

# Minimally invasive treatment options for anal fistula and pilonidal sinus

Fistulas in the anal and coccygeal region are common and strongly impact quality of life. Like other proctological disorders, they are often associated with embarrassment. As a result, many patients initially present to a physician quite late, and the number of undiagnosed fistulacases is believed to be high. Over the past 30 years, existing treatments have been continuously improved and new ones have been developed. No gold standard has been established for the treatment of either anal fistula or pilonidal sinus (also known as coccyx fistula). Hence, the surgical procedure is selected based on the surgeon's experience, patient preferences, and the specific findings. One new treatment approach is fistuloscopy, which applies endoscopic techniques to fistula surgery.

## Introduction

Fistulas are abnormal connecting "tunnels" between two body parts or between body parts and the exterior of the body. Their causes differ as widely as the organs and tissues from which they originate. Anal fistula and pilonidal sinus manifest either as fluid leaking through an abnormal opening in the skin or in the form of abscess development. These abscesses often suddenly drain, rapidly alleviating symptoms but rarely initiating complete healing. Hence, a fistula is the chronic aspect and an abscess the acute aspect of the same medical condition.

According to Hippocrates' still valid adage of *ubi pus, ibi evacua* ("where there is pus, drain it"), if an abscess develops, the primary focus of therapy is to open it sufficiently to ensure unhindered drainage (Doll, Matevossian et al. 2013, Iesalnieks and Ommer 2019). This is typically an emergency procedure and can be performed under local or general anesthesia, depending on the specific findings. Postoperatively, the wound often fails to completely heal or the abscess recurs, suggesting a manifest fistula (Jensen and Harling 1988, Ommer, Herold et al. 2017).

Further treatment options depend on the causes, which are discussed in more detail below for both anal fistula and pilonidal sinus. Both clinical pictures are characterized by a high degree of patient suffering, a need for surgical treatment in most cases, a high rate of treatment failure (recurrence) requiring revision surgery, and the absence of a therapeutic gold standard (Göttgens, Smeets et al. 2016, Iesalnieks and Ommer 2019). Surgical treatment is based on the excision or ablation of the pathological fistula tissue in order to create a fresh wound which is more likely to heal, but occlusive and drug-based treatment approaches have been reported as well.

## Anal fistulas

Primary anal fistulas are distinguished from secondary anal fistulas. The latter develop as a consequence of a disease, are highly complex, and therefore will not be further discussed in this publication. Primary fistulas, in contrast, almost always originate from the crypts in the transitional zone between the rectum and anus and can be located between the sphincter parts, through the sphincter parts, or superior or inferior to the sphincter (Ommer, Herold et al. 2017). Following a pressure gradient, fistulas often run to the skin, where they are visible as abnormal openings. Wound secretions, pus, or even fecal material can be discharged through the fistula opening.

Fistula treatment often consists of fistulotomy, the surgical opening of the entire fistulous tract to the surface of the skin. Fistulotomy creates a fresh wound whose secretions can drain freely, in an effort to achieve slow healing from the base of the wound to the surface. While fistulotomy is reportedly associated with a high rate of complete healing, the intentional transection of parts of the sphincter muscle results in an elevated risk of postoperative incontinence (Ommer, Herold et al. 2017). Where more than 50% of the sphincter muscle needs to be transected, fistulotomy is consequently recommended only in combination with reconstruction procedures (Schwandner 2015). Other current treatment options include ligation of the intersphincteric fistula tract (LIFT procedure), closure of the internal fistula opening by flap coverage or using a titanium clip, curettage of the fistula tract and subsequent occlusion with absorbable materials (plug procedure), and fistulotomy with subsequent surgical sphincter reconstruction (Schwandner 2015, Göttgens, Smeets et al. 2016, Ommer, Herold et al. 2017).



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### Case report:

Ms. M. K., age mid-30s, presented to a primary care practice complaining of suddenly arisen, worsening pain to the left of the gluteal fold. Since the area exhibited noticeable reddening, the patient was initially prescribed antibiotic therapy, but the pain persisted and swelling increased. The primary care physician diagnosed pilonidal sinus abscess and referred Ms. K. to a nearby surgical department.

On the same day, the abscess was lanced under local anesthesia; pus drained and a fistula to the gluteal fold was found. Despite daily rinsing, however, unpleasant symptoms in the area of the surgical wound persisted almost two months later.

Ms. K. presented again to the primary care practice with recurrence of fluid and blood secretion through the wound. Clinically, a small fistula opening was found in the center of the surgical scar. The primary care physician initiated a pelvic MRI scan for advanced fistula diagnostics and subsequent presentation for surgical treatment of the pilonidal sinus. At the hospital, Ms. K. was informed about the various surgical treatment options. Due to her busy professional schedule, the patient chose outpatient Endoscopic Pilonidal Sinus Therapy (EPSiT).

Ms. K. left the hospital a few hours after surgery and returned to work the next day. She rinsed the wounds daily. The 6-week wound check by the primary care physician revealed only two small bland scars.

These procedures represent different approaches, but in practice, procedures are commonly combined (e.g. flap and LIFT). The data available on the treatment methods are inconsistent (Göttgens, Smeets et al. 2016). A wide range of recurrence rates is reported for all techniques. The current S3 guideline states that the use of occlusive procedures is associated with lower incontinence rates but also lower complete healing rates. Based on the currently available evidence, no recommendation has been issued for any specific procedure. In any case, the sphincter muscles should be spared to the greatest extent possible. (Ommer, Herold et al. 2017)

### Pilonidal sinus

A pilonidal sinus, or coccyx fistula, does not form an actual connection between a natural body cavity and the exterior of the body. While the condition seems to have diverse causes which have yet to be conclusively clarified, a widely held theory is that it is due to hair (Latin pilus = hair, nidus = nest) below the skin surface (Ommer, Berg et al. 2014, Iesalnieks and Ommer 2019). This theory is supported by the typical abscess location adjacent to the midline, the fistula openings at the midline, and the fact that the condition is more likely to develop in people with extensive body hair. However, even people with very little body hair can experience pilonidal sinus. Sexual maturity appears to be a risk factor.

The clinical picture typically manifests in the second to third decade of life and is more common in men. Only in the cohort of girls between 10 and 14 years of age does the number of cases in women exceed that of men. (Ardelt, Dennler et al. 2017)

Irritation and inflammation of the enclosed “nests” results in a pressure gradient and the development of a fistula or abscess. The external openings are typically referred to as pits.

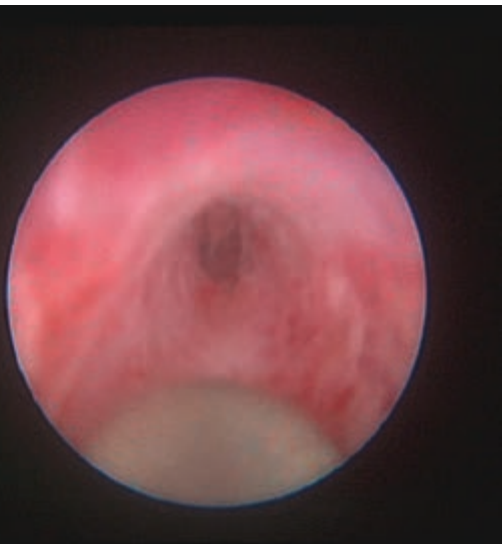
Pilonidal sinus treatment essentially consists of opening the abscess and generating a fresh wound with a chance of complete healing of the fistula. The resulting defect areas, which may be large, can be treated by asymmetric closure (e.g. Karydakis procedure) or an advancement flap, or the wound can be left open. A primary midline suture is no longer recommended. In less pronounced cases, the individual pits can be excised using a technique known as pit picking (Ommer, Herold et al. 2017).

In terms of advanced diagnostics, pelvic magnetic resonance imaging (MRI) can be performed for both conditions, and for anal fistula, endosonography represents an additional option. Both methods are considered equivalent for anal fistula diagnostics (Ommer, Herold et al. 2017). We recommend always conducting a pelvic MRI before planning the surgical treatment. This particularly applies before revision surgery and serves, firstly, the assessment of the course and extent of the fistula tract and, secondly, to rule out the involvement of osseous structures.

### VAAFT and EPSiT

Fistuloscopy, an endoscopic treatment option, is available for both conditions (Garg and Singh 2017, Meinero, La Torre et al. 2019). While endoscopy visualizes natural cavities within the body (intestine, urinary bladder, stomach, etc.), fistuloscopy applies the same basic principles: By distending the fistula tract with irrigation solution and using a very small telescope, the surgeon can view the fistula tract, generate diagnostic images, perform curettage and fulguration, and remove scattered material. Tiny secondary fistula tracts, often invisible in preoperative imaging, can be detected in this manner.

For anal fistulas, this approach is known as Video-Assisted Anal Fistula Therapy (VAAFT). With this technique, particularly previously undetected multiple secondary fistulas can be easily visualized and diagnosed under direct view. Where the fistula tract can be visualized to the anal canal or rectum, the technique can be easily combined with a method for internal fistula closure. At our hospital, VAAFT is combined with an advancement flap technique or primary suture. The external fistula opening is generously excised toward the end of surgery to generate a fresh wound bed with induction of a wide scar plate.



Intraluminal image of fistula findings

The surgery is performed under general anesthesia, and patients can typically be discharged to outpatient care the following day. The surgery (without advancement flap) typically takes less than one hour. Afterward, the external wound should be rinsed at least once daily or after every bowel movement (Ommer, Herold et al. 2017). The German Society for Hospital Hygiene (DGKH) recommends for a terminal sterile filter element to be connected to the water outlet for this purpose to achieve microbiological purity (Hübner, Assadian et al. 2007). If complete healing has not been achieved after six to eight weeks, a proctological follow-up should be conducted. The current guideline does not list VAAFT among sphincter-sparing procedures (yet – as it is a recently developed procedure), but due to its minimally invasive approach, we believe that it belongs in this group and is an option for both primary and recurrence therapy (Garg and Singh 2017). In our clinical use of the procedure, we have not yet seen any newly arisen postoperative incontinence.

The procedure is largely equivalent for pilonidal sinus: Endoscopic Pilonidal Sinus Therapy (EPSiT) employs the same instruments, but due to the absence of an internal fistula opening, it is not combined with a corresponding closure technique. In our opinion, the diagnostic value of the method is worth highlighting as well. The hair material regularly found within the fistula can be located using fistuloscopy and removed from the depths of the pilonidal sinus using grasping forceps. This method visualizes even individual hairs, which are otherwise easily overlooked but can favor recurrence or persistence. In case of very long, blind fistulas, a counter-incision is recommended to ensure sufficient drainage of the wound fluid. The pits are excised in the same manner as the external fistula opening in VAAFT. EPSiT can be performed on an outpatient basis. Patients experience only very minor pain (Meinero, La Torre et al. 2019). This method can be used for primary and recurrence therapy. Postoperative care must be ensured for the day of surgery, and the further wound care is as described above. If complete healing has not been achieved after six to eight weeks, we recommend a proctological follow-up.

In summary, the authors deem the fistuloscopic therapy of perianal fistula and pilonidal sinus to be both safe and effective. Where complete healing is not achieved or the fistula recurs, the procedure can be repeated. Experience shows that postoperative pain is minor, and pilonidal disease can typically be treated on an outpatient basis.

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An effective minimally invasive method  
for the treatment of anal fistulas

