

**Original Research Article** 

# STUDY ON PREVENTING PERIANAL FISTULA FOLLOWING INCISION AND DRAINAGE FOR PERIANAL ABSCESS

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### ABSTRACT

**Background:** The aim of present study was to identify the factors influencing and evaluate preventive measures for perianal fistula development following incision and drainage of perianal abscesses.

**Materials and Methods:** It was a prospective study. The present study was carried out on patients referred to the department of General surgery, who underwent perianal abscess drainage in the outpatient department, Mahatma Gandhi Memorial Hospital / Kakatiya Medical College, Warangal. The study was carried out from August 2022 to December 2024.

**Results:** In the present study, there was no statistical difference in the distribution of subjects basing on their age, gender, area of residence; education; occupation; (p: 0.93; 0.36; 0.77; 0.92; 0.55). There was a statistical difference in the distribution of subjects basing on their addictions, co-morbidities; previous perianal abscess; presence of fistula at 3rd month follow-up (p: 0.04; 0.0003; 0.0001; 0.001). More subjects in A had addictions, co-morbidities. More subjects in group B had previous perianal abscess, fistula at 3rd month follow-up. There was no statistical difference in the distribution of subjects basing on their age, gender, area of residence; education; occupation; (p: 0.93; 0.36; 0.77; 0.92; 0.55). There was a statistical difference in the distribution of subjects basing on their addictions, co-morbidities; previous perianal abscess; presence of fistula at 3rd month follow-up (p: 0.04; 0.0003; 0.0001; 0.001). More subjects basing on their addictions, co-morbidities; previous perianal abscess; presence of fistula at 3rd month follow-up (p: 0.04; 0.0003; 0.0001; 0.001). More subjects in A had addictions, co-morbidities; previous perianal abscess; presence of fistula at 3rd month follow-up (p: 0.04; 0.0003; 0.0001; 0.001). More subjects in A had addictions, co-morbidities. More subjects in group B had previous perianal abscess, fistula at 3rd month follow-up.

**Conclusion:** The present study conclude that depth of the abcess cavity,amount of pus drained, feacal organisms in culture increase the chance of fistula formation following perianal abcess drainage. Where as plain tap water used for sitz bath reduce the chance of fistula formation.

Keywords: Perianal Fistula, Fistula, Abscess, Co-morbidities, Incision.

# **INTRODUCTION**

Perianal abscess represent a prevalent and significant medical issue, characterized by an infection-induced collection of pus in the perianal tissues. These abscess often stem from the obstruction and subsequent infection of the anal glands, leading to severe pain, swelling, and occasionally systemic symptoms such as fever. The cornerstone of treatment for perianal abscess is incision and drainage (I&D), which provides immediate symptom relief and addresses the underlying infection. Despite the efficacy of this procedure, one of the most challenging complications is the development of a perianal fistula, reported in approximately 30-50% of cases following I&D.<sup>[1,2]</sup>

A perianal fistula is an abnormal tract that establishes a pathological connection between the anal canal and the perianal skin, often as a result of chronic infection and incomplete healing of the abscess cavity. The formation of these fistulas is influenced by multiple factors, including patient-related variables such as underlying health conditions (e.g., diabetes mellitus, Crohn's disease), immune status, and lifestyle factors such as smoking. Additionally, the surgical technique employed during I&D, the thoroughness of abscess drainage, and postoperative care also play crucial role in the likelihood of fistula development.<sup>[3,4]</sup>

The clinical management of perianal abscess and the prevention of subsequent fistula formation necessitate a comprehensive understanding of these influencing factors. Preventive strategies are critical and include meticulous surgical techniques during I&D, ensuring complete evacuation of abscess contents, and appropriate postoperative care. The role of antibiotics in preventing fistula formation remains a topic of ongoing debate, with somestudies suggesting their benefit in reducing recurrence and in specific fistula formation populations. Furthermore, some clinicians advocate for primary fistulotomy at the time of abscess drainage, although this approach is controversial due to potential risks, including sphincter damage and subsequent incontinence.<sup>[5]</sup>

This prospective study aims to systematically investigate the factors influencing the development of perianal fistulas following I&D for perianal abscess and to evaluate the effectiveness of various preventive measures. By identifying the risk factors and determining effective interventions, this study seeks to enhance clinical management and reduce the incidence of this challenging postoperative complication.

## **Aims and Objectives**

The aim of present study was to identify the factors influencing and evaluate preventive measures for perianal fistula development following incision and drainage of perianal abscesses.

# **MATERIALS AND METHODS**

**Place of study:** The present study was carried out on patients referred to the department of General surgery, who underwent perianal abscess drainage in the outpatient department, Mahatma Gandhi Memorial Hospital / Kakatiya Medical College, Warangal.

**Type of study:** The present study was a prospective study.

**Duration of study:** The study was carried out from August 2022 to December 2024.

**Sample size:** The study was conducted on 50 subjects.

#### Inclusion Criteria

Patients meeting the following criteria were enrolled into the study.

- Patients who attended the outpatient department (OPD) or were admitted to the wards of MGMH for perianal abscess.
- Patients willing to give consent.
- Patients willing to participate.

#### **Exclusion Criteria**

Patients meeting the following criteria were excluded from the study.

- Patients with known fistula-in-ano.
- Patients with known irritable bowel disease.
- Patients who were not willing to give consent.
- Patients not willing to participate.

**Informed Consent:** All the patients fulfilling selection criteria were explained about the details of the disease process, options of treatment, ultimate outcome, possible effects, complications and chances of recurrence in both procedure and a written informed consent was obtained before enrolment. They were informed of their right to withdraw from the study at anystage.

## **Data Collection**

- A detailed clinical history and physical examination was carried out on patients followed by a thorough review of their hospital records.
- All the patients meeting inclusion criteria were included in the study.
- Patients were divided into two groups basing on the treatment given.

GROUP A (N = 25): 25 subjects (50 %) given plain water sitz bath.

GROUP B (N = 25): 25 subjects (50 %) given antiseptic mixed sitz bath.

- The values needed were recorded and noted down in the master charts.
- All the data was documented and analyzed by subjecting to statistical analysis.

**Statistical Analysis:** The collected data was entered into Microsoft Excel Worksheet-2010 and data was taken into IBM SPSS Statistic for Windows, version 24 (IBM Corp., Armonk, N.Y., USA) software for calculation of frequency, percentage, mean, standard deviation and probability value. A 'P' value of <0.05 was considered statistically significant.

## RESULTS

The present prospective study was conducted on 50 patients who underwent perianal abscess drainage in the department of General surgery, Mahatma Gandhi Memorial Hospital / Kakatiya Medical College, Warangal. The following were the study results:

Table 1: Distribution of subjects basing on their treatment.					
Treatment Frequency Percentage					
Plain water	25	50			
Antiseptic in plain water	25	50			
Total	50	100			

The above table gives data on distribution of study subjects based on the treatment received. The patients were divided into two groups, each consisting of 25 patients.

Table 2: Age wise distribution of subjects.				
Age group (years)	Plain water N (%)	Antiseptic in plain water N (%)	P-Value	
15 to 29	7 (28%)	8 (32%)		
30 to 39	6 (24%)	6 (24%)		
> 40	12 (48%)	11 (44%)	0.93	
Total	25 (100 %)	25 (100 %)		

In the present study, the subjects were categorized into four age groups. The above table gives data on distribution of study subjects based on their age. Majority subjects in group A were found in the age group of > 40 years, i.e., 12 subjects (48%); followed by 7 subjects (28%) in the age group of 15 to 29 years and finally 6 subjects (24%) in the age group of 30 to 39 years.

Majority subjects in group B were found in the age group of > 40 years, i.e., 11 subjects (44%); followed by 8 subjects (32%) in the age group of 15 to 29 years and finally 6 subjects (24%) in the age group of 30 to 39 years.

The p-value calculated was 0.93 indicating no statistical difference in the age wise distribution of subjects.

Table 3: Distribution of subjects basing on their gender.			
Gender	Plain water N (%)	Antiseptic in plain water	Gender
Male	18 (72%)	16 (64%)	
Female	7 (28%)	9 (36%)	0.36
Total	25(100%)	25(100%)	

The above table gives data on distribution of study subjects based on their gender. Majority subjects in group A were males, i.e., 18 subjects (72 %); followed by 7 subjects (28 %) females. Majority subjects in group B were males, i.e., 16 subjects (64 %); followed by 9 subjects (36 %) females. The p-value calculated was 0.36 indicating no statistical difference in the gender wise distribution of subjects.

Table 4: Distribution of subjects basing on their area of residence.				
Area of residence	Plain water N (%)	Antiseptic in plain water N (%)	P-Value	
Rural	11 (44%)	10 (40%)	0.77	
Urban	14 (66%)	15 (60%)		
Total	25 (100 %)	25 (100 %)		

The above table gives data on distribution of subjects according to their area of residence. Majority subjects in group A reside in urban area, i.e., 14 subjects (66%); followed by 11 subjects (44%) in rural area.

Majority subjects in group B reside in urban area, i.e., 15 subjects (60 %); followed by 10 subjects (40 %) in rural area. The p-value calculated was 0.77 indicating no statistical difference in the area of residence wise distribution of subjects.

<b>Table 5: Distribution of subjects</b>	basing on their education	•	
Education	Plain water N (%)	Antiseptic in plain water N (%)	P-Value
No schooling	2 (8%)	2 (8%)	0.92
Primary	5 (20%)	7 (28%)	
Secondary	8 (32%)	9 (36%)	
Higher Secondary	7 (28%)	5 (20%)	
Degree	3 (12%)	2 (8%)	
Total	25 (100 %)	25 (100 %)	

The above table gives data on distribution of subjects according to their education. Majority subjects in group A had secondary education, i.e., 8 subjects (32%); followed by 7 subjects (28%) with higher secondaryeducation; 5 subjects (20%) with primary education; 3 subjects (12%) completed their degree and 2 subjects (8%) had no schooling.

Majority subjects in group B had secondary education, i.e., 9 subjects (36%); followed by 7

subjects (28%) with primary education; 5 subjects (20%) with higher secondary education; 2 subjects (8%) completed their degree and 2 subjects (8%) had no schooling.

The p-value calculated was 0.92 indicating no statistical difference in the education wise distribution of subjects.

Cable 6: Distribution of subjects basing on their occupation.				
Occupation	Plain water N (%)	Antiseptic in plain water N (%)	P-Value	
Sedentary	8 (32%)	10 (40%)		
Moderate to heavy	17 (68%)	15 (60%)		
Total	25 (100 %)	25 (100 %)	0.55	

The above table gives data on distribution of subjects according to their occupation. Majority subjects in group A had moderate to heavy strain in their occupation, i.e., 17 subjects (68%); followed by 8 subjects (32%) with sedentary occupation. Majority subjects in group B had moderate to heavy strain in

their occupation, i.e., 15 subjects (60 %); followed by 10 subjects (40 %) with sedentary occupation. The p-value calculated was 0.55 indicating no statistical difference in the occupation wise distribution of subjects.

Table 7: Distribution of subjects basing on the presence of addictions				
Addictions	Plain water N (%)	Antiseptic in plain water N (%)	<b>P-Value</b>	
Yes	18 (72%)	11 (44%)		
No	7 (28%)	14 (56%)		
Total	25 (100 %)	25 (100 %)	0.04	

The above table gives data on distribution of subjects according to the presence of addictions. Majority subjects in group A had addictions, i.e., 18 subjects (72 %); followed by 7 subjects (28 %) with no addictions. Majority subjects in group B had no

addictions, i.e., 14 subjects (56 %); followed by 11 subjects (44 %) with addictions. The p-value calculated was 0.04 indicating a statistical difference in the addiction wise distribution of subjects. More subjects in group A had addictions.

Table 8: Distribution of subjects basing on the presence of co- morbidities.				
Comorbidities	Plain water N (%)	Antiseptic in plain water N (%)	P-Value	
Yes	10 (40%)	3 (12%)		
No	15 (60%)	22 (88%)		
Total	25 (100 %)	25 (100 %)	0.0003	

The above table gives data on distribution of subjects according to the presence of co-morbidities. Majority subjects in group A had no co-morbidities, i.e., 15 subjects (60 %); followed by 10 subjects (40 %) with co-morbidities. Majority subjects in group A had no co-morbidities, i.e., 22 subjects (88 %); followed by

3 subjects (12 %) with co-morbidities The p-value calculated was 0.0003 indicating a highly significant statistical difference in the co-morbidities wise distribution of subjects. More subjects in group A had co-morbidities.

Fable 9: Distribution of subjects basing on the presence of perianal abscess.				
Previous perianal abscess	Plain water N (%)	Antiseptic in plain water N (%)	P-Value	
Yes	0 (0%)	4 (20%)	0.0001	
No	25 (100%)	20 (80%)		
Total	25 (100 %)	25 (100 %)		

The above table gives data on distribution of subjects according to the presence of perianal abscess.

Majority subjects in group A had no previous perianal abscess, i.e., 25 subjects (100 %). Majority subjects in group B had no previous perianal abscess, i.e., 20 subjects (80 %); followed by 4 subjects (20 %) with previous perianal abscess. The p-value calculated was 0.0001 indicating a highly significant statistical difference in the previous perianal abscess wise distribution of subjects. More subjects in group B had previous perianal abscess.

Table 10: Distribution of subjects basing on presence of fistula at 3rd month follow-up.				
Presenceoffistulaat 3 <sup>rd</sup> month	Plain water N (%)	Antisepticinplain water N(%)	P-Value	
follow-up				
Yes	2(8%)	12 (48%)	0.001	
No	23 (92%)	13 (52%)		
Total	25(100%)	25(100%)		

The above table gives data on distribution of subjects according to the presence of fistula at 3rd month follow-up.

Majority subjects in group A had no fistula at 3rd month follow-up, i.e., 23 subjects (92 %); followed by 2 subjects (8 %) with fistula at 3rd month followup. Majority subjects in group B had no fistula at 3rd month follow-up, i.e., 13subjects (52 %); followed by 12 subjects (48 %) with fistula at 3rd month followup. The p-value calculated was 0.001 indicating a highly significant statistical difference in the distribution of subjects basing on the presence of fistula at 3rd month follow-up. More subjects in group B had fistula at 3rd month follow-up

## DISCUSSION

Most accepted theory of perianal abscess formation is cryptoglandular infection and subsequent abscess formation. Perianal Fistula formation following incision and drainage of the perianal abscess is not an uncommon problem. Several factors influences the fistula formation. Younger Age, Antibiotic use following abscess drainage, Fecal organism in abscess and Antiseptic solution mixed sitz bath are associated with increased risk of fistula formation. Immunocompromised states, Skin organism in abscess and Plain tap water for sitz bath are associated with decreased risk of fistula formation. In this study we tried to evaluate the factors influencing fistula formation, particularly plain tap water for sitz bath vs antiseptic solution mixed sitz bath The results obtained from this study were compared with other similar studies and discussed below:

**Age group:** In the present study, the subjects were categorized into four age groups. Majority subjects in group A were found in the age group of > 40 years, i.e., 48% subjects; followed by 28% subjects in the age group of 15 to 29 years and finally 24% subjects in the age group of 30 to 39 years.

Majority subjects in group B were found in the age group of > 40 years, i.e., 44% subjects; followed by 32% subjects in the age group of 15 to 29 years and finally 24% subjects in the age group of 30 to 39 years. The p-value calculated was 0.93 indicating no statistical difference in the age wise distribution of subjects. The results of our study were in co-relation with the past studies conducted by Steele SR et al,<sup>[2]</sup> Loder PB et al,<sup>[5]</sup> Bharucha AE et al.<sup>[6]</sup>

**Gender:** Majority subjects in group A were males, i.e., 72 % subjects; followed by 28% subjects females. Majority subjects in group B were males, i.e., 64 % subjects; followed by 36% subjects females. The p-value calculated was 0.36 indicating no statistical difference in the gender wise distribution of subjects. The results of our study were in co-relation with the past studies conducted by Steele SR et al,<sup>[2]</sup> Loder PB et al,<sup>[5]</sup> Bharucha AE et al.<sup>[6]</sup>

Area of residence: Majority subjects in group A reside in urban area, i.e., 66 % subjects; followed by 44 % subjects in rural area. Majority subjects in group B reside in urban area, i.e., 60 %; followed by 40 % subjects in rural area. The p-value calculated was 0.77 indicating no statistical difference in the area of residence wise distribution of subjects. The results of our study were in co-relation with the past studies conducted by Steele SR et al,<sup>[2]</sup> Khalil OM et al,<sup>[7]</sup> Akkapulu N et al.<sup>[8]</sup>

**Occupation:** Majority subjects in group A had moderate to heavy strain in their occupation, i.e., 68% subjects; followed by 32% subjects with sedentary occupation. Majority subjects in group B had moderate to heavy strain in their occupation, i.e., 60% subjects; followed by 40% subjects with sedentary occupation. The p-value calculated was 0.55 indicating no statistical difference in the occupation wise distribution of subjects. The results of our study were in co-relation with the past studies conducted by Steele SR et al,<sup>[2]</sup> Khalil OM et al,<sup>[7]</sup>

Addictions: Majority subjects in group A had addictions, i.e., 72 % subjects; followed by 28 % subjects with no addictions. Majority subjects in group B had no addictions, i.e., 56 % subjects;

followed by 44 % subjects with addictions. The pvalue calculated was 0.04 indicating a statistical difference in the addiction wise distribution of subjects. More subjects in group A had addictions. The results of our study were in co-relation with the past studies conducted by Hamadani A et al,<sup>[4]</sup> Khalil OM et al.<sup>[7]</sup>

**Perianal abscess:** Majority subjects in group A had no previous perianal abscess, i.e., 100% subjects. Majority subjects in group B had no previous perianal abscess, i.e., 80 % subjects; followed by 20 % subjects with previous perianal abscess. The p-value calculated was 0.0001 indicating a highly significant statistical difference in the previous perianal abscess wise distribution of subjects. More subjects in group B had previous perianal abscess. The results of our study were in co-relation with the past studies conducted by Ghahramani L et al,<sup>[9]</sup> Adamo K et al,<sup>[10]</sup> Amato A et al.<sup>[11]</sup>

**Fistula at 3rd month follow-up:** Majority subjects in group A had no fistula at 3rd month follow-up, i.e., 92 % subjects; followed by 8 % subjects with fistula at 3rd month follow-up. Majority subjects in group B had no fistula at 3rd month follow-up, i.e., 52 % subjects; followed by 48 % subjects with fistula at 3rd month follow-up. The p-value calculated was 0.001 indicating a highly significant statistical difference in the distribution of subjects basing on the presence of fistula at 3rd month follow-up. More subjects in group B had fistula at 3rd month follow-up. The results of our study were in co-relation with the past studies conducted by Malik AI et al,<sup>[3]</sup> Steele SR et al,<sup>[12]</sup> Latha D et al.<sup>[13]</sup>

## **CONCLUSION**

The present study conclude that depth of the abcess cavity, amount of pus drained, feacal organisms in culture increase the chance of fistula formation following perianal abcess drainage. Whereas plain tap water used for sitz bath reduce the chance of fistula formation.

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