

Radio Frequency Surgery: A New Treatment Technique Of Fissure In Ano And Associated Pathologies

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Abstract

Background- Anal fissures are dealt with the traditional approaches aiming at relieving the anal spasm and minimizing the anal sphincter pressure. Nevertheless, for concomitant pathologies like sentinel tags, anal papillae, or small hemorrhoids, nothing specific is done.

Materials and Methods- In this study, a description is made about a combined approach of relieving the anal spasm by anal stretching followed by radio frequency surgical procedures to eliminate the associated pathologies mentioned.

Results- All the patients treated by the method of anal dilatation followed by radio frequency surgical procedure for aforesaid associated pathologies were comfortable due to reduction in pain and irritation during defecation, the pricking or foreign body sensation in the anus, and pruritus or wetness around the anal verge. A follow up after 12-15 months showed no recurrence of symptoms or local signs.

Conclusion- A combined approach by anal stretching and radio frequency surgery had been found to be very effective, easy and hassle free way of treating chronic fissure with associated pathologies. Except the radio frequency unit, the procedure needs no specialized instruments and the procedure can be performed in any routine surgical set up. Reduced hospital stay, early return to work, and minimum chances of recurrence of the problem are the noteworthy achievements of the radio frequency surgery technique.

INTRODUCTION

Anal fissure is a common and minor disorder that merits careful attention because it is painful but the treatment is simple and effective. Normally, the fissures are dealt with the traditional approaches aiming at relieving the anal spasm and minimizing the anal sphincter pressure [1]. However, the concomitant pathologies like sentinel tags, anal papillae, or small hemorrhoids are often ignored and nothing specific is done to eliminate them [2].

It has long been recognized that simple or acute fissures can be cured conservatively [3]. A non-constipating diet, use of laxatives, proper attention towards personal hygiene, and a hot sitz bath gives a fair amount of relief and allows a virtually painless defecation.

CHRONIC OR COMPLICATED FISSURES

A fissure is labeled as chronic or complicated if it fulfils the following criteria [4].

1. Not responding to conservative treatment.
2. Association with a fibrous anal polyp at the level

of dentate line.

3. Presence of an external skin tag.
4. Presence of hemorrhoids.
5. Induration at the edges of fissure.
6. Exposure of the fibers of the internal sphincter at the floor of the fissure.
7. Infection at the base of fissure.
8. A bridged fissure with underlying fistula [a post fissure fistula].
9. A post fissure granuloma.
10. A post fissure antibioma.

Various studies and references show that a case of fissure complicated by any of these factors would not heal spontaneously and the response to conservative therapy would be short termed and non satisfactory.

For these chronic fissures, various treatment options that had been advocated range from non-operative procedures like injection of botulin toxin [5], nitroglycerine ointment [6], endoscopic dilatation [7], direct current probing [8], cryotherapy [9], anal stretching etc., or surgical procedures like fissurectomy, fissurotomy and sphincterotomy.

Many of the above methods are good enough to give relief to the symptoms of fissure in ano. Nevertheless, for the associated pathologies mentioned above, these procedures do not provide a satisfactory answer.

AIM

In the present study, we have introduced a combined approach of relieving the anal spasm by anal stretching followed by radio surgical procedure to eliminate the above-mentioned associated pathologies.

In our study, we have taken the help of radio frequency device to tackle these concomitant findings. By combining anal dilatation with radio frequency procedure, the associated lesions are either destroyed or removed.

MATERIALS AND METHODS

In 283 patients under study, an anal dilatation [stretching of the anal sphincter] was performed under general anaesthesia with good relaxation. A spinal anaesthesia was preferred in patients who were denied general anaesthesia.

All of them were supplied, in writing, the details of the new technique to be employed in the procedure to be performed in their case. The potential drawbacks like relapses and need for repetition of the procedure were explained and the patients were allowed an option to choose between the conventional method and the additional use of radio frequency technique. An informed consent was obtained from them before subjecting them to this new technique. No special pre operative preparation was carried out. All the patients were administered a dose of laxative on the prior night.

STRETCHING OF ANAL SPHINCTER

This is one of the most favorite methods of treating the anal fissures [10]. The great attraction of the procedure is due to its extreme simplicity and need of almost no instrument. The procedure could be performed even at an ill-equipped hospital situated at a remote place. Lateral subcutaneous internal sphincterotomy under general anaesthesia is a good operation for anal fissure but then a simple sphincter stretch is not inferior to it as a means of cure of fissure [11]. The

mechanism by which anal dilatation heals anal fissure is by reducing the anal canal pressure. Normally, a four-finger dilatation is considered adequate. A gradual anal stretching up to four (2+2) fingers with gentle circular maneuvering of the inserted fingers was used to achieve the desired effect. Few surgeons advocated upto a six or even eight-finger dilatation, but this has not proved to be of any added advantage. On the contrary, it could interfere with the sphincter function to a greater degree. We found support to our findings from the experiences of Weaver et al [12] who established that manual dilatation of anus had no significant differences in outcomes than the internal sphincterotomy [13]. Crapp and Alexander Williams had described anal dilatation as the procedure of choice for anal fissures [14]. There are several studies which establish that when compared, the dilatation and the sphincterotomy showed no significant difference between the two approaches nor there was any clear advantage of one technique over the other [15,16]. Isbister [17] in his study has recommended a gentle anal dilatation as first method of choice in anal fissures.

SPHINCTER DILATATION FOLLOWED BY RADIO SURGERY

This additional procedure is performed in situations where the fissure is associated with pathologies like sentinel tags, hypertrophied anal papillae, fibrous polyps, post fissure fistula, internal hemorrhoids and the other situations mentioned above.

THE RADIO SURGICAL UNIT

Radio surgery is the method of cutting and /or coagulation of tissues, using a high frequency alternate current. It is a method of simultaneous cutting and coagulating of the tissues. The effect of cutting, known as high frequency section, is executed without pressuring or crushing the tissue cells. This is achieved through the heat produced by tissue resistance to the passage of high frequency wave emanating from the RF unit [18]. The heat makes the intracellular water boil, resulting in to an increase in the cell inner pressure to the point of breaking it from inside to outside [explosion]. This phenomenon is called as cellular Volatilization [19].

We are using the modern radio surgical equipment Ellman Dual Frequency 4MHz by Ellman International, Hewlett, N.Y. This instrument produces an electromagnetic wave of a very high frequency that reaches 4 megahertz. The amount of energy to be delivered can be pre-set. It is graduated from 0 to 100. The unit is supplied with a handle to which different inter changeable electrodes can be attached as per

the requirement [20]. In our study, we have used the ball electrode for coagulation and a round loop electrode for shaving off the desired tissue [21].

ASSOCIATED PATHOLOGIES AND THEIR RADIO SURGICAL TREATMENT

The distribution of pathologies found associated with patients of chronic fissure in ano in our study is given in Table No. 1[Fig.1].

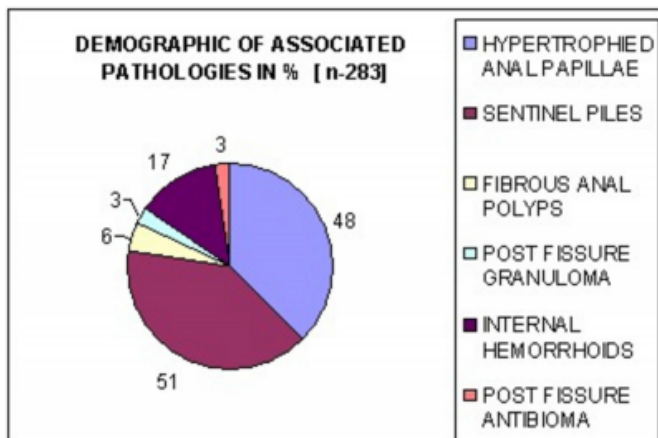
Figure 1

Table 1: Pathologies found associated with chronic fissure in ano [Total No of patients under study- 283].

ASSOCIATED PATHOLOGIES	FOUND IN CASES
Hypertrophied anal papillae	136
Sentinel tags or piles	146
Fibrous anal polyps	17
Post fissure granuloma	7
Internal hemorrhoids	48
Post fissure antibioma	9

Figure 2

Figure 1: Distribution Of Pathologies Found Associated With Chronic Fissure In Ano. [Total No. Of Cases Under Study: 283]



After the traditional four finger anal stretch, the aforementioned associated ailments were either shaved off or coagulated depending upon the situation.

HYPERTROPHIED ANAL PAPILLA

It is a common finding in most of the cases [22] of chronic fissure in ano and is responsible for minor associated complaints like discharge, a foreign body sensation, and occasionally being trapped in the tight sphincter. In our

study, 136 patients were found having these papillae. These papillae were coagulated with the Ball Electrode using the COAG mode with energy ranging between 40 and 50 of unit. They immediately disappeared.

SENTINEL PILES

Sentinel pile or tags are a common accompaniment of all the chronic fissures. Surgeons often do not pay attention to them [23] and leave them untouched while relieving the spasm of the internal sphincter. Nevertheless, from the personal experience, we are of the opinion that these are to be removed for two reasons. First, they may interfere with the healing of the fissure, and second, they may be a cause of concern for the patient who would continue to experience 'something' still left behind [9]. Studies [24] has shown that presence of sentinel tag adversely affects healing of fissure in ano. Its removal also facilitates in keeping a good anal hygiene [2]. According to us, if the tag is small, it could be directly coagulated with a Ball Electrode.

When it is sufficiently large, it is excised with the Round Loop attachment after holding it in a haemostat flush position to the skin [25]. Thereafter, the base is coagulated with the Ball electrode. Out of the 283 patients examined, 146 patients were found having these sentinel tags. The tags numbered ranged between one and three. In 89 cases, the tags were acutely inflamed and were painful to touch. Rests were in shrunken position and were non-tender.

FIBROUS ANAL POLYPS

These are exaggerated anal papillae, which with time attains excessive fibrous thickening, and acquire a rounded expanded tip, which can even be felt on digital examination [1].

We found as many as 17 patients having these polyps during our study. These were subjected to coagulation using the ball electrode. In case of voluminous masses, these were shaved off with a Loop Electrode after coagulation of the base, which was held in the haemostat.

POST FISSURE GRANULOMA OR FISTULA

These usually develop when the fissure is suppurated. The base of the fissure is indurated. It becomes the constant and nagging source of a foreign body sensation accompanied by intermittent pus discharge. It can be felt during a digital anal examination in the form of a tender nodule usually at 6 or 12 o'clock position. Seven of the patients under our study did have this pathology. The chances of recurrence of ano rectal

symptoms are high if this pathology is not treated [26].

This granuloma is curetted by frequent sweeps of a Loop Electrode in COAG mode kept at 60. After removing the mass, which looks yellow in color, the base starts oozing. Such bleeders could be secured by using a Ball Electrode and the resulting cavity is lightly packed for next 24 hours. Complete healing period required is about six weeks. The new tissue formation is healthy and strong enough to lead to a complete resolution.

HEMORRHOIDS

The associated [27] early degree of non-prolapsing hemorrhoids can be quickly dealt with radio frequency coagulation. The piles are directly coagulated in situ with the ball electrode having a long length[--]. This makes the procedure very simple, easy, without a need to excise or remove the pile mass. The bleeding is negligible. 48 patients having concomitant hemorrhoids were treated by this maneuver.

POST FISSURE ANTIBIOMA

The history was typical. An infected or suppurated fissure was treated with antibiotics and anti-inflammatory drugs without draining the pus. The abscess cavity became 'sterilized', and persisted as a lump that intermittently turned painful and edematous. There was sterile pus inside, but it seldom burst open. We came across nine such patients during our study.

The aim of treatment was to curette the complete cavity. It could be achieved by incising the center of the cavity using a Fine Wire Electrode in CUT/COAG mode. Then all the granulation tissues, which felt hard and have a little bleeding were scrapped out with a Round Loop Electrode until a soft red base was reached. The bleeding points were secured and the wound was left without attempting any primary closure allowing it to be healed in natural way.

OBSERVATIONS

All the patients under study, as aforesaid, were discharged within 24 hrs. A regular diet was started right from the first day. No special dressing was recommended except a twice-daily Sitz bath and application of xylocain and antiseptic ointment over the wound. The patients were able to resume normal duties in next few days.

COMPLICATIONS

Post defecation pain, minor bleeding, oozing from the wounds, and pruritus were but a few common postoperative

complaints. Most of them got resolved within two weeks of the procedure.

RESULTS

The patients were followed up after 4 weeks. No patient complained of incontinence to faeces, while 12% of them had incontinence to flatus for first few days in the immediate postoperative period. The wounds of radio surgery were present, but there was no pain. No patient had any postoperative wound infection. Less than half of them did have complaints like wetness, itching, and irritation. This was predominantly a post defecation problem.

A further follow up after 8 weeks of the procedure showed complete healing of the wounds. No patient had any pain or discharge. However, there were several complaints of pruritus. Appropriate medication helped them get rid of it. The average wound healing time taken was about 6 weeks.

FOLLOW UP AFTER 18 MONTHS

Thirty-nine patients [13.7%] failed to report for a follow up. From the remaining two hundred and forty four patients, in 93% cases, there was no recurrence of fissure or associated pathologies. 3% had developed hemorrhoids and had a complaint of intermittent bleeding episodes. 4% patients were found to have fissure but they were superficial and were causing pain and discomfort in defecation. They were prescribed medication and were relieved of the complaint.

COMPARATIVE FINDINGS BEFORE AND AFTER THE PROCEDURE

A questionnaire was prepared before subjecting the patients to the procedure and they were noted in each case under the following headings.

1. Itching
2. Feeling of uneasiness in the anal region
3. Crawling sensation in the anus.
4. Discharge.
5. Sense of incomplete evacuation of bowel.
6. Discomfort while sitting.
7. Prolapse at the anus.

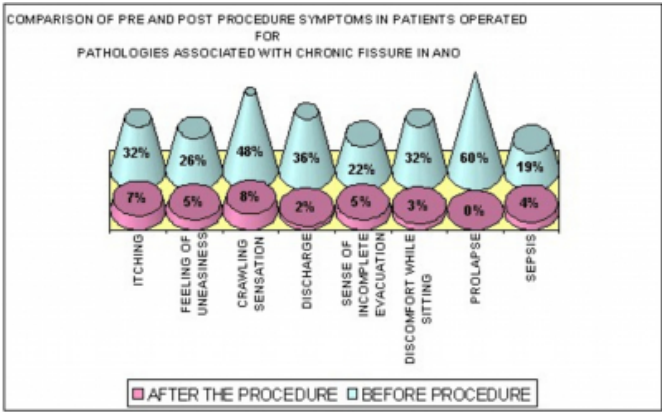
The above symptoms were entered according to the patient's complaints. Same questions were asked again when they came for follow up after 8 weeks and re entered in the

questionnaire.

The comparative data is given in Fig. 2.

Figure 3

Figure 2: Comparative data of complaints before and after the RF procedure.



COMPARISON OF CONVENTIONAL SURGICAL AND RADIO FREQUENCY SURGICAL PROCEDURE IN REMOVAL OF SENTINEL PILES

To demonstrate that removal of sentinel piles by RF is superior to the conventional surgical procedure, we carried out the following study.

Forty patients having a single, inflamed sentinel pile, associated with fissure in ano were selected at random. After the procedure of anal dilatation, a traditional approach of cutting and ligation of the sentinel pile base was performed while in the remaining twenty patients; the sentinel pile was removed by RF method described above. The following observations were noted. [Table No. 2] [Fig. No. 3]

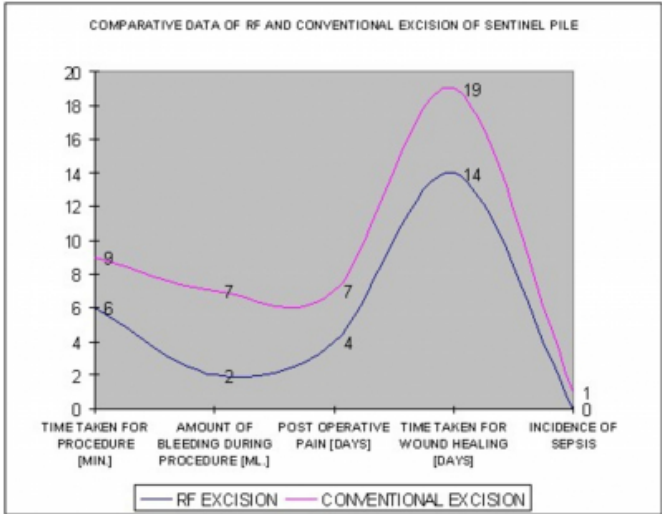
Figure 4

Table 2: Comparative findings after RF and conventional surgical removal of sentinel piles.

Observations	RF excision	Conventional Excision
Mean time taken for procedure	6 minutes	9 minutes
Mean amount of bleeding during the procedure	1.5 ml	7 ml
Mean period of post operative pain	4 days	7 days.
Mean time taken for wound healing	14 days	19 days
Incidence of sepsis in the wound.	None	1

Figure 5

Figure 3: Comparison and conventional and RF excision of sentinel pile.



DISCUSSION

Radio surgery, not to be confused with electro surgery, diathermy, spark-gap circuitry, or electrocautry, uses a very high frequency radio wave. Unlike electrocautry or diathermy, the electrode in radio surgery remains cold [28]. This is possible because of use of very high frequency current of 4 MHz, as compared to 0.5 to 1.5 MHz used in the electrocautry. In contrast to true cautery, which causes damage similar to 3rd degree burns; the tissue damage that does occur in radio surgery is superficial and is well comparable to the one that occurs with Lasers. Histologically, it has been shown that tissue damage with radio surgery is actually less than the conventional scalpel and it equals cold scalpel [29]. Radio surgery creates minimal collateral heat damage in the tissue. This results to a rapid healing and leaves only an aesthetically pleasing scar. Biopsies performed of the skin tissue indicate a maximum thickness of heat-denatured collagen to be 75 micrometer. This is equal to or even better than the carbon di oxide laser no increasingly being used for cutting [30].

It is found that additional anorectal procedures performed at the same time, while undergoing the treatment of fissure in ano does not lead to any increase in incidences of postoperative complications [31].

Lengths of hospital stay, loss of blood, mean length of surgery is much less in radio frequency surgical procedures as compared to the cold knife procedure.

Rapidity of treatment, a nearly bloodless field, minimal postoperative pain, and rapid healing are but a few

advantages of radio frequency surgery. Once the surgeon is able to establish a proper technique, the scar left by this method of treatment is often less pronounced than those produced by other surgical techniques [32].

PRECAUTIONS TO BE TAKEN

Removing a lesion on someone who is on aspirin or anticoagulant therapy may be accompanied by increased bleeding. This aspect is required to be taken care of.

The unit should not be used in presence of flammable or explosive liquids or gases. The surgeon is also expected to remember to deactivate the hand piece whenever the electrodes are needed to be changed to avoid injury to his self or the patient [33].

As with all radio frequency surgery machines, a smoke is produced on its application. This problem needs to be attended carefully to avoid the unpleasant smell of burning. The burning odour could be arrested with a vacuum extractor, with the aid of an assistant [34].

Conclusion- Associated pathologies like hypertrophied anal papillae, fibrous polyps, sentinel tags; granuloma, post fissure fistula, and internal hemorrhoids may become a cause of concern to the treating physician while dealing with a patient of chronic fissure in ano. Studies show that a combination of anal stretching and radio frequency surgery is very effective, is an easy, and hassle free way of treating the disease.

Except the radio frequency unit, the procedure needs no specialized instruments and the procedure can be performed in any routine surgical set up. Reduced hospital stay, early return to work, and minimum chances of recurrence of the problem are the noteworthy achievements of the radio frequency surgery technique.

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