



## Effectiveness of 0.2 percent glyceryl trinitrate ointment for pain reduction after open Hemorrhoidectomy

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### Abstract

*Open haemorrhoidectomy is associated with significant postoperative agony and inconvenience. 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.*

**Objective:** *The porpoise of this study is to evaluate effectiveness of 0.2 percent glyceryl trinitrate ointment for pain reduction after open hemorrhoidectomy.*

**Method:** *During study a planned clinical preliminary was directed. Patients were dispensed to either test gathering (GTN-gathering) or Non-GTN gathering. Complete healing was defined as complete epithelialization. There were 32 patients in the GTN gathering and 37 in Non-GTN gathering. There were no factually huge contrasts in sex, weight, kind of haemorrhoid, sort of medical procedure (emergency or elective), number of hemorrhoids excised, term of medical procedure, and doctor's facility remain and intricacy rate between the gatherings.*

**Result:** *Pain scores and pain-relieving use were not essentially unique. By week 3, be that as it may, 21 patients in the GTN amass had totally epithelialized wounds contrasted and 9 patients in the Non-GTN gathering ( $P = 0.006$ ). Just a single patient who got GTN experienced headache requiring suspension of the salve. GTN 0.2 for each penny balm enhanced injury recuperating rates and diminish postoperative torment in this investigation.*

**Conclusion:** *Post-operative pain was significantly less in GTN-Group in this study. Further study is need for better outcome.*

**Keyword:** *Haemorrhoidectomy, sphincter, glyceryl trinitrate ointment.*

### Introduction

Most hemorrhoids (piles) can either be treated with medicines or non-surgical procedures or it can be avoided with appropriate exercise and diet. Hemorrhoidectomy is a procedure that used to excise symptomatic

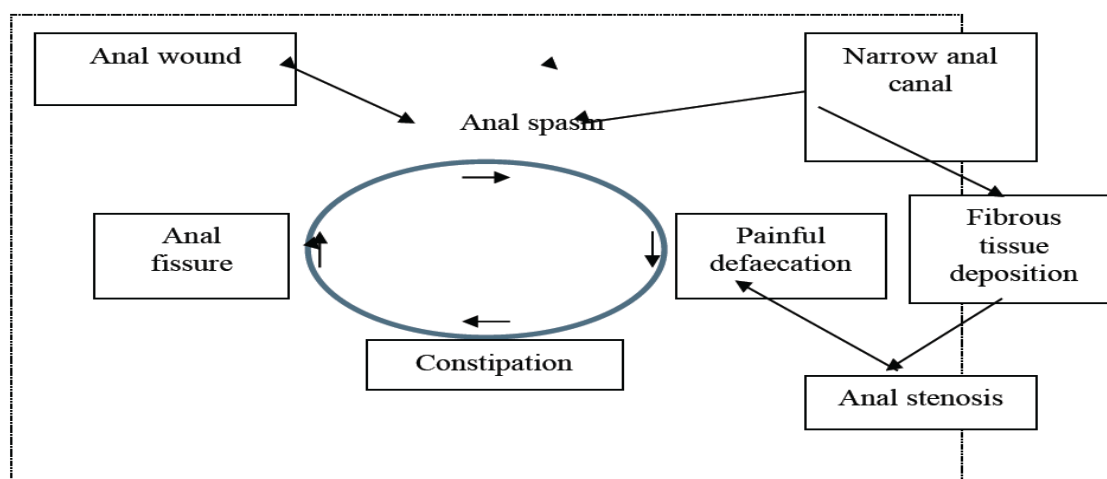
hemorrhoids. If non-surgical treatments don't work, or the hemorrhoids are particularly large and bleeds, patient should be offered for haemorrhoidectomy. Removing the hemorrhoids will relieve the uncomfortable symptoms but there is fear post-operative pain and recurrence.

Haemorrhoidectomy is typically done under spinal anaesthesia. Around 30 to 40 percent of the population experiences proctologic pathologies at any rate once in their lives.

Haemorrhoidectomy is associated with considerable postoperative pain and prolonged wound healing that may delay return to work (Mac Rae & McLeod 1995). 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, Eisenhammer 1969, Allgower 1975). Postoperative spasm of the internal anal sphincter may be a contributory factor (Cheetham & Phillips 2001, Asfar, Juma & Ala-Edeen 1988).

Sustained spasm of the anal sphincter may cause painful bowel action, which leads to more spasm, constipation and fissure formation, starting a vicious circle; Fig.1. (Asfar, Juma & Ala-Edeen 1988). The high incidence of faecal soiling and impaired control of flatus and faeces in patient treated with anal stretch disqualifies this maneuver and favors sphincterotomy to reduce post haemorrhoidectomy pain. (Asfar, Juma & Ala-Edeen 1988).



**Figure: 01:** Consequence of Hemorrhoidectomy

It is normal to experience a lot of pain after open haemorrhoid surgery. Glyceryl trinitrate (GTN) ointment is used to ease the pain associated with anal fissures. An anal fissure is a small tear of the anoderm extending from anal verge to dentate line. Glyceryl trinitrate has a place with the gathering of natural nitrates. Their activity gets from their metabolic transformation to nitric oxide in vascular smooth muscle cell. The fundamental driver of postoperative agony is the hemorrhoidectomy wounds, which cause reflex fit of the automatic inward butt-centric sphincter and the intentional outer sphincter. The last stops rapidly, adding to brief times of fit, and the kept-up butt-centric fit remains the sole capacity of the inward butt-centric sphincter.<sup>[1][2][3][4][5][9]</sup> Postoperative fit of the inward butt-centric

sphincter might be a contributory factor. The current excision-ligation procedure is available which is principally modified and described by Milligan, Morgan, Jones and Officer in 1937. Parks described a modification of hemorrhoidectomy in 1956 with seemingly more delicate technique; but it did not gain popularity, despite of all its theoretical advantages. In 1959 Hemorrhoids wound were first described by Ferguson. Longo described the circumferential resection of hemorrhoid in the height of anorectal transition zone with a circular stapler and the cutaneous component is left. The reason for our study was to assess the part of GTN treatment in regard to postoperative agony decrease after open hemorrhoidectomy.

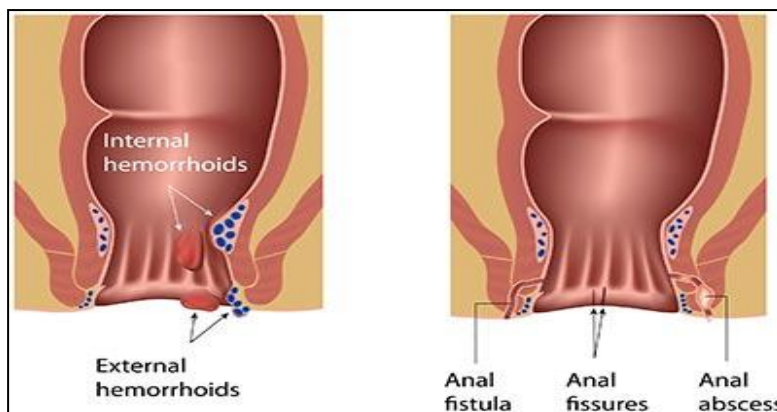


Figure: 02: Hemorrhoid removal (Hemorrhoidectomy)

**Objective**

**General objective**

- To assess the role of 0.2 percent glyceryl trinitrate (GTN) ointment after open hemorrhoidectomy in respect to pain reduction.

**Specific objective**

- To identify type of hemorrhoids.
- To evaluate post-operative pain in patients

**Methodology**

Table-1: Study design, place of study and duration, sample technique and sample size

Study design	Study Place	Study Duration	Sample Technique	Sample Size
Clinical trial (Quasi Experimental Study)	Dept. of Surgery, BSMMU; Dept. of Surgery, DMCH; and few private hospitals of Dhaka city	July 2007 to February 2009	Purposive sampling	69

Table-2: Selection criteria

Inclusion criteria	Exclusion criteria
a) Age: 30 to 60 years.	a) Patients age below 30 and above 60 years.
b) Sex: Male & female.	b) Patients with ischemic heart disease.
c) Patients with 2nd, 3rd & 4th degree hemorrhoids.	c) Patients who will undergo combined operation for anal fissure or fistula.
	d) Patients with previous anorectal surgery.
	e) Patients are intolerant to GTN, ketorolac or pethidine.

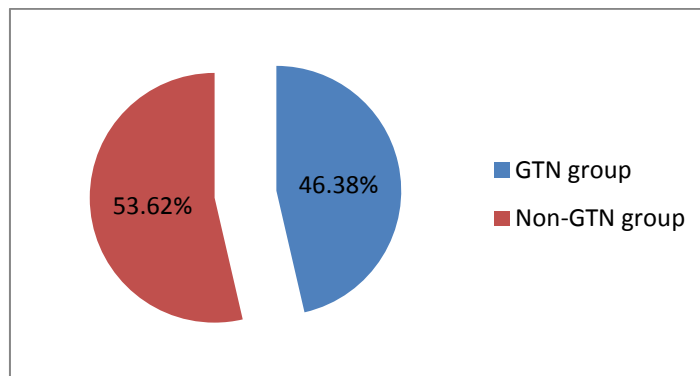
**Data analysis procedure**

- 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**

A total of 69 cases were followed. Thirty-two (46.38%) of them in experimental (GTN-) group and 37(53.62%) in Non-GTN group. The following figure is given below in detail:



**Figure-3:** Distribution of cases by group

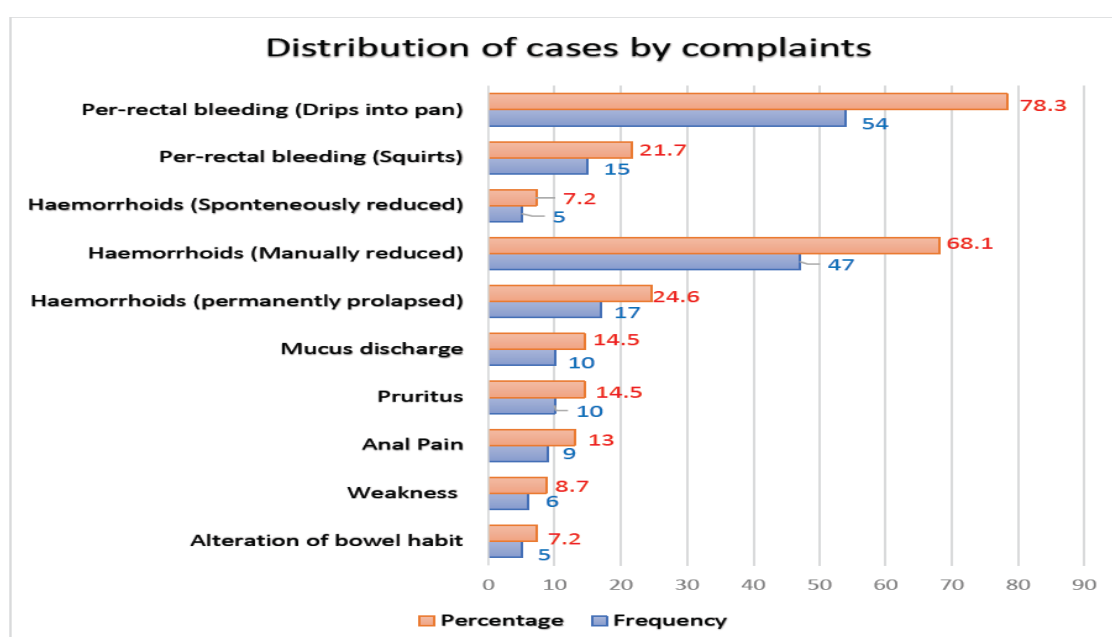
In table-3 shows distribution of cases by sex where for GTN 26.09% higher in male than female. The following table is given below in detail:

**Table-3:** Distribution of cases by sex

Sex	Group				Total(n=69)	
	GTN(n=32)		Non-GTN (n=37)		No.	%
	No.	%	No.	%		
Male	25	36.23	31	44.92	56	81.16
Female	7	10.14	6	8.69	13	18.84

In figure-3 shows Distribution of cases by presenting complaints where all patients were presented with passage of bright red blood per rectum, among them (78.3%) drips into pan; and (21.7%) squirts during defecation. All patients were also complaints of ‘something coming out through anus’, these were the hemorrhoidal tissue confirmed by examination; (7.2%) reduced spontaneously, these were the second degree hemorrhoids but all of them had severe per-rectal

bleeding and underwent hemorrhoidectomy immediately; (68.1%) manually reduced these were third degree and (24.6%) permanently prolapsed these were fourth degree hemorrhoids. Alteration of bowel habit was found in (7.2%) cases, all investigated by colonoscopy to exclude malignancy. (14.5%) had mucous discharge, 14.5% had Pruritus, 13% had pain in anus and 8.7% had weakness. The following figure is given below in detail:



**Fig. 4:** Distribution of cases by presenting complaints

Table-4 is shows distribution of cases by number of hemorrhoids where most of the cases (71.0%), had 3 hemorrhoids; of them (33.3%) in GTN-group and 37.7% in Non-GTN -group. Two

hemorrhoids were present in (26.1%) cases, of them (11.6%) in GTN-group and (15.9%) in Non-GTN -group. Only (3.0%) had single hemorrhoid. The following table is given below in detail:

**Table-4:** Distribution of cases by number of hemorrhoids

Number of hemorrhoid(s)	Group				Total( n=69)	
	GTN(n=32)		Non-GTN(n=37)		No.	%
	No.	%	No.	%		
1	1	1.5	1	1.5	2	3.0
2	8	11.6	10	15.9	18	26.1
3	23	33.3	26	37.7	49	71.0

Table-5shows Distribution of cases by degree of hemorrhoids where most of the cases (68.1%) had 3rd degree hemorrhoid, followed by (24.6%) had

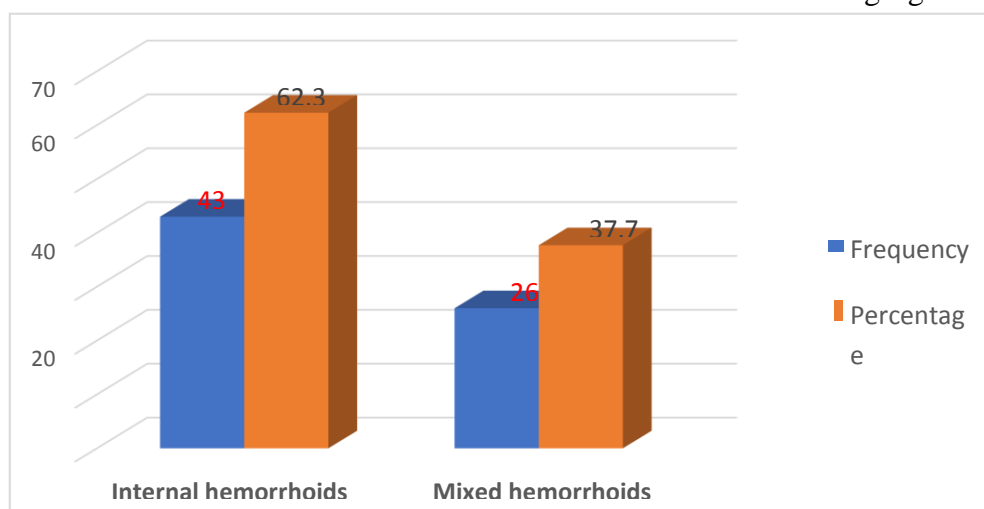
4th degree, and (7.2%) had 2nd degree hemorrhoid. The following table is given below in detail:

**Table-5:** Distribution of cases by degree of hemorrhoids

Degree of hemorrhoids	Frequency(n)	Percent (%)
2nd degree	5	7.2
3rd degree	47	68.1
4th degree	17	24.6

In figure-4 shows distribution of cases type of hemorrhoids where 62.3% had internal hemorrhoid

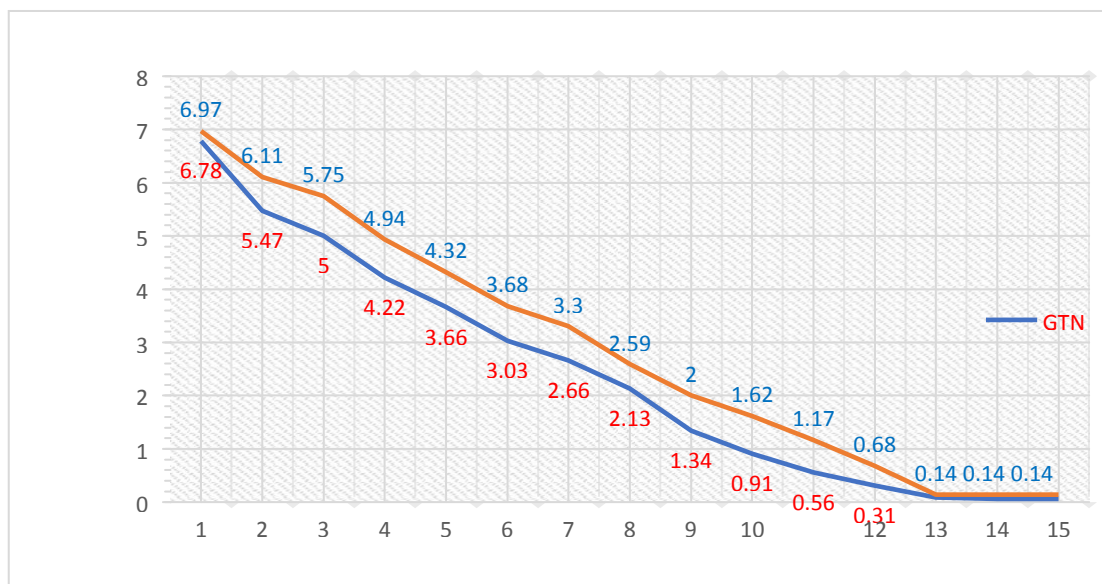
followed by (37.7%) had mixed type of hemorrhoid. The following figure is given below:



**Fig. 5:** Distribution of cases type of hemorrhoids

In figure -5 shows distribution of post-operative pain score where score was assessed for two weeks. Figure-5 is showing the pain score was lower in GTN -group than Non-GTN group and

that was statistically significant up to 10th postoperative day. The following figure is given below in detail:



**Figure-6:** Distribution of post-operative pain score

### Discussion

Diathermy hemorrhoidectomy is a frequently performed operation owing to patient preference and cost. The physiological effects of GTN ointment after hemorrhoidectomy are attractive. It exerts its action through nitric oxide (NO). These molecules are referred as NO donors and NO causes vascular and lymphatic dilation, decrease swelling and edema and thereby reducing pressure on nerves, which reduces the pain.<sup>[10]</sup> GTN reduces spasm of the internal anal sphincter, which has been identified as one of the contributors to pain and also increases endodermal blood flow and thus promotes healing.<sup>[12]</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]</sup> Post-operative pain was significantly less in GTN-Group in this study. And there is no significant difference in analgesic consumption between GTN and Non- GTN group. The observations of other studies support this finding.<sup>[4]</sup> But in other study reported that no significant difference in post-operative pain perception in their studies. The total amount of analgesics consumed were also similar in their studies. None of them mentioned any remarkable cause of such variation in other studies.<sup>[3] [12]</sup>

Post-operative complications had no statistically significant difference between GTN group and Non-GTN groups except headache and anorectal incontinence to liquid faces where ( $p < 0.05$ ) in my study. Headache was also experienced by significant number of patients of GTN-group in other studies.<sup>[3]</sup> Headaches were more commonly associated with the use of highly concentrated GTN ointment.<sup>[6]</sup>

### Conclusion

After many observations and analysis, it was found that post-operative pain was significantly less in GTN-Group in this study. Further study is need for better outcome.

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