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Original Research

Transanal opening of intersphincteric space (TROPIS) - A new procedure to treat high complex anal fistula

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HIGHLIGHTS

- The satisfactory treatment of high complex fistula-in-no still eludes us.
- The sepsis/tract in intersphincteric space is like a small abscess in a closed space.
- The sepsis in intersphincteric space plays a pivotal role in the pathogenesis of most complex fistula-in-ano.
- The sepsis in intersphincteric space needs to be drained and the space kept open so that it heals with secondary intention.
- This is done by transanal opening of intersphincteric Space (TROPIS).
- TROPIS is a simple new sphincter sparing procedure which is quite effective in treating high complex fistula-in-ano.
- TROPIS is also very effective in supralevator and horseshoe fistula and fistula with multiple tracts.

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ABSTRACT

Background: The sepsis in intersphincteric space has important role in pathogenesis of most complex fistula-in-ano. This sepsis is like a small abscess in a closed space. This closed space needs to be drained adequately and then kept open for the fistula-in-ano to heal properly. The aim was to lay open and drain the intersphincteric space through internal opening via transanal approach. This has been tried in submucosal and intersphincteric rectal abscesses but has never been tried in complex fistula-in-ano.
Materials and methods: All consecutive patients of complex high (involving >1/3 of sphincter complex) fistula-in-ano who were operated were included in the prospective cohort study. Preoperative MRI scan was done in all the patients. Transanal laying open of the intersphincteric space (TROPIS) was done through the internal opening. The external sphincter was not cut. The tracts in the ischiorectal fossa were curetted and cleaned. The incontinence scores were measured.
Results: 61 patients with high complex fistula-in-ano were included (follow-up:6–21 months). Male/Female:59/2, age-42.3 ± 9.5 years. 85.2% (52) were recurrent, 83.6% (51) had multiple tracts, 36.1% (22) had horseshoe tract, 34.4% (21) had supralevator extension and 26.2% (16) had associated abscess. 95.1% (58) were posterior fistula out of which 90.2% (55) were in posterior midline. Nine patients were excluded (due to tuberculosis, lost to follow-up). Fistula healed completely in 84.6% (44/52) and didn't heal in 15.4% (9/52). 4/9 of these were reoperated and fistula healed in three patients. Thus overall healing rate was 90.4% (47/52). There was no significant change in incontinence scores.
Conclusions: TROPIS is a simple effective sphincter sparing procedure to treat high complex fistula-in-ano including supralevator and horseshoe fistula.

1. Introduction

The role of intersphincteric space in pathogenesis of most complex fistula-in-ano is increasingly being recognized [1,2]. The deep postanal space (DPAS), which was first described by Courtney [3] as “posterior sub-sphincteric space”, was postulated to play a key role in pathogenesis and spread of posterior fistula-in-ano especially horseshoe fistulas. Based on this concept, modified Hanley procedure was innovated [4] in which the sepsis in DPAS

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was eradicated through the posterior midline incision which involved cutting of both internal and external sphincters. However, further research highlighted that posterior deep intersphincteric space (DPIS) was far more often involved in complex posterior cryptoglandular fistula than DPAS [1,5]. Therefore, the focus seems to be shifting to treating sepsis in intersphincteric space (DPIS) rather than DPAS [1,5,6]. This sepsis in the intersphincteric space is akin to an abscess in a closed space. This closed space needs to be adequately drained and then kept open so that sepsis is eradicated and the fistula can heal properly. Isolated attempts to close internal opening without eradicating intersphincteric sepsis (as in anal fistula plug, OTSC clip, VAAFT etc) could lead to recurrence of fistula [7,8]. This could explain high recurrence rates in complex fistula after such procedures [7,8].

In this study, the intersphincteric space was drained and laid open through the transanal route. The intersphincteric space was not closed and kept open so that it healed by secondary intention. The aim of this step was eradication of sepsis and healing of fistula. Since the external sphincter was not cut or damaged, the risk to incontinence was expected to be minimal. This simple procedure, transanal opening of intersphincteric space (TROPIS) through the internal opening, was done in complex high fistula-in-ano.

2. Methods

A prospective study was carried out in which all the consecutive patients operated in a referral institute between January 2015 to July 2016 were included. The approval from the hospital ethical committee was taken before the start of the study. An informed verbal and written consent in two languages (English and a native language) was taken from every patient. The principle behind the procedure and the associated risks were explained to the patients.

2.1. Inclusion criteria

- High cryptoglandular fistula-in-ano (involving more than one-thirds of the sphincter complex as assessed on MRI scan and intraoperative examination under anesthesia)
- Horseshoe fistula
- Supralevator fistula

2.2. Exclusion criteria

- Low fistula (involving less than one-third of the sphincter complex)
- Fistula-in-ano with Crohn's disease

2.3. Principle behind the procedure

The sepsis in fistula-in-ano is different from other sinus/fistula as it has some component/tract in intersphincteric plane (which can vary in different patients). The sepsis in this intersphincteric tract is bound by muscles on both sides (internal sphincter inside and external sphincter outside). For fistula to heal completely, this intersphincteric tract needs to be opened up. This opening can either be from outside through ischiorectal fossa by cutting the external sphincter or from inside the rectum by cutting the mucosa and internal sphincter. The former would involve a bigger cut and would damage external sphincter, which is more vital to continence. On the other hand, the opening from inside would involve a smaller cut and would not lead to cutting of external sphincter at all.

Therefore in TROPIS procedure, the tract in intersphincteric space is 'deroofed' or opened from inside the anal canal. For this, the mucosa and internal sphincter over the intersphincteric tract is incised with electrocautery. This not only destroys the infected crypt gland but also opens the tract in intersphincteric space which is then allowed to heal by secondary intention.

The main aim of this procedure is to achieve fistula healing without doing any damage to external sphincter. This is achieved by removing sepsis on both sides of the external sphincter so that both sides heal well. Sepsis eradication is done by transanal opening up of fistula tract 'inside the external sphincter' and curetting the tract 'outside the external sphincter'. Postoperatively, both sides are kept clean till complete healing happens. Inadequate cleaning of one side would lead to passage to infected fluid from this side to the other side leading to non-healing of both the sides. Therefore both the steps are crucial for the success of operation.

The internal opening is widened by electrocautery only at mucosal and internal sphincter level. It is of paramount importance that the opening/tract though the external sphincteric is not widened. The electrocauterized wound in rectum (opened intersphincteric space) heals quite well in 15–20 days. Once this is achieved, the cleaning of external tract is gradually reduced and then stopped.

2.4. Procedure

Preoperative MRI scan was done in all the patients. Based on the MRI, the fistula tracts were mapped in detail and a schematic diagram of the fistula (Fig. 1) was made after a discussion between the radiologist and the surgeon (PG).

The patient was given spinal anesthesia (saddle block) and then placed in lithotomy position. An oral dose of antibiotics, Ciprofloxacin-500 mg and Ornidazole-500 mg was given 6 h before the surgery. The internal opening was confirmed by injecting povidine iodine solution through the external opening and noticing its egress inside the anal canal. A curved artery forceps was inserted through the internal opening into the intersphincteric part of the fistula tract. The mucosa and the internal sphincter over the artery forceps was cut with electrocautery. The intersphincteric portion of the fistula tract was thus laid open on the medial (luminal) side (Fig. 1). The incision was usually curvilinear but could also be oblique, depending upon the direction of the intersphincteric tract. The incision started from the internal opening, which was mostly at the dentate line. In case of horseshoe fistula, the incision extended on both sides of the midline posterior internal opening. In case of an additional supralevator opening of the fistula in the rectum, the incision was extended from the midline posterior internal opening up to the supralevator rectal opening. Perfect hemostasis was achieved. The external opening/openings were slightly widened (up to 1 cm). All the tracts were thoroughly curetted as per the findings of MRI scan. The scrapings and pus was sent for histopathology and polymerase chain reaction (PCR) for Mycobacterium Tuberculosis.

The patient was discharged the next day of surgery and was advised to resume normal activities after the discharge. The curetted tracts were cleaned and kept empty twice a day with cotton swab mounted on an artery forceps [9]. The incontinence was assessed by objective scoring [10] before the surgery and at 3 months after the surgery. The six parameters assessed in the scoring were incontinence to gas, liquid and solid, alteration in lifestyle, need to wear a pad, need to take constipating medicines and ability to defer defecation for 15 min. The perfect continence would have a zero score and total incontinence would be a score of 24.

Fistula was taken to be healed when all the tracts healed completely and there was no pus discharge from any of the tracts or