

Loose Seton Technique as a Conventional Procedure for the Treatment of Anal Fistula and Long-Term Results

Anal Fistülün Tedavisinde Konvansiyonel Bir Prosedür Olarak Gevşek Seton Tekniği ve Uzun Dönem Sonuçları

Hasan Calis^{1*}

1.Alanya Alaaddin Keykubat University, Faculty of Medicine, Department of General Surgery, Alanya, Turkey.

ABSTRACT

Aim: The seton technique has long been used with success for the treatment of anal fistulas. This technique is recommended in the literature as a method which decreases anal incontinence in fistula surgery. This study aims to retrospectively analyze the long-term outcomes of anal patients on whom we performed loose seton technique for fistula surgery.

Patients and Methods: The information of 50 patients with the diagnosis of anorectal fistula on whom loose seton technique was performed at our clinic between November 2014 and June 2016 were retrospectively reviewed by using the individual follow-up forms of each patient.

Results: Fifty patients were included in the study. The mean follow-up time was 21 months. The etiology was crypto glandular abscess in 20 patients, Crohn's disease in 2 patients and idiopathic in 28 patients. In 23 patients without spontaneous resolution of fistula and incomplete division of internal sphincter muscle fibers underwent controlled fistulotomy. Spontaneous resolution of fistula tract had occurred in the remaining 27 patients. In all patients included in the study, complete healing was achieved and no recurrence, no total incontinence occurred during the 21-month mean follow-up period.

Conclusion: New treatment modalities have emerged for anal fistulas in recent years. Many studies were performed comparing these modalities to the conventional methods and none of these studies showed superiority over the conventional methods. The loose seton procedure is a well-tolerated modality for the treatment of anal fistula with low recurrence and incontinence rates during a long follow-up period of 21 months.

Key Words: Anal fistula, loose seton, incontinence, surgery technique

ÖZ

Amaç: Seton tekniği anal fistüllerin tedavisinde uzun süredir başarı ile kullanılmaktadır. Bu teknik literatürde fistül cerrahisinde anal inkontinansı azaltan bir yöntem olarak önerilmektedir. Bu çalışma, fistül cerrahisi için gevşek seton tekniği uygulanan hastaların uzun dönem sonuçlarını retrospektif olarak analiz etmeyi amaçlamaktadır.

Yöntemler: Kasım 2014-Haziran 2016 tarihleri arasında gevşek seton tekniği uygulanan anorektal fistül tanılı 50 hastanın bilgileri bireysel takip formları kullanılarak retrospektif olarak incelendi.

Bulgular: Çalışmaya 50 hasta dahil edildi. Ortalama takip süresi 21 aydı. Etiyolojide 20 hastada kriptoglandüler apse, 2 hastada Crohn hastalığı bulunurken 28 hastada da idiyopatiktir. Fistül traktının spontan kaybolmadığı ve internal sfinkter kas liflerinin tamamen kesilmediği 23 hastada kontrollü fistülotomi yapıldı. Diğer 27 hastada fistül traktının spontan rezolüsyonu gerçekleşti. Çalışmaya dahil edilen tüm hastalarda tam iyileşme sağlanırken ortalama 21 aylık takip süresinde rekürrens gelişmedi.

Sonuç: Son yıllarda anal fistül için yeni tedavi yöntemleri ortaya çıkmıştır. Bu modaliteleri geleneksel yöntemlerle karşılaştıran birçok çalışma yapılmış ve bu çalışmaların hiçbirisi konvansiyonel yöntemlere üstünlük gösterememiştir. Gevşek seton prosedürü 21 aylık uzun bir takip süresince düşük nüks ve inkontinans oranları ile anal fistül tedavisi için iyi tolere edilebilen bir tedavi modalitesidir.

Anahtar Kelimeler: Anal fistül, gevşek seton, inkontinans, cerrahi teknik

Received Date: 24.11.2018 Accepted Date: 20.03.2019 Published Date:23.04.2019

* Corresponding Authors: Hasan Calis, Alanya Alaaddin Keykubat University, Faculty of Medicine, Department of General Surgery, Alanya, Turkey. Phone:+905055361380 mail: drhasancalis@hotmail.com

ORCID:0000-0003-4182-798X



Anorectal fistulas have been one of the common surgical problems since the ancient times. The aim of fistula surgery is to close the fistula tract without impairing anal continence. Various treatment modalities were developed to maintain anal continence following fistula surgery. The seton technique is one of them and it has long been used with success for the treatment of anal fistulas. The seton technique involves placement of a foreign body into the fistula tract. While it has been used since ancient Egypt, its first detailed application was described by Hippocrates as the placement of horse hair into the tract[1,2].

Theoretically, the seton technique is an alternative to one-stage fistulotomy and it provides a slower division of the anal sphincter with better preservation of the sphincter functions. Therefore, this technique is recommended in the literature as a method which decreases anal incontinence in fistula surgery[3].

This study aims to retrospectively analyze the outcomes of anal fistula patients on whom one surgeon performed loose seton technique for fistula surgery.

PATIENTS AND METHOD

The age, gender, the nature and type of fistula, the treatment method and St Mark's incontinence score values for the assessment of incontinence of 50 patients with the diagnosis of anorectal fistula on whom loose seton technique was performed by one surgeon at Ahi Evran University Training and Research Hospital General Surgery Clinic, between November 2014 and June 2016 were retrospectively reviewed by using the individual follow-up forms of each patient.

Preoperative Pelvic Magnetic Resonance Imaging (MRI) and rectosigmoidoscopy were performed in all patients. All surgical procedures were performed in lithotomy or supine position under regional anesthesia.

During the procedure, fistula tracts were identified with probes in all patients following anorectal examination. In patients in whom the internal opening could not be identified, the fistula tract was identified by injecting diluted hydrogen peroxide into the external opening. Then, the loose seton tech-

nique was performed by using 0-heavy silk.

The St. Mark's incontinence scores were used to assess fecal incontinence and these results were retrospectively reviewed by using the individual follow-up forms of each patient. This scoring system has 7 questions assessing continence impairment from 0 to 24. Zero means full continence while 24 points show full incontinence. This evaluation was done at postoperative Month 3 in an outpatient clinic setting by a general surgery resident who had no knowledge of the treatment modalities performed in each patient.

Ethical approval: This study was approved by Ahi Evran University Faculty of Medicine Clinical Research Ethics Committee.

Statistic Analysis: Data including demographics, medical history, diagnosis and treatment method as well as the type, localization and recurrence of fistula of the patients were recorded and IBM SPSS Statics 20 was used to analyze the descriptive statistics.

RESULTS

Fifty patients (31 males, 19 females) were included in the study and the mean age was 38.6 ± 14 years. The mean follow-up time was 21 months (range:12-26 months). The etiology was cryptoglandular abscess in 20 patients, Crohn's disease in 2 patients and idiopathic in 28 patients. Two patients had a history of fistula surgery, 3 had a history of hemorrhoidectomy and 1 patient had a history of lateral internal sphincterotomy. The demographic datas of the patients are presented in Table 1.

Preoperative Pelvic Magnetic Resonance Imaging (MRI) was performed in all patients and transsphincteric fistula detected in 2 patients whom internal opening side of fistula could not be identified with MRI. This fistula tracts could be identified by injecting diluted hydrogen peroxide from the external opening side of fistula tract .

The length of hospital stay was 1 day in all patients. A period of 8 weeks was allowed for the resolution of the fistula tracts. In 23 patients without spontaneous resolution of fistula and incomplete division of internal sphincter muscle fibers underwent controlled fistulotomy. Spontane-

ous resolution of fistula tract had occurred in the remaining 27 patients. In all patients included in the study, complete healing was achieved and no recurrence occurred during the 21-month mean follow-up period.

Table 1: Demographic Datas of Patients

Participants (n)	50 (19 Female, 31 Male)
Age	38,6±12
Duration Of Disease (Years)	0.5-17
Smoker (n)	22
Diabetes Mellitus (n)	16
Etiology (n / %)	Idiopathic: 28 / 56%
	Cryptoglandular Abscess: 20 / 40%
	Crohn's Disease: 2 / 4%
Previous Anal Surgery (n)	Fistul Surgery: 2
	Hemorrhoidectomy: 3
	Lateral Internal sphincterotomy:1
Type Of Fistula (n / %)	Intersphincteric: 19 / 38%
	Transsphincteric: 26 / 52%
	Horseshoe fistula: 5 / 10%

Ninety-six percent of the patients (n=48) had no complications and the treatment was well tolerated by these patients. Only 2 patients (4%) had increased granulation tissue and pain associated with heavy silk used for the treatment. The complaints of these patients were relieved with analgesics. Two patients (4%) developed gas and watery stool incontinence. These patients had histories of lateral internal sphincterotomy and fistula surgery. The St. Mark's incontinence scores of these patients were 0 and 2 in the preoperative and 3-month postoperative assessments, respectively. No patients developed total incontinence during the follow-up period of 21 months.

DISCUSSION

Many different techniques are used for the treatment of anal fistulas depending on the personal surgical experience and preference. The aim of the treatment is to close the fistula tract without disturbing continence. The aim of fistulotomy and fistulectomy is to divide the sphincters through which the fistula tract runs by also including the anal skin to minimize fistula recurrence and incontinence risk. Fistulotomy may be performed in low-level fistulas involving less than one-third of the sphincter[4]. The treatment of fistulas involving middle or high level sphincters is more challenging and

incontinence risk is high if the sphincter muscles are divided[5]. Many different techniques were described to decrease incontinence. The seton technique is one of them. This technique is an alternative to one-stage fistulotomy and it provides a slow division of the sphincter muscles with better preservation of the muscles forming the sphincters[3]. The local inflammation and the resultant fibrosis cause the sphincter muscle neighboring the trace to adhere to the surrounding tissues. As a result of these pathological anatomical changes, the edges of the cut muscle do not separate from each other during the late sphincter cut, the tissue defect is allowed to fill with secondary healing and the loss of sphincter function remains minimal during this process. The seton procedure was initially used for the drainage of the associated abscess[4]. The seton technique is divided into two categories as cutting or loose seton. Cutting seton involves slow cutting of sphincter muscles by a progressive tightening of seton, producing a gradual fistulotomy[6]. Incontinence rates up to 67% and a high level of postoperative patient dissatisfaction were reported following cutting seton procedures[7]. Currently, cutting setons are not highly preferred due to pain, uncontrolled cutting of sphincter muscles and high incontinence rates[4]. Nevertheless, some surgeons continue to use this method. The other method, namely the loose seton technique is performed by passing seton through the fistula tract and leaving it loose without tightening in patients with a high risk of incontinence, perianal Crohn's disease patients and in patients with severe perianal sepsis[8]. Since the primary function of loose seton is drainage and not cutting the anal sphincter, anal incontinence is less common with this technique[4]. Incontinence rates are considerably lower when compared to cutting setons (5-17%) [9]. In our study, two patients (4%) with a previous history of lateral internal sphincterotomy and fistula surgery developed gas and watery stool incontinence. The St. Mark's incontinence scores of these patients were 0 and 2 in the preoperative and 3-month postoperative assessments, respectively. No patients developed total incontinence during the follow-up period of 21 months.

In our patients, heavy silk was used as the seton material since it produces an intense inflammation. This material provided a complete resolution

or shortening of the fistula tract at the 8-week follow-up. This showed that seton does not only provide drainage but also provides a slow and controlled fistulotomy. Complete resolution of fistula tract was achieved in 54% of the patients (n=27) in 8 weeks, while in 46% of the patients (n = 23) complete resolution of the fistula tract was not achieved and a controlled fistulotomy was performed.

There are many proponents of loose seton procedure stating that this technique should be the gold standard in patients with a history of pelvic radiotherapy, recurrent fistulas, Crohn's disease, fistulas involving more than 50% of the external sphincter, multiple fistula tracts and complicated fistulas such as horseshoe fistula[10]. However, there is inadequate data on the effectiveness, patient tolerance and follow-up period of this treatment[11]. In our study, there were patients with horseshoe fistula, Crohn's disease and transsphincteric and multiple fistula tracts (Figure 1: Multiple Fistula Tracts, Figure 2: Opening Of Multiple Fistula Tracts). Only 2 patients (4%) developed gas and watery stool incontinence during the mean follow-up period of 21 months. These patients had previous histories of lateral internal sphincterotomy and fistula surgery. Only 2 patients (4%) developed intolerance. These patients had increased granulation tissue associated with heavy silk used for the treatment and pain secondary to inflammation; these complaints were relieved with analgesics. All of our patients had complete healing and no recurrences were observed.



Figure 1 Multiple Fistula Tracts



Figure 2 Opening Of Multiple Fistula Tracts

Despite a long follow-up period of 21 months, our study had some limitations. The main limitation was that our study was retrospective. Moreover, the presence of a randomized control group would have provided a more adequate evaluation and statistical analysis of the loose seton procedure.

As a conclusion; new treatment modalities have emerged for anal fistulas in recent years. Many studies were performed comparing these modalities to the conventional methods and none of these studies showed superiority over the conventional methods[12]. Despite the limitations of this study, we may say that the loose seton procedure is a well-tolerated modality for the treatment of anal fistula with low recurrence and incontinence rates during a long follow-up period of 21 months.

Funding sources: There is no any source of funding or financial interest in this study.

Conflict of Interest: The author have no conflicts of interest relevant for this article.

KAYNAKLAR

1. Mi chalopoulos A. Perianal fistulas. *Tech Coloproctol* 2010;14:15–17. PMID: 20676718
2. Culp CE. Use of Penrose drains to treat certain anal fistulas: a primary operative seton. *Mayo Clin Proc* 1984;59:613–17. PMID: 6381914
3. Galis-Rozen E, Tulchinsky H, Rosen A, Eldar S, Rabau M, Stepanski A, et al. LongTerm Outcome of Loose-Seton for Complex Anal Fistula: A Two-Centre Study of Patients with and without Crohn's Disease. *Colorectal Disease* 2010;12: 358-62. PMID: 19220385
4. G Subhas, JS Bhullar, A Al-Omari, A Unawane, K Vijay. MR Pearlman. Setons in the Treatment of Anal Fistula: Review of Variations in Materials and Techniques. *Dig Surg* 2012;29:292-300. PMID: 22948115

5. Garcia Aguillar J, Belmonte C, Wong WD, Goldberg SM, Madof RD. Anal fistula surgery: factors associated with recurrence and incontinence. *Dis Colon Rectum* 1996;39:723-29. PMID: 8674361
6. Dudukjian H, Abcarian H. Why do we have so much trouble treating anal fistula. *World J Gastroenterol* 2011;17:3292-96. PMID: 21876616
7. Ritchie RD, Sackier JM, Hodde JP. Incontinence rates after cutting seton treatment for anal fistula. *Colorectal Dis* 2009;11:564-71. PMID: 19175623
8. Person B, Wexner S. Management of perianal Crohn's disease. Current treatment options. *Gastroenterology* 2005;8:197-209. PMID: 15913509
9. Lim CH, Shin HKS, Kang WH, Park CH, Hong SM, Jeong SK, et al. The use of a staged drainage seton for the treatment of anal fistulae or fistulous abscesses. *J Korean Soc Coloproctol* 2012;28:309-14. PMID: 23346510
10. Rizzo JA, Naig AL, Johnson EK. Anorectal Abscess and Fistula-in-Ano: Evidence-Based Management. *Surg Clin North Am* 2010;90:45-69. PMID: 20109632
11. Mitalas LE, Van Wijk JJ, Gosselink MP, Doornebosch P, Zimmerman DE, Schouten WR. Seton drainage prior to transanal advancement flap repair: useful or not? *Int J Colorectal Dis* 2010;25:1499-1502. PMID: 20645104
12. Cirocchi R, Trastulli S, Morelli U, Desiderio J, Boselli C, Parisi A, et al. The treatment of anal fistulas with biologically derived products: is innovation better than conventional surgical treatment? An update. *Tech Coloproctol* 2012;17:259-73. *Epub* 2012 Dec 4. PMID: 23207714

How to cite this article/Bu makaleye atıf için:

Çalış H. Loose Seton Technique as a Conventional Procedure for the Treatment of Anal Fistula and Long-Term Results. *Acta Med. Alanya* 2019;3(1):67-71. DOI:10.30565/medalanya.487261