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PILONIDAL SINUS: A COMPARATIVE STUDY OF OPEN VERSUS CLOSED METHODS OF SURGICAL APPROACH

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ABSTRACT

Background: When the hair punctures the skin and it is embedded in it, the sinus is formed. It is mostly found at the cleft of the buttocks. Approximately 0.7% of the population is affected by the infected pilonidal disease. The definitive treatment of this disease is surgery and there are two methods of surgery; open method and closed method. In the open method, there is excision of the tract without primary closure and secondary intention is used for healing. On the other hand, the closed method includes excision of the tract with primary closure or closure by other processes. There are different techniques that can be used to manage this disease.

Objective: To compare the results of both, open and closed, methods of surgery in terms of recurrence, wound healing, and wound infection

Study design: A randomised controlled trial

Duration and place of study: This study was conducted at Suleman Roshan Medical College Tando Adam from September 2024 to September 2025

Methodology: This study is a randomised controlled trial which was performed on a total of 80 patients. A non-probability consecutive sampling method was used to detect the sample size. All the patients who were a part of this study were those who presented with symptoms of chronic Pilonidal Sinus disease. All the symptoms were confirmed by clinical examination. All the patients were

randomly divided into 2 groups. One group of patients underwent an open method of surgery (Group A) while the other group of patients underwent a closed method of surgery (Group B). Group A patients were advised for daily dressing while group B patients were advised for every alternative day. The review and follow-up was done at 1st, 6th, 12th, 18th, and 24th month in order to check the recurrence and complications. SPSS version 26 was used to analyse the data.

Results: There were a total of 80 patients involved in this research. All of the patients were equally divided into 2 groups, having 40 patients in each group. The majority of the patients were male, representing 75% of the total population. The age of the total patients ranged from 19 years to 33 years. The mean age of group A was 25.3 years while it was 24.1 years in group B. All the patients were having sinus openings in the midline.

Conclusion: In terms of recurrence rate, wound infection, wound dehiscence, blood loss, and surgery time, the open method showed better results to manage pilonidal sinus.

INTRODUCTION

Piliferous cyst, pilonidal sinus, pilonidal cyst or fistulas; all these words are synonyms and they are derived from a Latin word which means nest of hair [1]. When the hair punctures the skin and it is embedded in it, the sinus is formed. It is mostly found at the cleft of the buttocks [2]. Approximately 0.7% of the population is affected by the infected pilonidal disease[3]. The definitive treatment of this disease is surgery and there are two methods of surgery. One is the open method and the other is the closed method. In the open method, there is excision of the tract without primary closure and secondary intention is used for healing [4]. On the other hand, the closed method includes excision of the tract with primary closure or closure by other means such as Bascom's procedure, Z-plasty, or Karydakis procedure [5]. These procedures are designed to avoid midline wounds.

According to the meta analysis of Iain J et al., wounds heal more quickly after primary closure than using an open method [6]. But this increases the risk of recurrence. Another study by R. Dudink revealed that a closed method of surgery is better than the open technique [7]. According to the randomised controlled study of Loran et al., faster healing is linked with sinus excision and primary closure instead of using the open method [8]. However, they also revealed that there is no difference in healing rate after 1 year. A study of Baris Saylam et al. used 4 different surgical interventions to manage pilonidal sinus [9]. Those 4 methods were D-flap, excision with primary closure, Limberg flap, and Karydakis technique. There was no statistically significance seen in terms of recurrence of the wound. The study of Calikoglu et al. used phenol injection and excision with secondary wound healing [10]. It was revealed that wound healing is better with phenol injection as compared to the open method.

There are different techniques that can be used to manage this disease. The techniques include the use of platelet-rich plasma, use of fibrin glue, and minimally invasive video-assisted ablation of pilonidal sinus [11]. There are a number of interventions done to manage pilonidal sinus but there is still no universal acceptance of any procedure to be carried out. Therefore, this study was conducted to compare the results of both, open and closed, methods of surgery in terms of recurrence, wound healing, and wound infection.

METHODOLOGY

This study is a randomised controlled trial which was performed on a total of 80 patients. A non-probability consecutive sampling method was used to detect the sample size. All the patients who were a part of this study were those who presented with symptoms of chronic Pilonidal Sinus disease. All the symptoms were confirmed by clinical examination. Patients were informed about this study and their consent was obtained. The Ethical Review Committee approved this research.

Exclusion criteria: Patients with recurrent sinuses and acute sinuses were not a part of this study. Those who were having some other pathology were also not a part of this study.

All the patients were randomly divided into 2 groups. One group of patients underwent an open method of surgery (Group A) while the other group of patients underwent a closed method of surgery (Group B). Patients were operated on an elective list. Local anaesthesia was given to most of the patients and they were placed in prone/Jack-Knife positions. In some cases, spinal anaesthesia was given. If there was the presence of more than one sinus tract, it was assessed with a blunt probe. In group A, sinus along with its tracts was excised through a midline elliptical incision up to sacral fascia. If there was any leftover residual tissue found, it was removed. The patients' wound was left open in group A and pyodine soaked dressing was done. The wound was allowed to close in group B by primary healing.
The same group of surgeons performed all of the surgeries. Patients were discharged on the 2nd post-operative day and they were given analgesics and antibiotics. Group A patients were advised for daily dressing while group B patients were advised for every alternative day. The review and follow-up was done at 1st, 6th, 12th, 18th, and 24th month in order to check the recurrence and complications. SPSS version 26 was used to analyse the data. To compare both the groups, a t-test was conducted. Data was presented in tables and percentages and frequencies were calculated.

RESULTS

There were a total of 80 patients involved in this research. All of the patients were equally divided into 2 groups, having 40 patients in each group. One group of patients underwent an open method of surgery (Group A) while the other group of patients underwent a closed method of surgery (Group B). The majority of the patients were male, representing 75% of the total population. Table number 1 shows the distribution of patients according to gender.

Table No. 1:

Gender	**N**	**%**
Male	60	75
Female	20	25

The age of the total patients ranged from 19 years to 33 years. The mean age was 24.5 years. The age of the patients in group A ranged from 19 years to 33 years while the age of patients in group B ranged from 21 years to 32 years. Table number 2 shows the mean age calculated in both the groups.

Table No. 2:

Age	**Group A**	**Group B**
Mean Age (yrs)	25.3	24.1

All the patients were having sinus openings in the midline. Table number 3 shows the clinical presentation as well as sinus characteristics of all the patients.

Table No. 3:

Parameters	**N**	**%**
Clinical presentation		

● **Intermittent pain, swelling, and discharge**	70	87.50
● **Painless, foul smelling discharge**	10	12.50
Sinus Characteristics		
● **Single sinus opening**	77	96.25
● **Multiple sinus opening**	3	3.75

Table number 4 shows the outcomes of both the groups.

Table No. 4:

Outcomes	**Group A**		**Group B**	
	N	**%**	**N**	**%**
Wound Infection and dehiscence	4	5.00	8	10.00
Recurrence Rate	3	3.75	10	12.50
Mean				
Blood Loss (ml)	95 ± 15.5		105 ± 25.1	
Surgery time (mins)	63.5 ± 20.6		74.8 ± 32.5	
Hospital stay (days)	4.75 ± 1.8		3.64 ± 1.6	
Healing time (days)	20.46		13.5	

DISCUSSION

It is still an enigma in the modern world that which type of surgery should be used to manage pilonidal sinus surgery. There are controversies that still exist whether to use open method or closed method. Both of the methods have their own benefits and challenges. The main purpose of the treatment of pilonidal sinus disease is to heal the sinus as early as possible and avoid the risk of recurrence [12]. Our study divided the total participants into 2 groups equally, having 40 patients in each group. One group of patients underwent an open method of surgery (Group A) while the other group of patients underwent a closed method of surgery (Group B). The outcomes of both of the groups were discussed.

In our study, we observed some advantages of the open method of surgery such as low surgical time, less recurrence rate, low wound infection rate, and low wound dehiscence rate. However, the disadvantages include longer healing time, daily dressing, and longer hospital stays. According to studies, many treatments have been discussed to manage this disease but still there is no method that shows satisfactory results and can be said as the ideal method to treat pilonidal sinus [13,14]. Every method has its own advantages and disadvantages. The ideal surgery should be simple, cost-

effective with a low recurrence rate, short hospital stay, less pain, and less wound problems. However, none of the surgical methods of pilonidal sinus proved to be ideal [15].

A study by Shahida et al. was conducted on 40 patients [16]. They also divided their patients into two groups and showed similar results to our study in terms of wound healing, hospital stay, and recurrence rate. However, the healing time in their study for open technique was 22 to 42 days and 9 to 11 days for closed technique. In our study, it was 17 to 28 days for the open method and 10 to 15 days for the closed method. Another study by Mohamed et al. showed comparison of three different surgical methods [17]. They observed significant differences in terms of surgical time and hospitalization.

Another study by Mehmet Füzün et al. was conducted on 110 patients [18]. They observed that hospital stays are longer in the closed method of the surgery. They also revealed that recurrence rate and wound infection were not significant in both the groups. These findings are not similar to our study. Anees k Nile et al. also found out that the hospital stay is longer in the closed method as compared to the open method [19]. Mehmet et al. also showed similar findings [20].

There are a few limitations of our study. First, a blunt probe was used to identify the tract and no other advanced investigations were used. Moreover, different flap methods in closed technique were not used.

CONCLUSION

In terms of recurrence rate, wound infection, wound dehiscence, blood loss, and surgery time, the open method showed better results to manage pilonidal sinus.

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Conflict in the interest

The authors had no conflict related to the interest in the execution of this study.

Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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