DOI: 10.4274/tjcd.galenos.2024.2024-3-1
Turk J Colorectal Dis 2024;34:50-53

RESEARCH ARTICLE

Outcomes of Loose Seton Followed by Fistulotomy in Transsphincteric Perianal Fistulas: A Retrospective Study

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ABSTRACT

Aim: This retrospective study aimed to investigate the outcomes of the "loose seton followed by fistulotomy" technique in patients with transsphincteric perianal fistulas, focusing on the effectiveness of this surgical technique in achieving fistula tract healing while preserving anal sphincter function.

Method: A total of 114 patients with transsphincteric anal fistulas underwent surgery at the University of Health Sciences Turkey, Samsun Training and Research Hospital between September 2015 and December 2023. The technique of loose seton followed by fistulotomy was employed, and patient data, including demographics, surgical procedures, incontinence scores, complications, and recurrence rates, were collected and analyzed using statistical methods.

Results: During a median follow-up period of 27.8 weeks, complete healing of the fistula was observed in all patients (100%), with no cases of seton loss or recurrence observed in five patients (4.8%). The median incontinence scores post last operation and at present were significantly improved compared with preoperative scores. The overall incontinence rate postoperatively was found to be 1.8%.

Conclusion: The loose seton followed by fistulotomy technique demonstrated favorable outcomes in terms of fistula healing, low rates of incontinence, and acceptable recurrence rates. Despite the need for multiple surgeries in some cases, the benefits of this approach in preserving continence and reducing recurrence support its suitability for treating transsphincteric perianal fistulas.

Keywords: Perianal fistula, loose seton, fistulotomy, transsphincteric fistula, incontinence

Introduction

Perianal fistulas are a common condition affecting the anorectal region, with cryptoglandular abscesses accounting for the vast majority of cases.[1] The primary goal of surgical treatment is to achieve complete healing of the fistula tract while preserving anal sphincter function. The seton technique is commonly employed in transsphincteric fistulas to prevent incontinence by promoting fibrosis in the surrounding tissue. Traditionally, the "cutting seton" has been utilized for an extended period, but serious adverse effects, such as patient discomfort due to pain and relatively high rates of incontinence, have been reported.[2,3] The loose seton technique is often used for palliation in cases of perianal abscesses and symptom control. However, it has also been demonstrated that using a loose seton followed by fistulotomy yields favorable results with acceptable lower rates of incontinence.[4-7]

In this retrospective study, we aim to investigate the outcomes of loose seton followed by fistulotomy in patients with transsphincteric perianal fistulas.

Materials and Methods

This study was conducted at the University of Health Sciences Turkey, Samsun Training and Research Hospital following approval from the Local Ethical Committee (approval number: 2024/2/3, date: 17.01.2024). Between September 2015 and December 2023, a total of 114 patients with transsphincteric anal fistulas underwent surgery in the department and were included in the study. Patients with other types of fistulas and those undergoing concurrent perianal surgical procedures were

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Received: 30.03.2024 **Accepted:** 25.05.2024

not included in the study. The diagnosis of perianal fistula was made through physical examination by identifying the external opening of the fistula around the anal canal and through magnetic resonance imaging by detecting the fistula tract. The primary outcome of this study was to assess the effectiveness of the loose seton followed by fistulotomy and the rate of incontinence.

Procedure

All patients underwent surgery under spinal anesthesia while in the jackknife position. The anal canal was examined to evaluate internal openings of the fistula tract and exclude other possible pathologies. In some cases, hydrogen peroxide solution was injected through the external opening to identify the tract. The fistula tract was completely excised until the external anal sphincter was reached, after which a seton was inserted and loosely tied. A circular piece cut from the thickest part of a sterile surgical glove was chosen as the seton material.

Postoperative Care and Follow-up

Patients were allowed oral intake 4 hours after the operation and discharged on postoperative day 1. They were then evaluated every 6-8 weeks, and surgery was performed when a seton revision was required or a definitive fistulotomy was indicated.

Data Collection and Analysis

Patient characteristics, demographic features, past medical history, operation times and frequencies, incontinence scores, complications, and recurrence rates were obtained from patient records, as well as through on-call interviews or outpatient clinic visits.

The Wexner Scoring System–a fecal incontinence score ranging from 0 to 20, where 0 is perfect continence and 20 is complete incontinence; it is also termed the Cleveland Clinic Fecal Incontinence Severity Scoring System–was used for incontinence scoring (Table 1)[8]. The patients were divided into two groups based on their incontinence scores; the first group included patients with an incontinence score of <8, and the second group included patients with an incontinence score of ≥8.

Table 1. The Wexner Scoring System

Type of incontinence	Frequency				
	Never	Rarely	Sometimes	Usually	Always
Solid	0	1	2	3	4
Gas	0	1	2	3	4
Wears pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

0 = perfect, 20 = complete incontinence, Never = 0 (never), Rarely = <1 month, Usually = <1 week, Always = ≥1/day

Statistical Analysis

Statistical analysis was performed using SPSS software version 25. The Kolmogorov-Smirnov test was used to assess the distribution of the data in the analysis. The Wilcoxon signed-rank test was chosen for comparing non-parametric dependent variables. For comparing categorical variables, the chi-squared and Fisher's exact tests were employed. The Mann-Whitney U test was used to determine the difference between non-parametric independent variables in the paired groups. Values with a p-value of <0.05 were considered statistically significant.

Results

Between 2015 and 2023, a total of 114 patients underwent surgery for transsphincteric fistulas in the hospital's surgical department. Patient characteristics and demographical features are summarized in Table 2. During a median follow-up period of 27.8 weeks, no patient experienced seton loss and recurrence was observed in only two patients. The median number of operations was three. Complete healing of the fistula was observed in all patients (100%). The median incontinence scores post last operation and at present were determined as 1 and 0, respectively. When comparing the median preoperative incontinence score with the median postoperative incontinence score, a statistically significant difference was found (0 vs. 1,

Table 2. Descriptive features of the patients

Mean age (SD) (years)	**44.78 (13.1)**
Sex n (%)	
Male	100 (87.7%)
Female	14 (12.3%)
Total	114
Preoperative abscess	
Yes	58 (50.9%)
No	56 (49.1%)
Number of external os	
1	102 (89.5%)
2	11 (9.6%)
3	1 (0.9%)
Number of operations	
2	67 (58.8%)
3	29 (25.4%)
4	14 (12.3%)
5	4 (3.5%)
Median follow-up time (min.-max.)	27.8 weeks (4-183)

SD: Standard deviation, min.: minimum, max.: maximum

p<0.001). However, no significant difference was found between the preoperative median incontinence score and the current median incontinence score (0 vs. 0, p=0.244).

Patients were divided into two groups based on their incontinence scores. When comparing the preoperative patient numbers with the post-last-operation and current patient numbers in these groups, no significant difference was found (Table 3). The relationship between postoperative incontinence scores and the number of operations performed, as well as the presence of abscesses before the operation, could not be determined (Table 4). During the follow-up period, recurrence occurred in five patients (4.3%).

Discussion

The findings of this study shed light on several important aspects related to the management of perianal fistulas and the impact on incontinence outcomes. The results indicate the efficacy of the loose seton followed by fistulotomy technique in achieving the primary objective of fistula tract healing while preserving anal sphincter function.

The absence of a significant difference between preoperative and current status incontinence scores suggests that the surgical approach employed in this study may contribute to maintaining continence levels postoperatively. However, the observed difference between preoperative and current status incontinence groups highlights the need for further investigation into factors influencing long-term continence outcomes in patients with perianal fistulas.

In our study, only five patients had Wexner scores ≥8 in long-term follow-up. Three of these patients already had incontinence scores >10 before surgery (10, 12, and 15, respectively). The patient with an incontinence score of 15 showed a decrease to 10 in postoperative follow-up. No change was observed in the patient with a score of 12. The patient with a score of 10 had an increase in postoperative incontinence score to 13. Among the two patients with preoperative incontinence scores of 0, the postoperative scores were 8 and 10. As a result, out of a total of 111 patients who did not have preoperative incontinence, only 2 were found to have postoperative incontinence (1.8%). When compared with the cutting seton, this rate remains quite low. The rates of fecal incontinence following cutting seton procedures vary between 8.4% and 60% in the literature.[9,10] The rates of fecal incontinence following loose seton procedures have been reported as 0-17% in various studies.[1,4,6,7,11] Our results are consistent with the literature. The low incontinence rate is one of the most significant advantages of the loose seton compared with the cutting seton.

Interestingly, no significant difference was found in the preoperative incontinence scores between patients with and without preoperative abscesses, indicating that the presence of an abscess may not necessarily predict preoperative continence status. However, the significant difference in current incontinence scores between these groups underscores the potential impact of abscess formation on postoperative continence outcomes. This result, although different from that of the study by Sungurtekin et al.[7], may be attributed to the difficulty in identifying anatomical structures due to the intense inflammation caused by the abscess, leading to the observed difference between the abscess group and the non-abscess group.[6]

One of the most significant disadvantages of loose seton application is the potential need for multiple surgeries in patients. Nearly half (41.2%) of our patients needed to undergo three or more surgeries. Similar results are also found in the literature.[6,12,13] Furthermore, the analysis comparing patients requiring three or more surgeries with those requiring two surgeries revealed no significant differences in postoperative or current status incontinence scores. This suggests that the number of surgeries may not be a significant predictor of long-term continence outcomes in patients with perianal fistulas, highlighting the importance of individualized treatment approaches based on patient characteristics and disease severity.

In our study, the recurrence rate was determined to be 4.3%, which is consistent with the literature.[1,4,6,11,14,15] Studies have identified various risk factors for recurrence. These risk factors include high transsphincteric fistulas, situations where the internal opening cannot be located, a history of previous anal surgery, and multiple fistula tracts.[14-16] In our study, out of the five patients who experienced recurrence, two had a history of previous anal surgery. Additionally, three patients had anal abscesses.

Table 3. Comparison between the preoperative incontinence group and the post-last-operation incontinence group

Patient group	Preoperative	After last operation	
Low score (n)	112	110	
High score (n)	2	4	p=0.069*
Total (n)	114	114	

*Fisher's exact test

Table 4. Comparison of preoperative incontinence scores between groups with and without preoperative abscesses

Preoperative abscess	Preoperative incontinence score	
Yes	0 (0-16)	p=0.064
No	0 (0-3)	

Study Limitations

Our study has some limitations that should be addressed. Comparisons with other types of fistulas and treatment methods were not made. Additionally, the sample size was relatively small, which reduces the statistical power of the study. Our median follow-up period was relatively short; consequently, we are unable to comment on the long-term outcomes of the "loose seton" method.

Conclusion

In conclusion, despite its disadvantages of requiring a long treatment duration and multiple surgical procedures, the loose seton procedure is preferred in transsphincteric fistulas due to its low rates of incontinence and recurrence. Further comprehensive studies with longer follow-up periods should support this recommendation.

Ethics

Ethics Committee Approval: This study was conducted at the University of Health Sciences Turkey, Samsun Training and Research Hospital following approval from the Local Ethical Committee (approval number: 2024/2/3, date: 17.01.2024).

Informed Consent: Retrospective study.

Authorship Contributions

Surgical and Medical Practices: Ö.F.B., S.O., Concept: Ö.F.B., S.O., Design: S.O., M.G.B., Data Collection or Processing: Ö.F.B., S.O., M.A.A., M.G.B., Analysis or Interpretation: Ö.F.B., S.O., M.A.A., M.G.B., Literature Search: Ö.F.B., S.O., M.A.A., C.A., M.G.B., Writing: Ö.F.B., S.O.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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