

# The proposed use of radiofrequency ablation for the treatment of fistula-in-ano



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## ABSTRACT

Fistula in ano is a very common presentation to colorectal clinic. Embarrassment due to the symptoms makes accurate estimations of incidence difficult. It is estimated that up to 40% of peri-anal abscess will be accompanied by or preceded by a fistula. Fistulae can be classified into simple fistulae that involve no or minimal sphincter muscle and complex, which involve significant amounts of the anal sphincter muscle, possibly with multiple tracts.

For complex fistulae a seton suture is usually placed through the tract and out through the anus to form a loop allowing pockets of sepsis to drain internally and externally and a mature tract of fibrous tissue to develop. Following this period definitive fistula treatment is considered. This can involve a number of procedures that have tremendously varied success rates in the literature. The first stage of surgical treatment is often a core fistulectomy, which entails surgical removal of the tract. This may be followed by insertion of fibrin glue, a collagen plug or formation of a rotation skin flap from surrounding tissue in order to close the resultant tissue defect. All current treatments have a significant failure rate.

If this wound breaks down the surgery can leave a large painful peri-anal wound that can lead to ongoing fistulation. Should this occur resiting of the seton will be required with the patient only getting back to square one after months of healing around the seton. In addition removing cores of fibrous tissue passing through the sphincter can threaten the sphincter function resulting in impaired continence.

Having seen radiofrequency ablation used to close varicose veins the authors propose that one could use similar techniques to close a fibrous tract matured with a seton in order to close a fistula. The authors propose that a short length radiofrequency catheter could be used to treat fistula in ano. This would in theory be less painful with less tissue destruction. In addition there would be no necessity for extensive incisions. As the energy penetration can be controlled the procedure will be safe even if it fails, without causing a large wound or tissue necrosis. All other treatment options will still be available.

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## Introduction

Anal fistula or fistula in ano is a common reason for patients to present to colorectal clinics in the UK. The fistula is a communicating tract between the inside of the anus and the skin on the outside. This leads to pain, discharge and repeated flares of infection. No ideal treatment exists, but the preservation of anal sphincter muscle function is paramount to ensure continence. The authors propose that radiofrequency (RF) technology used for varicose vein treatment would also be suitable for minimally invasive treatment of fistula-in-ano.

## Background

Fistula in ano is a common problem in the United Kingdom. The exact figures are difficult to identify, as there is a large amount of embarrassment associated with the symptoms produced. The most accurate data from Finland suggests an incidence of 8.6–10 per 100/000, although this may underestimate the disease [1]. There is a male predominance of 2–4: 1. Symptoms include pain, repeated infections, abscess formation and discharge. The leakage of purulent or faecal material occurs to varying degrees and may represent perceived (leakage through fistula) or real (leakage per anus) incontinence.

A fistula occurs when there is an abnormal communication between two epithelialised surfaces. In the case of fistula-in-ano the communication occurs from inside the anus or rectum to the skin surrounding the anus. The majority of fistulas have their aetiology classified as non-specific, idiopathic, or cryptoglandular.

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Their specific aetiology is rarely proven although most are believed to originate from a diseased intersphincteric anal gland [2]. These are mucin secreting glands, the majority of which lie between the internal and external anal sphincter. There are, however, other conditions associated with fistulation such as Crohn's disease, tuberculosis, pilonidal disease, hidradenitis and malignancy [2] (see Fig. 1).

There have been a number of studies examining the exact aetiology of fistula in ano but none have been conclusive. An important factor does appear to be epithelialisation of the tract from one or both sides leading to local antimicrobial peptide secretion, which is backed up by the relative paucity of organisms cultured from chronic fistulae [3,4].

Anal fistulae are subject to classification which guides management. The most commonly used system was devised by Sir Alan Parks at St Mark's Hospital [5].

1. intersphincteric
2. transsphincteric
3. supra-sphincteric
4. extra-sphincteric

Conventional methods of treatment commence with a comprehensive history and examination. This will allow the clinician to identify any factors that may influence the development of a fistula, such as previous disease, inflammatory bowel conditions or malignancy. Investigations may include an MRI scan if there is a suggestion of multiple or complex tracts. The MRI may occur before or after an initial examination under anaesthesia depending on clinician preference and the expected complexity of the fistula.

Examination under anaesthesia is conventionally undertaken in the lithotomy (supine, legs up) position. If the fistula is found to be superficial (little or no sphincter involvement) then simply laying the tract open and allowing the wound to close by secondary intention or marsupialisation of the tract is the preferred option. These fistulae have a higher rate of healing as compared with those encompassing more sphincter muscle. One can speculate that this may be due to less opportunity for pockets of sepsis to persist or indeed that there is a different pathology at work involving

perianal skin glands instead of intersphincteric glands. Should the fistula encircle part (trans-sphincteric) or all (supra-sphincteric) of the sphincter muscle then other techniques must be considered as laying open the tract would carry increased risk of impaired continence.

In this situation the usual first measure is to place a loose seton through the tract and out through the anus to form a loop. A seton is simply a loop of inert material, often a suture or a synthetic rubber loop. This controls symptoms for the patient by allowing sepsis to drain and establishing a fibrous tract that is usually less painful and troublesome than having recurrent flares of sepsis with associated pain and discharge. This method controls the fistula but is rarely a long-term solution as the lumen of tract persists.

Definitive solutions to close off or remove the tract are numerous and reported success rates are extremely varied. Some of the techniques used involve surgically excising the tract and there is considerable risk of causing further damage to the sphincter function, which may already be impaired due to the presence of a comparatively rigid fibrous tract. Incontinence rates are not consistently reported in the literature and those reporting no incontinence are not in keeping with larger studies and systematic reviews. Those studies that do report incontinence show anywhere from 6% for a large systematic review of the ligation of intersphincteric fistula tract (LIFT) to 34% in a long term follow up study looking specifically at incontinence associated with surgical fistulotomy [6,7]. Closure of the resultant tissue defect has been attempted with sutures, rotation flaps, fibrin glues, collagen pastes and plugs and a number of other techniques. Reported success rates are extremely variable and very few studies utilise a control arm to validate their results [8]. More recent techniques such as LIFT have improved success rates but are more invasive than the radiofrequency procedure proposed [6,9]. Definitions of healing are also varied with few studies having objective evidence in the form of a post procedure MRI to demonstrate closure of the tract.

Apart from the obvious failure rate and need for ongoing treatment, surgical interventions carry other risks. As stated risk of sphincter damage is particularly worth consideration in parous women who may have a very short length of functioning sphincter.

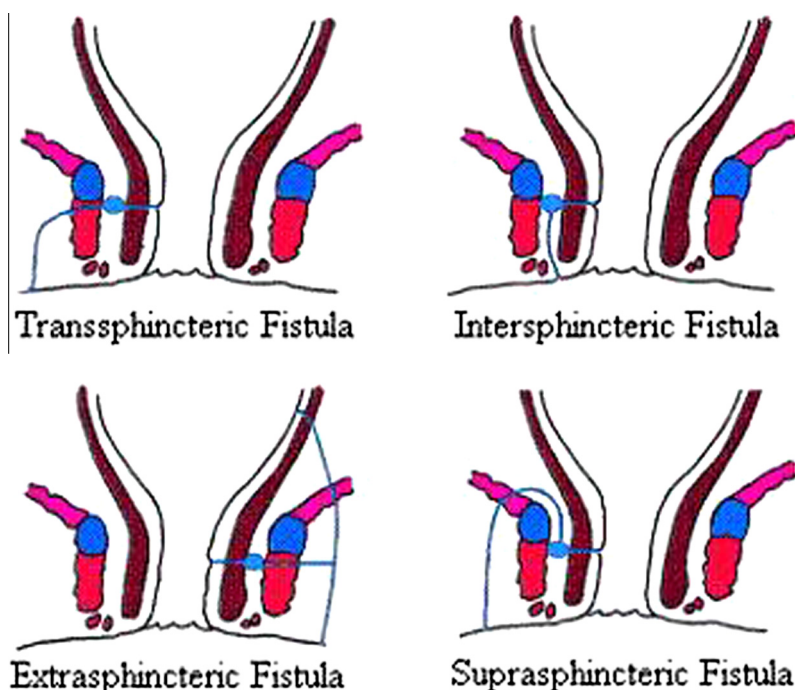


Fig. 1. The Parks classification of fistula in ano.

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