

ORIGINAL ARTICLE

Compare the Role of 5% Phenol in Almond Oil and Injection Sodium Tetradecyl Sulfate in the Treatment of Rectal ProlapseJAVED IQBAL¹, ARSHAD KAMAL², SURESH KUMAR³, ABID RAFIQ CHAUDHRY⁴¹Consultant Pediatrics Surgery Mayo Hospital Lahore, Pakistan.²Assistant Professor Pediatric Surgery, Lady Reading Hospital Peshawar, Pakistan.³Senior Registrar Paediatric Surgery, Indus Hospital and Indus Health Network Karachi, Pakistan.⁴Consultant Pediatric Critical Care Medicine, FMH College of Medicine and Dentistry Lahore.Corresponding author: Arshad Kamal, Email: arshadkamal335@gmail.com, Cell: + 92 3339877118**ABSTRACT****Objective:** To compare the role of 5% Phenol in Almond oil and Injection Sodium Tetradecyl Sulfate in the treatment of rectal prolapse.**Methods and material:** This study was conducted at Pediatric Surgery Department, Mayo Hospital Lahore. A total of 100 patients were included in the study and randomly divided into 2 groups. In Group-A patients were given 5% Phenol in Almond Oil and in Group-B patients were given Sodium Tetradecyl Sulfate. Patients were followed up at 1st post operative day and at 1st post operative month to see recurrence or any other complications (bleeding, perirectal inflammation, urinary retention, ischiorectal abscess, and necrosis of the rectal mucosa) in cases in both treatment groups.**Results:** In Group-A mean age was 5.63±3.34 years and in Group-B mean age of children was 7.16±2.80 years. In Group-A 46 and in Group-B 39 children were included. There was significant association between treatment groups and outcome on 1st postoperative day reduction (P < 0.05). In Group-A 5 and in Group-B 1 child had bleeding PR after postoperative day. No statistically significant association was present between treatment groups and bleeding PR after POD (P > 0.05). In Group-A 49 and in Group-B 44 children had achieved reduction when observed at one month follow up time period. In Group-A reduction was achieved in greater number of patients as compared to that of Group-B patients (P < 0.05).**Practical implication:**

Current study will bring a revolution in the awareness of community among rectal prolapse problem and treating it successfully with the knowledge provided with the current literature. The role of 5% Phenol in Almond oil and Injection Sodium Tetradecyl Sulfate is well shown which proven to be a good treatment in Rectal prolapse.

Conclusion: We conclude that 5% Phenol almond oil is more effective than Sodium Tetradecyl Sulfate in treating rectal prolepses. i.e., after the one-month follow-up, the post-operative decrease was 98% vs. 88 percent.**Keywords:** Rectal submucosa, ischiorectal abscess, ulceration, polyps, inflammation, idiopathic rectal prolapse, Etiology.**INTRODUCTION**During 15th century rectal prolapse was initially defined. A full-thickness layer of rectal tissue slides through the opening of anal, results in rectal prolapse. If left untreated rectal prolapse causes constipation and rectal ulcers.¹⁻³Rectal prolapse is recorded as a common condition among children, spiking around the time of toilet training. The mainstream subjects are minor and resolve spontaneously. Stool softeners are considered the first line of defense, as well as evading extended straining.^{4,5}Even though the particular etiology of rectal prolapse is unidentified, several interrelated abnormalities are explored. Chronic straining in defecation is accountable for waste numbers of prolapse incidences. Rectal prolapse is also connected with shallow sacral curvature, and pelvic floor defects.^{3,6}The most prevalent type of rectal prolapse is idiopathic. In children the complication may resolve on its own with the passage of time. The time it takes for spontaneous resolution differs from subject to subject but sometimes it takes months and years for complete resolution.^{7,8}Bladder exstrophy, malnourishment, and parasitic disease often lead to prolapse. In developed regions of the world, cystic fibrosis a most common cause found behind rectal prolapse, and it mainly manifests as a consequence of malnutrition and diarrhea in underdeveloped regions of the world. However, it is a frightful complexity but individuals are concerned about its tenacity. The existence of a prolapsed rectum can cause ulceration, edema, and gut necrosis that often results in perforation. The treatment of rectal prolapse is debatable, and no conclusive approach exists involving minor surgery to major intervention such as abdominoperineal operations.^{4,9-12}An injection of sclerosing solutions i.e. ethanolamine oleate, phenol in almond oil, quinine, 5% sodium morrhuate, 30% saline into the rectal submucosa has proven to be the effective and risk-free intervention.¹³A technique involving the phenol in olive oil to cause fixation of the mucosa and submucosa was developed during 18th century. Currently, a solution comprised of 5% quinine and urea, 5% phenol in almond oil, 5% sodium morrhuate, sodium tetradecyl sulfate is used. This was achieved by using a needle of 25- 30-gauge that permits 1-2 mL of sclerosant to be injected into the submucosal region. The commonly observed complications are urinary retention, rectal mucosa necrosis, bleeding, perirectal inflammation, and ischiorectal abscess.^{14,15}

Rectal prolapse causes discomfort among individuals of all age group due to which different treatment approaches has been to counter this condition, so the primary aim of this study is to compare the 5% phenol in almond oil and sodium tetradecyl sulfate injection in the treatment of rectal prolapse. The outcome of this study will help us to determine the effective treatment modality in minimizing the risks associated with this condition.

MATERIAL AND METHODS**Research Design:** A comparative clinical study.**Place of Study:** This randomized trial was conducted at Pediatric Surgery Department, Mayo Hospital Lahore after taking approval from the hospital's ethical committee.**Populations size:** Total 100 patients of pediatric age group 1-12 years of age who were presented with rectal prolapse were included in the study**Sample size:** n=100**Reliability and Validity:** Quantitative variables were presented by using mean±SD. Qualitative variables were presented by using frequency tables and percentages. For association between qualitative variables Chi square test was used. P-value <0.05 was taken as significant.**Data collection procedure:** Patients presented with prolapse with secondary causes (cystic fibrosis, neurological causes, bladder exstrophy, imperforate anus) and patients having age less than one year were excluded from the study. Patients were randomly divided into 2 groups. In Group-A patients were given 5% Phenol

in Almond Oil and in Group-B patients were given Sodium Tetradecyl Sulfate. Patients were followed up at 1st post operative day and at 1st post operative month to see recurrence or any other complications (bleeding, perirectal inflammation, urinary retention, ischiorectal abscess, and necrosis of the rectal mucosa) in cases in both treatment groups.

Data analysis: IBM SPSS 22 was used for data analysis

RESULTS

This study was conducted on 100 patients. In Group-A mean age of patients was 5.63±3.34 years. Minimum and maximum age of patients in this group was 2 and 12 years respectively. In Group-B mean age of patients was 7.16±2.80 years minimum and maximum age of patients was 3 and 10 years respectively. Mean age of all 100 patients was 6.39±3.21 years. In Group-A there were 22 (44%) male and 28 (56%) female patients while in Group-B there were 44 (88%) male and 6 (12%) female patients. In Group-A 6 patients had complete and 44 had incomplete history of presenting complaint. In Group-B 12 patients had complete and 38 patients had incomplete history of presenting complaint.

Table-1: Minimum and maximum age of patients (n = 50)

| Parameters | Group A (Mean±SD) | Group B (Mean±SD) |
|-------------|-------------------|-------------------|
| Age | 5.63±3.43 | 7.16±2.80 |
| Male n(%) | 44±01 | 88±0.2 |
| Female n(%) | 56±02 | 12±03 |

In Group-A 46 and in Group-B 39 children and outcome on 1st POD reduction. According to p-value significant association was present between treatment groups and outcome on 1st POD reduction. It was observed that in Group-A outcome on 1st POD reduction was high as compared to that of Group-B patients. i.e. (p-value=0.049). In Group-A 46 and in Group-B 39 patients had reduction on 1st POD. According to p-value significant association was present between treatment groups and outcome on 1st POD reduction.

Table-2: Comparative treatment of 5%PhenolAlmond Oil and Sodium Tetradecyl Sulfate

| Biomarkers | Group-A 5%PhenolAlmond Oil | P-value | Group-B Sodium Tetradecyl Sulfate | P-value |
|---------------------------|----------------------------|---------|-----------------------------------|---------|
| Bleeding | 23±01 | 0.01 | 13±02 | 0.02 |
| Perirectal inflammation | 21±01 | 0.01 | 10±01 | 0.01 |
| Urinary retention | 13±03 | 0.03 | 01±03 | 0.03 |
| Ischiorectal abscess | 12±03 | 0.03 | 01±01 | 0.01 |
| Necrosis of rectal mucosa | 11±01 | 0.01 | 07±01 | 0.01 |

It was observed that in Group-A outcome on 1st POD reduction was high as compared to that of Group-B patients. i.e. (p-value=0.049). In Group-A 5 and in Group-B 1 child had bleeding PR after POD. In terms of p-value no statistically significant association was present between treatment groups and bleeding PR after POD. i.e. (p-value=0.092) But it was observed that in Group-B bleeding per rectum was less as compared to that of Group-A. In Group-A 2 and in Group-B 1 patients had Perianal abscess. In terms of p-value no statistically significant association was present between treatment groups and Perianal abscess i.e. (p-value=0.092) But it was observed that in Group-B Perianal abscess was less as compared to that of Group-A. In Group-A 49 and in Group-B 50 patients had achieved reduction when observed at one month follow up time period. In Group-A reduction was achieved in greater number of patients as compared to that of Group-B patients. This difference of reduction was statistically significant. i.e. (p-value=0.050).

Based on these findings, it was determined that hypertonic saline has a statistically equivalent rate of complication, including faecal incontinence and anal stenosis, and is a more effective sclerosing agent than 5% phenol in almond oil after a single injection. All patients whose symptoms do not improve with conservative therapy should be offered injectable sclerotherapy before they are sent for surgery. Hence, in babies and children with idiopathic rectal prolapse, hypertonic saline injection can be safely used as the sclerosing agent of choice. In the treatment of paediatric idiopathic rectal prolapse, 15% hypertonic saline was shown to be a more effective sclerosing agent than 5% phenol in almond oil. Also, it was discovered to have a statistically equal rate of sequelae, such as anal stenosis and faecal incontinence.

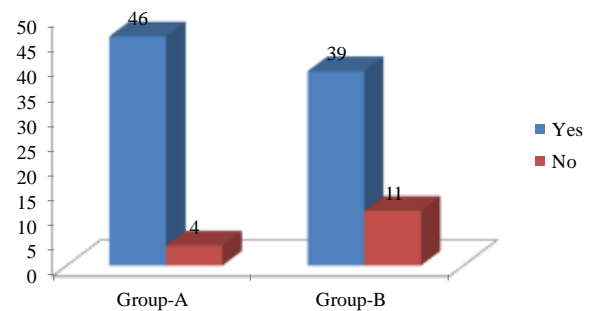


Figure 1: Outcome on Post Operative Reduction

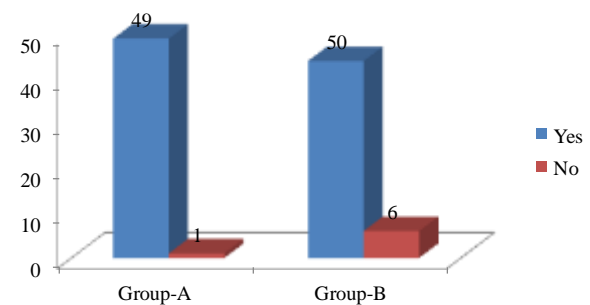


Figure 2: One Month Follow Up Reduction

DISCUSSION

In children, rectal prolapse that normally resolves on its own. There is no ideal or standard treatment for rectal prolapse in children. Normally it is treated conservatively by avoiding the squatting position, excessive defecation straining, good bowel training, and removing triggering factors such as diarrhoea, polyps, constipation, and so on⁸⁻⁹. Surgery is occasionally used to address rectal prolapse, and there is no consensus on which of the several techniques previously reported in the literature is the most effective. The amount of time it takes for spontaneous resolution to occur varies. Rectal prolapse is inconvenient and frightening for parents, and it can be difficult to minimise at times. Most families seek some form of help at some point¹⁶.

There is no consensus on the type of rectal prolapse intervention. It includes everything from sclerotherapy to a variety of surgical techniques. The sort of sclerosants to use and the surgical procedure to perform are likewise debatable. As a result, there are numerous therapy solutions for this condition in the literature, making it one of the most contentious pathologies to address. In the majority of cases, however, success has been observed with many of these treatments^{17, 18}. Sclerosants of various sorts have been used to cure rectal prolapse in children

like Oily phenol injections, hypertonic saline, 50 % dextrose water, deflux, alcohol, STD^{19,20}.

Cow milk, 5% dextrose water (D/W), 15%, 25%, and 30% saline solutions, and 5% phenol in almond oil are some of the sclerosing agents employed by different studies^{21, 22}. Each of them works in a similar way, causing aseptic chemical irritation. As a sclerosant, we utilised 5% phenol in almond oil, which is a readily available, cost-effective chemical with a well-documented sclerosant action^{8, 17, 23, 24}.

In this study 1st post operative follow up showed that in Group-A(Phenol Almond Oil Injection) 46 and in Group-B(Sodium Tetradecyl Sulfate) 39 children had reduction on 1st POD. According to p-value significant association was present between treatment groups and outcome on 1st POD reduction. It was observed that in Group-A outcome on 1st POD reduction was high as compared to that of Group-B patients. In Group-A(Phenol Almond Oil Injection) 49(98%) and in Group-B(Sodium Tetradecyl Sulfate) 44(88%) children had achieved reduction when observed at one month follow up time period. In Group-A reduction was achieved in greater number of patients as compared to that of Group-B patients. This difference of reduction was statistically significant. **i.e. (p-value=0.050)**

Patients who were treated with Phenol Almond Oil injection among them bleeding per rectum was observed in 5 patients while patients who were treated with Sodium Tetradecyl Sulfate among them only 1 patient had bleeding per rectum. This difference in bleeding per rectum was not statistically significant for both treatment modalities.

In his study, Sasaki Y examined the outcomes of injection sclerotherapy in children using phenol in almond oil (PAO), as well as the occurrence of problems following PAO injection. According to his findings, all nine patients were cured after one to three injections with no problems. After injection sclerotherapy, the manometric analysis revealed a normal anorectal reflex and other anorectal characteristics. After the therapy, two of the four people who had complained of constipation no longer had it¹⁵.

The effect of injectable sclerotherapy with 5% phenol in almond oil in the treatment of rectal prolapse in children was investigated in a local study in Nawab Shah. Twenty-six patients were given injectable sclerotherapy with 5% phenol in almond oil, according to their findings. These 26 patients were all tracked for a month. There were no anaesthetic or procedure-related complications. There was no recurrence after a month's follow-up²⁵.

Batool et al. conducted a two-phase study on the treatment of idiopathic rectal prolapse in children. Patients were monitored conservatively in phase one of the trial, and more than half of the prolapse disappeared in three months. As a result, they advise waiting at least three months before attempting any type of intervention. In the second part of the study, patients were given injection sclerotherapy as an intervention. After a single injection, 58% of patients were treated after two weeks, and all patients were cured after three months. This was a really noteworthy observation⁸.

Another local study was conducted in Quetta to evaluate the results of injectable sclerotherapy (5 percent phenol in almond oil) combined with Thiersch's stitch for rectal prolapse in children. The study's findings revealed that recurrence was observed in three cases after a one-month follow-up period. They were given injection sclerotherapy once more, and their condition improved. In three cases, the only consequence was an abscess in the perianal region. Following drainage, all settled. There is no option for long-term follow-up¹⁶.

There were no studies discovered in the literature that compared both of these therapy regimens. For example, % phenol almond oil combined with Sodium Tetradecyl Sulfate is used to cure rectal prolapse. Sodium Tetradecyl Sulfate, on the other hand, has been shown to be effective in the treatment of haemorrhoids in trials. According to the findings of a local study comparing injection sclerotherapy (IS) and electrocoagulation (EC)

in the treatment of early haemorrhoids in terms of pain during the procedure, rectum haemorrhage reduction, and overall patient satisfaction. Chronic constipation was found in 81 percent of patients, according to the study's findings. Only 24.5 percent of the patients had a positive haemorrhoid family history. Patients in the electrocoagulation (EC) group experienced more pain during the procedure than those in the injection sclerotherapy (IS) group (P<0.000), but EC was significantly more effective than IS in terms of reducing rectum bleeding (P= 0.039), and a significantly higher number of patients in the EC group were fully satisfied (P<0.04)²⁶.

According to the results of a study, patients in the STD group had a 70% success rate and patients in the phenol group had an 80% success rate in controlling bleeding and prolapse, which were the cardinal symptoms¹⁸.

The cost of both treatment modalities, i.e. 5 % phenol almond oil injection is less expensive than STD injection, is a significant factor to consider. So, in our situation, money is an issue when recommending medication to a patient. However, because the majority of our patients were from lower socioeconomic backgrounds, treatment selection was critical, keeping in mind the financial load and affordability of the patient.

Almond oil contains phenol, which has been shown to be effective. It is commonly utilised since it is inexpensive and readily available. Many difficulties have been documented with this drug, but the occurrence is fairly minimal. It operates by causing fibrosis as a result of protein precipitation. It's antiseptic and corrosive. Its systemic absorption is hampered by the oily preparation. Ingredients, such as almond oil, are utilised to carry other pharmacologically active ingredients. Its usage in children is normally restricted, and when injected, extreme caution is required. Although there is no consensus on dosage, it is usually recommended not to exceed 10 mL in one sitting, as we discovered in our research. Injections in the perirectal area should be avoided since they may inadvertently harm nearby tissues. Prostatic abscess, ischioanal fossa abscess, and other complications might occur as a result of a misdirected injection. Systemic absorption has been linked to tissue sloughing and necrotizing fasciitis, whereas systemic absorption has been linked to cardiac arrhythmias. There have been reports of pyrexia and allergic responses. It is not suggested to store this agent in plastic syringes. Syringes made of glass are preferable²⁵.

CONCLUSION

We conclude that 5% Phenol almond oil is more effective than Sodium Tetradecyl Sulfate in treating rectal prolapses. i.e., after the one-month follow-up, the post-operative decrease was 98% vs. 88%.

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Author's contribution: All authors contributed to the data interpretation and analysis, authoring the manuscript, language editing, and critical review.

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