparative study of functional outcomes between ultra-low anterior resection and inter-sphincteric resection: a propensity matched analysis. *ANZ J Surg* 2022 Jan;**92**(1-2):151-6. doi: 10.1111/ans.17405.
18. Saito N, Ito M, Kobayashi A, et al. Long-term outcomes after intersphincteric resection for low-lying rectal cancer. *Ann Surg Oncol* 2014;**21**:3608-15. doi: 10.1245/s10434-014-3762-y.
19. Bozbıyık O, Çalışkan C, Köse Ö, et al. Functional outcomes of intersphincteric resection in low rectal tumors. *Turkish Journal of Surgery* 2022;**38**(2):180. doi: 10.47717/turkjsurg.2022.5556.