

Comparison of Postoperative Pain and Functionality in Patients Undergoing Fistulotomy and Seton for Anal Fistula

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Research Article

Keywords:

Posted Date: October 18th, 2023

DOI: <https://doi.org/10.21203/rs.3.rs-3400982/v1>

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Additional Declarations: No competing interests reported.

Abstract

Introduction: Anal fistula is a common proctological disease characterized by a tunnel formation between the skin and the anal canal. Surgical intervention is often required for treatment. The study aimed to assess postoperative pain and functionality in patients undergoing either fistulotomy or seton application for anal fistula.

Method: The study included patients undergoing fistulotomy or seton application. Pain and functionality were assessed using the WHODAS 2.0 and VAS scores before surgery and at 1 week and 1 month post-surgery. Data were analyzed using statistical methods.

Results: Out of 144 patients, 125 were included in the study. Fistulotomy was performed in 54.4% of patients, while seton application was performed in 45.6%. Pain levels were significantly higher in the fistulotomy group at postoperative 1 week but significantly lower at postoperative 1 month compared to the seton group. WHODAS 2.0 results correlated with VAS scores, showing that pain affected functionality. Seton group patients experienced less pain in the first postoperative week, but pain increased in the first month due to the presence of setons. Loss of function in social life and human relations was higher in the seton group.

Discussion: Anal fistulas are more prevalent in men, but this study found a higher ratio of women, possibly due to geographical differences or the small sample size. Pain levels and functionality were affected by the choice of surgical method. Fistulotomy patients experienced increased pain in the first week but improved over time, while seton patients had lower initial pain but more persistent discomfort. Setons can disrupt daily life and social activities. Surgeons should consider long-term pain and functionality when choosing between procedures.

INTRODUCTION

Anal fistula is defined as a tunnel developing between the skin and the anal canal and is a common proctological disease. Anal fistulas are classified according to treatment approaches and their location relative to the anal sphincter [1]. Spontaneous recovery is observed in approximately 10% of anal fistula patients, while the need for surgical intervention is inevitable in the remaining patients [1].

Anal fistula can progress with pain, foul-smelling discharge, and related systemic findings may be found if accompanied by perianal abscess. The frequency of recurrence after treatment in this patient group causes long-term persistence of symptoms in patients and leads to loss of function [2]. Apart from the preoperative symptomatology, patients also experience complaints during the recovery period due to the surgery performed.

Fistulotomy is still the most successful method for treating simple fistulas. However, in complex fistulas, cutting seton application, drainage seton placement followed by advanced surgical methods such as video-assisted anal fistula treatment (VAAFT), and ligation of the intersphincteric fistula tract (LIFT) may

be preferred [3, 4]. In all surgical methods used, postoperative pain and loss of function are inevitable. Depending on the type of surgery preferred, postoperative complaints, severity and duration of loss of function and postoperative pain vary. Different social and occupational characteristics of patients and differences in pain thresholds can be shown as the reason for this variability.

As the evaluation of pain, disability and functionality is subjective and difficult to standardize, the Disability Assessment Schedule 2.0 (WHODAS 2.0) developed by the World Health Organization and visual analog scale (VAS) are the most frequently used methods [5, 6].

In this study, we aimed to measure the existing functional loss and pain levels before treatment in patients who underwent fistulotomy or seton application due to anal fistula and to reveal the changes in functionality and pain level in the postoperative period.

METHOD

In this prospectively designed study, following the approval of the ethics committee (Muğla Sıtkı Koçman University Medicine and Health Sciences Ethics Committee, decision date: December 22th 2021, protocol no: 210033, decision no: 27), patients who were planned for a fistulotomy or seton application in Muğla Research and Training Hospital were asked to be included in the study on a voluntary basis, and verbal and written consent was obtained. Accordingly, consented anal fistula patients admitted from January 1, 2022 to October 31, 2022 were included in the study.

Participants:

Patients who had previous proctology surgery and patients with additional comorbidities that already caused loss of function were excluded. Additionally, patients with Crohn's disease, tuberculosis, HIV infection, and malignancy were excluded. In all patients, proctoscopy was performed. The level of the anal fistula was determined according to the pelvic magnetic resonance imaging (MRI) of the patients, and the type of surgical treatment (fistulotomy or drainage seton application) was determined accordingly. Patients were divided into two groups: the "seton group" and the "fistulotomy group". The cutting seton was not applied to any of the seton patients. The pain level and functionality status of the patients were evaluated with the WHODAS 2.0 and VAS scores preoperatively and in the postoperative 1st week and 1st month, and the results were compared between groups.

Statistical analysis:

The obtained data were analyzed with SPSS for Windows, Rel. 15.0.0 (SPSS Inc., Chicago; USA). Compliance with a normal distribution was evaluated with the Kolmogorov–Smirnov and Shapiro–Wilk tests, and the mean \pm standard deviation for data with a normal distribution and median + interquartile range (IQR) values for data without a normal distribution were given. Then, the chi-square test was used for categorical data to compare the groups defined in the methodology, and the T test was used for the analysis of continuous variable data. Preoperative, postoperative 1st week and postoperative 1st month

results of the WHODAS 2.0 and VAS scores in both groups were evaluated by the Friedman test. Comparative analysis of the WHODAS 2.0 results was performed with the Mann–Whitney U test. “p” values below 0.05 were considered statistically significant.

RESULTS

Fistulotomy or seton application was performed on 144 patients within the specified date range. One hundred forty-four patients were enrolled in the study, and eight of those were excluded due to exclusion criteria. One hundred thirty-six patients were followed up. However, 11 patients who suffered from abscess and/or fistula in another quadrant after seton application during follow-up were excluded from the study. Finally, a total of 125 patients were included in the study (Fig. 1).

Fistulotomy was performed in 68 (54.4%) patients, and seton was performed in 57 (45.6%) patients. The mean ages of the patients in the fistulotomy and seton groups were 44.56 (\pm 12.57) and 46.61 (\pm 13.75), respectively. The female ratios were 22.1 and 31.6 in the fistulotomy and seton groups, respectively. Detailed demographic and clinical data of the patients are given in Table 1.

Table 1
Comparative analysis of demographic and clinical data of fistulotomy and seton application groups

		Fistulotomy (n:68)	Seton (n:57)	All (n:125)	p
Age (\pm SD)		44.56 (12,57)	46.61 (13.75)	45.5 (13.11)	0.385
Gender	Female (%)	15 (22.1)	18 (31.6)	33 (26.4)	0.308
	Male (%)	53 (77.9)	39 (68.4)	92 (73.6)	
Park's classification of fistula	Superficial	14 (20.6)	0 (0)	14 (11.2)	< 0.001
	Intersphincteric	47 (69.1)	0 (0)	47 (37.6)	
	Transsphincteric	7 (10.3)	19 (33.3)	26 (20.8)	
	Suprasphincteric	0 (0)	30 (52.6)	30 (24)	
	Extrasphincteric	0 (0)	8 (14)	8 (6.4)	

When the VAS and WHODAS 2.0 subscales were evaluated, it was observed that the VAS score in the seton group did not change significantly at week 1 and month 1 (p = 0.138), but scale changes were significant in all other parameters (Table 2, Fig. 2). Parameters measured in WHODAS 2.0 are given in Table XXX.

First, the fistulotomy group was analyzed in detail. The VAS scores of the patients who underwent fistulotomy increased significantly at the postoperative 1st week compared to the preoperative period ($p < 0.001$). However, at the end of the 1st month, the VAS score was significantly lower than both the 1st week and the preoperative scores ($p = 0.024$, $p < 0.001$, respectively). When the WHODAS 2.0 subscales were examined, there was a significant increase in the DAS 2, 5, and 6 subscores and DAS total score compared to the preoperative scores ($p < 0.001$, $p = 0.021$, $p = 0.034$ and $p < 0.001$, respectively), and no significant change was found in the other subscores ($p > 0.05$ for all parameters).

In the seton group, VAS scores did not differ from the preoperative period in the postoperative 1st week and 1st month ($p > 0.05$ for all values). When the WHODAS 2.0 scores were evaluated in the seton group, no significant difference was found between the 1st month-end values in the preoperative period, except for the DAS 4 subgroup scale ($p > 0.05$ for all values). In the DAS 4 subgroup, the 1st week and 1st month scores were found to be significantly higher than those in the preoperative period ($p = 0.002$ and $p < 0.001$, respectively). Again, in the seton group, the DAS total score increased significantly in the 1st week compared to the preoperative period ($p < 0.001$), but there was no significant difference when compared with the preoperative score in the postoperative 1st month ($p > 0.999$). In the comparative analysis of the scores of the fistulotomy and seton groups, the VAS score was significantly higher ($p < 0.001$) at week 1 and significantly lower ($p < 0.001$) at month 1 compared to the seton group. Again, in the DAS 2 and DAS 5 subscales, the 1st week values were higher in the fistulotomy group ($p = 0.020$ and $p = 0.027$), while the DAS 4 and DAS 6 subscale scores were significantly lower in the fistulotomy group at the 1st month ($p = 0.012$ and $p < 0.001$, respectively) (Table 2).

Table 2

Comparative analysis of the changes in the VAS and WHODAS 2.0 results of the patients in the fistulotomy and seton group at the end of the preoperative, postoperative 1st week and postoperative 1st month, within and between groups

		Fistulotomy	Pairwise comparisons p values for Gf	Seton	Pairwise comparisons p values for Gs	p
VAS	T0	3.5 (1–6)	T0 vs T1: <0.001	4 (1-5.5)	T0 vs T1: >0.05	0.852
	T1	7 (5–8)	T0 vs T2: 0.024	3 (2–5)	T0 vs T2: >0.05	< 0.001
	T2	2 (1–3)	T1 vs T2: <0.001	4 (3–5)	T1 vs T2: >0.05	< 0.001
Intragroup p^f		< 0.001		0.138		
DAS 1	T0	4.17 (0-19.79)	T0 vs T1: 0.595	4.17 (0-33.33)	T0 vs T1: 0.367	0.965
	T1	6.25 (0-33.33)	T0 vs T2: 0.030	8.33 (0-33.33)	T0 vs T2: 0.783	0.876
	T2	4.17 (0-33.33)	T1 vs T2: <0.001	4.17 (0-27.09)	T1 vs T2: 0.023	0.429
Intragroup p^f		< 0.001		< 0.001		
DAS 2	T0	10 (0–30)	T0 vs T1: <0.001	10 (0–30)	T0 vs T1: 0.05	0.637
	T1	25 (11.25-50)	T0 vs T2: 0.086	20 (5–30)	T0 vs T2: >0.999	0.020
	T2	10 (0–25)	T1 vs T2: <0.001	10 (5–30)	T1 vs T2: 0.275	0.173
Intragroup p^f		< 0.001		0.001		
DAS 3	T0	3.13 (0-18.75)	T0 vs T1: 0.641	0 (0–25)	T0 vs T1: >0.05	0.692
	T1	6.25 (0-18.75)	T0 vs T2: 0.236	6.25 (0–25)	T0 vs T2: >0.05	0.803
	T2	0 (0-12.5)	T1 vs T2: 0.008	6.25 (0-21.88)	T1 vs T2: >0.05	0.177

*: Mann–Whitney U test, f: Friedman's test, DAS 1: Understanding and communicating, DAS 2: Moving, going from place to place, DAS 3: Self-care, DAS 4: Human relations, DAS 5: Home and work life, DAS 6: Participation in social life, T0: Preoperative, T1: Postoperative 1st week, T2: Postoperative 1st month

		Fistulotomy	Pairwise comparisons p values for Gf	Seton	Pairwise comparisons p values for Gs	p
Intragroup p ^f		< 0.001		0.056		
DAS 4	T0	0 (0–20)	T0 vs T1:>0.999	0 (0–15)	T0 vs T1:0.002	0.665
	T1	0 (0-23.44)	T0 vs T2: 0.062	6.25 (0-18.75)	T0 vs T2:<0.001	0.466
	T2	0 (0-18.75)	T1 vs T2: 0.471	6.25 (0-21.88)	T1 vs T2:>0.999	0.012
Intragroup p ^f		< 0.001		< 0.001		
DAS 5	T0	15.63 (0-34.38)	T0 vs T1: 0.021	15.63 (0-34.38)	T0 vs T1: 0.783	0.460
	T1	26,57 (10.16–44.54)	T0 vs T2: 0.215	15.63 (0-34.38)	T0 vs T2:>0.999	0.027
	T2	15.63 (0-34.38)	T1 vs T2:<0.001	9 (0-34.38)	T1 vs T2: 0.976	0.988
Intragroup p ^f		< 0.001		0.008		
DAS 6	T0	34.38 (10.16–46.1)	T0 vs T1: 0.034	34.38 (15.63–54.69)	T0 vs T1: 0.001	0.616
	T1	39.29 (25–46,43)	T0 vs T2:<0.001	35.71 (17.86–53.57)	T0 vs T2:>0.999	0.815
	T2	17.86 (3.57–28.75)	T1 vs T2:<0.001	28.57 (10.71–46.43)	T1 vs T2:<0.001	< 0,001
Intragroup p ^f		< 0.001		< 0.001		
DAS Toplam	T0	16.58 (5.42–27.98)	T0 vs T1:<0.001	14.58 (5.1-27.26)	T0 vs T1:<0.001	0.888

*: Mann–Whitney U test, f: Friedman's test, DAS 1: Understanding and communicating, DAS 2: Moving, going from place to place, DAS 3: Self-care, DAS 4: Human relations, DAS 5: Home and work life, DAS 6: Participation in social life, T0: Preoperative, T1: Postoperative 1st week, T2: Postoperative 1st month

	Fistulotomy	Pairwise comparisons p values for Gf	Seton	Pairwise comparisons p values for Gs	p
T1	21.58 (13.96–32.32)	T0 vs T2: <0.001	16.64 (9.44–29.74)	T0 vs T2:>0.999	0.131
T2	11.43 (3.87–20.87)	T1 vs T2: <0.001	14.78 (7.46–27.19)	T1 vs T2:<0.001	0.054
Intragroup p ^f	< 0.001		< 0.001		
*: Mann–Whitney U test, f: Friedman’s test, DAS 1: Understanding and communicating, DAS 2: Moving, going from place to place, DAS 3: Self-care, DAS 4: Human relations, DAS 5: Home and work life, DAS 6: Participation in social life, T0: Preoperative, T1: Postoperative 1st week, T2: Postoperative 1st month					

DISCUSSION

Anal fistula is a common disease in the community that impairs quality of life [7, 8]. The male–female ratio of the patients in our study was found to be 3:1. Although this ratio is consistent with male population dominance in the disease, this ratio is generally accepted as 2:1 in the literature [9]. This can be explained by the small size of our study group or geographical differences.

In the seton group, we found that the use of setons was 80% in women and 50% in men. The high need for seton application in women in our study is due to the high incidence of complex and highly located fistulas. In the literature, it is seen that women have a higher percentage of low-level fistulas than men, at 70.2% over 50.3% [10].

In our study, we observed that the preoperative VAS and WHODAS 2.0 scores of the patients who were going to undergo seton and fistulotomy were similar. Pain was significantly higher in the fistulotomy group in the postoperative 1st week and in the seton group in the postoperative 1st month than in the seton group. In patients who underwent fistulotomy, pain was observed at the incision site in the first week postoperatively, especially during and after defecation. This pain subsides with recovery, so pain levels in the postoperative 1st month lag behind those in the seton group. The fact that the pain was less in the first postoperative week in the seton group may be attributed to better tolerance of the procedure than in the fistulotomy group, since there was no incision in the operation. In the first month postoperatively, while the pain decreased due to the healing of the incision site in the fistulotomy group, it was observed that the pain was higher in the seton group. This situation can be explained by the tension caused by the seton and the foreign body reaction. When we look at the literature, it is seen that the pain levels of the conventional drainage seton are higher than even the cutting seton [3, 11]. However, no study comparing it with fistulotomy has been found.

The results of the WHODAS 2.0 appear to be consistent with the results of the VAS. This is not surprising, as pain is an important factor in functioning. Apart from pain, other factors affecting functionality include difficulty in defecation, bleeding, discharge, and the presence of seton. The patients in the seton group could defecate more easily since there was no incision in the first postoperative week. Similarly, discharge and bleeding were observed less in the seton group in the first week than in the fistulotomy group. Since the fistulotomy incision healed in the first month postoperatively, bleeding and discharge were not observed. On the other hand, discharge continues in the seton group. In addition, the presence of setons may disturb patients during their daily life, thus reducing functionality.

When the WHODAS 2.0 subgroups were evaluated, the DAS 4 and 6 subscale scores were higher, and the loss of function in social life and human relations was higher in the seton group than in the fistulotomy group. The continuation of discharge and pain in the first month postoperatively in patients who underwent seton may cause them to keep themselves away from social activities such as religious activities and ceremonies. In a study evaluating the long-term follow-up results (3.65 years) of 22 patients, it was observed that the quality of life improved in all patients whose treatment was completed [12]. However, the follow-up period of our study was short, and a final fistula treatment had not yet been completed in the seton group.

Due to the higher risk of fecal incontinence after fistulotomy, compared to seton application, surgeons who do not have sufficient experience in the field of proctology are probably inclined to see seton application as a more innocent procedure, and they may apply it more liberally. However, it should not be forgotten that the concept of treatment includes not only the elimination of the existing disease but also protecting the long-term functionality of the patients. Therefore, it should be kept in mind that performing a seton for a more conservative approach instead of fistulotomy may result in more long-term pain and greater loss of function.

Declarations

Ethical Approval

Ethics committee approval was received from Muğla Sıtkı Koçman University Medicine and Health Sciences Ethics Committee (Decision date: 22.12.2021, Protocol no: 210033, Decision no: 27)

Funding

No financial support was received from any institution or organization.

Availability of data and materials

All data have been archived by the corresponding author for accessibility in case of necessity.

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Figures

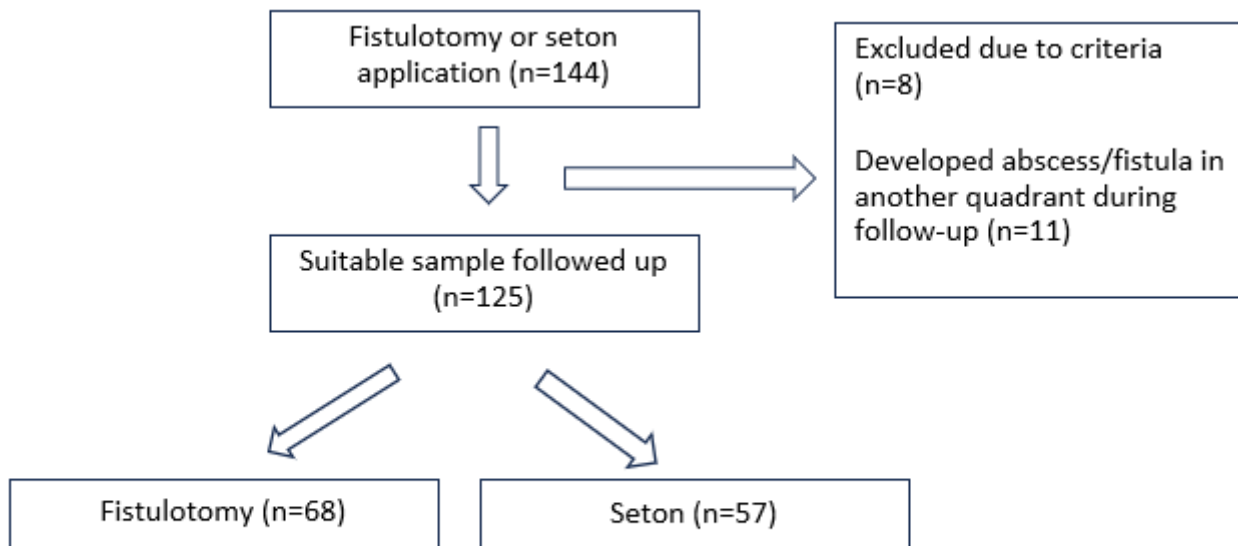


Figure 1

Sample flowchart and study groups

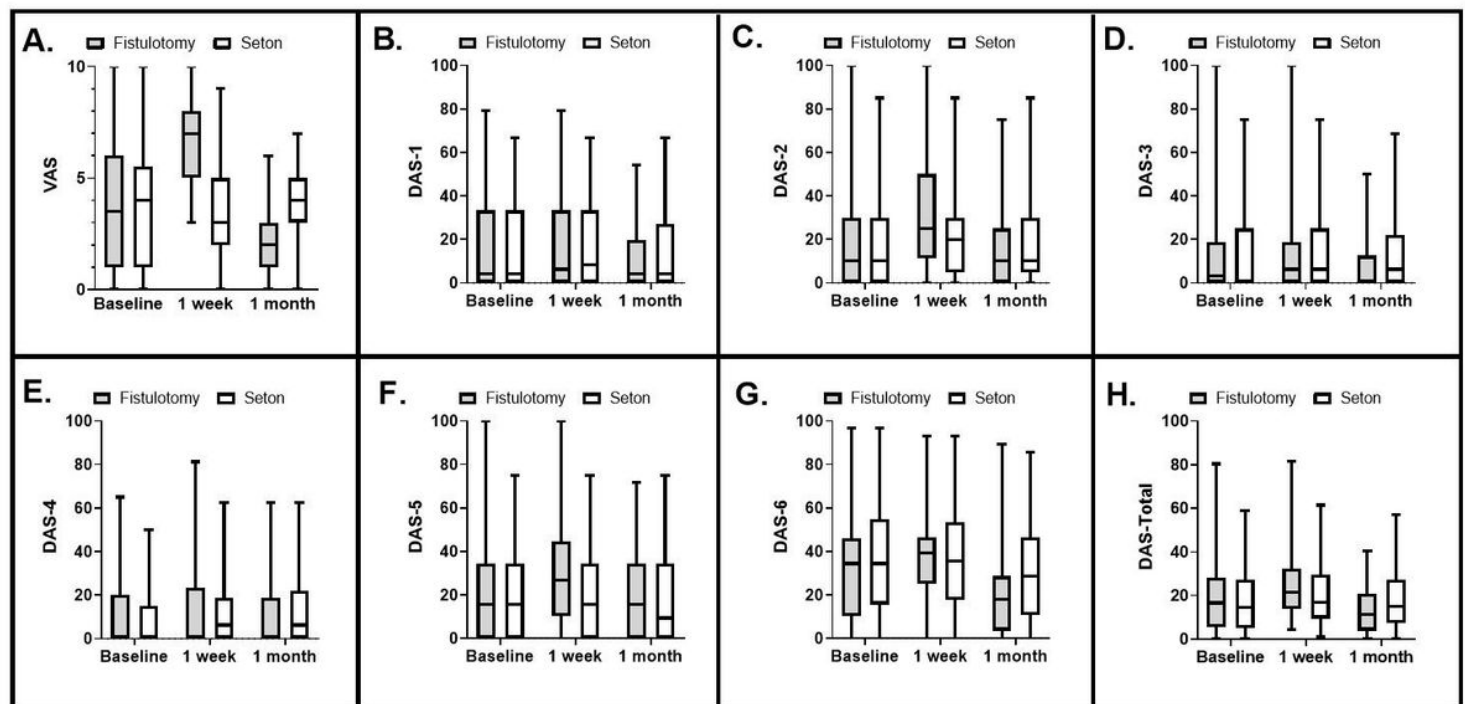


Figure 2

WHODAS 2.0 and VAS score changes in the fistulotomy and seton groups. DAS 1: Understanding and communicating, DAS 2: Moving, going from place to place, DAS 3: Self-care, DAS 4: Human relations, DAS 5: Home and work life, DAS 6: Participation in social life.

