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Original Article

Clinical Profile and Efficacy of Injection Sclerotherapy as Primary Treatment Modality in Case of Grade I and II Primary Hemorrhoids

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Abstract

Introduction: Most patients with hemorrhoids present with painless bright red bleeding. However, the diagnosis should never be assumed and should be arrived at only after a thorough and detailed history and physical examination. Injection of sclerosing agents into the submucosal tissue at the base of an internal hemorrhoid to create a focus of aseptic inflammation. This leads to fibrosis and contraction of submucous anal cushion.

Materials and Methods: No special preparation necessary other than an empty rectum. The patient is typically positioned in the left decubitus or modified prone position with the aid of a proctoscopy examination table. The base of the hemorrhoid is identified and the needle is advanced into the submucosal tissue along the vertical plane approximately 1–2 cm. Before injection, brief aspiration will determine inadvertent cannulation of a hemorrhoidal vein, for which the needle should be removed and re-inserted. A total of 3–5 mL should be slowly injected into the submucosal tissue at the base of each hemorrhoid. Injection sclerotherapy may be performed in single or multiple sessions according to patient and practitioner preference.

Results: Total 75 cases of 1st hemorrhoids underwent injection sclerotherapy. The results are depicted in the form of tables. Also out of 75, 50 patients were grade I and 25 were grade II. As only 3 patients out of 52 who underwent sclerotherapy for bleeding, complained of bleeding at 6 months, the success rate of the injection sclerotherapy was 94.23% for bleeding. Likewise, the success rate was 100% for each pain and prolapse.

Conclusion: Sclerotherapy is beneficial procedure for initial symptom improvement in all grades of hemorrhoids who are unfit for surgery. Multiple hemorrhoidal sclerotherapy injection can be done at single session. Sclerotherapy was found effective based on significant symptom improvement with 94.23% symptom free at 6-month follow-up. Sclerotherapy was given to grade I and grade II hemorrhoids with 3 cases of portal hypertension and 1 immunocompromised case with hemorrhoids.

Key words: Hemorrhoids, Sclerotherapy, Treatment

INTRODUCTION

Ancient references to symptomatic hemorrhoidal disease date back thousands of years and can be found in the Bible as well as early Egyptian, Babylonian, and Greek scripts.[1-3] The first known mention of this condition is from an Egyptian papyrus in 1700 BC, which advises … "Thou shouldest give an ointment of acacia leaves, ground and titurated together … and place in the anus, that he recovers immediately."[4]

So, for as long as man has been blessed with an anus, it is fair to assume that he has also been doubly blessed with hemorrhoids. Hemorrhoids are one of the most common ailments to afflict mankind. It is almost impossible to calculate its prevalence as for many patients with hemorrhoids never have symptoms so whether such patients should be considered as diseased is still a question.

The word "HAEMORRHOID" is derived from Greek word Haemorrhoides, "Haemo" means blood and "rhoos" means flowing. The word "PILES" comes from Latin word

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"pila" meaning a pill or ball. To be accurate, we should call the disease as piles when the patient complains of a swelling and hemorrhoids when patient complains of bleeding.

Hemorrhoids have been defined differently over the years from oversimplified definition of varicosities of hemorrhoidal plexus to the more recent study describing them as specialized highly vascular cushions of discrete masses of thick submucosa containing blood vessels, smooth muscles, elastic and connective tissue which may slide down due to breakage of collagen and anchoring supporting connective tissue causing symptoms such as prolapse, bleeding, and pain. The cause of which is still hypothesized as erect posture, constipation, straining during defecation, sedentary work, diet low in fibers, heredity, and high resting anal pressure.

Based on the research and evidence, it can be inferred that grade I and II hemorrhoids whose most common presentation is bleeding per rectum can be treated very effectively by injection sclerotherapy which is a very simple and easy procedure to perform without any elaborate work up, can be performed on outpatient department (OPD) basis, and is very cost effective and hence can be recommended as an effective outpatient treatment for Grade I and Grade II hemorrhoids.[5-10]

Sclerotherapy

John Morgan first attempted sclerotherapy to obliterate hemorrhoids as early as 1869 using iron persulfate. Anderson (1924) and Bacon (1949) outlined injection treatment and later Albright used 5% phenol in almond oil in dose of 3.5 mL.[1]

Indications

- First-degree hemorrhoids with bleed[2]
- Second-degree internal hemorrhoids
- Some III degree internal hemorrhoids.

Sclerosant

Numerous sclerosing agents are available for use; however, 5% phenol in vegetable or almond oil, 23.4% hypertonic saline, and 5% quinine and urea are among the most popular.

Different types of sclerosants along with doses are as follows.

- 5% quinine and urea hydrochloride (3–5 mL)
- 1% sodium tetradecyl sulfate (2–4 mL)
- 5% phenol in almond or vegetable oil (3–5 mL)
- 23.4% hypertonic saline (3–5 mL)
- Sodium morrhuate (3–5 mL)
- Aluminum potassium sulfate (OC–108) (9–13 mL).

MATERIALS AND METHODS

Instruments Required Proctoscope

Gabriel syringe with needle with lateral rings on the barrel and a ring at the end of the piston for fingers. Nowadays, disposable syringes are used.

Technique

No special preparation necessary other than a empty rectum. The patient is typically positioned in the left decubitus or modified prone position with the aid of a proctoscopy examination table. Adequate lighting for visualization of the entire anal canal is essential. Liberal use of topical lubricant is encouraged during placement of a standard side viewing proctoscope, with subsequent careful examination of the entire anal canal. The base of the hemorrhoid is identified and the needle is advanced into the submucosal tissue along the vertical plane approximately 1–2 cm. Before injection, brief aspiration will determine inadvertent cannulation of a hemorrhoidal vein, for which the needle should be removed and re-inserted. A total of 3–5 mL should be slowly injected into the submucosal tissue at the base of each hemorrhoid. If the injection is too superficial, the mucosa will become tense and blanched. The injection should immediately be stopped upon suspicion of superficial placement to avoid

Table 1: Age and sex distribution

Age (years)	Male, *n* (%)	Female, *n* (%)	Total, *n* (%)
≤20	1 (1.63	0	1 (1.33)
21–30	5 (8.19)	2 (14.28)	7 (9.33)
31–40	15 (24.59)	3 (21.42)	18 (24.0)
41–50	14 (22.95)	4 (28.57)	18 (24.0)
51–60	26 (42.62)	5 (35.71)	31 (41.33)
Total	61 (100)	14 (100)	75 (100.0)
Mean	45.91	42.85	45.41

Table 2: Grades

	Male, *n* (%)	Female, *n* (%)
Grade I	44 (58.67)	6 (8)
Grade II	17 (22.67)	8 (10.67)

Table 3: Bowel habits

Bowel habits	*n*=75, *n* (%)
Constipation and straining	54 (72.0)
Regular	21 (28.0)

Table 4: Dietary habits of study group

Diet	*n*=75, *n* (%)
Mixed diet	59 (78.67)
Vegetarian	16 (21.33)

mucosal necrosis. Patients may also feel discomfort during the injection of larger volumes of sclerosing solution, but in general, it is a rare occurrence to require more than the standard 3–5 mL per column. Injection sclerotherapy may be performed in single or multiple sessions according to patient and practitioner preference.

RESULTS

Total 75 cases of first-degree hemorrhoids underwent injection sclerotherapy during the period from January 2014 to August 2015.

Table 5: Hemoglobin

Hemoglobin (g%)	*n*=75, *n* (%)
<9.0	34 (45.33)
>9.0	41 (54.67)

Table 6: Presenting symptoms of the study group

Presenting symptoms	*n* (%)
Bleeding	52 (69.33)
Pain and discomfort	40 (53.33)
Prolapsed hemorrhoids	8 (10.67)
Irritation	7 (9.33)
Discharge	4 (5.33)

Table 7: Post-procedure complications

Symptoms	*n*=75, *n* (%)
Pain and discomfort	15 (20.0)
Bleeding	6 (8.0)
Urinary symptoms	6 (8.0)
Sepsis	-
Vasovagal shock	-
Pulmonary embolism	-

Age and Sex Distribution

The age and sex distribution of cases that underwent sclerotherapy is as follows.

In the present study, the youngest patient was 20 years and the eldest patient was 60 years of age while the mean age for males was 45.91 years. Whereas in females, the mean age was 42.86 years. The overall mean age was 45.41 years.

Also out of 75, 50 patients were grade I and 25 were grade ll.

The bowel habits were grouped under regular bowel habits and with history of constipation and straining at stools. According to Rome III criteria, constipation is passing stools fewer than 3 times in a week. Faulty habits of defecation and postponement of urge of defecation cause hard stool formation and straining. Straining habit is seen in many individuals with otherwise normal bowel habits. Regular bowel habits mean passing stools of normal consistency without straining even 2–3 times a day.

It was observed that 72% of cases had history of constipation and straining at stools. Regular bowel habits were seen in 28% of cases.

Diet

The dietary habits of the patients of the study are as follows:

Most of the patients, i.e., about 78.67% were on mixed diet consuming low fiber mostly non-vegetarian diet.

Hemoglobin

Considering the diversity in hemoglobin percentage signifying anemia, and inability to set gold standard for the methods of hemoglobin estimation, the cases were grouped

Table 8: Effect of sclerotherapy on symptom improvement

Symptoms	At presentation, *n* (%)	At 1 week, *n* (%)	At 1 month, *n* (%)	At 3 months, *n* (%)	At 6 months, *n* (%)
Bleeding	52 (69.33)	5 (6.67)	1 (1.33)	3 (4)	3 (4)
Pain	40 (53.33)	5 (6.67)	0	3 (4)	0
Prolapsed hemorrhoids	8 (10.67)	-	-	-	-
Irritation	7 (9)	-	1 (1.33)	-	-
Discharge	4 (5.33)	-	-	-	-
Anal stenosis	-	-	-	-	-
Anal incontinence	-	-	-	-	-

Table 9: Effectiveness of therapy

Symptom	Number of patients C/O	Number of patients cured at 6 months	Effectiveness of therapy (%)
Bleeding	52	49	94.23
Prolapsed hemorrhoids	8	8	100
Pain and discomfort	40	40	100

as hemoglobin <9 g% signifying anemia and hemoglobin >9 g% taken as normal for this study. The observations were as follows:

It was observed that 45.33% of patients were having hemoglobin >9 g% and 54.67% of patients were having anemia, i.e., hemoglobin <9 g%.

Presenting Symptoms

The presenting symptoms of the 75 cases that underwent sclerotherapy are as follows:

Majority of cases, i.e., 69.33% had bleeding as the predominant symptom, followed by pain and discomfort in 53.33%, prolapse in 10.67%, irritation in 9.33% cases, and discharge in 5.33% cases.

Immediate Post-procedure Complications

Following sclerotherapy of 75 cases, the following post-procedure complications were observed in the respective members:

Around 20% of cases complained of pain and discomfort and bleeding in 8% of cases and 8% cases complained of urinary retention. Complications such as sepsis, vasovagal shock, and pulmonary embolism were not seen in the study.

Table 10: Associated diseases

Associated disease	*n*=75, *n* (%)
Portal hypertension	3 (4.0)
Immunodeficiency state	1 (1.33

Symptoms at Follow-up

The effect of sclerotherapy on symptom improvement was assessed using parameters as bleeding, pain, prolapse, irritation, discharge, anal stenosis and anal incontinence.

Success Rate of the Therapy at 6 Months

As only 3 patients out of 52 who underwent sclerotherapy for bleeding, complained of bleeding at 6 months, the success rate of the injection sclerotherapy was 94.23% for bleeding. Likewise, the success rate was 100% for each pain and prolapse.

Present Study with other Associated Diseases

In the present study, 4% patients of complaining bleeding per rectum are having associated portal hypertension and 1.33% of patients were case of immune deficiency state [Tables 1-12].

DISCUSSION

Injection sclerotherapy proved to be a simple technique to perform and did not need any expertise. Rather no pre-procedure elaborate work up, no expensive equipments and no need of bed rest. Sclerotherapy can be done on OPD basis.

Age Distribution

In the present study, numbers of patients in the study were falling in the age range of 20–60 years. The mean age of individual in the present study is 45.91 years. In the study of Chauhan *et al.*, the mean age of individual was 41 years and the range being 15–77 years.

Table 11: Effect of sclerotherapy on symptom improvement

Symptoms	At presentation, *n* (%)	At 1 week, *n* (%)	At 1 month, *n* (%)	At 3 months, *n* (%)	At 6 months, *n* (%)	Percentage of improvement
Bleeding	52 (69.33)	5 (6.67)	1 (1.33)	3 (4)	3 (4)	94.23
Pain and discomfort	40 (53.33)	5 (6.67)	0	3 (4)	0	100
Prolapsed hemorrhoids	8 (10.67)	-	-	-	-	100
Irritation	7 (9)	-	1 (1.33)	-	-	100
Discharge	4 (5.33)	-	-	-	-	100
Anal stenosis	-	-	-	-	-	-
Anal incontinence	-	-	-	-	-	-

Table 12: Comparison of success rate of different studies

Study	Total number of patients	Number of patients cured	No response	Duration of study (months)	Percentage
Gartell *et al*. (1985)	109	74	35	33	67.8
Greca *et al*.	33	23	10	12	69.6
Ambrose *et al*. (1985)	42	31	11	12	73.8
Walker *et al*.	35	31	4	48	88.5
Abdur rehmal *et al*. (2001)	25	18	7	14	72
Takano *et al*. (2005)	80	75	5	12	94
Chauhan *et al*. (2009)	67	54	13	12	80.5
Present study	75	96	4	6	96.0

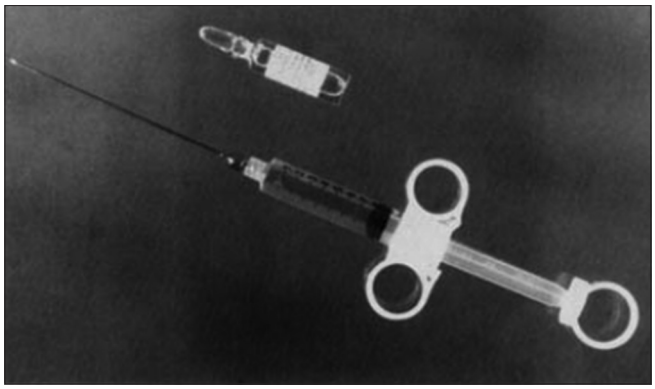

Figure 1: Gabriel syringe

In the study of Gartell *et al.*, the mean age of individual was 52 years and range of age was 23–90 years. In the study of Santos *et al.*, the mean age of individual was 51 years and range of age was 20–80 years.

Sex Distribution

In the present study, the sex distribution of cases of hemorrhoids was compared to other studies as follows:

The sex distribution in the present study with male: female ratio of 61:14 (4.35:1) was on the higher side as compared to the other studies of Khoury who showed male: female ratio 31:31, Kanellos *et al.*, showed male: female ratio 154:86, and Santos *et al.*, who showed male: female ratio 106:83. Bharat Chandra *et al.*, shows this as 90:30 which is similar to this study. The high male-to-female ratio in this study may be because females do not disclose problems related to their private parts in this part of the world.

Association of Dietary Habits and Bowel Habits with Hemorrhoids

As the etiology is not exactly defined, some etiological factors were taken into consideration as diet and bowel habits.

The dietary habits of the patient, 78.67% cases were on mixed diet and low in fiber. This finding is in accordance with the studies which showed close relationship of hemorrhoids with western type of diet which is more refined and low in fiber as stated by Thomson WH.[1]

The low fiber diet causes increase in bowel transit time and forms hard stools. This causes constipation and straining of stools. Constipation and straining were seen in 72% of cases which corroborate the fact that constipation and staining are risk factors for hemorrhoids.

Presenting Symptoms

The presenting symptoms of 75 cases that underwent sclerotherapy were as follows in comparison to other studies.

The principle presenting symptom in most studies was bleeding per rectum seen in 69.33% in the present study, 80% in Kanellos *et al.*, and 100% in study of Santos *et al.*, 100% in study of Chauhan *et al.*, and 82% in study of Ambrose *et al.*

The next common symptom in the present study was pain and discomfort which was seen in 53.33% of cases and complains of prolapse in 10.67% cases of the present study. Similar complaints were recorded by Chauhan *et al.*, Kenellos *et al.*, and Santos *et al.*

Immediate Post-procedure Complication

The cases were observed for immediate complications and compared with studies of Tokunaga *et al.*, Khoury *et al.*, Santos *et al.*, Kanellos *et al.*, and Gartell *et al.*

In the present study, 20% of cases were complaining of pain and discomfort after sclerotherapy, which was also mentioned in studies of Khoury *et al.*, Santos *et al.*, Kanellos *et al.*, and Gartell *et al.* and immediate bleeding was seen in 8% cases in the present study which was stopped after applying pressure and packing in anal canal. Urinary retention was seen 8% of the cases.

Symptoms at Follow-up

The effect of sclerotherapy on symptom improvement was assessed using parameters as bleeding, pain, prolapse, discharge, anal stenosis and incontinence.

At 1-week post-sclerotherapy, bleeding seen in 69% cases at presentation decreased to 4% which further decreased to 4% at 3 months and 3% at 6 months. Pain and discomfort were seen in 53% cases at presentation decreased to 8% at 1 week and further decreased to 5% at 1 month and 3% at 3 months. Prolapsed hemorrhoids was seen in 10.67% of cases at presentation had disappeared completely by 6 months.

Irritation and discharge were seen in 9% and 5.33% of cases, respectively, and symptom improvement was 100% at 6-month follow-up in both symptoms.

Comparison of Success Rate

Comparison of success rate of different studies was done with duration of each study. In the present study, the numbers of cases were 75 and duration of study was for 6 months with success rate of 96%.

Gartell *et al.* did a similar study with 109 cases and duration of study was for 33 months with success rate of 67.8%.

Similar studies with small number of cases were done by Greca *et al.*, and Ambrose *et al.*, for 12 months with success

rate of 69.6% and 73.8%, respectively. Walker *et al*., did a study with 35 cases for 48 months and success rate was 88.5%. Also similar study performed by Chauhan *et al*., with 67 patients followed up for 12 months gave the success rate of 80.5%.

Hemorrhoids with Other Associated Disease

In this study, portal hypertension was associated with 4% cases of hemorrhoids while 1 patient was of immunocompromised state. Scaglia conducted a study with HIV patients with hemorrhoids and recommended that injection sclerotherapy is a safe approach for hemorrhoids in HIV patients because surgery is associated with grievous complications due to poor healing process in such patients.[11-21]

CONCLUSION

Sclerotherapy is beneficial procedure for initial symptom improvement in all grades of hemorrhoids who are unfit for surgery. Multiple hemorrhoidal sclerotherapy injection can be done at single session. Sclerotherapy was found effective based on significant symptom improvement with 94.23% symptom free at 6-month follow-up. Sclerotherapy was given to grade I and grade II hemorrhoids with 3 cases of portal hypertension and 1 immunocompromised case with hemorrhoids.

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