



A-JMRHS

COMPARATIVE STUDY OF MANAGEMENT OF SECOND AND THIRD DEGREE HEMORRHOIDS WITH INJECTION SCLEROTHERAPY USING POLIDOCANOL

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ABSTRACT

Introduction: Hemorrhoid is the anal disease and causes major morbidity and economic burden. Surgical treatment causes major complications. Injection Sclerotherapy is widely used in the treatment of hemorrhoids. So the present study was carried out to find the comparative effectiveness of Injection Sclerotherapy using Polidocanol for the management of second and third degree hemorrhoids.

Aims: The aim of the study was to compare the efficacy and safety of polidocanol sclerotherapy in second and third degree hemorrhoids by assessing symptom relief, operative parameters, complications, and treatment outcome at 6 weeks.

Materials and Methods: This prospective comparative interventional study was conducted in the Department of General Surgery, Bankura Sammilani Medical College and Hospital over 12 months among 120 patients with second and third degree hemorrhoids who underwent polidocanol injection sclerotherapy and were assessed for treatment outcomes and complications.

Results: No significant difference in gender (56.7% vs 53.3%, $p = 0.71$), but Grade III showed higher prolapse (100% vs 16.7%, $p < 0.001$), longer injection time (10.5 ± 2.8 vs 8.2 ± 2.1 min, $p = 0.002$), higher VAS (4.6 ± 1.3 vs 2.8 ± 1.1 , $p < 0.001$), more complications ($p < 0.001$), and lower complete relief (63.3% vs 86.7%, $p < 0.001$).

Conclusions: Thus injection Sclerotherapy using Polidocanol elicits good results with less complications and low cost. Further, the results have shown that this method is effective in second degree hemorrhoids as that of the third degree hemorrhoids.

Keywords: Hemorrhoids, Injection Sclerotherapy, Polidocanol, Second Degree Hemorrhoids.

INTRODUCTION

Haemorrhoids, also referred as piles are a pathological condition occurring at the anorectal region. Globally the incidence ranges from 50-80% and in India it affects around 75% of the population [1]. Haemorrhoids, generally has the peak prevalence at the age of 45 to 65 years and affects both the genders. The factors associated with the development of haemorrhoids encompass erect posture, constipation, straining during defecation, high fat diet and low fibre intake [2]. Based on the degree of prolapse, Goligher has graded the Haemorrhoids for the accurate treatment. Thus, first degree Haemorrhoids has visible vessels, second degree haemorrhoids prolapse with defecation and

Restore instantly, third degree lesions prolapse but requires manual replacement and fourth degree lesions prolapse out of the anal canal [3]. Based on the degree of haemorrhoids, the treatment strategies include dietary restriction, injection sclerotherapy, rubber band ligation, scalpel and laser surgery [4, 5]. When compared to other treatment modalities, injection sclerotherapy is a widely employed outpatient clinical procedure to treat first and second-degree haemorrhoids. This technique is reliably safe, cost effective, less time consuming and success rate is high [6, 7]. Various sclerosing agents like Sodium tetra decyl sulphate, polidocanol, and sodium morrhuate and ethanolamine oleate have been used for clinical management of haemorrhoids [8]. Among the various sclerosing agents, polidocanol has a sclerosant as well as local anesthetic property. Due to this it elicits painless sclerotherapy, low incidence of allergy and anaphylaxis reactions [6]. In this back drop, the present study was conducted to study the comparative outcome of injection sclerotherapy with polidocanol for the management of second and third degree haemorrhoids.



www.ajmrhs.com
eISSN: 2583-7761

Date of Received: 01-06-2026
Date Acceptance: 12-06-2026
Date of Publication: 11-07-2026

MATERIALS AND METHODS

Study Design: This was a Prospective comparative interventional study.

Study area: The study was conducted in the Department of General Surgery, Bankura Sammilani medical college and hospital.

Study Period: The study was carried out over a period of 12 months

Study population: The study population comprised 120 patients diagnosed with second and third degree hemorrhoids attending the Department of General Surgery, Bankura Sammilani Medical College and Hospital during the study period of 12 months, who met the inclusion criteria and were selected for comparative evaluation of injection sclerotherapy using polidocanol.

Sample Size: 120 Patients with second and third degree hemorrhoids.

Study variables:

- Age group
- Gender
- Bleeding per rectum
- Pain
- Prolapse
- Itching
- Injection time (min)
- Pain score (VAS)
- Complete relief
- Partial relief
- Poor response

Inclusion Criteria:

- Patients diagnosed with second degree hemorrhoids
- Patients diagnosed with third degree hemorrhoids
- Patients aged above 18 years
- Patients willing to give informed consent
- Patients fit for outpatient or elective treatment

Exclusion Criteria:

- Patients with fourth degree hemorrhoids
- Patients with complicated hemorrhoids (thrombosed, strangulated, or prolapsed non-reducible piles)
- Patients with associated anorectal diseases (anal fissure, fistula, malignancy)
- Patients with bleeding disorders or on anticoagulant therapy
- Pregnant and lactating women
- Patients unfit for sclerotherapy or anesthesia (if required)

Statistical Analysis:

Data were entered into Excel and analyzed using SPSS and GraphPad Prism. Numerical variables were summarized using means and standard deviations, while categorical variables were described with counts and percentages. Two-sample t-tests were used to compare independent groups, while paired t-tests accounted for correlations in paired data. Chi-square tests (including Fisher's exact test for small sample sizes) were used for categorical data comparisons. P-values ≤ 0.05 were considered statistically significant

RESULT

Table 1: Age Distribution of Patients

Age Group (Years)	Grade II (N=60)	Grade III (N=60)	Total (N=120)	P-Value
18-30	12 (20%)	10 (16.7%)	22 (18.3%)	0.68
31-45	25 (41.7%)	22 (36.7%)	47 (39.2%)	
46-60	18 (30%)	20 (33.3%)	38 (31.7%)	
>60	5 (8.3%)	8 (13.3%)	13 (10.8%)	

Table 2: Gender Distribution

Gender	Grade II (N=60)	Grade III (N=60)	Total	P-Value
Male	34 (56.7%)	32 (53.3%)	66	0.71
Female	26 (43.3%)	28 (46.7%)	54	

Table 3: Presenting Symptoms

Symptoms	Grade II (N=60)	Grade III (N=60)	P-Value
Bleeding Per Rectum	55 (91.7%)	58 (96.7%)	<0.001
Pain	18 (30%)	35 (58.3%)	
Prolapse	10 (16.7%)	60 (100%)	
Itching	20 (33.3%)	22 (36.7%)	0.71

Table 4: Mean Operative Parameters

Parameter	Grade II (Mean $\pm$ SD)	Grade III (Mean $\pm$ SD)	P-Value
Injection Time (Min)	8.2 $\pm$ 2.1	10.5 $\pm$ 2.8	0.002
Pain Score (VAS)	2.8 $\pm$ 1.1	4.6 $\pm$ 1.3	<0.001

Table 5: Post-Procedure Complications

Complication	Grade II (N=60)	Grade III (N=60)	P-Value
Pain	10 (16.7%)	22 (36.7%)	0.01
Bleeding	3 (5%)	8 (13.3%)	0.09
Ulceration	1 (1.7%)	4 (6.7%)	0.17
No Complication	46 (76.7%)	26 (43.3%)	<0.001

Table 6: Treatment Outcome at 6 Weeks

Outcome	Grade II (N=60)	Grade III (N=60)	P-Value
Complete Relief	52 (86.7%)	38 (63.3%)	<0.001
Partial Relief	6 (10%)	16 (26.7%)	
Poor Response	2 (3.3%)	6 (10%)	

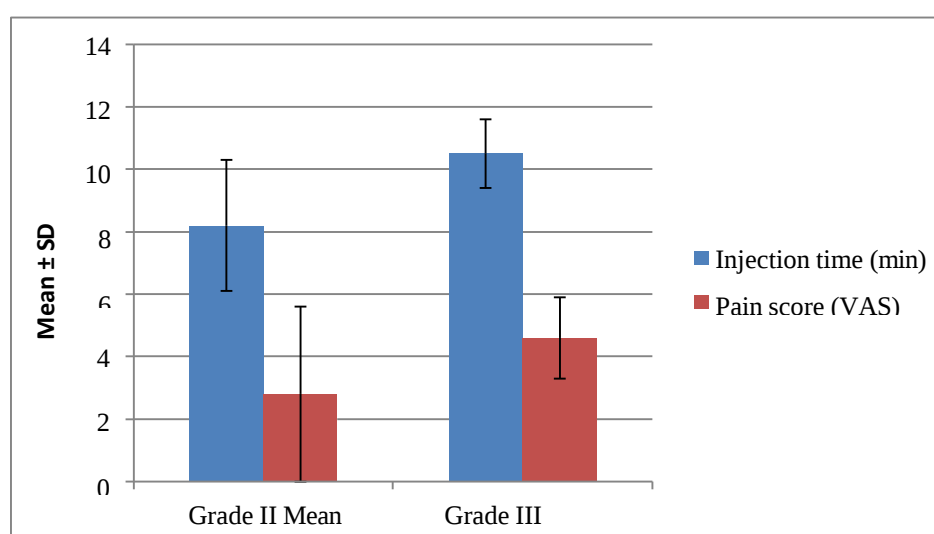


Figure 1: Mean Operative Parameters

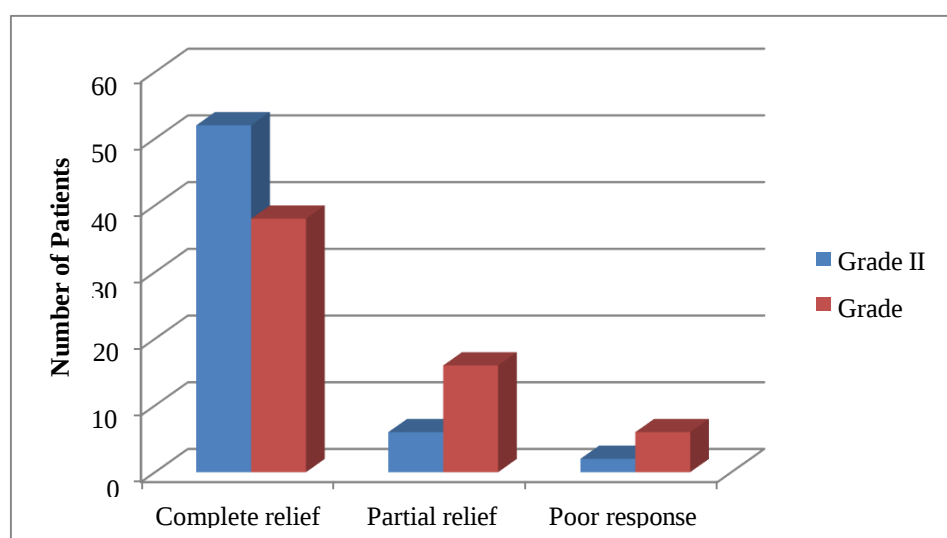


Figure 2: Treatment Outcome at 6 Weeks

Demographic Characteristics of Study Population

Result

In the Grade II group, 34 patients (56.7%) were male and 26 patients (43.3%) were female. In the Grade III group, 32 patients (53.3%) were male and 28 patients (46.7%) were female. The

difference in gender distribution was not statistically significant ($p = 0.71$).

Severe symptoms such as prolapse were present in 10 patients (16.7%) in Grade II group compared to 60 patients (100%) in Grade III

group ($p < 0.001$). Pain was reported in 18 patients (30%) in Grade II group and 35 patients (58.3%) in Grade III group ($p < 0.001$). Bleeding per rectum was present in 55 patients (91.7%) vs 58 patients (96.7%) respectively.

Interpretation:

Gender distribution was comparable between the two groups. However, severity of symptoms such as prolapse and pain was significantly higher in Grade III hemorrhoids, indicating progression of disease with increasing grade.

Clinical Parameters and Operative Findings Result:

The mean injection time was 8.2 ± 2.1 minutes in Grade II group and 10.5 ± 2.8 minutes in Grade III group, which was statistically significant ($p = 0.002$).

Post-procedure pain score (VAS) was significantly lower in Grade II group (2.8 ± 1.1) compared to Grade III group (4.6 ± 1.3) ($p < 0.001$).

Interpretation:

Grade III hemorrhoids required longer procedure time and were associated with higher post-procedural pain, indicating that increasing disease severity is associated with more difficult and symptomatic intervention outcomes.

Post-procedure Complications

Result:

Pain was observed in 10 patients (16.7%) in Grade II group and 22 patients (36.7%) in Grade III group ($p = 0.01$). Bleeding occurred in 3 patients (5%) vs 8 patients (13.3%) respectively ($p = 0.09$). Ulceration was seen in 1 patient (1.7%) vs 4 patients (6.7%) ($p = 0.17$).

Overall, no complications were seen in 46 patients (76.7%) in Grade II group compared to 26 patients (43.3%) in Grade III group ($p < 0.001$).

Interpretation:

Post-procedure complications were significantly higher in Grade III hemorrhoids, suggesting that sclerotherapy is safer and better tolerated in Grade II hemorrhoids compared to Grade III cases.

Treatment Outcome at 6 Weeks Result:

Complete relief was achieved in 52 patients (86.7%) in Grade II group compared to 38 patients (63.3%) in Grade III group ($p < 0.001$). Partial relief was seen in 6 patients (10%) vs 16 patients (26.7%), while poor response was observed in 2 patients (3.3%) vs 6 patients (10%) respectively.

Interpretation:

Treatment success was significantly higher in Grade II hemorrhoids, while Grade III patients had lower complete relief rates and higher partial/poor response, indicating reduced efficacy of polidocanol sclerotherapy in advanced disease.

DISCUSSION

Hemorrhoidal disease is one of the most common anorectal conditions encountered in surgical practice, with symptoms ranging from bleeding per rectum to prolapse and pain. In the present study, a prospective comparative evaluation of polidocanol sclerotherapy in Grade II and Grade III hemorrhoids was performed, demonstrating that while both grades benefit from treatment, outcomes are significantly better in Grade II disease. In the present study, gender distribution was comparable between both groups, indicating no significant demographic variation influencing outcomes. Similar observations have been reported in earlier studies where hemorrhoidal disease showed no strong sex predilection affecting treatment response [9,10]. However, symptom severity was markedly higher in Grade III hemorrhoids, particularly prolapse and pain, reflecting progressive deterioration of supporting connective tissue and increased mucosal displacement [11,12]. The present study demonstrated that Grade III hemorrhoids required significantly longer injection time and were associated with higher post-procedure pain scores. This may be attributed to increased vascularity, prolapse, and fibrotic changes making the procedure technically more demanding. Comparable findings have been reported where advanced hemorrhoidal grades required more complex intervention and were associated with increased post-procedural discomfort [13,14]. Post-procedure complications such as pain, bleeding, and ulceration were more frequent in Grade III hemorrhoids, although bleeding and ulceration did not reach statistical significance. However, overall complication-free recovery was significantly higher in Grade II patients. This aligns with previous evidence suggesting that sclerotherapy is most effective and safest in lower grade hemorrhoids, while efficacy declines in higher grades due to significant prolapse and structural changes [15]. In terms of treatment outcome, complete symptom relief was significantly higher in Grade II hemorrhoids compared to Grade III. This finding is consistent with studies reporting higher success rates of sclerotherapy in early hemorrhoidal disease, while Grade III disease often demonstrates reduced response due to mechanical prolapse and inadequate fixation of hemorrhoidal cushions [9,11]. Overall, the findings of the present study reinforce that polidocanol sclerotherapy is an effective, safe, and minimally invasive treatment modality, particularly for Grade II hemorrhoids, but its effectiveness decreases in Grade III disease where prolapse is more prominent and may require additional or alternative

interventions [12,13].

CONCLUSION

The present prospective comparative study demonstrates that injection sclerotherapy using polidocanol is an effective and minimally invasive treatment modality for hemorrhoidal disease, with significantly better outcomes observed in Grade II hemorrhoids compared to Grade III hemorrhoids. While both groups showed improvement, Grade III cases were associated with longer procedure time, higher post-procedural pain, increased complications, and lower rates of complete symptom relief. These findings suggest that polidocanol sclerotherapy is highly suitable for early-stage hemorrhoids, whereas its efficacy decreases in more advanced disease where prolapse is prominent. Careful patient selection is therefore essential to achieve optimal clinical outcomes.

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How to cite this article: Dr. Arnab Mondal, COMPARATIVE STUDY OF MANAGEMENT OF SECOND AND THIRD DEGREE HEMORRHOIDS WITH INJECTION SCLEROTHERAPY USING POLIDOCANOL, Asian J. Med. Res. Health Sci., 2026; 4 (2):2009-2013.

Source of Support: Nil, Conflicts of Interest: None