

## CHEMICAL SPHINCTEROTOMY IN CHRONIC ANAL FISSURE

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**Introduction:** Surgical treatments for fissure overcome spasm of the IAS by forcible anal dilatation or internal sphincterotomy. Both anal dilatation and sphincterotomy are associated with short-term and long-term impairment of continence in up to 30% of patients. Glyceryl trinitrate (GTN) ointment applied to the anus causes a fall in maximum anal resting pressure (MARF) amounting to a reversible "chemical sphincterotomy". Oral and topical preparations of calcium channel blockers have recently shown to lower anal resting pressure probably by relaxing the internal anal sphincter.

**Patients and Methods:** 120 patients presented with chronic anal fissure were randomly selected and classified into three groups. Group (I) used Glyceryl Trinitrate gel 0.25%, Group (II) used Nefidipine gel 0.5%. Group (III) were submitted for lateral sphincterotomy with or without fissurectomy.

**Results:** Our results were assessed and compared in the 3 groups under the following points: time of pain relieve, healing time (Table 2), headache as a side effect of the therapy used, incidence of recurrence and comments of the patients included in our study. As regard complete healing of the fissure, this was recorded in 34 patients in GTN gp in a mean time of 28 days. While in NF gp, healing was recorded in 29 patients in a mean time of 33 days. In OP gp the healing was recorded in 34 patients in a mean time of 28 days.

**Conclusion:** Both Glyceryl Trinitrate 0.25% and Nefidipine 0.5% are effective in treating chronic anal fissure when applied topically. Both harbor minimal side effects, excellent patient's compliance and good healing rate when compared with surgery. They can replace surgery in most of cases. No need for hospitalization with the result of saving money and time with preservation of the normal anal tone after healing. So, chemical sphincterotomy must be the first line in treatment of chronic anal fissure

*Key words:* anal fissure, lateral sphincterotomy, chemical sphincterotomy

### INTRODUCTION

Anal fissure is characterized by pain on defecation, rectal bleeding, and spasm of the internal anal sphincter (IAS). The etiology of anal fissure is contentious; it may be due to ischemia of the posterior commissure of the anal canal, exacerbated by hypertonicity of the internal anal sphincter.<sup>(1, 2)</sup>

Anodermal blood flow may be inversely related to (MARF) because the blood supply to the mucosa comes predominantly from vessels which cross the sphincter. Increase in anodermal blood flow has been reported after lateral internal sphincterotomy and topical applications of nitrates.<sup>(3, 4)</sup>

Surgical treatments for fissure overcome spasm of the

IAS by forcible anal dilatation or internal sphincterotomy. Both anal dilatation and sphincterotomy are associated with short-term and long-term impairment of continence in up to 30% of patients.<sup>(5, 6)</sup>

Nitric oxide (NO) has recently been shown to be an inhibitory neurotransmitter in the IAS.<sup>(7)</sup> Organic nitrates are degraded by cellular metabolism releasing NO.<sup>(8)</sup> (GTN) ointment applied to the anus causes a fall in (maximum anal resting pressure) MARF amounting to a reversible "chemical sphincterotomy".<sup>(9)</sup>

Calcium channel blockers cause relaxation of vascular smooth muscles and vasodilatation; it is widely and safely used in clinical practice as an antihypertensive and antianginal therapy with few side effects. Oral and topical

preparations of calcium channel blockers have recently shown to lower anal resting pressure probably by relaxing the internal anal sphincter

## PATIENTS AND METHODS

This study included 120 patients presented with chronic anal fissure during the period from January 2001 to July 2004. Those patients were randomly selected and classified into three groups each consists of 40 patients.

*Group (I)* used GTN gel 0.25%. The duration of the topical therapy ranged from 4 - 12 weeks.

### GTN gel

Angised tablets (R) was utilized as a source for Glyceril trinitrate. Each tablet contains 0.5mg of the drug. The average weight of the tablet was determined. Tablets were crushed in a porcelaine mortar. A weighted amount of the fine powder equivalent to the weight of 100 tablets was incorporated into sufficient KY gel base (20gm) to prepare a mediated gel having a drug concentration of 0.25% w/w

*Group (II)* used Nefidipine gel 0.5%. Also, the duration of the topical therapy was 4 to 12 weeks.

### NF gel

Nefidipine capsules were used to prepare the gel. The content of 25 capsules (each contains 10mg of the drug) were mixed , in a porcelaine dish, with enough amount of KY gel base(50gm) to make the final concentration of the drug in the mediated gel as 0.5% w/w

*Group (III)* were submitted for lateral sphincterotomy with or without fissurectomy (in case of tough fibrous fissures). Their mean age was 35 years and they were 29 male and 11 female.

All patients were submitted for the following

- 1-Brief general history and detailed history about the anal problem
- 2-Meticulous clinical examination of the perianal area, PR examination and clinical assessment of the anal tone.
- 3-Proctoscopic inspection of the anorectum to exclude other pathology (hemorrhoids, polyps) and to assess the condition of the fissure as regard the edges (fibrous) and the base (exposure of the internal sphincter fibers).

The fissure was considered chronic if it is persistent for more than 6 weeks.

Patients with pregnancy, intolerance to nitrates or in

treatment with nitrate drugs for cardiac ischemia were excluded from the study.

Evaluation of the results of therapy was done in two stations:

- 1- Onset of pain and other symptoms relieve.
- 2- Onset of healing of the fissure detected clinically by direct inspection.

We considered a novel issue in evaluating each type of therapy which is the patient's comment. We believe that the patient's comment may reflect -to a great extent- the patient's compliance and as a consequence the success of the therapy which is the aim of this study.

## RESULTS

The mean age of our patients was 35 years in both GTN and OP group and 36 years in NF group. Sex distribution of our patients in each group is summarized in (Table 1).

Our results were assessed and compared in the 3 groups under the following points: time of pain relieve, healing time (Table 2), headache as a side effect of the therapy used, incidence of recurrence and comments of the patients included in our study.

In the GTN group, 35 patients had the pain relieved. The mean time of pain relieve was about 9 days. However, only 34 of those patients had healed fissures after mean time of 28 days. In the NF Nefidipine group, the total number of patients that experienced relieve of pain was 32 in a mean time of about 10 days, while those who were assigned as healed fissures were 29 in a mean time of about 33 days. 35 patients of those underwent operative management developed relieve of symptoms after a mean time of 9 days with complete healing of the fissure in 34 patients at a mean time of 28 days postoperatively.

As regard complete healing of the fissure, this was recorded in 34 patients in GTN gp in a mean time of 28 days. While in NF gp, healing was recorded in 29 patients in a mean time of 33 days. In OP gp the healing was recorded in 34 patients in a mean time of 28 days.

Headache was the only side effect recorded in GTN gp, it was recorded in 4 patients (10%) but in all of them the headache was mild, tolerable and responded to simple analgesics. It was not recorded in the NF gp. While in the OP gp, the headache was reported in 2 patients (5%). It was post spinal headache and was severe enough to be associated with nausea and vomiting. It was difficult in treatment and needs injectable analgesics in large doses (Table 3).

Incontinence to flatus and soft stools was reported in 2 patients (5%) underwent sphincterotomy (group III) and it was mild for gases in one patient and resolved spontaneously within 24 weeks and in the other it was accompanied with staining of the underwear with escape of the soft stools. It was improved spontaneously but needed longer time (5 months).

We recorded the patients' comments and categorized them into 4 groups (accepted, good, excellent/effective, bad /useless) (Table 4). In the GTN gp there were 9

patients (22.5%) reporting that the therapy is accepted, 14 patients (35%) said that it is good, 12 patients (30%) reported that it is excellent and effective and 5 patients (12.5%) said that it is bad or useless. In NF gp the accepted group was 12 patients (30%), the good group was 12 (30), the effective/excellent was 6 (15%) and the bad/useless group was 10 patients (25%). In the OP group, the accepted group was 11 patients (27.5%), the good group was 11 (27.5%), the excellent/effective group was 3 patients (7.5%), while the bad/useless group was 15 patients bo movie is a I and if it has %).

**Table 1: Age and sex distribution**

	Sex		Mean age
	male	female	
GTN gp	29(72.5%)	11(27.5%)	35.2 yrs
NF gp	27(67.5%)	13(32.5%)	36.3 yrs
OP gp	29(72.5%)	11(27.5%)	34.8 yrs
Total	85(70.8%)	35(29.2%)	

**Table 2: Results of the treatment in the three groups**

	Pain relieve	Healing
GTN gp * mean time	8.857 days	28 days
* No	35 (87.5%)patients	34 (85%)patients
NF gp * mean time	9.75 days	32.66 days
* No	32 (80%) patients	29 (72.5%)patients
OP gp * mean time	8.86 days	28.4 days
* No	35 (87.5%)patients	34 (85%)patients

**Table 3: Complications in the three groups**

	Headache	Incontinence
GTN gp	4 (10%)	-
NF gp	-	-
OP gp	2 (5%)	2 (5%)

**Table 4: Patients' comment -compliance- on the three treatment modalities**

	Accepted	Good	Excellent/effective	Bad/useless	
GTN gp	9 (%)	14(%)	12(%)	5(%)	40
NF gp	12(%)	12(%)	6(%)	10(%)	40
OP gp	11(%)	11(%)	3(%)	15(%)	40

## DISCUSSION

Chronic anal fissure may be treated by chemical or surgical sphincterotomy at present. Lateral internal sphincterotomy may result in healing in up to 95% of patients but still there remains a significant risk of incontinence.<sup>(11)</sup>

In our study, we classified the patients randomly into 3 groups of equal number (40 patients for each); group I of GTN, group II of Nefidipine and group III of surgical lateral sphincterotomy).

Pain relieve was achieved in 35 patients for both group I and III in an average time of 9 days, while in group II pain relieve was achieved in only 32 patients in an average of 10 days. This points to the efficacy of both agents used in chemical sphincterotomy. Actually, the pain relieve is the main target of the patients presenting to the clinic suffering from chronic anal fissure. Healing of the fissure was also coincide with the pain relieve. It was recorded in 34 patients after an average of 28 days in both group I & group III, while in group II healing was recorded in 29 patients after an average of 33 days. Bassotti et al, 2000 reported that healing occurred in more than 70% of his patients using GTN cream after 2 months period,<sup>(12)</sup> while Knight et al., 2001 reported that healing of the fissure has been achieved in 45 - 80% of the patients under topical GTN therapy.<sup>(13)</sup>

In the group III (operative group) healing occurs in about 85% of the patients and this agrees with the results reported by many authors (Farouk et al., 1994, Lund et al., 1996, and Others) who reported 95% healing rate after lateral internal sphincterotomy.<sup>(14,15)</sup> The most distressing drawback of this procedure is the incontinence especially to flatus that was reported in 5% of our patients underwent this operation and this agrees with that recorded by Libertiny et al., 2002.<sup>(16)</sup> This complication in addition to bad healing and keyhole deformity may contribute to the bad and useless comments reported by 37.5% of patients in our series. To minimize these bad effects, Littlejohn, 1997 reported that each sphincterotomy should be tailored according to the length of the fissure, length of the anal canal, and the length of the patient.<sup>(17)</sup>

Headache, which is the most frequent reported side effect of using nitrates, was reported in 4 patients (10%) using GTN (group I) which is comparable to the 5% (2 patients) incidence of more severe post spinal headache in group III (sphincterotomy group). This incidence (10%) is less than those reported by Altomare et al., 2000 (37%) and Lund, 1997 (58%).<sup>(18,19)</sup> This may be attributed to the difference in drug concentration, difference in the pharmaceutical base with lower systemic exposure and the difference in the patients' quality.

## CONCLUSION

Both Glyceryl Trinitrate 0.25% and Nefidipine 0.5% are effective in treating chronic anal fissure when applied topically. Both harbor minimal side effects, excellent patient's compliance and good healing rate when compared with surgery. They can replace surgery in most of cases. No need for hospitalization with the result of saving money and time with preservation of the normal anal tone after healing. So, chemical sphincterotomy must be the first line in treatment of chronic anal fissure.

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