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Recurrent anal fistulas: When, why, and how to manage?

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Abstract

Anal fistula is a commonly encountered anal condition in the surgical practice. Despite being a benign condition, anal fistula remains to represent a surgical challenge, particularly the complex type of fistulas. One of the common complications of anal fistula surgery is the persistence or recurrence of the pathology, both defined as failure of surgery. Recurrent anal fistulas after previous surgery represent an even more challenging problem since they are usually associated with a higher risk of re-recurrence and continence disturbance. The present review aimed to shed light on various aspects of recurrent anal fistulas, including the different definitions of failure after surgery, risk factors of recurrence, problems associated with management of recurrent fistulas, and assessment and treatment of recurrent anal fistulas.

Key words: Recurrent; Anal; Fistula; When; How; Manage

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Core tip: Recurrent anal fistulas represent a unique challenge to general and colorectal surgeons. They are usually associated with high risk of re-recurrence and fecal incontinence. The risk factors for recurrence of anal fistula after surgery include preoperative, intraoperative, and postoperative factors. Thorough assessment of recurrent anal fistulas is crucial before planning treatment. Endoanal ultrasonography and magnetic resonance imaging are the most widely used modalities for the assessment of recurrent anal fistulas. Treatment of recurrent anal fistula should address the cause of recurrence, extirpate the entire fistula tract, ensure adequate drainage of sepsis and at the same time preserve the anal sphincters and continence.

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INTRODUCTION

Anal fistula is an abnormal hollow tract communicating an external opening in the perianal skin with an internal opening in the anal canal. The majority of anal fistulas in the adult population are attributed to cryptoglandular infection which starts in the intersphincteric space and then spreads in various directions^[1]. Anal fistula can be classified according to the position of the fistula tract into intersphincteric, trans-sphincteric, suprasphincteric, and extra-sphincteric fistulas. More recently, anal fistulas have been classified into either simple or complex entities, with simple fistulas being amenable to fistulotomy as a curative surgery^[2].

Treatment of complex anal fistulas is challenging as these fistulas tend to entail a significant portion of the anal sphincters, rendering complete eradication of the fistula tract associated with a considerable risk of continence impairment. On the other hand, failure to excise the primary tract and its secondary extensions and to drain sepsis adequately may eventually result in persistence or recurrence of the anal fistula^[3].

Recurrent anal fistulas after previous fistula surgery represent a unique challenge and usually warrant more experience with anal surgery to address the cause of recurrence and navigate through the disturbed anatomy after previous surgery. This review aimed to illustrate different aspects of recurrent anal fistulas including various definitions, causes of recurrence, technical difficulties, and management of this complex type of anal fistula.

DEFINITIONS OF RECURRENCE

Success of anal fistula surgery is generally defined as complete healing of the anal wound by epithelization without residual tract, external or internal openings, or perianal discharge. On the other hand, failure of fistula surgery comprises three different definitions; persistence, recurrence, and de-novo fistula. Persistence of anal fistula is defined as failure of complete healing of the anal fistula for more than six months after surgery. Recurrence is defined as clinical reappearance of the fistula after complete healing of the surgical wound, occurring within one year after the procedure. Whereas de-novo fistula is the clinical appearance of fistula after complete healing of the surgical wound, occurring more than one year after the procedure^[4,5].

CAUSES OF RECURRENCE OF ANAL FISTULA

Various risk factors for failure of healing after anal fistula surgery have been identified. These risk factors can be broadly classified into preoperative, intraoperative, and postoperative factors ([Table 1](#)).

Preoperative factors

The preoperative predictors of recurrence are related to the fistula anatomy and patients' comorbidities. The position of the primary tract can predict the onset of recurrence before surgery as high trans-sphincteric, suprasphincteric fistula, and extrasphincteric fistulas are typically more complex than simple intersphincteric fistulas and are more difficult to eradicate^[6]. The nature of the primary tract also factors in recurrence as curved tracts such as horse-shoe and semi-horse shoe fistulas are often more difficult to excise or lay open^[7]. While a single fistula tract is usually easier to deal with, secondary extensions, whether supralevator, infralevator, or ischioanal, may be missed during surgery, and thus persistence or recurrence of anal fistula may ultimately supervene^[8]. Moreover, the pathology of anal fistula plays a fundamental role in determining the outcome of treatment. Anal fistulas secondary to specific disease such as Crohn's disease are more susceptible to persistence or recurrence after surgical treatment^[9].

The medical comorbidities of the patient, namely diabetes mellitus, also contribute to failure of healing after anal fistula surgery owing to the delayed healing and weak tissue immunity caused by the disease. Patients with history of previous surgery for anal fistula are typically at higher risk to experience re-recurrence of anal fistula^[10]. While steroids and immunosuppressive drugs are used to treat anal fistulas secondary to Crohn's disease^[11], the immunosuppressive effect of these medications can substantially impair healing after surgery for cryptoglandular fistulas and subsequently result in persistence or recurrence^[12].

Intraoperative factors

A number of surgery-related factors can increase the risk of recurrence of anal fistula.

Table 1 Risk factors for persistence/recurrence of anal fistula

Type	Risk factors for recurrence
Preoperative	Position of the tract (high trans-sphincteric, suprasphincteric, and extrasphincteric)
	Curved fistula tracts (horse-shoe and semi horse-shoe fistulas)
	Secondary extensions (supralevator, infralevator, or ischioanal)
	Secondary anal fistula to Crohn's disease
	Diabetes mellitus
	Steroids and immunosuppressive drugs
	Previous fistula surgery
Intraoperative	Wrong selection of the procedure
	Failure to identify the internal opening
	Failure to extirpate the primary tract completely
	Missed secondary tracts and abscess cavities
Postoperative	Poor hygiene of the anal wound
	Failure to comply to follow-up instructions
	Persistence of preoperative factors

Amongst these factors is the experience of the surgeons, selection of the procedure along with some technical considerations. The selection of the procedure according to the type and nature of anal fistula is imperative for success. Performing simple lay-open of the external portion of the tract and leaving the part traversing the external anal sphincter will definitely be associated with failure of healing.

A critical step in anal fistula surgery is to accurately identify the internal opening, failure to do so is 20 times more likely to be followed by recurrence^[13]. Furthermore, the inability to detect the internal opening accurately is often associated with the possibility of creation of a false tract, thus increasing the morbidity of the operation^[10]. In order to ensure proper healing of anal fistula, the primary tract has to be extirpated either by lay open, excision, or fulguration using electrocautery or Laser. Equally, any secondary branches or extensions should be eradicated as well and any associated abscess cavities should be adequately drained. Missing secondary tracts or abscess cavities are associated with three to five fold higher risk of recurrence^[10,14].

Postoperative factors

Care of the anal wound after anal fistula surgery is crucial to achieve a successful outcome. Care is subdivided into early and late care with the early care involving the first six weeks after surgery which is the duration often required to achieve complete healing^[15]. Failure to maintain adequate hygiene of the anal wound, follow postoperative instructions particularly when a seton is placed, and comply to follow-up schedule may eventually end with a persistent or recurrent anal fistula.

WHY RECURRENT ANAL FISTULAS ARE CHALLENGING?

Recurrent anal fistulas after previous surgery represent a unique challenge because they are associated with a high risk of re-recurrence and continence impairment. Recurrent anal fistulas have been identified as a significant independent predictor of re-recurrence of fistula after placement of seton^[14], ligation of intersphincteric fistula tract (LIFT)^[16], endorectal advancement flap^[17], video-assisted anal fistula treatment (VAAFT)^[18], and anal fistula surgery in general^[10].

It has been estimated that previous fistula surgery increases the odds of recurrence after further surgery by two to three folds^[10,12]. While the exact cause of this observation is not clear, it may be explained by the disturbed anatomy of the perianal region after previous surgery and the effect of excess scarring and fibrosis which may render the identification of the internal opening, secondary branches, and associated abscess cavities technically challenging. This has been demonstrated in a recent study^[19] on the utility of endoanal ultrasound (EAUS) in the assessment of recurrent anal fistulas compared to primary fistulas. The sensitivity of EAUS in the detection of the pathologic anatomy of recurrent fistulas was less than that of primary anal fistulas.

Furthermore, the risk of FI after surgery for recurrent anal fistulas is usually higher than after primary anal fistula. This can be elucidated that previous surgery may have

inflicted some degree of injury to the internal or external anal sphincters, yet was not symptomatic after the first procedure. Subsequently, with further division of the anal sphincter fibers during the second surgery, full blown FI may manifest. This is particularly evident in female and elderly patients, patients with weak anal sphincters, and patients with preoperative FI^[20].

ASSESSMENT OF RECURRENT ANAL FISTULAS

Appropriate management of recurrent anal fistula starts with careful assessment of the patient with three objectives in mind. First, to identify the cause of recurrence in order to manage it, second to recognize the anatomy of the fistula in order to plan surgical treatment, and third to evaluate the continence state of the patient.

The assessment plan entails detailed history taking, clinical examination, and investigations. A detailed history is taken from the patient with emphasis on the timing of recurrence to determine whether it is a persistent or recurrent fistula, number and type of previous surgery, where previous surgery was conducted (General hospital *vs* Specialized referral center), medical diseases, namely diabetes mellitus, inflammatory bowel disease, tuberculosis, sexually transmitted diseases, history of exposure to radiation for treatment of prostate cancer or pelvic malignancy, and previous obstetric injuries.

Clinical examination is then conducted to allow for inspection of the site of previous surgery and scar, detection of coexisting anal problems such as hemorrhoids or anal fissure, identification of the number and position of external opening(s), palpation of the tract from the external opening to the anal verge. Then, digital rectal examination (DRE) is followed to exclude anorectal lesions and assess anal tone. The identification of internal opening by DRE is usually difficult and not feasible. Finally, an office proctoscopy examination should conclude the examination. Complexity of recurrent anal fistulas can be suspected when the following signs are detected: More than one external openings, distant external opening away from the anal verge, anterior anal fistula in female, internal opening above the dentate line, and failure to palpate the whole tract from the external opening till the anal verge.

While primary simple anal fistulas usually do not warrant investigations, recurrent anal fistula require preoperative assessment with EAUS or magnetic resonance imaging (MRI)^[2]. MRI is the most widely used tool for the assessment of complex and recurrent anal fistulas, nonetheless EAUS still has its place in the preoperative assessment. According to comparative meta-analysis, EAUS and MRI had comparable sensitivities (87%) at detecting anal fistulas, yet with higher specificity in favor of MRI (69% *vs* 43%)^[21]. A recent radiologic study concluded that 3D-EAUS may represent the first-line diagnostic tool. In cases of fistulas classified as complex by 3D-EAUS, MRI may be indicated as adjunctive diagnostic imaging examination, to more carefully describe the fistulas' complete anatomy^[22]. One added value of EAUS is the ability of accurate detection of anal sphincter defects that may be present after previous surgery and about 5% of which are asymptomatic^[19].

TREATMENT STRATEGY FOR RECURRENT ANAL FISTULAS

Address the cause

The first and most important step in the treatment of recurrent anal fistulas is to identify and address the cause of recurrence. If the anal fistula is secondary to certain disease, then it would be reasonable to treat the primary disease firstly. Fistulas secondary to Crohn's disease usually respond to biologic therapy with infliximab^[9] and recently the local injection of mesenchymal stem cells has conferred promising results^[23]. If tuberculosis was recognized as the cause of anal fistula, then most probably it will be also responsible for recurrence after surgery. Therefore, treatment with full course of anti-tuberculous medications should be commenced before attempt of any surgical intervention^[24]. Similarly, sexually transmitted diseases, namely HIV, may also afflict the anorectal region and present as anal fistula. Recognition of the underlying cause of anal fistula and its recurrence after surgery is imperative since control of the underlying disease is usually the mainstay to achieve healing or at least control of anal fistula^[25].

As for cryptoglandular anal fistulas, a careful review of preoperative imaging studies including EAUS and/or MRI is essential before planning surgery. Imaging review is important to detect secondary extensions or abscess cavities that may have been missed during the first surgery and thus resulted in recurrence.

Surgical treatment

It is imperative to localize the internal opening of anal fistula at the start of the procedure. Failure to do so may increase the incidence of recurrence substantially. Common methods to identify the internal opening include the injection of hydrogen peroxide or povidone iodine through the external opening and detection of its outflow through the inner opening. Also, surgeons may try insertion of a malleable metallic probe through the external opening and guiding it through the fistula tract till its tip exits from the internal opening. However, this technique may be associated with the risk of creation of false tracts. More recently, the use of fiberoptic fistuloscope in the VAAFT procedure has provided a weighed mean rate of detection of the internal opening equal to 93.3%^[18].

Afterwards, the surgeon should be able to assess the anatomy of the fistula tract in relation to the anal sphincters as inter-, trans-, supra-, or extra-sphincteric tract. The orientation of the tract should be also noted because a straight tract is different in management to a circumferential one as with horse-shoe fistula. Moreover, secondary extensions and branches of the main tract should be sought and either excised or curetted according to their anatomic location and extension.

If the recurrent anal fistula proved to be a simple intersphincteric fistula, then lay-open of the tract with curettage of its bed is usually sufficient, unless the risk of incontinence was high, then a sphincter-saving procedure such as LIFT should be attempted.

In the case of more complex anal fistulas, the portion of the tract lying outside the external anal sphincter can be laid open or excised whereas the part traversing the anal sphincters warrant a sphincter-saving procedure. According to the clinical practice parameters of the ASCRS, there is good clinical evidence for some sphincter-saving procedures such as endorectal advancement flap, LIFT procedure, and placement of Seton with success rates of 75%, 76%, and 90%, respectively^[2,12,14,26]. Other emerging procedures with promising, yet unverified results include VAAFT and fistula laser closure with success rates of 86% and 69%, respectively^[16,27]. The endoscopic treatment of anal fistula VAAFT has emerged as a promising procedure for management of complex anal fistulas^[28], including recurrent fistulas. The main virtues of endoscopic treatment are the ability to accurately identify the internal opening, drain sepsis, and fulgurate the fistula tract without any compromise to the anal sphincter muscles^[18]. Other modalities including the injection of fibrin glue, permacol paste, and anal fistula plug have not conferred satisfactory results to be recommended as a routine practice^[2].

Follow-up

As aforementioned, recurrence of anal fistula may be attributed to poor postoperative care after surgery. Hence, regular follow-up with careful office examination is required to ensure proper healing of the surgical wound and detect early recurrence. Some authors recommend doing MRI after complete healing to confirm the absence of residual tracts or abscess cavities. However, fibrosis may be confused with residual fistula, hence Gadolinium-enhanced T1 weighted images can help differentiate both^[29].

CONCLUSION

Recurrent anal fistula is a challenging condition that warrants thorough assessment of the patient to decipher the cause of recurrence and address it. Surgical treatment of recurrent anal fistulas is usually associated with higher incidence of re-recurrence and potential compromise of the continence state. Hence, sufficient experience with treatment of anal fistulas is necessary for the adequate management of recurrent anal fistulas.

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