

## A Study on Evaluation of the Effectiveness of 0.2 Percent Glyceryl Trinitrate Ointment for Wound Healing After Open Haemorrhoidectomy

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### ABSTRACT

**Background:** Haemorrhoidectomy is related with impressive postoperative pain and delayed injury mending that may postpone come back to work. present study was conducted to evaluate the role of 0.2% glyceryl trinitrate (GTN) ointment after open haemorrhoidectomy for complete wound healing.

**Method:** A prospective clinical trial was conducted. Patients were allocated to either experimental group (GTN-group) or Non-GTN group. Patients were asked to fill in a pain diary. Finish recuperating was characterized as entire epithelialization. There were 32 patients in the GTN group and 37 in Non-GTN group. When GTN ointment is applied to the wound after open haemorrhoidectomy, it is thought that it will shorten the healing time and decrease postoperative pain. This study focused on the efficacy of 0.2% GTN ointment to shorten the healing time after open haemorrhoidectomy.

**Results:** By week 3, however, 21 patients in the GTN group had completely epithelialized wounds compared with 9 patients in the Non-GTN group. Only 1 patient who received GTN experienced headache requiring discontinuation of ointment.

**Conclusion:** Topical application of 0.2 percent glyceryl trinitrate ointment enhances the wound healing and decreases the postoperative pain after open haemorrhoidectomy.

**Keywords:** Efficacy, Glyceryl Trinitrate Ointment, Haemorrhoidectomy, Wound Healing.


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### INTRODUCTION

Haemorrhoidectomy is an operation that used to remove severe haemorrhoids (also known as piles). It is usually carried out under a spinal anaesthesia. The procedure haemorrhoidectomy is common and safe, but recovery after the surgery can take a few weeks and can be painful. Pathologies of the anal canal—acute and chronic fissures and hemorrhoids are extremely common. About 30 to 40 percent of the population suffers from proctologic pathologies at least once in their lives. The resulting disorders are more annoying than dangerous.<sup>1</sup> The main cause of postoperative pain is the haemorrhoidectomy wounds, which cause reflex spasm of the involuntary internal anal sphincter and the voluntary external sphincter. The latter stops quickly, contributing to short periods of spasm, and the maintained anal spasm remains the sole function of the internal anal sphincter (PARKS 1956). Postoperative spasm of the internal anal sphincter may be a contributory factor.<sup>2,4</sup> Glyceryl trinitrate

(GTN) ointment is used to heal the wound associated with anal fissures. 0.2% GTN heals 60% of fissures.

Hippocratic provided information on clinical description and surgical treatment of haemorrhoids at 460BC in details. The Romans succeeded the Greeks as pioneers in medical science. The present extraction ligation strategy is accessible which is changed and portrayed by Milligan, Morgan, Jones and Officer in 1937. Parks depicted a change of haemorrhoidectomy in 1956 with more fragile method; yet it didn't pick up prominence, in spite of all its hypothetical favorable circumstances. In 1959 Hemorrhoids wound were first portrayed by Ferguson. Longo portrayed the circumferential resection of hemorrhoid in the tallness of anorectal change zone with a round stapler and the cutaneous part is cleared out. It is necessary to make that the glyceryl trinitrate ointment is the right treatment before using it. There are some factors that doctors should know before

prescribing the glyceryl trinitrate ointment to the patients. The factors are pregnancy, breast feeding, impaired liver or renal function, hypertension, migraine or severe headache, anemia, hypoxemia, glaucoma and allergic reaction to this drug. The main goal of this study was to estimate the role of glyceryl trinitrate (GTN) ointment in respect to wound healing after open haemorrhoidectomy.

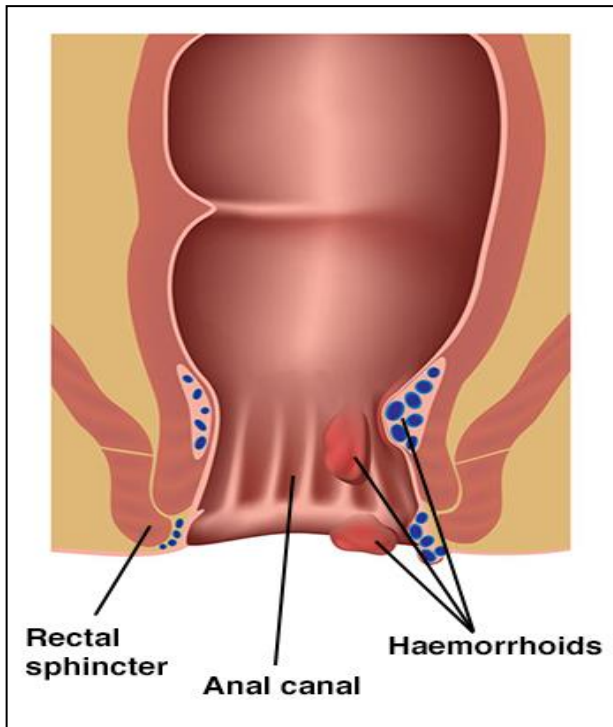


Figure 1: Haemorrhoids (piles)

**OBJECTIVE**

**General Objective**

- To evaluate the role of 0.2 percent glyceryl trinitrate (GTN) ointment after open haemorrhoidectomy in respect to complete wound healing.

**Specific Objective**

- To identify family history of hemorrhoids
- To examine postoperative complications in the case of wound healing in the patients

**METHODOLOGY**

**Study design:** Clinical trial (Quasi Experimental Study)

**Study Place:** Dept. of Surgery, BSMMU; Dept. of Surgery, DMCH; and few private hospitals of Dhaka city

**Study Duration:** July 2007 to February 2009

**Sample Technique:** Purposive Sampling

**Sample Size:** 69 Patients

**Inclusion Criteria**

- Age: 30 to 60 years.
- Sex: Male & female.
- Patients with 2nd, 3rd & 4th degree haemorrhoids.

**Exclusion Criteria**

- Patients age below 30 and above 60 years.
- Patients with ischemic heart disease.
- Patients who will undergo combined operation for anal fissure or fistula.
- Patients with previous anorectal surgery.
- Diabetes Mellitus, Anaemia, Malnutrition, Jaundice or any other condition that affect the wound healing.
- Patients are intolerant to GTN, ketorolac or pethidine.

**Data Analysis Procedure**

- The following steps analyzed collected data,
- Collected data was checked repeatedly.
- Data was collected by the researcher himself.
- Then the collected data was entered into SPSS (Statistical Package for Social Science) computer software program.
- The qualitative data was analyzed by the chi-square (c2) test
- The quantitative data was analyzed by student's *t* test
- $P < 0.05$  was accepted as the level of significance

**RESULTS**

Figure 2 shows distribution of cases by gender where for non-GTN 26.09% lower in female than male.

Table 1 shows distribution of cases by age group where for GTN age between 30-40 had 8.7% higher than 41-50 age group.

Figure 3 shows distribution of cases by presence or absence of family history of hemorrhoids where only (19%, n=13) patient had positive family history of hemorrhoid.

Table 2 shows comparison of mean analgesics consumption between two groups where for GTN 21 patients wound were healed and for non-GTN number is low, only 9 patients.

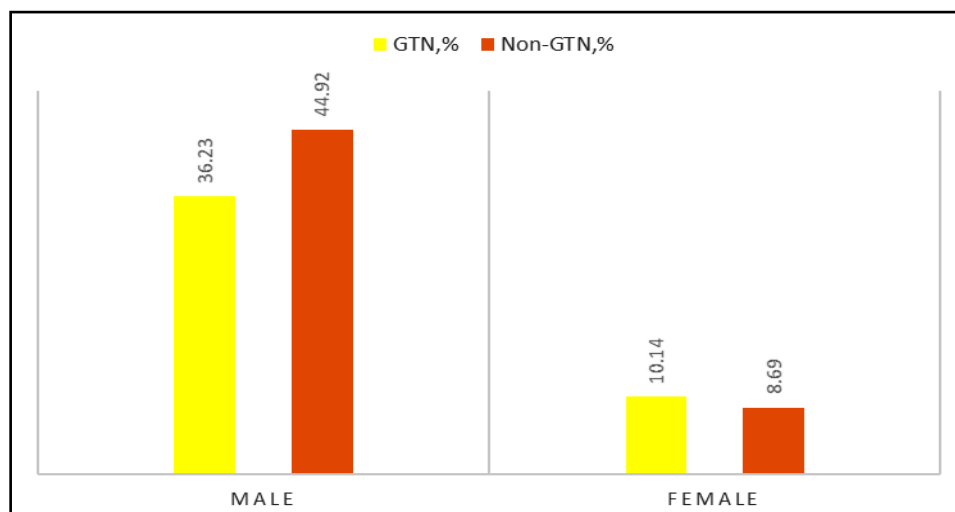
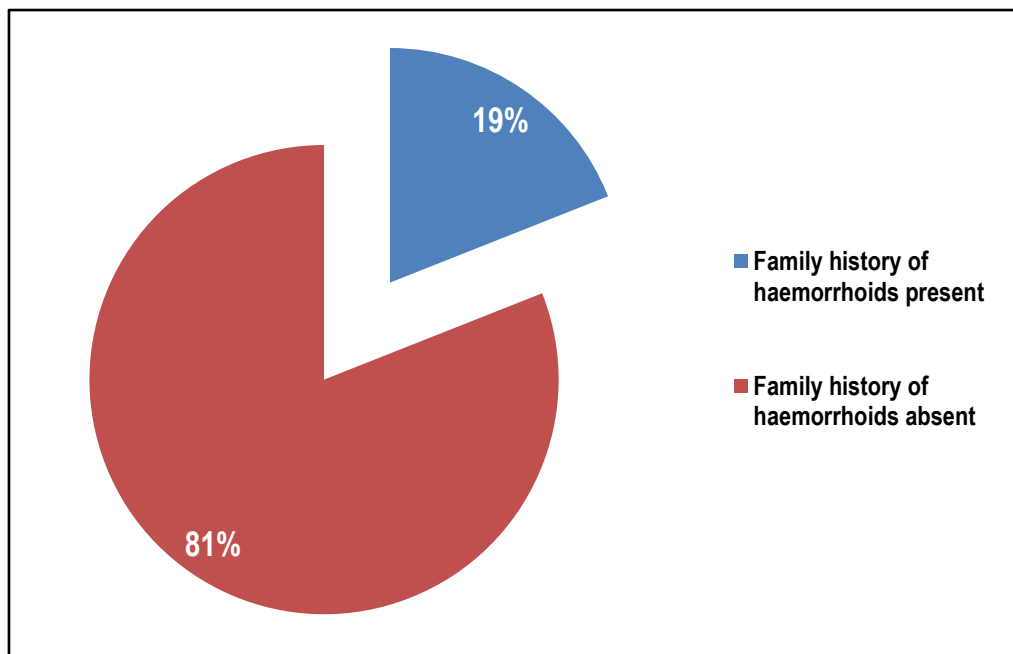


Figure 2: Distribution of cases by gender

**Table 1: Distribution of cases by age group**

Age group (years)	Group						t	P*value
	GTN (n= 32)		Non-GTN (n=37)		Total(n=69)			
	No.	%	No.	%	No.	%		
30-40	15	21.74	18	26.09	33	47.83	.756	.453
41-50	9	13.04	14	20.29	23	33.33		
51+	8	11.59	5	7.25	13	18.84		

\*p value reached from unpaired student's t test (>0.05)



**Figure-3: Distribution of cases by presence or absence of family history of hemorrhoids**

**Table 2: Comparison of mean analgesics consumption between two groups**

Group	Wound healing	
	Yes	No
GTN (n=32)	21	11
Non- GTN (n=37)	9	28

**Table 3: Comparison of post-operative complication between two groups**

Post-operative complications	Group				Total(n=69)		x <sup>2</sup>	P value
	GTN (n=32)		Non-GTN (n=37)		No.	%		
	No.	%	No.	%				
Urinary retention	9	13.04	6	8.70	15	21.74	1.59	0.207
Reactionary/ secondary haemorrhage	1	1.45	3	4.35	4	5.80	0.753	0.385
Headache	7	10.15	1	1.45	8	11.59	6.416	0.011
Itching	5	7.25	5	7.25	10	14.49	0.081	.776
Wound infection	2	2.90	2	2.90	4	5.80	0.210	.654
Faecal Impaction	-	-	4	5.80	4	5.80	3.632	0.057
Anorectal incontinence to gases	7	10.15	3	4.35	10	14.49	2.797	0.094
Anorectal incontinence to liquid faeces	8	11.59	3	4.35	11	15.94	3.889	0.049
Anorectal incontinence to solid faeces	-	-	-	-	-	-	-	-

Table 3 shows comparison of post-operative complication between two groups where rate of wound healing is consistently faster in patients who received GTN ointment. By week 3, 21 of 32 patients in GTN -group had completely epithelialized wound compared with 9 of 37 patients in Non-GTN group (P = 0.006).

**DISCUSSION**

Diathermy haemorrhoidectomy is an effective technique for the management of 2nd, 3rd and 4th degree haemorrhoids which is a performed operation owing to patient fondness and price. But, the long period of wound healing, associated with perianal irritation,

discharge and pain, continues to pose a problem for patients hoping to return to work as soon as possible. Spasm of the internal anal sphincter may be the source anal pain and delayed healing after hemorrhoidectomy.<sup>5</sup> High anal canal pressures are common in patients who have symptomatic haemorrhoid.<sup>6</sup> A lateral internal sphincterotomy during the haemorrhoidectomy to normalize the anal pressure was recommended.<sup>7</sup> GTN also has the advantage of having a temporary effect compared with anal dilatation and lateral sphincterotomy, which carry a risk of incontinence.<sup>8,9</sup> In many study found promising results in terms of wound healing. It was with these issues in mind that the present study was conducted, with the hope of defining the role of GTN ointment in improving wound healing rates and reducing pain after haemorrhoidectomy.<sup>6,10</sup> In this study, significantly improved wound healing rate was observed in the GTN group in comparison with Non-GTN group. By weeks 3, 21 of 32 patients in the GTN group had completely epithelialized wound compared with 9 of 37 in the Non- GTN group (P = 0.006). All other studies of had the similar observation about statistically significant wound healing in GTN group.<sup>5-13</sup> Overall the benefits of improved wound healing outweighed the problem of side-effects. Patient selection, however, is important for best results.

#### LIMITATION

Sample size was small, random sampling was not possible.

#### CONCLUSION

After many examinations it was found that 0.2 percent glyceryl trinitrate ointment enhances the healing of post-haemorrhoidectomy wounds without significant side effects except headache as a minor one. Further research work should be performed with larger sample size.

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