

# Surgical Treatment Protocols and Risk of Malignancy in Perianal Fistulas: A Single-Center Retrospective Study

## Perianal Fistüllerde Cerrahi Tedavi Protokolleri ve Malignite Riski: Tek Merkezli Retrospektif Bir Çalışma

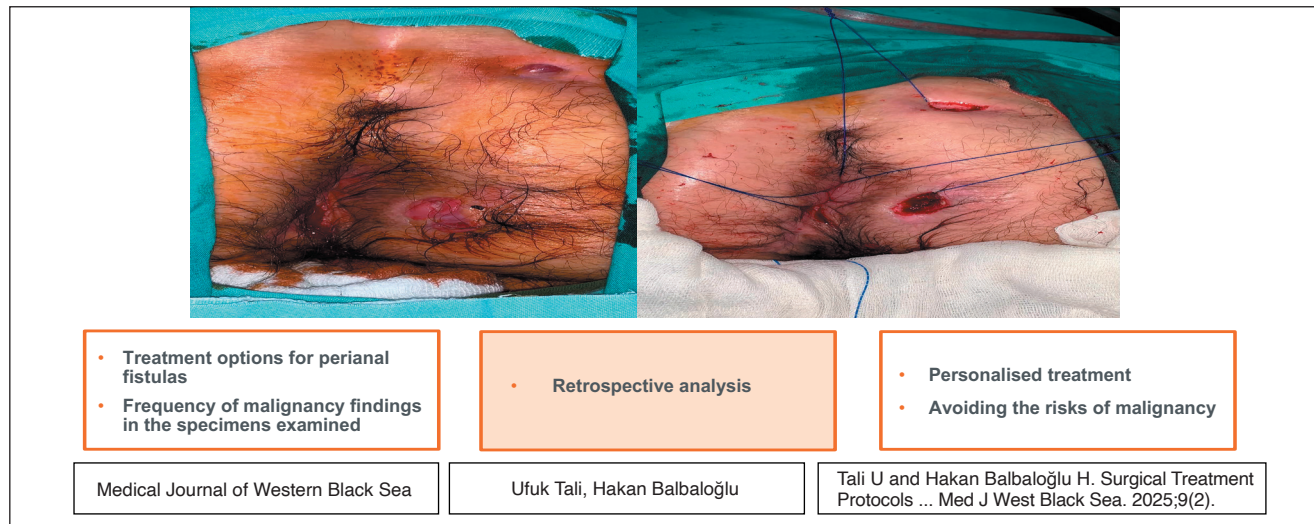
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### GRAPHICAL ABSTRACT



### ABSTRACT

**Aim:** The aim of the study was to investigate the outcomes of different treatment options for perianal fistula disease in a single large patient cohort.

**Material and Methods:** The study retrospectively included 176 consecutive patients operated between 2020 and 2024. Symptoms at presentation (discharge, swelling, etc.), perianal fistula types (simple, intersphincteric, extrasphincteric, etc.) and surgical treatments (seton, fistulotomy, laser, etc.) were determined

**Results:** In our study, malignant pathology results were found in four patients. The common feature of these patients was their advanced age and the fact that they had not applied to health centres with complaints of chronic discharge.

**Conclusion:** Such supportive imaging and diagnostic procedures may improve treatment success and reduce the risk of complications by facilitating accurate diagnosis and determination of appropriate treatment.

**Keywords:** Anal fistula, malignancy, surgery

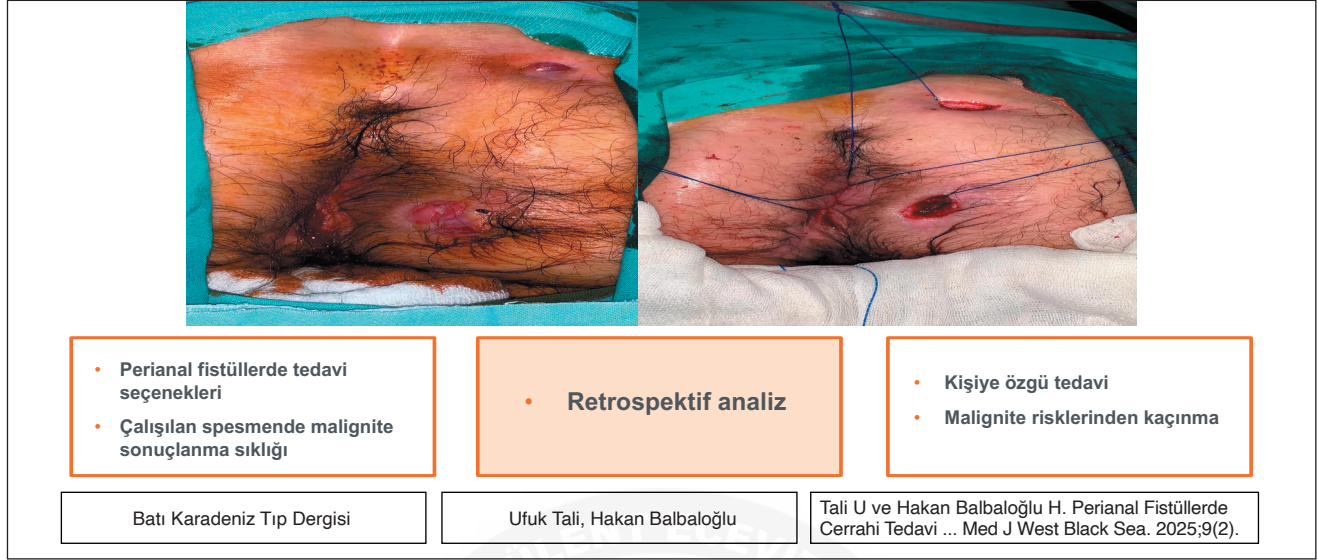
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## GRAFİKSEL ÖZET



## ÖZ

**Amaç:** Çalışmanın amacı, perianal fistül hastalığında farklı tedavi seçeneklerinin sonuçlarını tek bir büyük hasta kohortunda araştırmaktır.

**Gereç ve Yöntemler:** Çalışmaya 2020-2024 yılları arasında ameliyat edilen 176 ardışık hasta retrospektif olarak dahil edildi. Başvuru semptomları (akıntı, şişlik vb.), perianal fistül tipleri (basit, intersfinkterik, ekstrasfinkterik vb.) ve cerrahi tedaviler (seton, fistülotomi, lazer vb.) belirlendi

**Bulgular:** Çalışmamızda dört hastada malign patoloji sonucu saptandı. Bu hastaların ortak özelliği ileri yaşta olmaları ve kronik akıntı şikayeti ile sağlık merkezlerine başvurmamış olmalarıydı.

**Sonuç:** Bu tür destekleyici görüntüleme ve tanısal işlemler, doğru tanı ve uygun tedavinin belirlenmesini kolaylaştırarak tedavi başarısını artırabilir ve komplikasyon riskini azaltabilir.

**Anahtar Sözcükler:** Anal fistül, malignite, cerrahi

## INTRODUCTION

Perianal fistulas are non-physiological tract-like structures starting from the distal rectum or anal canal and opening to the perianal skin, caused by infection of the rudimentary glands around the dentate line and abscesses. Anal fistula is one of the most common anorectal diseases and its prevalence is higher in men than in women. The prevalence is reported to be 12.3/100.000 in men and 5.6 per 100.000 in women (1). Most anal fistulas develop as a result of anorectal abscess drainage. In addition, fissures, haemorrhoids, inflammatory bowel diseases and malignant lesions may also lead to fistula formation (2,3).

The classification of anal fistula, which is widely used in practice today, is made according to its relationship with the anal sphincter complex and treatment options are determined accordingly (3). This classification is divided into four categories as intersphincteric, transsphincteric, su-

prasphincteric and extrasphincteric. According to this classification, 45% of fistulas were determined as intersphincteric, 30% as transsphincteric, 20% as suprasphincteric and 5% as extrasphincteric (3). Persistence of discharge after perianal abscess drainage is considered to be the most important symptom and finding of fistula development (4).

In the surgical treatment of anal fistulas, especially the necessity of preserving sphincter functions leads to high recurrence rates in complex fistulas and this leads surgeons to search for new treatment methods (5). In traditional treatment methods, the closure of the inner mouth of the fistula and drainage is the main focus. However, new treatment methods such as laser may not require closure of the inner mouth. In 70% of anal fistulas, simple fistulotomy can provide an adequate and effective treatment. In this method, the skin and subcutaneous tissues along the fistula tract from the outer mouth to the inner mouth are opened and the whole tract is brought into contact with the atmosphere (4).

Preoperative radiological and endoscopic evaluations have been shown to affect surgical success and recurrence rates. It is thought that preoperative magnetic resonance imaging (MRI) and colonoscopic evaluations may positively affect the surgical process and thus recurrences may be reduced.

Mucinous adenocarcinoma may develop in the background of chronic perianal fistula. The preferred imaging modality for the diagnosis of mucinous adenocarcinoma arising from perianal fistula is MRI. T2-weighted and contrast-enhanced MRI can provide important diagnostic information. Mucinous adenocarcinoma arising from perianal fistula is rare and difficult to diagnose. Carcinoma usually occurs in the chronic course of the disease (6-8).

The aim of this study was to evaluate the recurrence rates and the time to recurrence in perianal fistulae, to compare the results of different treatment options and to investigate the risk of malignancy.

## MATERIALS and METHODS

The study is a retrospective study covering 276 patients who were operated on with a diagnosis of perianal fistula among 243586 patients who applied to the general surgery outpatient clinic between 15 January 2014 and 15 June 2024. It was conducted by analysing the medical records of patients who were diagnosed with anal fistula and operated in Zonguldak Bülent Ecevit University Hospital Clinic. This study was conducted in accordance with the ethical standards set by the National Institutes of Health of the European Commission and the guidelines for the care and use of laboratory animals. This study received ethical approval from the Zonguldak Bülent Ecevit University Faculty of Medicine (Date: 2025, Number: 2025-02).

Patients were evaluated in terms of age, gender, examination findings, fistula type according to Parks classification system, recurrence status and the status of MRI and colonoscopy. Seton application was preferred for patients with high incontinence risk (high transsphincteric fistula, multiple tracts and inflammatory bowel disease). Seton is a drain placed to create drainage and/or fibrosis along the fistula (3). In cutting seton, a suture thread or a drain is passed through the fistula tract and intermittently compressed. In simple fistulas, fistulotomy (opening of the fistula tract) (3), fistulectomy, curettage and secondary healing treatment methods were frequently chosen.

## Statistical Analysis

Statistical analyses of the study were performed with SPSS 29.0 package programme. Descriptive statistics of the quantitative variables in the study were shown with arithmetic mean, standard deviation, minimum and maximum values, and qualitative variables were shown with frequency and percentage.

## RESULTS

A total of 176 perianal fistula patients were included in the study; 48 (27.3%) of these patients were male (mean age  $44.15 \pm 12.74$  years) and 128 (72.7%) were female (mean age  $46.09 \pm 13.73$  years). The mean age of the patients was  $45.56 \pm 13.46$  (19-77) years. Recurrence was seen in 12 patients and this rate was determined as 6.8%. According to Parks classification; simple fistula was found in 61 patients, intersphincteric in 81 patients, extrasphincteric in 4 patients, transsphincteric in 29 patients and suprasphincteric in 1 patient (Table 1).

Ninety-five patients (54%) presented with the complaint of discharge and 81 patients (46%) were operated after abscess drainage.

Magnetic resonance imaging and endoscopic examination were used as supportive diagnostic modalities in patients with discordant clinical and physical examination findings (66 patients underwent MRI and 127 underwent endoscopic procedures). MRI provided more detailed information such as different tracts, internal openings, presence of abscess, supra levator extension or horseshoe fistula tract.

When the patients were divided into two groups as simple and complex fistula, 93 patients (52.8%) were diagnosed as simple and 83 patients (47.2%) as complex fistula. Fistulot-

**Table 1.** Patient demographic characteristics

	$\bar{x} \pm s$ (min - maks)
Age	$45.56 \pm 13.46$ (19-77)
n (%)	
Gender	
Female	128 (46.9)
Male	48 (44.1)
Symptom	
Discharge	95 (53.9)
Abscess	81 (46.1)
Endoscopic examination	
Yes	127 (72.2)
No	49 (27.8)
MRI examination	
Yes	66 (37.5)
No	110 (62.5)
Perianal fistula types	
Simple	61 (34.7)
Intersphincteric	81 (46.0)
Low transsphincteric	25 (14.2)
High transsphincteric	4 (2.3)
Suprasphincteric	1 (0.6)
Extrasphincteric	4 (2.3)

**MRI:** Magnetic Resonance Imaging



omy and fistulectomy were performed in simple fistula cases, while complex fistulas were treated with seton, mucosal flap, laser and Radiofrequency ablation (RFA) methods (Table 2). Twelve patients (6.8%) who developed postoperative recurrence underwent fistula surgery for the second time (Table 3). 5 of these patients underwent fistulectomy, four patients underwent seton, and one patient underwent mucosal flap, fistulotomy and RFA, respectively. The mean recurrence time was 16.41 months.

The recurrence times and second surgical interventions performed in patients with recurrence are presented in detail in Table 3. According to postoperative pathological examinations, malignancy was detected in 4 patients (2.3%), while benign pathology was reported in 172 patients (97.7%). These findings indicate that the development of malignancy after perianal fistula surgery is rare, but should be followed carefully.

**Table 2:** Operation Types and Recurrence Rates of Patients

Operation Type	Outcome (n=176)	Recurrence Rate (n=176)
	n (%)	n (%)
Seton	71 (40.3)	6 (8.4)
Fistulotomy	31 (17.6)	3 (9.6)
Fistulectomy	62 (35.2)	3 (4.8)
Mucosal flap	8 (4.5)	0 (0)
Laser	2 (1.1)	0 (0)
RFA	2 (1.1)	0 (0)

**Table 3:** Recurrence Periods and Secondary Operations

Pathology	Benign = 172 (97.7)	Malignant = 4 (2.3)
Recurrence	Present = 2 (6.8)	None = (0)
Relapse time (months)	2nd Operation	
40	Mucosal flap	
10	Fistulectomy	
9	Seton	
7	RFA	
9	Fistulotomy	
10	Seton	
13	Fistulectomy	
6	Fistulectomy	
23	Seton	
13	Fistulectomy	
8	Fistulectomy	
49	Seton	

**RFA:** Radiofrequency ablation

## DISCUSSION

Although there are many different surgical approaches to the treatment of perianal fistula disease, there is not yet a universally accepted “gold standard” treatment method. Surgeons usually determine the most appropriate surgical procedure based on their clinical experience and the individual patient’s condition.

In recent years, various new surgical treatment modalities have been widely applied in anal fistulas to reduce the risk of complications and improve surgical outcomes. An ideal treatment is based on three basic criteria including control of infection in the anal region, closure of the fistula tract, and preservation of continence (9). In our study, no complication was detected and no significant difference was observed between the surgical procedures in terms of recurrence.

We attribute the fact that faecal incontinence was not observed in our study to inadequate follow-up of the patients, underreporting of embarrassing information by the patients and inadequate records, as reported by Enck et al. (10).

In our study, the number of patients who developed recurrence was 12 (6.8%) and 10 of these patients were male. Theerapol et al. reported recurrence rates ranging between 8-22% depending on the type of seton used (11). Similarly, recurrence was observed in 6 of 71 patients (8.4%) who underwent seton technique in our study.

In 2005, Kronborg reported that recurrence rates were similar in 12-month follow-up of patients who underwent fistulotomy and fistulectomy; 12.5% for fistulotomy and 9.5% for fistulectomy (12). Similarly, in our study, in patients who underwent fistulotomy recurrence rate was 9.6% and 4.8% in patients who underwent fistulectomy. We attribute our lower recurrence rate in fistulotomy patients compared to the rates reported in the literature to the regional debridement applications performed every other day after the operation. We think that early epithelialisation at the fistulotomy site may cause recurrence and regular debridement applications reduce this risk.

In our study, no recurrence was observed in 8 patients treated with mucosal flaps, 2 patients treated with laser and 2 patients treated with RFA. These results suggest that it is more beneficial to determine the most appropriate treatment method for each patient rather than adopting a standardised approach in perianal treatment methods.

Anorectal fistula cancer is defined as a tumour arising from the anal sinus or fistula according to the classification of the World Health Organization (13). Anorectal fistula cancer is usually associated with abscesses, fibrosis and inflammatory cell infiltration around the tumour because it develops in an inflammatory region and shows more invasion (14). It

has been reported that malignancy develops in 0.1% of anorectal fistulas that persist for more than 10 years in relation with chronic inflammation (15). However, the pathophysiology and clinical features of anorectal fistula cancer have still not been fully elucidated (16).

In our study, malignancy was found in four patients who underwent fistulectomy as a result of pathological examination. In the literature, the most common histological type of cancers arising from anorectal fistulas is mucinous carcinoma (17). The first case in our study was mucinous adenocarcinoma associated with anal fistula developing on the background of Crohn's disease. In the other three cases, mucinous adenocarcinoma developed over 45, 24 and 8 years of chronic perianal fistulas, respectively. Kodama et al. reported that anorectal fistula cancer associated with Crohn's disease had a worse prognosis compared to normal anorectal fistula cancer (17). In addition, it was reported that increased expression of epithelial-mesenchymal transition-related protein expression in Crohn's disease-related anorectal fistula cancer increased the possibility of metastasis (18).

Preoperative MRI and colonoscopy procedures have important contributions to the diagnosis and treatment process. MRI is becoming the gold standard in the evaluation of anal fistulas. In anal mucosal surgical approaches, the course of fistula tracts must be revealed. Physical examination alone may not be sufficient. Therefore, imaging modalities such as MRI and rectoscopy have an important place in the diagnosis and treatment of the disease.

Limitations of this study include its retrospective nature and its small sample size due to the rarity of cancer associated with anorectal fistula. In addition, the lack of long-term follow-up of the patients is considered to be an important limitation in terms of generalising the findings obtained.

## Conclusion

In the treatment of perianal fistula, it is of great importance to select surgical procedures appropriate to the individual characteristics of each patient rather than a standardised approach. There is a low risk of malignancy development from the perianal fistula tract. This risk is especially increased in elderly patients with complicated fistulae, chronic perianal fistula complaints and in individuals with Crohn's disease or underlying inflammatory bowel disease. Therefore, the use of diagnostic methods such as MRI and endoscopy is of great importance in order not to delay diagnosis and treatment. Such supportive imaging and diagnostic procedures may improve treatment success and reduce the risk of complications by facilitating accurate diagnosis and determination of appropriate treatment.

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None.

## Author Contributions

Conception, design, data collection, literature search, writing, approval: **Ufuk Tali**, Conception, design, literature search, writing, approval: **Ufuk Tali**, **Hakan Balbaloglu**, Analysis and interpretation of data, writing, approval: **Ufuk Tali**. All co-authors have had the opportunity to review the final manuscript and have provided their permission to publish the manuscript.

## Conflicts of Interest

There is no conflict of interest among the authors.

## Financial Support

The authors did not receive financial support for the study.

## Ethical Approval

This study received ethical approval from the Zonguldak Bülent Ecevit University Faculty of Medicine (Date: 2025, Number: 2025-02).

## Review Process

Extremely and externally peer-reviewed.

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