

## Fistula in Ano - Recent Advances in Management

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### Introduction

Fistula in ano commonly develops as a chronic sequela to an asymptomatic or symptomatic abscess in an anal canal gland, i.e. cryptoglandular in origin [1]. It occurs in upto one third of patients who undergo drainage of an anorectal abscess [2]. Complex, recurring fistulas could develop secondary to trauma, infection, radiation or chronic granulomatous infections (tuberculosis, actinomycosis) [3].

Treatment depends on the location and anatomy of the fistula tract, amount of anal sphincter involved in the fistula and the underlying disease process. The goal should always be to control local sepsis without loss of continence [3,4].

### General principles of management [3]

All modalities of treatment adhere by a few general principles:

1. Obliteration of the internal opening is key to the success of treatment
2. There should be good local sepsis control
3. The part of the fistula tract that is outside the sphincter should be opened and drained
4. If <30% of the sphincter muscle length is enveloped by the fistula tract, it can be safely cut without fear of major incontinence.
5. If >30% of the sphincter muscle length would be cut, then it would be safer to use a seton.
6. Biopsies should be performed from the tract to rule out malignancy.

### Modalities of treatment

Traditional modalities of surgical treatment include fistulotomy (lay open of fistula tract) with or without seton insertion and fistulectomy (excision of the tract). These modalities have an increased risk of postoperative incontinence. This risk necessitated the development of newer modalities of treatment which do not involve cutting of the sphincter complex [5]. They include

1. Fibrin glue
2. Fistula plug
3. Ligation of Intersphincteric tract
4. Video assisted anal fistula treatment

### Fibrin glue

It was introduced as a haemostatic agent during World War I and was subsequently used for fistula in ano by Hjortup and colleagues in 1992 [6]. It is a mixture of fibrinogen, thrombin and calcium ions. It is postulated to act via two mechanisms. As it is injected into the tract, the fibrinogen, thrombin and calcium ions react with factor XIII to

form a clot which immediately stems the contamination of the fistula tract with blood, pus, stool and mucous. Secondly, the proteins within the glue promote the proliferation of fibroblasts and pleuripotent endothelial cells which then replace the glue with fibrous tissue. As the glue gets replaced, the tract gets sealed off with fibrous tissue with minimal damage to the sphincter and practically no risk of incontinence [2,5].

The glue is currently available in 2 forms – an autologous preparation made from pooled human blood and a commercial preparation. Though their efficacies have been shown to be the same, the autologous preparation carries a small risk of viral transmission [2].

### Procedure

1. Identify the external and internal openings of the tract
2. Curette the tract
3. The double barrelled syringe containing the two components of the glue is inserted from external opening to the internal opening
4. Tract filled completely from internal to external opening until a blob is seen outside
5. It is allowed to set for 30-60 seconds

### Advantages

It has practically no learning curve and is repeatable with no risk of incontinence

Treatment with fibrin glue does not stop the patient from getting any other modality of treatment [2]

Various studies have achieved success rates ranging from 31-85%. Failure of the treatment may occur due to several reasons, including dislodgement of the glue, inadequate removal of granulation tissue and abscess formation [2,5]. The length of the tract may have some influence over the success rate of the treatment. The failure has been shown to occur most often in the first 6 months after the treatment [2].

### Fistula plug

It was first used in 2006 as a modification of the Surgisis(R) biocompatible material by Johnson et al. It is based on the fact that the internal opening of the fistula is plugged closed. Biological plugs are designed from lyophilized porcine small intestinal submucosa [2,5,7]. It acts as a strong scaffold for growth of fibroblasts and promotes the ingrowth of native tissues [7].

## Procedure of Insertion [5,7]

1. The plug must be rehydrated first, usually in a 0.9% normal saline solution for 3 to 5 minutes, before insertion
2. It is inserted in the internal opening and then pulled through the tract until light resistance is met and then sutured securely in the internal opening
3. The external opening must be partially open at the end of the procedure as this is the path that allows drainage and prevents a closed-space infection
4. Most common cause for failure with plug is due to dislodgement of the plug. Enlarging the fistula tract by curettage or overdebridement of the tract increases the risk of dislodgement. It can be avoided by adequately securing the plug to the primary opening and ensuring that it is not dangling and instructing the patient to avoid strenuous activity for at least 2 weeks [2,5].

## Ligation of Intersphincteric tract (LIFT)

It is a novel new technique first described in Thailand [8]. It is based on the closing the internal opening and removing the infected cryptoglandular tissue via the intersphincteric plane [8]. In this procedure, the intersphincteric space is opened via a small incision made in the intersphincteric groove and the fistula tract is identified as it crosses from the internal to the external sphincter. It is clearly defined and ligated with a suture. The technique disconnects the internal and external openings, thus allowing for fibrosis of the tract without any damage to the anal sphincter. Comparative economic analysis between techniques suggests that this technique could be economically beneficial in the long term due to the decreased risk of recurrence and shorter healing time [9]. This has led to the increased popularity of this technique in these recent years [7].

In pooled data with follow up duration of 10 months, it has been shown to have a success rate of 75.6% with no cases of postoperative incontinence. Long term recurrence data is yet to be studied and the current evidence for this technique is based on small case series and very few clinical trials [7].

## Video assisted anal fistula treatment (VAAFT)

It was first developed by Meinero and Mori in 2006. In this technique, the internal opening is visualized with the aid of a fistuloscope, the tract is cauterized from within and the internal opening can then be closed with a stapler or mucosal advancement flap [7].

It is performed with a kit that has a fistuloscope (Karl Storz), an obturator, a unipolar electrode, an endobrush and 0.5 mL of synthetic cyanoacrylate glue. The fistuloscope has an 80 angled eyepiece and is equipped with an optical channel and also a working and irrigating

channel. The fistuloscope has 2 taps, one of which is connected to a 5000 mL bag of glycine-mannitol 1% solution [7].

VAAFT consists of a diagnostic phase, followed by an operative phase. Diagnostic phase involves localizing the internal opening by passing the fistuloscope through the tract via the external opening.

In the operative phase, the fistula tract is destroyed from the inside and the internal opening is closed.

This is done with the help of a unipolar electrode inserted from the external opening into the internal opening and then the internal opening is stapled shut, reinforced with cyanoacrylate glue.

In 136 patients, it showed a success rate of 73.5%. While it does have the benefit of direct localization of the internal opening under direct vision and minimal sphincter damage, it does involve a longer technique with a steeper learning curve. The instrumentation is expensive and has not shown to be of added benefit [7].

While these new treatment modalities have much to offer in terms of sphincter preservation and low risk of postoperative incontinence, they are technically much more complicated and require expertise. Moreover, the long term effectiveness of these techniques remains to be followed up. The time-tried technique of fistulotomy +/- seton insertion (lay open of fistula) currently remains the standard of care for majority of the fistulas presenting to a primary surgical care clinic. The treatment of fistula in ano should be individualized from case-to-case, depending on the locally available resources and infrastructure.

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