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Original Research

A Comparative Study of Treatment Outcome Following Sclerotherapy Versus Open Hemorrhoidectomy in Second Degree Hemorrhoids

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ABSTRACT

Background: Hemorrhoids are one of the most common anorectal conditions frequently encountered in surgical department. There are various non-surgical and surgical treatment modalities to manage hemorrhoids. The present study was conducted to compare the treatment outcome of sclerotherapy and open hemorrhoidectomy in second degree hemorrhoids. **Methods:** This comparative study was conducted in Department of General Surgery, Adesh Medical College and Hospital, Shahbad. 80 patients of second degree hemorrhoids were enrolled in the study and they were subjected to either sclerotherapy or open hemorrhoidectomy. Results were expressed as mean ± standard deviation. **Results:** The duration of procedure was 10.64 ± 3.94 minutes in sclerotherapy group and 44.87 ± 6.24 minutes in open hemorrhoidectomy group, with statistically highly significant difference ($p<0.0001$). The hospital stay was significantly shorter in sclerotherapy group compared to open hemorrhoidectomy group (0.4 ± 0.1 days vs 1.6 ± 0.2 days; $p<0.0001$). Cure rate was 85% in sclerotherapy group and 100% in open hemorrhoidectomy group with statistically significant difference ($p<0.05$). **Conclusion:** Sclerotherapy is non-surgical treatment modality with shorter hospital stay and fewer complications whereas open hemorrhoidectomy is a definitive treatment with higher cure rate.

Keywords: Hemorrhoids, Sclerotherapy, Open hemorrhoidectomy, Polidocanol

INTRODUCTION

Hemorrhoids, also known as piles, are characterized by the engorgement and downward displacement of highly vascular anal cushions which can lead to bleeding per rectum and prolapse of submucosal tissue. The most common risk factors for hemorrhoids include constipation, low fiber diet and prolonged straining during defecation. Other contributing factors include obesity, pregnancy, ageing and sedentary lifestyle. The main complaints are bleeding per rectum during or after defecation, pain, prolapse and perianal itching.

Worldwide, prevalence of haemorrhoids is estimated to be 4.4%. Approximately 50% of the population is likely to experience hemorrhoids at some point in their lives, probably by the age of 50. It can occur at any age and can affect both males and females.[1,2]

Hemorrhoids can be either external or internal. External hemorrhoids are covered by skin below the dentate line, while internal hemorrhoids are located above the dentate line. A combination of both types is referred to as intero-external hemorrhoids. Hemorrhoids are classified into the following four grades:

- **Grade I**: bleed only, no prolapse
- **Grade II**: prolapse, but reduce spontaneously
- **Grade III**: prolapse and have to be manually reduced
- **Grade IV**: permanently prolapsed

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The definite diagnosis of hemorrhoids is based on complete history and clinical examination of patient. Clinical examination includes digital rectal examination and anoscopy in the left lateral position. Different treatment options available are dietary and lifestyle modification, medical treatment, sclerotherapy, rubber band ligation, infrared coagulation and surgical management (open or closed hemorrhoidectomy, stapled hemorrhoidopexy).

Sclerotherapy is a procedure used to treat first, second and some cases of third degree hemorrhoids. During this procedure, a sclerosing agent such as 5% phenol in almond or arachis oil, 5% quinine and urea, aluminium potassium sulfate and tannic acid, or polidocanol is injected into the submucosa of each hemorrhoid.[2,3] The goal is to induce thrombosis of the blood vessels and promote fibrosis, which helps to retract the prolapsed tissue.

One of the most common surgical techniques employed for treating hemorrhoids is open hemorrhoidectomy (Milligan-Morgan method) in which redundant tissue causing the bleeding and protrusion is completely excised. Surgery is primarily indicated when non-surgical treatments fail or in cases of grade III and IV internal hemorrhoids.[2]

Although haemorrhoids are generally a non-threatening condition, recurring complaints like itching, bleeding and prolapse can interfere with daily activities and affect the overall quality of life. Thus, it is important to select an optimal management approach that not only provides relief in symptoms but also prevents recurrence of disease. There is limited data on the efficacy of sclerotherapy compared to open hemorrhoidectomy. Therefore, the present study was conducted to compare the treatment outcome of sclerotherapy and open hemorrhoidectomy in second degree hemorrhoids.

METHODS

The present study was conducted in the Department of General Surgery, Adesh Medical College and Hospital, Shahbad.After taking clearance from the ethical committee, 80 patients were enrolled in the study. Informed written consent was obtained from each patient prior to their participation.All patients of both genders with second degree internal hemorrhoids with age 18 years or above were included in this study. Grade I, III and IV internal hemorrhoids, external, thrombosed and recurrent haemorrhoids were excluded from the study.

Patients presented to outpatient department or surgical emergency with complaints of rectal bleeding or something protruding out of rectum.Detailed information regarding age, gender, medical history and clinical findings were recorded for all patients. Per rectal digital examination and anoscopy were done to identify the presence, degree and position of internal hemorrhoids. Systemic examination and basic investigations were done.

The closed envelope method was used to randomise patients into two groups and one group was subjected to sclerotherapy and another to open hemorrhoidectomy. 40 patients were assigned to each group. Polidocanol was used as sclerosing agent. Sclerotherapy was done without any anaesthesia whereas open hemorrhoidectomy was done under spinal anaesthesia. Post-operative follow-up was done for all patients on first, third and seventh postoperative day and thereafter at 3rd month and 6th month. Operative and postoperative variables such as duration of procedure, duration of hospitalization and postoperative complications like pain, bleeding, infection, anal stricture, anal incontinence and cure rate were evaluated.

IBM SPSS Statistics for Windows, Version 25.0. (Armonk, NY: IBM Corp.) was used for statistical analysis. Results were expressed as mean ± standard deviation. Chi-square test was applied for qualitative data and Student's t test was applied for quantitative data.Data was considered to be significant when p value <0.05 and highly significant when p value<0.001.

RESULTS

The study included 80 patients, with 40 patients in each group. The mean age in the sclerotherapy group was 47.37 ±8.46 years, while in the open hemorrhoidectomy group, it was 44.63 ± 9.72 years. The age distribution between the two groups was comparable, with no statistically significant difference ($p>0.05$). Of the 80 patients, 44 were male and 36 were female and gender distribution was also statistically similar between the groups ($p>0.05$;Table I).

Rectal bleeding was reported by 38 patients in sclerotherapy group and 39 patients in open hemorrhoidectomy group. Painful defecation was noted in 7 and 5 patients, respectively. Constipation was observed in 37 patients in sclerotherapy group and 38 patients in open hemorrhoidectomy group. Overall, there were no statistically significant differences in clinical presentations between the two groups ($p>0.05$; Table I).

The duration of procedure was 10.64 ± 3.94 minutes in sclerotherapy group and 44.87 ± 6.24 minutes in open hemorrhoidectomy group, with statistically highly significant difference ($p<0.0001$). The hospital stay was significantly shorter in sclerotherapy group (0.4 ± 0.1 days) compared to open hemorrhoidectomy group (1.6 ± 0.2 days) and the difference was statistically highly significant ($p<0.0001$, Table II).

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Table I: Demographic data and clinical presentation of patients in sclerotherapy and open hemorrhoidectomy groups

		Sclerotherapy (n=40)	Open hemorrhoidectomy(n=40)	p value
Age (years)		47.37 ± 8.46	44.63 ± 9.72	0.182
Sex (no. & %)	Male	23 (57.5)	21(52.5)	0.653
	Female	17 (42.5)	19(47.5)	
Clinical findings (no. & %)				
Rectal bleeding		38 (95)	39 (97.5)	1
Painful defecation		7 (17.5)	5 (12.5)	0.755
Constipation		37 (92.5)	38 (95)	1

Table II: Operative and post operative findings of patients in sclerotherapy and open hemorrhoidectomy groups

	Sclerotherapy (n=40)	Open hemorrhoidectomy(n=40)	p value
Duration of procedure (min)	10.64 ± 3.94	44.87 ± 6.24	<0.0001
Hospitalization duration (days)	0.4 ± 0.1	1.6 ± 0.2	<0.0001
Postoperative complications (No. & %)			
Pain	24 (60)	38 (95)	0.0003
Bleeding	3(7.5)	4 (10)	1
Infection	0	0	0
Anal stricture	0	1	1
Anal incontinence	0	0	0

Postoperative pain was reported by 24 patients in sclerotherapy group and 38 patients in open hemorrhoidectomy group with a statistically significant difference ($p<0.05$). Postoperative bleeding was reported by 3 patients in sclerotherapy group as compared to 4 patients in open hemorrhoidectomy group with no statistically significant difference ($p>0.05$).Other postoperative complications, including infection, anal stricture and anal incontinence, are summarized in Table II, with no statistically significant differences between the two groups.

In sclerotherapy group, 85% were cured and 15% were not cured, whereas all the patients were cured in open hemorrhoidectomy group. The difference was statistically significant ($p<0.05$, Table III).

Table III: Final outcome in sclerotherapy and open hemorrhoidectomy groups

	Sclerotherapy (n=40)	Open hemorrhoidectomy(n=40)	p value
Cured	34 (85)	40 (100)	0.025
Not cured	6 (15)	0	

DISCUSSION

The present study included 80 patients of second degree haemorrhoids subjected to either sclerotherapy or open hemorrhoidectomy with 40 patients assigned to each group. The age, gender and clinical presentations of patients were comparable between two groups.

In our study, procedure duration was significantly shorter in sclerotherapy group (10.64 ± 3.94 minutes) compared to open hemorrhoidectomy group (44.87 ± 6.24 minutes), with highly significant difference ($p<0.0001$). Similarly, Gahltot et al reported that sclerotherapy was completed in 1 to 10 minutes, while open hemorrhoidectomy took more than 30 minutes. However, no statistically significant difference was observed between two groups in their study ($p>0.05$).[4] These findings highlight the time efficiency of sclerotherapy as a minimally invasive alternative, particularly when compared to more invasive open hemorrhoidectomy.

In Gahltot et al study, total hospital stay was significantly longer in open hemorrhoidectomy group compared to sclerotherapy group (1.5± 0.4 days vs. 0.9 ± 0.3 days; $p<0.05$).[4] Similarly, Ammanagi et al found that postoperative hospital stay was 1 day in groups treated with sclerotherapy and in open hemorrhoidectomy, 28 patients stayed for 3 days and 2 patients for 5 days.[5] Our findings are consistent with these studies as hospital stay in sclerotherapy group was significantly shorter (0.4 ± 0.1 days) compared to open hemorrhoidectomy group (1.6 ± 0.2 days) and this difference was statistically highly significant ($p<0.0001$). This emphasizes the efficiency of sclerotherapy in minimizing the length of hospital stay compared to open hemorrhoidectomy.

Gahltot et al reported significantly less post-procedural pain in sclerotherapy group compared to

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open hemorrhoidectomy group (56% vs. 96%, p<0.05).[4] Similarly, Ammanagi et al observed post-procedural pain in 42.9% of patients in sclerotherapy group versus 53.6% in open hemorrhoidectomy group.[5] Our findings align with these studies with lesser post-procedural pain in sclerotherapy group (60%) compared to open hemorrhoidectomy group (95%) which was statistically significant (p=0.0003).Although sclerotherapy is minimally invasive, it is not without complications. Localized pain, often attributed to irritant injection is one of the most commonly reported issues, affecting up to 70% of patients according to the American Gastroenterological Association.[6] Several studies emphasize that although open hemorrhoidectomy has higher incidence of postoperative pain due to surgical excision and associated inflammation, it still remains a safe and effective treatment option.[7,8]

Our study observed post-procedural bleeding in 7.5% of patients in sclerotherapy group and 10% in open hemorrhoidectomy group. Similarly, Ammanagi et al reported bleeding in 13.3% of patients in sclerotherapy group and 46.7% in open hemorrhoidectomy group.[5] A meta-analysis further supports these findings, indicating 8.7% bleeding rate in sclerotherapy patients.[9] Sclerotherapy is often considered a safe option, even for patients at higher risk of bleeding, such as those on anticoagulants or with portal hypertension.[10] In contrast, Gahltot et al reported post-procedural bleeding in 66% of sclerotherapy patients compared to 30% in open hemorrhoidectomy group.[4] This variability may reflect differences in procedural techniques or patient factors. The increased bleeding in open hemorrhoidectomy is attributed to its invasive nature, involving the excision of vascularized tissue. Conversely, bleeding in sclerotherapy group likely results from local reactions to sclerosant injection, leading to irritation or mucosal damage.

In the present study, 85% of patients in sclerotherapy group were cured, while 15% were not. In contrast, all patients in open hemorrhoidectomy group were cured. This difference was statistically significant (p<0.05, Table III). Gahltot et al reported cure rate of 96% in sclerotherapy group and 74% in open hemorrhoidectomy group with p value of 0.005.[4] Chandrabose K et al observed complete recovery in 79.31% participants undergoing sclerotherapy.[11] Another trial on sclerotherapy demonstrated an initial cure rate of 82%, which increased to 98% after second session.[12] Additionally, Moser et al evaluated the efficacy of polidocanol as sclerosing agent and found an 88% success rate within 12-week follow-up period.These findings highlight the effectiveness of modern agents like polidocanol in improving treatment outcome and reducing the need for surgical intervention.[13]

In sclerotherapy, sclerosing agent is injected above the dentate line, targeting the internal hemorrhoidal plexus to induce fibrosis and scarring of hemorrhoidal tissue. Polidocanol foam is currently one of the most widely used agents for sclerotherapy as its foam formulation allows for reduction in injected dose of sclerosing agent, potentially increasing the area of contact with endothelium.[3] Compared to surgical intervention, sclerotherapy is more cost effective, require lesser hospital stay with an apparently lower risk of complications. It not only reduces healthcare cost but also improves patient compliance and convenience as minimally invasive nature of procedure aligns well with patient preferences for non-surgical options.

Cure rate of sclerotherapy is lower as compared to open hemorrhoidectomy due to its limited efficacy in treating hemorrhoids and higher likelihood of recurrence over time. In contrast, open hemorrhoidectomy, a surgical procedure involving the excision of hemorrhoidal tissue, offers more definitive solution, particularly for cases unresponsive to conservative treatments or minimally invasive methods like sclerotherapy. However, it is associated with higher risk of postoperative pain, longer recovery time and potential complications such as bleeding.

CONCLUSION

Sclerotherapy is more cost effective, minimally invasive treatment with shorter hospital stay and fewer complications, making it a convenient option that aligns with patient preferences for non-surgical treatment. However, its limitations include lower cure rate and higher recurrence. Despite higher complications and longer recovery time, open hemorrhoidectomy remains the preferred choice for definitive treatment. While selecting the procedure, one should consider severity of condition, patient preferences and the balance between efficacy and potential risks.

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REFERENCES

1. Kibret AA, Oumer M, Moges AM. Prevalence and associated factors of hemorrhoids among adult patients visiting the surgical outpatient department in the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia. PLoS One 2021;16:e0249736.
2. Agbo SP. Surgical management of hemorrhoids. J Surg Tech Case Report 2011;3:68-75.
3. Gallo G, Picciariello A, Armellin C, Lori E, Tomasicchio G, Tanna GLD, et al. Sclerotherapy for hemorrhoidal disease: systematic review and meta-analysis. Tech in Coloproctol 2024;28:28.
4. Gahltot N, Kumar A, Jakhar D, Nath K, Pareek M. A comparative study of sclerotherapy and hemorrhoidectomy in second-degree hemorrhoids. Asian J Pharm Clin Res 2023;16:112-4.
5. Ammanagi AS, Mathew T. A comparative study of sclerotherapy and rubber band ligation versus open hemorrhoidectomy in second degree hemorrhoids. Int Surg J 2019;6:1545-8.

DOI: 10.69605/ijlbpr_14.1.2025.3

6. Madoff RD, Fleshman JW. American gastroenterological association technical review on diagnosis and treatment of hemorrhoids. Gastroenterology 2004;126:1463-73.
7. Uba AF, Obekpa PO, Ardill W. Open versus closed haemorrhoidectomy. Niger Postgrad Med J 2004;11:79-83.
8. Wahyudi PAE, Soeseno SW, Febyan F.Diagnosis and Management of Internal Hemorrhoids: A Brief Review. EJMED 2021;3:1-5.
9. Salgueiro P, Ramos MI, Castro-Poças F, Libânio D.Office-Based Procedures in the Management of Hemorrhoidal Disease: Rubber Band Ligation versus Sclerotherapy- Systematic Review and Meta-Analysis. Paulo GE Port J Gastroenterol 2022;29:409-19.
10. Yano T, Yano K. Comparison of injection sclerotherapy between 5% phenol in almond oil and aluminum potassium sulfate and tannic acid for grade 3 hemorrhoids. Ann Coloproctol 2015;31,103-5.
11. Chandrabose K, Subbiah V. Comparison of treatment outcome following rubber band ligation vs injection scleratherapy for treatment of hemorrhoids: a prospective observational study. Surgical Update: Int J Surg Trauma Orthoped 2019;5:14-19.
12. Shekhar R, Gupta VK. Efficacy of foam sclerotherapy in treatment of grade I and grade II bleeding hemorrhoids at Nalanda Medical College and hospital, Patna. Int Surg J 2020;7:2925-8.
13. Moser KH, Mosch C, Walgenbach M, Bussen DG, Kirsch J, Joos AK, et al. Efficacy and safety of sclerotherapy with polidocanol foam in comparison with fluid sclerosant in the treatment of first-grade haemorrhoidal disease: a randomised, controlled, single-blind, multicentre trial. Int J Colorectal Dis 2013;28:1439-47.