

## ORIGINAL ARTICLE

EFFICACY AND SIDE EFFECTS OF GLYCERYL TRINITRATE IN  
MANAGEMENT OF CHRONIC ANAL FISSURE

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**Background:** Various options are available for treatment of chronic anal fissure, each with its own associated complications. This study aimed to evaluate the efficacy of topical Glyceryl Trinitrate (GTN) for anal fissures in an outpatient setting. **Methods:** A prospective experimental study was carried out at the outpatient department of Surgical Unit IV, Liaquat University Hospital from Aug 2004 to Jul 2005. Total 100 patients fulfilling the criteria of chronic anal fissure were included in the study. Patients presenting with chronic anal fissure but with associated comorbidities were excluded. Data were collected on a designed questionnaire, and analysed using SPSS-10. **Results:** Sixty women and 46 men were included in the study with a mean age of 30 years. After the end of 8 weeks of treatment, 76 showed healing of fissure and relief in symptoms whereas 20 patients either had improvement in symptoms or did not heal. The commonest side-effect was headache reported by 21 patients. The minimum period of follow-up was one year, and 7 patients had recurrence. **Conclusion:** Topical 0.2% GTN is an effective first-line agent in managing chronic anal fissure. The associated side-effects and recurrence remains a matter of concern.

**Keywords:** Anal fissure, GTN, Glyceryl trinitrate, Headache, side-effects

## INTRODUCTION

Anal fissure is a painful linear tear or crack in the distal anal canal, which, in the short-term, usually involves only the epithelium and, in the long-term, may involve the entire mucosa. The disease irrespective of its benign nature carries significant morbidity. The aetiology is no more an enigma and recent work attributes the chronicity of this condition with ischemia of anoderm due to hypertonic internal anal sphincter.<sup>1</sup> Interests in the pharmacological manipulation of internal anal sphincter was driven by the recognition of fact that sphincter hypertonia is responsible for the chronicity of condition. The internal anal sphincter is both under the influence of internal myogenic mechanisms and extrinsic neural effects.<sup>2,3</sup> Nitric oxide is the principle non-adrenergic, non-cholinergic neurotransmitter responsible for contraction of internal anal sphincter<sup>4,5</sup> and when released locally causes relaxation of internal anal sphincter. This finding suggested that local delivery of NO to the anoderm may reduce pain and will promote healing of anal fissures. Different nitrates have been used worldwide in the management of the chronic anal fissure, the commonest being topical GTN (Glyceryl Trinitrate).<sup>7</sup>

The objective of this study was to evaluate efficacy and side effects of locally applied GTN in treatment of chronic anal fissure.

## MATERIAL AND METHODS

During Aug 2004–Jul 2005 this study was carried out at outpatient department of surgical unit IV, Liaquat University Hospital, Hyderabad. After taking informed consent, 96 patients with diagnosis of chronic anal fissure, with pain during or after defecation lasting for

more than 8 weeks (with or without bleeding), presence of sentinel pile and/or exposure of horizontal fibres of internal anal sphincter were included. Those with systemic comorbidities, contraindicating the use of nitrates like ischemic heart disease, migraine headache or with concurrent anal pathology like haemorrhoids were excluded from the study. Patients were advised to apply a pea size quantity of 0.2% GTN ointment (approximately 0.5 mg) at anal verge, three times a day for 8 weeks, and were advised for a follow-up for 1 year.

Data were recorded on a questionnaire designed specifically for the study and statistical analysis was done using SPSS-10.

## RESULTS

Out of the total 96 patients, 60 (62.5%) were females. Mean age was 30 years (18–48 year). The number of patients who showed excellent substantial response to treatment in terms of symptoms reduction was 76 (79%) whereas 16 (16.6%) showed partial, and 4 (4.4%) no response. On clinical examination, 52 patients (54%) had complete healing. Rest of the patients showed variable response.

Twenty-one (22%) patients suffered from a headache that was self-limiting and responded well to NSAIDs. Only 3 suffered from severe headache, warranting discontinuation of treatment. The other side effects observed during the course of treatment were postural hypotension (1%), pruritis (3%), and gastrointestinal (1%).

During the 1 year follow-up, 60 patients remained symptom free, 7 (7%) came back with recurrence, and 26 (27%) did not report at all. Patient who either failed to respond to treatment or experienced

recurrence were offered a further 2 week continuation of GTN, and 4 showed complete healing after 2 weeks application of GTN. The rest underwent surgery.

## DISCUSSION

With the better understanding of pathogenesis and advent of pharmacological agents to relax sphincter tone, the paradigm to manage chronic anal fissure has changed from surgical to medical sphincterotomy. Topical GTN has emerged as time-tested drug for the management of this condition. Literature reports an equal predilection of this condition in both genders.<sup>7</sup> Most of our patients, who consented for this trial, were females (62.5%), suggestive of their preference for drug therapy instead of surgery.

In this study by the end of treatment, 76 (79%) patients completely healed. Healing was defined on parameters of complete absence of ulcer crater and tenderness. This is more than what is reported by Simpson *et al*<sup>9</sup> (62%), and Manookian *et al*<sup>10</sup> (54%), but is comparable with Thornton *et al*<sup>11</sup> (73%), Shoukat *et al*<sup>12</sup> (72%), and Aziz *et al*<sup>13</sup> (72%). The patients in GTN group showed an over all improvement in their symptomatology, mainly pain during defecation. The mean pain score dropped from 8 to 2. This is comparable with Omar *et al*<sup>14</sup> and Kocher *et al*<sup>15</sup>.

Treatment with GTN is not free of side-effects. Different series report a variety of undesirable effects, mainly headache. The headache is usually self limiting, occurs within 15 minutes after the application of drug and subsides with simple NSAIDs. In our study, 21% of patients in GTN group suffered from headache. This was mainly observed during the first 2 weeks of therapy and was usually self-limiting. In case of intolerance, patients were advised to take pain killers. Researchers worldwide have reported different incidence of headaches in their studies. Omar *et al*<sup>14</sup> and Altmore *et al*<sup>16</sup> have reported headache in 40–50% cases. A study conducted by Aziz *et al*<sup>13</sup> at Lahore mentioned this side effect in up to 70% patients. Our study shows somewhat similar incidence of headaches as reported by Shoukat *et al*<sup>12</sup>.

After the completion of treatment, as the patients were declared disease free, they were directed to report if any symptoms recur. Amongst them, (52%) were free of disease by the end of one year, 7% returned with recurrence. This is comparable with Richard *et al* (11%), and is less than that of Shoukat *et al*<sup>12</sup>, Azeem *et al*<sup>13</sup>, and Graziano *et al*<sup>17</sup>.

Since, GTN causes temporary relaxation of internal anal sphincter, anal resting pressure may return to its initial level, hence recurrence will always remain a problem. Besides, the prevalence of headache remains a problem.

## CONCLUSION

Topical GTN has proved to be an effective option in managing chronic anal fissure as first-line treatment option for chronic anal fissure, with bearable side-effects.

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