

COMPARISON OF POST-OPERATIVE PAIN WITH TOPICAL GLYCERYL TRINITRATE CREAM VERSUS LATERAL INTERNAL ANAL SPHINCTEROTOMY AFTER HEMORRHOIDECTOMY

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ABSTRACT

Background: Hemorrhoidectomy is the surgical treatment for grade III, IV hemorrhoids. Hemorrhoidectomy is notorious for postoperative pain which may be due to spasm of the internal anal sphincter. **Objective:** To compare mean post-operative pain with 0.2% topical Glyceryl Trinitrate cream versus lateral internal anal sphincterotomy after hemorrhoidectomy. **Methodology:** Setting: General Surgery ward, Sheikh Zayed Medical College/ Hospital Rahim Yar Khan. Duration: From 4th February to 4th August, 2015. **Design:** Randomized Controlled Trials. A total of 60 patients with hemorrhoids were included in this study. Thirty patients were in group A and subjected to Milligan-Morgan open hemorrhoidectomy followed by post-operative application of 0.2% topical Glyceryl Trinitrate (GTN) using a measuring spoon, three times a day. 30 patients were included in group B and treated with Milligan-Morgan open hemorrhoidectomy along with lateral internal sphincterotomy. All the patients were followed up to one week for post-operative pain assessment and mean post-operative pain was noted for both groups at 7th day post-operatively. This all data was recorded on an especially designed Proforma. The data was entered in SPSS version 16 and analyzed. **Results:** Mean post-operative pain score was significantly low in group B (2.07±0.9) as compared to group A (3.17±1.1) (p=0.0005). **Conclusion:** Internal sphincterotomy with open hemorrhoidectomy is an effective method to reduce post-hemorrhoidectomy pain as compared to 0.2% topical Glyceryl Trinitrate (GTN) cream.

Key Words: Hemorrhoidectomy, Glyceryl Trinitrate, Lateral internal anal sphincterotomy, Post-operative pain

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INTRODUCTION

Hemorrhoidectomy is the surgical treatment for grade III, IV hemorrhoids. Hemorrhoidectomy can be performed by multiple techniques which include open (Milligan-Morgan), closed (Ferguson), Ligasure hemorrhoidectomy and stapled hemorrhoidopexy.¹ Hemorrhoidectomy is usually notorious for having postoperative pain which may be due to spasm of the internal anal sphincter.² Multiple modalities have been used to reduce this pain including topical application of 0.2% Glyceryl Trinitrate (GTN), 0.4% GTN, 2% Lignocain gel, and metronidazol.^{3,4}

Glyceryl trinitrate ointment acts as a dilator of the internal anal sphincter.² GTN reduces pain during the first week after surgery.³ In the evaluation of the pain intensity, using Visual Analogue Scale each day for 7 days, GTN group experienced significantly less pain during the first week after surgery.^{5,4} Postoperative pain both at rest and during defecation and the time to healing and return to normal activity significantly reduces if patients are treated postoperatively with GTN.^{6,8} Another modality to reduce this post-operative pain includes simultaneous per-operative lateral

anal sphincterotomy through one of the wounds of hemorrhoidectomy.^{9,10,11} Studies suggest a beneficial effect of surgical internal sphincterotomy more than chemical sphincterotomy as an adjunct procedure to standard hemorrhoidectomy and that the benefit of this procedure outweighs the perceived risk of complications.^{10,12,13} The number of patients who suffered from postoperative pain decreased significantly when performing internal sphincterotomy.² As post-operative pain following hemorrhoidectomy is the most common complaint which not only affects the patients physically but also associated with high morbidity, so the purpose of this study was to compare the mean post-operative pain by using 0.2% topical Glyceryl Trinitrate (GTN) cream versus lateral internal anal sphincterotomy after hemorrhoidectomy in local population.

METHODOLOGY

Study Design: Randomized Controlled Trial. **Setting:** This study was conducted in Surgical Unit-I, Sheikh Zayed Hospital Rahim Yar Khan. Patients meeting inclusion criteria, presenting in outpatient/emergency department were admitted to surgical unit-1 and enrolled for the study.

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Duration of Study: 6 months from 4th February to 4th August, 2015.

Sample Size: The calculated sample size was 60 i.e. 30 cases in each group, with 5% level of significance, 80% power of study and taking mean post-hemorrhoidectomy pain with lateral internal anal Sphincterotomy as 1.6 ± 0.59 and with 0.2% topical Glyceryl Trinitrate (GTN) cream as 3.26 ± 2.25 .

Sampling Technique: Non Probability, Consecutive sampling.

Inclusion Criteria:

- 3rd and 4th degree hemorrhoids
- All male and female patients of age 18-45 yrs.
- Duration of hemorrhoids > 1 months

Exclusion criteria:

- Any patient with other co-existing anal or rectal pathology like fistula, fissure or other colorectal diseases.
- Any patient having history of any anal surgery.
- Patients with cardiovascular pathology
- Patients taking nitrates or calcium channel blockers
- Patients allergic to GTN
- Patients having uncontrolled diabetes mellitus

Dosage of Glyceryl Trinitrate (GTN): A measuring spoonful three times a day. This regimen delivered approximately 300 mgs of GTN per application.

Post-operative Perianal Pain: It was assessed by using visual analogue scale at 7th day post-operatively. No Pain = 0, Mild Pain = 1-3, Moderate Pain = 4-6, Severe Pain = 7-10 After approval from ethical review committee, written informed consent was taken and patients were randomly allocated either of two groups by lottery method. All selected cases were offered to pick up a slip from total mixed up slips (half-slips contained letter "A" and other half-slips contained letter "B") and he/she was placed in that group. Group A was subjected to Milligan-Morgan open hemorrhoidectomy followed by post operative application of 0.2% topical GTN using a measuring spoon, three times a day. This regimen delivered approximately 300 mgs of GTN per

application. All patients were advised to take sitz bath twice a day before application of drug. Group B was subjected to Milligan-Morgan open hemorrhoidectomy along with lateral anal Sphincterotomy. To reduce bias, all patients had Milligan-Morgan hemorrhoidectomy performed by the same consultant surgeon. All the patients were assessed up to one week for post-operative pain assessment and mean post-operative pain (as per operational definitions) was noted for both groups at 7th day post-operatively. This all data was recorded on especially designed proforma.

Data was entered and analyzed on SPSS version 16. Mean and Standard deviation was calculated for quantitative variables like age, duration of disease and VAS score. Frequency and percentage was calculated for qualitative variables like gender and degree of hemorrhoids (third / fourth). Mean post-operative pain was compared between two groups by student's t test. P value ≤ 0.05 was taken as significant. Effect modifiers were controlled by stratification of data in terms of age, gender, duration of disease and degree of hemorrhoids (third / fourth).

RESULTS

60 patients with hemorrhoids were included in this study. Patients were randomly allocated into two groups. Thirty patients were in group A and subjected to Milligan-Morgan open hemorrhoidectomy followed by post-operative application of 0.2% topical GTN using a measuring spoon, three times a day and 30 were in group B and treated to Milligan-Morgan open hemorrhoidectomy along with internal Sphincterotomy. The mean age of the patients was 34.52 ± 8.07 years. Mean age was not significant different between groups while mean duration of hemorrhoid were significant different between groups as shown in Table I.

Table I: Comparison of age and duration of hemorrhoids in both groups.

Variable	Group A (n=30)	Group B (n=30)	P-Value
Age (Years)	34.27 ± 8.13	34.77 ± 8.17	0.81
Duration of Hemorrhoid (months)	10.27 ± 3.27	12.27 ± 2.67	0.012

Out of 60 cases, 33(55%) were male and 27(45%) female. Gender distribution with respect to groups is

shown in Figure I.

Figure I: Gender distribution with respect to groups (N=60)

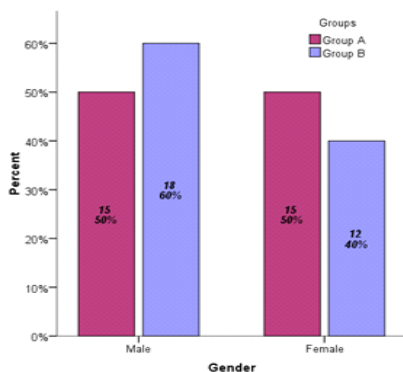


Table II: Comparison of mean pain score between groups

Pain Score	Group A (n=30)	Group B (n=30)	P - Value
Mean	3.17	2.07	0.00
Standard Deviation	1.12	0.91	

Table III: Comparison of mean pain score between groups with respect to age groups

Age Groups (Years)	Pain Score	Group A	Group B	P - Value
≤ 30	n	8	10	0.001
	Mean ± SD	3.38 ± 0.52	1.90 ± 0.87	
31 to 40	n	11	12	0.14
	Mean ± SD	2.91 ± 1.13	2.25 ± 0.96	
41 to 50	n	11	8	0.041
	Mean ± SD	3.27 ± 1.42	2.0 ± 0.93	

Table IV: Comparison of mean pain score between groups with respect to sex

Sex	Pain Score	Group A	Group B	P-Value
Male	n	15	18	0.01
	Mean ± SD	3.20 ± 1.26	2.17 ± 0.92	
Female	n	15	12	0.003
	Mean ± SD	3.13 ± 0.99	1.92 ± 0.90	

Table V: Comparison of mean pain score between groups with respect to grade of hemorrhoid

Grade of Hemorrhoid	Pain Score	Group A	Group B	P-Value
3 rd Degree	n	11	18	0.025
	Mean ± SD	3.18 ± 0.98	2.33 ± 0.91	
4 th Degree	n	19	12	0.001
	Mean ± SD	3.16 ± 1.21	1.67 ± 0.77	

The mean pain score in two groups is shown in table II. The comparison of mean pain score with respect to sex in table IV and with respect to grade of hemorrhoid is shown in table V. Whereas, pain score with respect to duration of hemorrhoids is shown in table VI.

Regarding degree of hemorrhoids, 29 (48.3%) had 3rd degree and 30 (51.6%) had 4th degree hemorrhoid. Grade of hemorrhoid with respect to groups is also given in Figure II.

Figure II: Degree of hemorrhoid with respect to groups (N=60)

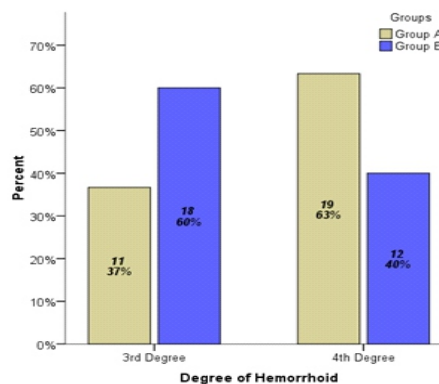


Table VI: Comparison of mean pain score between groups with respect to duration of hemorrhoid

Duration of Hemorrhoid	Pain Score	Group A	Group B	P-Value
≤ 12 months	n	23	22	0.0005
	Mean ± SD	3.30 ± 1.11	1.95 ± 0.89	
>12 months	n	7	8	0.53
	Mean ± SD	2.71 ± 1.11	2.38 ± 0.92	

DISCUSSION

High anal canal pressure was documented in patients with hemorrhoids^{14,15,16} especially in the younger patients. Anal canal pressure remains mostly higher

in younger patients due to tight internal sphincter (high tone) than the older people. This tight (over active) sphincter is the prime cause of unpleasant post hemorrhoidectomy pain.¹⁷ Over the decade several authors reported that significant reduction of post hemorrhoidectomy pain and associated complications can be achieved by adding internal sphincterotomy to hemorrhoidectomy.¹⁸ Finally Asfar et al¹⁹ reported that the routine performance of internal sphincterotomy through one of the hemorrhoidectomy wounds significantly reduces post hemorrhoidectomy pain and associated complications.

In this study, the average age of the patients was 34.52 ± 8.07 years. Out of 60 cases, 33(55%) were male and 27(45%) female. In Das et al⁹ study there were patients aged 24-50 years. There were 38 males and 12 females. 31 (62%) were 40 years of age and 19(38%) were in between 40 to 50 years of age. In the present study mean post-hemorrhoidectomy pain by using 0.2% topical Glyceryl Trinitrate (GTN) cream was 3.17 ± 1.12 as compared to 2.07 ± 0.91 treated with lateral anal sphincterotomy. It showed that mean post-operative pain score was significantly low in group B as compared to group A ($p=0.00$). In Das et al,⁹ study mean post-hemorrhoidectomy pain by using 0.2% topical Glyceryl Trinitrate (GTN) cream was found to be 3.26 ± 2.258 compared to 1.6 ± 0.599 treated with lateral anal sphincterotomy. In this respect, it is worth considering the importance of performing anal divulsion/internal sphincterotomy to prevent postoperative pain, as already highlighted in several multi-centre clinical trials.^{20,21} Some authors, instead, showed that the internal sphincterotomy does not influence the incidence of postoperative pain.^{22,23} Sometimes pain may persist over time after cicatrization of wounds. In most of these cases, the cause should be attributed to the formation of an anal fissure on the groove of one of the excised peduncles. Several authors reported beneficial effect by adding lateral internal sphincterotomy to hemorrhoidectomy. Galizia et al,²⁴ performed a randomized prospective study to investigate anorectal manometric findings and to evaluate the postoperative course in 42 patients after hemorrhoidectomy with and without lateral internal sphincterotomy. The results showed significant differences in the pain scores and the analgesic requirements between the two groups.

Thus, these investigators concluded that sphincterotomy significantly improves the postoperative course after hemorrhoidectomy and is safe. However, they also suggested that this is justifiable only when preoperative anorectal manometry shows high anal pressures. Similarly, Di Bella and Estenne,²⁵ stated that internal sphincterotomy represents a valid complement to hemorrhoidectomy, assuring a better postoperative course, according to the author's theory that it removes the pain by hypertoning of the internal sphincter. Finally, Asfar et al¹⁹ reported that the routine performance of sphincterotomy through one of the hemorrhoidectomy wounds significantly reduces postoperative pain and complications.

CONCLUSION

Internal sphincterotomy to open hemorrhoidectomy is an effective method to reduce post open hemorrhoidectomy pain as compared to 0.2% topical Glyceryl Trinitrate (GTN) cream without significant morbidity. A beneficial effect of surgical internal sphincterotomy is more than 0.2% topical Glyceryl Trinitrate (GTN) cream as an adjunct procedure to standard hemorrhoidectomy and that the benefit of this procedure outweighs the perceived risk of complications.

Conflict of interest:

There is no conflict of interest among all authors.

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