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Application of the Hybrid Seton Technique in High, Complex Perianal Fistulas and One-Year Outcomes

Oztekin Cikman[1], Serhat Binici[1]

[1]Van Yuzuncu Yil University, Faculty of Medicine, General Surgery Clinic, Van, Türkiye

Abstract

Introduction: Perianal fistulas are defined as abnormal, epithelialized connections in the anorectal region. In this study, we aimed to present the treatment outcomes of patients undergoing treatment with an elastic cutting seton (hybrid seton) for transsphincteric fistulas.

Materials and Methods: A total of 92 cases diagnosed with high and complex anal fistulas in our hospital's general surgery clinic between 2023-2024 were included in the study. Patients had fistulas involving more than one-third of the sphincter muscles or transsphincteric fistulas in the anterior region. Demographic data, operation duration, treatment plans, visual analog scores, anal incontinence scores, recurrence rates, and complications were evaluated.

Results: All patients presented with complaints of malodorous discharge, pain, swelling, and pruritus ani in the perianal region. During examination under anesthesia, the fistula tract was identified with a stylet, and the wrist portion of a size 8 glove was placed as a seton. The seton either fell off spontaneously or was removed with a fistulotomy within an average of 45 days. Over an average 12-month follow-up period, no recurrence or incontinence was observed in any of the cases.

Conclusıon: The hybrid seton technique does not cause incontinence as it gradually cuts through sphincter tissue without causing acute damage. Additionally, the lack of seton revisions and quality-of-life deterioration in follow-up makes hybrid seton a preferred treatment option.

Key words: Fistulas; hybrid seton; transsphincteric fistula

Introduction

Perianal fistula is a chronic condition characterized by the formation of an abnormal connection between the anal canal and the perianal skin (1). Similar to pilonidal sinus disease, which is one of the most common perianal region diseases, the most frequent cause of perianal fistulas is cryptoglandular infections (2,3). In 40% of perianal abscesses resulting from the infection of anal crypts, a fistula develops over time. Other etiological factors include Crohn's disease, hidradenitis suppurativa, tuberculosis, radiotherapy, trauma, and neoplasms (3,4). Perianal fistulas are commonly classified as simple or complicated. However, the classification based on the relationship of the fistula tract with the sphincters, known as the PARKS classification, is considered the fundamental classification system (5,6). Although the treatment approaches for simple fistulas are relatively well-defined, no definitive treatment method has been established, especially for complicated cases, such as fistulas located in the anterior region in women and transsphincteric fistulas in general. Today, various treatment methods are being used, and new approaches continue to be researched. Among the current treatment methods are fistulotomy, fistulectomy, loose seton application, rectal mucosa flap advancement procedures, intersphincteric fistula tract ligation (LIFT), video-assisted anal fistula surgery (VAAFT), and laser-assisted techniques (7,8,9,10). However, there are ongoing discussions regarding the long-term effectiveness, recurrence rates, and complication profiles of these methods. In this study, we aimed to evaluate the use of an elastic cutting seton (hybrid seton) as a treatment method for transsphincteric fistula types according to the PARKS classification, and to contribute to the literature by analyzing the obtained results.

Materials and Methods

Ethical approval of this study was obtained from the Clinical Research Ethics Committee of Van Yüzüncü Yıl University on 21.03.2025, with decision number 2025/03-11. Ninety-two patients diagnosed with high, complex anal fistulas between 2023 and 2024 at the General Surgery Clinic of our hospital were included in the study. The diagnosis was based on physical examination and magnetic resonance imaging (MRI) findings. No additional intraoperative investigations were

*Corresponding Author: Oztekin Cıkman General Surgery Specialist, Van Yuzuncu Yil University General Surgery Clinic, Van Türkiye. **Email:** droztekin67@hotmail.com
Orcid: Oztekin Cıkman 0000-0002-1601-6029, Serhat Binici 0000-0003-3034-1239

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required. Patients with fistulas involving more than half of the sphincter muscles or those with transsphincteric fistulas located in the anterior region were included in the study. Patients with multiple fistulas, horseshoe fistulas, those requiring additional anorectal surgery, those with perineal damage due to childbirth, patients undergoing oncological treatment, and those with fistulas related to inflammatory bowel disease were excluded from the study. A case report form was created for each patient, and demographic information, operation durations, and treatment plans were recorded. Patients who met the inclusion criteria and had a suitable peroperative fistula shape were treated with elastic cutting seton, also known as hybrid seton. Preoperative visual analog scale (VAS) and anal incontinence scores (CCIS) were assessed and recorded for all patients (11). Surgeries were routinely performed under general or spinal anesthesia by a colorectal surgeon in a standard manner. The patient was placed in a lithotomy or jackknife position, depending on the position of the fistula's external opening. The skin and anoderm around the external opening of the fistula were incised. The fistula was advanced from the external opening towards the surgical stile, and the internal opening was identified. Oxygenated water was injected with the help of an intraket to delineate the fistula tract. Fistulectomy was performed up to the sphincters to make them more prominent. A hybrid seton was created by cutting a standard sterile 8-size latex glove at the wrist into a circular shape, approximately 2-3 mm in diameter. This hybrid seton, which was attached to the end of the surgical stile, was tied with 2.0 silk material with enough tension to fit the sphincters, neither too tight nor too loose. No additional anorectal surgical procedures were performed. The anorectal region was closed with a dressing (figure 1).

Figure 1: Application of Elastic Cutting (Hybrid) Seton in the Treatment of High, Complicated Anal Fistulas

If there were no complications, patients were discharged on the first postoperative day. Upon discharge, patients were instructed on anal area hygiene, seton removal time, outpatient follow-up appointments, and informed about possible complications. All procedures were performed in a high-volume tertiary referral center specialized in colorectal surgery. Patients were re-examined at 1 week, 1 month, and 1 year postoperatively. During these examinations, healing progress, complications, and VAS and CCIS scores were re-evaluated and recorded. Non-resolution of symptoms, the presence of a new fistula tract on MRI, or the formation of an additional fistula tract was considered recurrence. The results were expressed as mean ± SD (standard deviation).

Statistical analysis: The data obtained in the study were analyzed using SPSS (Statistical Package for the Social Sciences) for Windows, version 22.0. Descriptive statistical methods were used to summarize the data. Results were expressed as mean ± standard deviation (SD) for normally distributed continuous variables, median (minimum–maximum) for non-normally distributed variables, and frequencies with percentages for categorical variables.

Results

The mean age of the 92 patients included in the study was 42.2 years, with 20 females (21.7%) and 72 males (78.3%). All patients presented with foul-smelling discharge, pain, swelling, and pruritus ani in the perianal region. All cases underwent rectosigmoidoscopy, and the fistula tracts were mapped through MRI imaging, followed by a detailed physical examination under anesthesia. Fistulas involving more than one-third of the anal sphincter complex, highly complicated fistulas, were identified. In all cases evaluated, anteriorly located fistulas (in female patients) and transsphincteric fistulas (highly located and/or transsphincteric fistulas) were detected. The patients underwent detailed examinations under anesthesia, and the fistula tract was carefully identified using a surgical stile. After determining the path of the fistula, an 8-size sterile latex glove with low elasticity and high tissue compatibility was preferred as seton material. All patients were discharged on the first postoperative day. None of the patients developed any clinical conditions requiring prolonged hospitalization or re-hospitalization. The preoperative, postoperative day 1, and postoperative day 7 VAS pain scores were recorded as <3 and 1, respectively. During the average 45-day follow-up period, the seton either fell out spontaneously or was removed via

Table 1: Demographic and clinical characteristics of the patients included in the study

Category	Variable	Value
General Information	Number of Patients (n)	92
	Average Age (years)	42.2 ± 10.5
	Gender Distribution (Female/Male, %)	20/72 (21.7% / 78.3%)
	Study Period	2023-2024
Fistula Characteristics	Fistula Type	High and complicated anal fistula
	Fistula Localization in Female Patients	Anterior transsphincteric fistula
	Fistula and Sphincter Relation	Involving more than one-third of the sphincter muscles
Diagnosis and Treatment	Diagnostic Methods	Physical examination, MRI, examination under anesthesia
	Treatment Method	Hybrid seton application (8 size glove wrist)
	Anesthesia Type	General or spinal anesthesia
	Surgical Position	Lithotomy or Jackknife
Postoperative Process	Hospital Stay Duration (days)	1
	Pain Scores (VAS)	Preoperative: median 2 (range <3), Postoperative day 1: median 1 (range 0-3)
	Seton Fall-Off Duration (days)	45 ± 12
	Follow-Up Duration (months)	12 ± 3
	Recurrence Rate (%)	0
	Postoperative Complications (%)	0
	Anal Incontinence Rate (%)	0
	Complete Healing Duration (months)	2 ± 0.5
	Additional Surgical Intervention Requirement (%)	0
	Outpatient Follow-Ups	1st week, 1st month, 1st year

controlled fistulotomy depending on the patient's clinical condition. Throughout this period, postoperative complications were closely monitored, and no side effects were encountered. During the average 12-month long-term follow-up period, none of the patients experienced fistula recurrence or fecal incontinence (Table 1).

Discussion

Transsphincteric fistulas and anteriorly located fistulas in female patients are classified as complicated anal fistulas, with these types of fistulas involving more than one-third of the external anal sphincter. This patient group presents a challenging clinical scenario, as there is still no standardized treatment method available. While cutting seton or loose seton applications may provide benefits for certain patient groups, the complications and management difficulties associated with these methods cannot be overlooked (12-14). In this study, we evaluated the clinical outcomes of the hybrid seton technique applied to patients with complicated and high anal fistulas. Our study, with an average follow-up period of one year, found that the success rates were quite promising. During the study period, no patients experienced recurrence, and complete healing was observed in all patients by the second month. In a 2022 study by Ege et al., which included 122 patients treated with the hybrid seton technique, a recurrence rate of 1.5% was observed at 12 months(8). Furthermore, no postoperative pain or complications were reported in any of the patients due to the use of the hybrid seton. Postoperatively, low VAS scores were noted in all patients. Although many surgical

techniques have been applied in the management of complicated and high anal fistulas, an ideal treatment method has yet to be proven. The 2022 guidelines published by the American Society of Colon and Rectal Surgeons describe various methods for treating transsphincteric or anteriorly located fistulas in female patients (9). However, more clinical studies are needed to assess the effectiveness of these methods. In retrospective studies using the cutting seton method with intermittent tightening, success rates of up to 98% have been reported (8). However, a meta-analysis of this technique showed that the incidence of anal incontinence could reach up to 67% (14). The intersphincteric fistula tract ligation (LIFT) method has been reported as an effective surgical technique with a success rate of 76%, a complication rate of 14%, and an incidence of anal incontinence of 1.4% (15). However, long-term follow-up studies have reported variable success rates, ranging from 42% to 62% (16,17). Furthermore, it has been noted that the effectiveness of the LIFT technique is limited in fistulas associated with Crohn's disease and horseshoe fistula formations (15). New techniques involving laser-assisted and endoscopic methods have also been described in the literature. Success rates for video-assisted anal fistula surgery (VAAFT) have ranged from 71% to 85% (18). In a study on laser-assisted fistula closure with a 24-month follow-up, the success rate was found to be 65%, with a complication rate of 4% (19). Although the results of minimally invasive techniques are promising, the long-term recurrence and healing rates of these methods remain unclear. Anal fistula plugs and fibrin plugs, despite their sphincter-preserving effects, are recommended for use in specific patient groups due to their lower healing rates compared to other techniques (20,21). In a study conducted in our country on the use of hybrid seton, it was reported that the method was effective in the healing process, with low complication rates (12). The effectiveness of hybrid seton in reducing anal incontinence was more pronounced compared to other treatment methods, and it was found that patients had higher complete healing rates and shorter healing times, as well as beneficial effects on hospital stay duration and patient satisfaction (12). While the low recurrence and complication rates in the short-term results are a positive indicator of the method's effectiveness, long-term follow-up studies are required to obtain more definitive and objective data. In this context, there is an ongoing need for prospective, randomized controlled trials comparing the effectiveness of hybrid seton and other seton techniques. In conclusion, this study demonstrates that the use of elastic hybrid seton is a feasible method in the treatment of high, complicated anal fistulas. The ability of hybrid seton to cut the anal sphincters in a gradual and controlled manner without causing acute damage to the sphincters is a significant advantage in preventing incontinence. Moreover, the reduced need for seton revision and the fewer quality-of-life issues observed in patients with this method support the clinical potential of hybrid seton.

Study limitations: This study has several limitations. First, due to its retrospective design, some patient records may be incomplete or lack detailed information. Additionally, the follow-up period was limited to 12 months, which may not fully capture long-term outcomes. The retrospective nature of the study also introduces the potential for selection bias, which may affect the generalizability of the findings. Despite these limitations, we believe the study provides valuable insights and contributes meaningfully to the current literature.

Ethical approval: Ethical approval was obtained from the Clinical Research Ethics Committee of Van Yüzüncü Yıl University on 21.03.2025, with decision number 2025/03-11.

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References

1. Tarmohamed M, Lodhia J, Mashambo A, Amsi P, Sadiq A, Mgaya A, at al. Fistula-in-ano extending to the thigh. Turk J Colorectal Dis 2022;32(3):202-206.
2. Aslan F, Bartın MK. Pilonidal sinüs tedavisinde kristalize fenol ile pilonidal sinüs eksizyonunun karşılaştırılmasında tek merkez deneyimi. Europeanatolia Health Sciences J 2024;2(3):44-48.
3. Wu, C., Mei, Z., & Wang, Z. (2025). Curing cryptoglandular anal fistulas-Is it possible without surgery?. *Heliyon*, *11*(1).
4. M. Jimenez and N. Mandava, Anorectal Fistula, StatPearls Publishing, Treasure Island, FL, USA, 2021 Jan.
5. Singh A, Kaur G, Singh JI, Singh G. Role of transcutaneous perianal ultrasonography in

evaluation of perianal fistulae with MRI correlation. Indian J Radiol Imaging. 2022;32(1):51-61.
6. Issa SA, Legesse TK, Kebede AG, Worke AB, Buser AA. Clinical and radiological features of perianal fistula: an MRI-based study in Addis Ababa, Ethiopia. Ethiop J Health Sci 2024;34(Spec Iss 1):31-38.
7. Bhat S, Xu W, Varghese C, Dubey N, Wells CI, Harmston C, et al. Efficacy of different surgical treatments for management of anal fistula: a network meta-analysis. Tech Coloproctol 2023;27(10):827-845.
8. Ege, B., Leventoğlu, S., Menteş, B. B., Yılmaz, U., & Öner, A. Y. (2014). Hybrid seton for the treatment of high anal fistulas: results of 128 consecutive patients. *Techniques in coloproctology*, *18*, 187-193.
9. Gaertner, W. B., Burgess, P. L., Davids, J. S., Lightner, A. L., Shogan, B. D., Sun, M. Y., et al. & Clinical Practice Guidelines Committee of the American Society of Colon and Rectal Surgeons. (2022). The American Society of Colon and Rectal Surgeons clinical practice guidelines for the management of anorectal abscess, fistula-in-ano, and rectovaginal fistula. *Diseases of the Colon & Rectum*, *65*(8), 964-985.
10. Chase, T. J. G., Quddus, A., Selvakumar, D., Cunha, P., & Cuming, T. (2021). VAAFT for complex anal fistula: a useful tool, however, cure is unlikely. *Techniques in coloproctology*, *25*, 1115-1121.
11. Mei, Z., Zhang, Z., Han, Y., Du, P., Yang, W., Wang, Q.,et all (2023). Surgical laser therapy for cryptoglandular anal fistula: Protocol of a systematic review and meta-analysis. *PLoS One*, *18*(1), e0279388.
12. Rockwood, T. H., Church, J. M., Fleshman, J. W., Kane, R. L., Mavrantonis, C., Thorson, A. G., et al. Fecal incontinence quality of life scale: quality of life instrument for patients with fecal incontinence. Dis Colon Rectum 2000;43(1):9-17.
13. Patton, V., Chen, C. M., & Lubowski, D. (2015). Long-term results of the cutting seton for high anal fistula. *ANZ journal of surgery*, *85*(10), 720-727.
14. Ritchie RD, Sackier JM, Hodde JP. Incontinence rates after cutting seton treatment for anal fistula. Colorectal Dis 2009;11(6):564-571.
15. Emile SH, Khan SM, Adejumo A, Koroye O. Ligation of intersphincteric fistula tract (LIFT) in treatment of anal fistula: an updated systematic review, meta-analysis, and meta-regression of the predictors of failure. Surgery. 2020;167(2):484-492.
16. Rojanasakul A, Pattanaarun J, Sahakitrungruang C, Tantiphlachiva K. Total anal sphincter saving technique for fistula-in-ano; the ligation of intersphincteric fistula tract. J Med Assoc Thai 2007;90(3):581-586.
17. Zirak-Schmidt S, Perdawood SK. Management of anal fistula by ligation of the intersphincteric fistula tract - a systematic review. Dan Med J 2014;61(12):A4977.
18. Jiang, H. H., Liu, H. L., Li, Z., Xiao, Y. H., Li, A. J., Chang, Y., et al. Video-assisted anal fistula treatment (VAAFT) for complex anal fistula: a preliminary evaluation in China. Med Sci Monit 2017;23:2065-2071.
19. Elfeki H, Shalaby M, Emile SH, Sakr A, Mikael M, Lundby L. A systematic review and meta-analysis of the safety and efficacy of fistula laser closure. Tech Coloproctol 2020;24(4):265-274.
20. Kontovounisios C, Tekkis P, Tan E, Rasheed S, Darzi A, Wexner SD. Adoption and success rates of perineal procedures for fistula-in-ano: a systematic review. Colorectal Dis 2016;18(5):441-458.
21. Sugrue, J., Mantilla, N., Abcarian, A., Kochar, K., Marecik, S., Chaudhry, V., et al. Sphincter-sparing anal fistula repair: are we getting better? Dis Colon Rectum 2017;60(10):1071-1077.