

# Improved Healing in Open Haemorrhoidectomy With 0.2% GTN

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## ABSTRACT

**Aim:** Hemorrhoids is a very common condition faced by majority of population now a days. The aim of the study was to compare the efficacy of topical 0.2% glyceryl trinitrate vs. placebo on wound healing after open hemorrhoidectomy.

**Study Design:** It was based on randomized Control Trials that was conducted in surgical unit of DHQ Teaching Hospital, Dera Ghazi Khan. Duration of study was of nine months starting from 1<sup>st</sup> Feb 2014 to 31<sup>st</sup> October 2014. A total of 56 patients were included in this study.

**Results:** Fifty six patients were included in the study which were divided into two groups (i.e., GTN-28 and placebo=28). Among them 40(71.4%) were male and 16(28.6%) were female. Out of 56 patients, 12 (21.4%) patients were in the age from 20-30 years, 13(23.2%) within 31-30 years, 16(28.6%) between the age 41-50 years and 15(26.8%) patients were in the age group from 51-60 years. As regards the grades of haemorrhoids, 22(78.6%) patients from GTN group and 18(64.3%) patients from placebo group were in the grade-III. While 6(21.4%) patients from GTN and 10(35.7%) patients from placebo group were in the grade-IV. Incidence of headache was found in 8(28.6%) patients in GTN group and in 27.1% patients in placebo group.

**Conclusion:** It is concluded from the study that GTN ointment enhances the healing of post hemorrhoidectomy wounds without significant side effects. Also, GTN ointment had an effect to decreasing postoperative pain. However, as an analgesic, GTN ointment has no merit.

**Keywords:** Glyceryl trinitrate, haemorrhoids, post hemorrhoidectomy.

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## INTRODUCTION

Hemorrhoids are common benign anorectal condition that form a significant part of a surgeon's workload. Hemorrhoids are swollen venous cushions in the lower part of the rectum and anal canal. They are usually present at right anterior, right posterior and left lateral and consist of direct arteriovenous communications and surrounding connective tissue. Surgical open hemorrhoidectomy is a very effective treatment with high cure and low recurrence rates<sup>1</sup>. These procedures are now performed in a day-surgery setting in many centers. In open haemorrhoidectomy the skin bridges between the excised hemorrhoids are preserved to avoid stricture formation in future and the wounds are left open for healing by secondary intention, this practice is usually associated with much discomfort and pain after surgery. Internal anal sphincterotomy should not be performed as it exacerbates continence impairment<sup>2</sup>. Glyceryl trinitrate paste dilates the internal anal sphincter<sup>3</sup> and is being used as a treatment option in the treatment of chronic anal fissure and replaces lateral sphincterotomy in many

cases. The option of using Glyceryl trinitrate paste post-operatively after haemorrhoidectomy is appealing as it is not associated with permanent decrease in resting anal pressure and incontinence<sup>4</sup>. Nitrates relax internal anal sphincter thus increasing blood supply to anoderm and hence promoting wound healing and significant pain reduction. A study comparing effect of 0.2%Glyceryl trinitrate vs. a placebo showed that 0.2% glyceryl trinitrate significantly improved wound healing than those with placebo after three weeks<sup>5</sup> (74.5% vs. 42%),  $p=0.002$ .

Another study assessing the role of topical GTN as an adjunct following open haemorrhoidectomy also showed that Topical GTN is an effective agent in hastening wound healing after Milligan Morgan's haemorrhoidectomy ( $p=0.004$ ). Its role in better management of pain was, however not observed<sup>6</sup>.

## MATERIAL AND METHODS

Randomized Control Trial was done at surgical unit of DHQ Teaching Hospital, Dera Ghazi Khan from 01-02-2014 to 31-10-2014. Sample size calculated for this study was  $(P1=74.5\%, P2=42.0\%)^5$   $\alpha=5$  &  $1-B=80$   $n=28$  in each group. Total 56 patients were studied.

We included patients of both genders, Ages between 20-60 years, and having 2<sup>nd</sup> and 3<sup>rd</sup> degree haemorrhoids regardless of duration, diagnosed on

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proctoscopy examination while patients having dual anal or perianal pathologies like anal fissure or perianal fistula, patients having any immunocompromised states like diabetes mellitus, chronic liver disease, AIDS, chronic renal failure or any contra indication to use of nitrates like migraine, postural hypotension, hypertension and ischemic heart disease were excluded from study.

All patients, meeting the inclusion criteria, were randomly allocated to two groups: (lottery method). Open haemorrhoidectomy (Milligan-Morgan's haemorrhoidectomy) was performed on all patients. Their wounds were left for healing by secondary intention. A small gauze soaked with pyodine and xylocaine gel was packed in anal canal of patients after surgery for better haemostasis. This pack was removed 24 hours after surgery during sitz bath. Group-A was given 0.2% glyceryl trinitrate paste postoperatively for topical application (approx 300 mg glyceryl trinitrate per application) and Group-B was given placebo (petroleum jelly) twice a day. We advised all patients to take sitz bath two times a day at regular interval and after that apply medicine, same antibiotics and analgesics was advised and they were followed up three weeks after surgery and outcome that is efficacy of drug in terms of wound healing (either the wound healed or wound not healed) in both groups was noted.

The collected data were entered and analyzed. Quantitative data like age and duration since disease were calculated by taking means and standard deviation while qualitative data like gender and efficacy of drug in terms of wound healing were calculated by taking frequencies and percentages. Chi-square test was applied to compare the proportion of efficacy in both groups.  $p \leq 0.05$  was considered significant. Confounding factors like age, duration since disease and degree of hemorrhoids were controlled by stratification and effect of these was seen on outcome.

## RESULTS

Fifty six patients were included in the study divided into two groups equally (i.e., GTN=28 and placebo=28). Among them 40(71.4%) were male and 16 (28.6%) were female (Table-1). Out of 56 patients, 12(21.4%) patients were in the age from 20-30 years, 13(23.2%) within 31-30 years, 16(28.6%) between the age 41-50 years and 15(26.8%) patients were in the age group from 51-60 years (Table-2). As regards the grades of hemorrhoids, 22(78.6%) patients from GTN group and 18 (64.3%) patients from placebo group were in the grade-III. While 6 (21.4%) patients from GTN and 10(35.7%) patients from placebo group were in the grade-IV as shown in table-3.

Incidence of headache was found in 8 (28.6%) patients in GTN group and in 2 (7.1%) patients in placebo group (Table-4).

Table-1: Sex distribution (n=56)

Sex	n	%age
Male	40	71.4
Female	16	28.6

Table 2: Age distribution (n=56)

Age (years)	n	%age
20-30	12	21.4
31-40	13	23.2
41-50	16	28.6
51-60	15	26.8

Table 3: Grades of haemorrhoids (n=56)

Grade	GTN	Placebo
Grade-III	22(78.6%)	18(64.3%)
Grade-IV	06(21.4%)	10(35.7%)

Table 4: Incidence of headache (n=56)

Headache	GTN	Placebo
Yes	08(28.6%)	02(07.1%)
No	20(71.4%)	26(92.9%)

Table 5: Comparison of wound healing in two groups at three weeks postoperative (n=56)

Wound healing	GTN	Placebo
Yes	20	10
No	8	18

## DISCUSSION

Wound healing after open haemorrhoidectomy is the most fearful part of haemorrhoidectomy for both surgeon and patient. It usually hinders with patient recovery and return to work. Our study showed that topical GTN could reduce postoperative pain and improve wound healing after haemorrhoidectomy. Pain after haemorrhoidectomy is multifactorial and it depends upon personal tolerance, anaesthesia type, analgesia given after surgery and surgical technique used also it is believed that spasm on internal sphincter contribute to postoperative pain<sup>7,8</sup>. In another study, topical application of 0.2% GTN ointment in patients underwent haemorrhoidectomy, reduced maximum resting pressure after 5 days and postoperative pain both at rest and during defecation<sup>9</sup>. All of these studies support the findings of our study in correlation to analgesic effect of GTN ointment in patients underwent haemorrhoidectomy.

Topical GTN is being used in management of chronic anal fissure since long period of time, but the results of its use in open haemorrhoidectomy postoperatively are somewhat controversial. Hwang et al have reported most promising results in terms of pain reduction and improved wound healing<sup>10</sup>. In this

study we observed considerable difference of wound healing in both groups although the pain perception was same in both groups. Results are close as described by Tan et al<sup>11</sup>. Headache is the major irritating side effect that has been observed in management of patients having chronic anal fissure and some studies have reported its occurrence up to 65%<sup>12</sup>. In our study the incidence of this annoying side effect is similar to that reported by Patti et al<sup>13</sup>. The application of GTN leads to nitric oxide-mediated dilatation of the internal anal sphincter<sup>14</sup> and to a decrease in the anal resting pressure of 20–40% without any symptoms of incontinence<sup>15,16</sup>. The GTN ointment mainly acts on the upper two-thirds of the anal canal and, to a lesser extent, on the lower one-third of the anal canal<sup>17</sup>. We tried to observe the effects of GTN ointment on wound healing after open hemorrhoidectomy. This study focused on would GTN ointment usage increase the rate of wound healing after a hemorrhoidectomy and that wound drainage would be improved because of dilatation of the internal anal sphincter and the increased blood flow to the anal canal<sup>18</sup>. In this study, we confirmed the healing effect of GTN ointment on hemorrhoidectomy wounds. There was no notable difference of postoperative complications in both groups. The one case of stenosis, which was due to overexcision of the hemorrhoids, and was managed with postoperative dilatation. In the case of delayed bleeding, suture ligation of the bleeder was done under anaesthesia. Headaches are very common side effect of GTN ointment, but only one patient in the GTN group presented with headaches. The causes of the lower incidence of headaches were probably the use of a smaller amount (mean amount of 1gm/day) of GTN ointment and the effect of the consumed painkillers. Jonas et al reported that GTN ointment effects locally on the internal anal sphincter and that there was no correlation between the plasma concentration and headaches<sup>19</sup>. Headaches were more commonly associated with the use of highly concentrated GTN ointment<sup>16,20</sup>.

## CONCLUSION

It is concluded from the study that GTN ointment enhances the healing of post hemorrhoidectomy wounds without significant side effects. Also, GTN ointment had an effect to decreasing postoperative pain. However, as an analgesic, GTN ointment has no merit.

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