

# Excision with undermining skin flaps for primary closure of pilonidal disease on redivac without tension

Original  
Article

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## ABSTRACT

**Introduction:** Pilonidal sinus is a chronic infection-related inflammatory illness causing anxiety and confusion and affecting productivity due to skin and subcutaneous tissue inflammation.

**Aim & Objectives:** The objective is to assess the efficacy of performing a simple excision of tissue followed by undermining of skin flaps on both sides and secure closure using a redivac (closed suction drain). This study aims to evaluate the impact of this procedure on operating and healing time, length of hospital stays, occurrence of postoperative problems, and rate of recurrence.

**Patients and Methods:** This research was conducted on 40 cases suffering from pilonidal sinus with age varying between 18 and 39 years who underwent excision, undermining of skin flaps on both sides, and tension-free primary closure on redivac.

**Results:** According to wound healing, 33 (82.5%) patients had complete healing, six (15%) patients had partial healing, and one (2.5%) patient had no healing. According to satisfaction, 37 (92.5%) patients were satisfied, and three (7.5%) patients were not satisfied. According to complications, 31 (77.5%) patients had no complication, four (10%) patients had wound infection, two (5%) patients had recurrence, three (7.5%) patients had hematoma, and two (5%) patients had seroma.

**Conclusion:** The use of a redivac drain after undermining skin flaps on both sides proved to be a successful and beneficial therapy for the primary closure of the pilonidal sinus. It resulted in optimal wound healing with minimal complication rates. The effectiveness of the redivac drain also led to a high level of case satisfaction.

**Key Words:** Primary closure of pilonidal sinus, pilonidal disease, redivac drain.

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## INTRODUCTION

Pilonidal sinus is a persistent infection-related inflammatory condition that can cause feelings of anxiety, confusion, and lack of productivity. The term “pilonidal sinus” was coined by Hodges in 1880 to describe a condition that occurs when a cavity is developed in the natal cleft due to continuous pressure<sup>[1]</sup>.

This disorder can occur because of inflammation of the skin and subcutaneous tissue, and it is more prevalent in men than in women, with a ratio of two to one. Despite its low prevalence of 26 (0.026%) cases per hundred thousand people, this illness is a severe illness that significantly impacts the productivity of an otherwise healthy person<sup>[2]</sup>.

Although the precise definition of the progress in medical study and research remains unclear, there is a technique for managing pilonidal sinus conditions. The therapy regimen must effectively lower discomfort,

reduce hospitalization duration, prevent problems, and decrease the rate of recurrence. Although the exact cause and origin of pilonidal illness are not clear, it appears that hair and granulation tissue play a significant role in its development<sup>[3,4]</sup>.

The hypothesis suggests that the movement within the hair is caused by suction positioned near the median line. This rapid increase may lead to infection and manifest as an acute abscess in the sacrococcygeal region. The recurrence of the wound is highly common when the acute stage has been eliminated. This condition primarily affects those with a high degree of hairy appearance, and those who have regular contact with the workplace frequently feel its effects. The driver's illness has been identified. The primary etiologies of pilonidal sinus are infections, injuries, and hair follicles entering deep into the tissues of the coccyx area. This disease is commonly observed throughout adolescence when there is a significant level of hair growth and activity in the sebaceous glands<sup>[5]</sup>.

Pilonidal sinus primarily affects the younger demographic of society, significantly limiting their normal lives due to one of the main contributing factors. Those who suffer from this illness find it exceedingly difficult to perform even the most basic tasks in their daily lives<sup>[6]</sup>.

This disease significantly prevents young cases from attending work because of its high incidence of recurrence and the prolonged duration needed for treating the affected area. Regarding the etiology of this sickness, the acquired theory has presented two ideas, one suggesting that it is congenital and the other suggesting that it is acquired<sup>[7,8]</sup>.

The objective of this investigation was to assess the efficacy of simple excision with undermining of skin flaps on both sides and tension-free primary closure with the use of a redivac (closed suction drain). The study aimed to evaluate the impact of this technique on operating and healing time, length of hospital stays, incidence of postoperative problems, and rate of recurrence.

## **PATIENTS AND METHODS:**

This research was conducted at the Surgery Department of Armed Forces College of Medicine Hospital (AFCMH) from June 2023 to June 2024 after approval from the ethical committee on 40 cases suffering from pilonidal sinus with age varying between 18 and 39 years underwent excision with the undermining of skin flaps on both sides and tension-free primary closure on redivac for 2 weeks.

Inclusion criteria: patients of any sex who have been diagnosed with pilonidal sinus based on clinical observation of symptoms such as swelling, intermittent pain, and discharge at the natal cleft.

Exclusion criteria: cases with recurrent sinuses, acute sinuses, and those who did not provide any written consent.

### **Sample size calculation**

This research is based on research performed by Karim *et al.*<sup>[9]</sup>. The sample size required for the study was estimated to be 40 patients at least, considering a 95% confidence level, with a power of 80%, and  $\alpha$  error of 5%. We will use Cochran's formula to calculate sample size<sup>[10]</sup>:

$$\text{Sample Size} = \frac{Z_{1-\alpha/2}^2 P(1-P)}{d^2}$$

$d$ =absolute error (0.05).

$P$ =prevalence of partially wound healing was 15.56%.

$Z_{1-\alpha/2}$ =1.96.

$$\text{Sample size} = \frac{1.96^2 \times 0.242 (1 - 0.1556)}{0.05^2} = 31.387$$

Therefore, the sample size was increased to 40 cases to allow for any potential cases of dropout throughout the follow-up period.

## **Methods**

All patients are exposed to complete history taking, clinical examinations, and routine laboratory inspections. Also, all patients signed written consent.

### **Preoperative assessments**

Patient spinal anesthesia was administered and they were permitted to place in a prone position. Hair density was assessed by visual inspection of the area where the excision was performed to check for the presence and distribution of hair. Also, palpation of the area is used to assess the texture and thickness of the hair. The infected region initially underwent shaving then was cured with pyodine and draped following aseptic measures.

### **Procedure**

Initial assessment using the probe was done through the external opening of the sinus to assess the extent of the sinus, then injection of diluted methylene blue dye through the external opening using a gray cannula port. An elliptical incision was made and extended, reaching the sacrococcygeal fascia to ensure complete removal of the sinus area. However, if there was any secondary tract present, the area was probed again and then completely removed. Hemostasis was achieved by employing artery forceps and diathermy. The cases' wound underwent undermining of skin flaps on both sides, which was then closed using a redivac drain inserted deep into the wound to allow the drainage of blood, serous fluid, or pus. The deep sutures were placed using vicryl material at the undermined subcutaneous flaps near the sacrococcygeal fascia. Subsequently, the skin margins were closed using continuous subcuticular sutures using monocryl. Additionally, gauze with local antibiotics were applied over the closed wound, which helped to eliminate any dead space and reduce the infection rate. Finally, the dressing was applied.

### **Follow up**

The cases received discharge from the hospital the same day or the next morning following their operation and then monitored for 8 weeks. Cases were monitored in the outpatient department to observe the duration of healing and primarily to assess the incidence of wound infection and postsurgical consequences. In addition, they were instructed to participate in selective shaving for 3 weeks in conjunction with the prescribed medications. If a case acquired a wound infection, they were advised to undergo daily dressing. If necessary, a stitch was removed based on the state of the wound. Daily dressing was recommended to facilitate healing of the wound through secondary intention. The drain was removed 2 weeks after the operation.

**RESULTS:**

According to (Table 1), the mean age was 27.62±6.2 varied from 18 to 39, and the mean BMI was 23.78±3.34 ranged from 18.9 to 33. Thirty-four (85%) cases were men, and six (15%) cases were women.

According to (Table 2), 23 (57.5%) patients had excessive hair, 17 (42.5%) patients had nonexcessive hair, all patients (100%) had pain, and 16 (40%) patients had discharge. The mean operation time was 31.7±3.89 ranged from 24 to 39.

According to (Table 3), 31 (77.5%) patients had no complication, four (10%) patients had wound infection, two (5%) patients had recurrence, three (7.5%) patients had hematoma, and two (5%) patients had seroma (two of three patients with hematoma had recurrence) (Fig. 1).

According to (Table 4), 33 (82.5%) patients had complete healing, six (15%) patients had partial healing, and one (2.5%) patient had no healing (Fig. 2).

According to (Table 5), 37 (92.5%) patients were satisfied, and three (7.5%) patients were not satisfied.

Patient Satisfaction Questionnaire was used for all patients who were asked about how satisfied they were with pain relief, wound healing, cosmetic outcomes, and overall experience (Images 1-3).

**Table 1:** Demographic characteristics of cases in the group of study

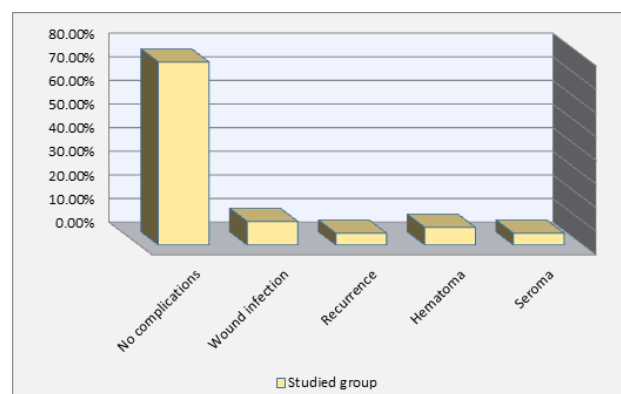
Studied group (N=40)	
Age	
Mean±SD	27.62±6.2
Range	18–39
BMI	
Mean±SD	23.78±3.34
Range	18.9–33
Sex [n (%)]	
Male	34 (85)
Female	6 (15)

**Table 2:** Operative data of patients in the studied group

Studied group (N=40) [n (%)]	
Hair density	
Excessive	23 (57.5)
Nonexcessive	17 (42.5)
Presentation	
Pain	40 (100)
Discharge	16 (40)
Operation time (min)	
Mean±SD	31.7±3.89
Range	24–39

**Table 3:** Postoperative complications of patients in the studied group

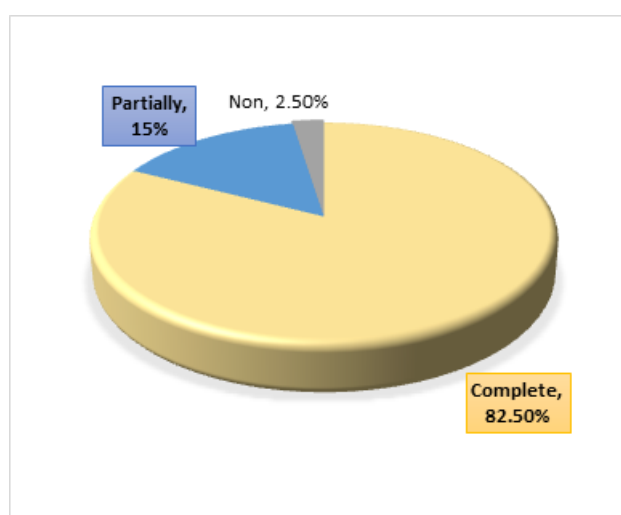
Studied group (N=40) [n (%)]	
No complication	31 (77.5)
Wound infection	4 (10)
Recurrence	2 (5)
Hematoma	3 (7.5)
Seroma	2 (5)



**Fig. 1:** Postoperative complications of cases in the group of study.

**Table 4:** Wound healing of cases in the group of study

Studied group (N=40) [n (%)]	
Complete	33 (82.5)
Partially	6 (15)
Non	1 (2.5)



**Fig. 2:** Wound healing of cases in the group of study.

**Table 5:** Satisfaction of cases in the group of study

Studied group (N=40) [n (%)]	
Yes	37 (92.5)
No	3 (7.5)



**Image 1:** Pilonidal sinus with a tuft of hair inside it and then pilonidal sinus was excised with the insertion of a drain, and then cosmetic closure of the wound was done.



**Image 2:** Pilonidal sinus underwent excision and insertion of suction drain, then subcuticular closure of wound, then removal of drain after 2 weeks with a good scar.



**Image 3:** Pilonidal sinus stained after methylene blue injection to delineate tract underwent excision and insertion of suction drain then subcuticular closure of the wound.

## DISCUSSION

Regarding demographic data, the present study revealed that the mean age of the studied population was  $27.62 \pm 6.2$  years, varying from 18 to 39 years, and the mean BMI was  $23.78 \pm 3.34$  kg/m<sup>2</sup>, there was 34 (85%) cases were men and six (15%) cases were women.

Furthermore, our results were consistent with the study conducted by Karim *et al.*<sup>[9]</sup>, which assessed the efficacy of undermining skin flaps with the insertion of redivac drain in the primary closure of the pilonidal sinus. The study findings revealed that the average age of the patients was  $28.52 \pm 6.88$  years and the average BMI was  $24.16 \pm 7.33$  kg/m<sup>2</sup>. Most of the cases, specifically 66 (73.33%), were men, while 24 (26.67%) were women.

Similarly, this investigation supported the findings of Alkatta and Mejally<sup>[11]</sup>, who assessed the efficacy of simple excision and tension-free primary closure in terms of operating and healing time, length of hospital stays, postoperative complications, and recurrence rate. Their cases had a median age of 28.5 years, ranging from 18 to 39 years. Out of the total number of cases, 71 (91%) were men and seven (9%) were women.

Furthermore, our findings were in accordance with the study conducted by Tasneem *et al.*<sup>[12]</sup>, which examined the outcomes following primary closure of the pilonidal sinus and compared it with and without the use of a redivac drain. The study findings indicated that the average age of cases was  $31.25 \pm 3.98$  years, with 22 (91.7%) men cases and two (8.3%) women cases.

According to operative data, our results reported that 23 (57.5%) patients had excessive hair, 17 (42.5%) patients had nonexcessive, all patients (100%) had pain, and 16 (40%) patients had discharged, and the mean operation time was  $31.7 \pm 3.89$  min ranging from 24 to 39 min.

That was consistent with Alkatta and Mejally<sup>[11]</sup> who demonstrated that 38 (48.7%) patients had excessive hair, 40 (51.3%) patients had nonexcessive hair, and the mean operation time among their studied population was 44.6 min.

As regards postoperative complications, this study revealed that 31 (77.5%) cases of the studied population had no complication, four (10%) cases had wound infection, two (5%) cases had recurrence, three (7.5%) cases had hematoma, and two (5%) cases had seroma.

Also, the current research agreed with Karim *et al.*<sup>[9]</sup>, who demonstrated that three (6.67%) patients had recurrence while 42 (93.33%) patients had no recurrence.

In relation to postoperative complications, our results were consistent with those of Alkatta and Mejally<sup>[11]</sup>, who reported that 61 (78.2%) cases did not have any intraoperative, early, or late postoperative complications. Additionally, five (6.41%) cases had minor wound infections, and three (3.85%) obese hairy cases had recurrence.

According to wound healing, our findings reported that 33 (82.5%) cases had complete healing, six (15%) cases had partial healing, and one (2.5%) patient had no healing.

Regarding wound healing, our results were consistent with Karim *et al.*<sup>[9]</sup>, who reported that 36 (80%) cases revealed complete healing, seven (15.56%) revealed partial healing, and two (4.44%) did not heal.

Also, our results agreed with Tasneem *et al.*<sup>[12]</sup>, who demonstrated that 20 (83.3%) cases with redivac drain demonstrated satisfactory wound healing.

Another research demonstrated favorable outcomes of using a redivac drain in 31 cases diagnosed with pilonidal sinus, specifically for excision and primary closure. Their investigations indicate that primary closure focuses mostly on promoting rapid healing through infection avoidance and the formation of pus. Furthermore, they suggested using a high vacuum redivac drain as a defense against such consequences<sup>[13]</sup>.

Regarding patients' satisfaction, the present study demonstrated that 37 (92.5%) patients were satisfied, and three (7.5%) patients were not satisfied.

Similarly, this study was in agreement with Karim *et al.*<sup>[9]</sup>, who revealed that 41 (91.11%) patients of their studied population were satisfied, and four (8.89%) patients were not satisfied.

## CONCLUSION

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Our findings indicate that the use of a redivac drain after undermining of skin flaps on both sides is a successful and beneficial therapy for primary closure of the pilonidal sinus without tension. This approach resulted in good wound healing and minimal complication rates. Additionally, cases indicated high levels of satisfaction with this treatment.

## CONFLICT OF INTEREST

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There are no conflicts of interest.

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