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Loose Seton Technique in the Management of Complex High Anal Fistula: Enhancing Outcomes with Magnetic Resonance Imaging

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Abstract

Background: Complex high anal fistulas challenge treatment efforts, necessitating innovative approaches that balance healing with sphincter preservation.

Methods and Results: In a prospective study at Tikrit Teaching Hospital, 39 patients with complex high anal fistulas underwent treatment with loose silicone setons, guided by preoperative MRI mapping. The efficacy of this method was evaluated through follow-up visits at 1, 3, and 6 months, focusing on fistula healing, recurrence rates, continence preservation (assessed by the Wexner Continence Score), and patient satisfaction.

Complete healing was achieved in 31 patients (79.5%), with a recurrence rate of 7.7%. There was a significant improvement in continence, with the mean Wexner score reducing from 3.5 to 1.2 (P<0.001). Moreover, 85% of patients expressed satisfaction with their treatment outcomes.

Conclusion: The combined use of loose silicone setons and MRI mapping presents an effective, satisfactory method for managing complex high anal fistulas. This technique ensures high healing rates, significantly preserves sphincter function, and achieves high patient satisfaction.**(International Journal of Biomedicine. 2024;14(2):282-285.)**

Keywords: fistula healing • sphincter preservation • MRI • patient satisfaction

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Introduction

Complex high anal fistulas represent a significant therapeutic challenge in colorectal surgery due to their intricate course and close relationship with the anal sphincters.[1] The loose seton technique has been recognized as a sphincter-preserving method, offering a balance between effective treatment and the preservation of anal function.[2-4] However, one of the key challenges in the management of complex fistulas is the accurate identification and assessment of the fistulous tract.[5,6]

Magnetic resonance imaging (MRI) has emerged as a crucial tool in the preoperative assessment of anal fistulas, it provides detailed visualization of the fistula's path, its relationship with the sphincter complex, and any associated abscesses.[7,8] This information is vital for surgical planning; allowing for a targeted approach that minimizes sphincter disruption (Figure 1 and Figure 2).

This study aims to evaluate the effectiveness of the loose seton technique for the treatment of complex high anal fistulas, assisted by MRI for defining the fistula tract. Specifically, it seeks to assess the accuracy of fistula tract identification, the success rate of the procedure, the preservation of sphincter function, and the incidence of recurrence.

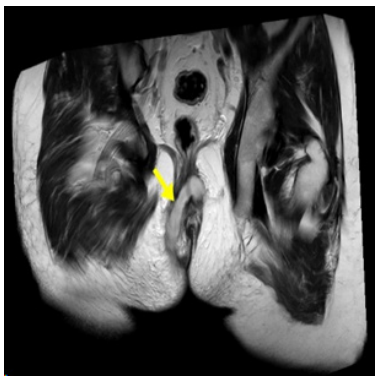

Fig. 1. *MRI T2 coronal oblique image shows a large sinus tract crossing the midline.*

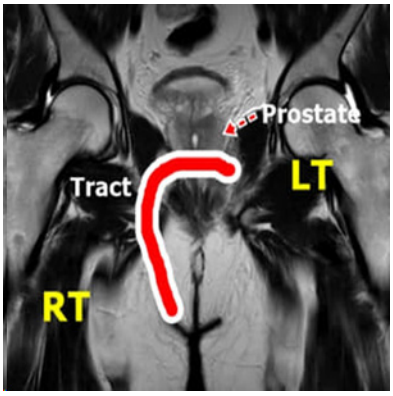

Fig. 2. *MRI T2 coronal oblique image: the red line shows the course of the sinus tract.*

Materials and Methods

Study Design and Setting

This prospective study was conducted at Tikrit Teaching Hospital, focusing on patients diagnosed with complex high anal fistulas. The study aimed to evaluate the effectiveness of the loose seton technique, enhanced by MRI, for defining the fistula tract.

A total of 39 patients were included in the study, based on the following inclusion criteria: adults aged 18 years and older; diagnosed with complex high anal fistula, as confirmed by clinical examination and preoperative MRI; no previous anal fistula surgery; consent to participate in the study.

Exclusion criteria were the presence of an acute anal abscess, low anal fistulas not involving the sphincter complex, and patients with contraindications to MRI.

Intervention

All patients underwent a detailed preoperative assessment, including MRI, to map the fistula tract. Silicone setons were used in the loose seton technique for all patients, which involved the careful placement of the seton to allow for drainage and gradual fistula-tract fibrosis without cutting through the sphincter muscle.

Surgical Procedure

The procedure was performed under general anesthesia. Following the MRI and proctoscopic evaluations, the external opening of the fistula was identified and cannulated with a probe. A silicone seton was then threaded through the tract and loosely tied around the sphincter muscle to avoid tension. Silicone was chosen as the material for the seton due to its biocompatibility, flexibility, and minimal irritation to the surrounding tissues.

Postoperative Care and Follow-up

Patients were discharged with instructions on seton care, including hygiene and monitoring for signs of infection. Follow-up visits were scheduled at 1, 3, and 6 months postoperatively, including clinical examination and a repeat MRI at the last follow-up to assess fistula healing and any changes in the fistula tract.

Outcome Measures

The primary outcomes measured were the healing rate of the fistula, defined as the closure of the external opening and absence of discharge; recurrence rate within the follow-up period; preservation of continence assessed using the Wexner Continence Score; and patient satisfaction, measured through a post-treatment questionnaire.

Statistical Analysis

Statistical analysis was performed using the statistical software package SPSS version 25.0 (SPSS Inc, Armonk, NY: IBM Corp). Descriptive statistics were used to summarize patient demographics and clinical characteristics. The Kaplan-Meier method was employed to estimate healing and recurrence rates. The significance of differences between preoperative and postoperative continence scores was evaluated using the paired t-test, with a P-value < 0.05 considered statistically significant.

Results

The study included 39 patients (28 males and 11 females) with an average age of 45±12 years (range 18-65 years). All patients presented with symptoms of complex high anal fistulas and underwent the specified treatment protocol at Tikrit Teaching Hospital (Table 1).

Table 1.

Patient Demographics and Clinical Characteristics.

Characteristic	Value
Total number of patients	39
Age (years), (mean ± SD)	45 ± 12
Gender (Male/Female)	28/11
Previous fistula surgery	No
Type of fistula (according to MRI) Transsphincteric Suprasphincteric	 25 4

Fistula Healing and Recurrence Rates

At the end of the 6-month follow-up period, 31(79.5%) out of 39 patients showed complete fistula healing. The recurrence rate was observed in 3(7.7%) patients. The Kaplan-Meier survival analysis indicated a significant improvement in fistula healing over the follow-up period (P<0.05) (Table 2).

Table 2.

Fistula Healing and Recurrence Rates.

Outcome	Number of Patients	Percentage
Complete healing	31	79.5%
Recurrence	3	7.7%
No change	5	12.8%

Continence Preservation

Continence was assessed using the Wexner Continence Score. Preoperative scores ranged from 0 to 12 (mean 3.5±2.1). Postoperatively, scores improved significantly, with a mean postoperative score of 1.2±1.5, indicating a significant preservation of continence following the procedure (P<0.05) (Table 3).

Table 3.

Continence Scores Pre- and Post-Procedure.

Time Point	Mean Wexner Score	SD	*P*-value
Preoperative	3.5	2.1	<0.001
Postoperative	1.2	1.5	

Patient Satisfaction

The patient satisfaction questionnaire revealed that 85% of patients were satisfied or very satisfied with the outcome of their treatment, reporting improved quality of life without significant discomfort or incontinence issues (Table 4).

Table 4.

Patient Satisfaction Survey Results.

Satisfaction Level	Number of Patients	Percentage
Very satisfied	20	51.3%
Satisfied	13	33.3%
Neutral	4	10.3%
Unsatisfied	2	5.1%
Very unsatisfied	0	0%

Discussion

The present study's findings indicate a promising approach to managing complex high anal fistulas, with a significant healing rate of 79.5% and a low recurrence rate of 7.7% over a 6-month follow-up period. These outcomes are notable, considering the complexity of the fistulas treated and the priority placed on sphincter preservation. Integrating MRI for surgical planning and using loose silicone setons has contributed to these favorable outcomes.

The use of MRI in the preoperative assessment aligns with the recommendations of recent studies, which highlight its utility in accurately mapping fistula tracts and identifying associated abscesses. This accuracy in mapping is crucial for surgical planning, particularly for complex fistulas, where traditional examination methods may not suffice.[11,12]

The significant preservation of continence observed, with an improvement in Wexner Continence Scores postoperatively, underscores the importance of sphincter-preserving approaches. These findings are consistent with the work of several studies, which also reported high rates of continence preservation using similar techniques.[13-16]

Patient satisfaction levels reported in this study reinforce the clinical relevance of these outcomes. The high satisfaction rate among participants suggests that combining MRI with the use of loose silicone setons not only addresses the physical aspects of fistula management but also positively impacts patients' quality of life. This aspect of treatment is increasingly recognized in the literature as an essential measure of success.[17-19]

Conclusion

This study contributes valuable insights into the management of complex high anal fistulas, highlighting the efficacy of a multimodal approach involving MRI and loose silicone setons. As the field evolves, continued innovation and research are essential to refine these techniques and improve patient outcomes.

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Disclaimer

We state that the views expressed in the submitted article are ours and not an official position of the institution.

Competing Interests

The authors declare that they have no competing interests.

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