

# Comparison of two Different Surgical Modalities in the treatment of Pilonidal Sinus (Primary Closure and Open Technique)

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## ABSTRACT

**Background:** Pilonidal sinus is disease of young age and its prevalence is higher in men compared to women (almost twice). It is a disease that arises from hair follicles particularly present in the natal cleft. It occurs commonly in Jeep Drivers and hence gets the name from there "Jeep Drivers Disease" and also commonly occurs in Barbers. It leads to formation of abscesses and chronic wounds with discharge and pain. Disease can have huge impact on social life and quality of life. In most cases the treatment is incision and drainage.

**Study design:** It is a case series study.

**Place and duration of study:** Department of General Surgery at Shaikh Zayed Hospital Lahore from January 2019 to January 2021.

**Aim:** To compare the relative effects of open and closed surgical techniques on the recurrence rate, rate of infection and time of healing for pilonidal sinus.

**Methodology:** Patients with pilonidal sinus disease from January 2019 to January 2021 received surgical treatment either excision followed by primary closure as in closed technique (group A) or excision followed by leaving the wound open for healing by secondary intention as in open technique (group B). Surgical management is widely based upon two techniques open and closed. In open technique wound is left open and heals by secondary intention while in closed technique it is closed primarily and heals by primary intention. The better choice between these two techniques is still a topic of debate.

**Results:** The most common age group for pilonidal sinus was between 16-25 years of age. The mean age came out to be 26.7 years. The mean healing time was 15 days in group A and 42 days in group B. The duration of hospital stay ranged between 2-8 days for group A and 5-16 days for group B. Early postoperative complications seen was infection in 1 patient (7.69%) in group A and 5 patients (35.71%) in group B and these cases were managed conservatively. 1 (7.69%) case of aseptic gaping of wound after stitch removal was seen in group A and was managed with closed technique. Recurrences reported in group A was 1 case (7.69%) at 6 months and was surgically managed by open technique. There were a total of 4 (28.57%) recurrences which were left open to heal by granulation.

**Conclusion:** It is concluded that better management option for pilonidal sinus disease is primary closure of defect. So it is suggested that management of pilonidal sinus disease should be individualized but preference must be given to closure of wound after excision.

**Keywords:** Pilonidal sinus, Primary Closure, Open Technique.

## INTRODUCTION

Pilonidal disease is a common condition that usually occurs in younger patients. Sometimes it causes discomfort that may interfere with education or work due to poor hygiene and malodor or itching for a long period. It may cause severe pain and abscess formation as well<sup>1,2</sup>. It generally affects young, working-class males in the age group of 15-30 years and has a reported incidence rate of 26/ 10,000 people per year<sup>3</sup>. Despite the old theories arguing that pilonidal sinus is congenital, it is currently considered an acquired condition. The causative factors usually include keratin plugs, presence of skin disease, hair remnants in the natal cleft and foreign body reactions related to hair.<sup>4</sup> More than half of the patients present with a sacrococcygeal abscess<sup>5,6</sup>. Multiple surgical treatment options exist: simple incision and drainage, lying open, marsupialization, excision and primary closure, or rhomboid excision and the Limberg flap procedure<sup>7,8</sup>. Simple excisional techniques are associated with high morbidity and recurrence due to the presence of the natal cleft and its nature<sup>9</sup>. However, the commonly used methods include Limberg flap transposition, Karydakias flap transposition and primary closure or allowing healing by secondary intention following the complete excision of the cyst<sup>10</sup>.

## PATIENTS AND METHODS

This study was conducted in the Department of Surgery, Shaikh Zayed Post Graduate Medical Institute Lahore, from January 2019 to January 2021. Approval of the study was taken from ethical committee of hospital and college of physician and surgeon of Pakistan properly. Total number of 27 cases of pilonidal sinus disease, with two being females and all belonging to Pakistani nationality were identified and treated surgically. Mean follow up period was 1.5 years.

**Inclusion Criteria:** Patients with pilonidal sinus having one or two openings in natal cleft at sacro-coccygeal region presenting to surgery department for treatment

**Exclusion Criteria:** Patients having more than two sinuses at sacro-coccygeal area or having recent infection or recurrence were excluded from the study. Those having some debilitating disease or some immunocompromised state like malignancy, tuberculosis and diabetes were excluded.

**Closed Technique (Group A):** In this technique a limited area of skin (1-1.5cm) around the sinus was incised down to sacral fascia and the whole tissue was removed. Wound was looked carefully for secondary tracts and if found were excised subcutaneously with one cm healthy margin. Hemostasis was secured carefully. The adjacent flaps of skin were undermined over the sacral fascia and brought together. Wound were closed by polypropylene (prolene) 1/0 circle needle. Stitches were passed at the interval of about 2.5cm from one another and about 2cm from the skin edge. Each stitch emerged in the wound at the junction of fat with fascia on the

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back of coccyx and sacrum. It then took a bit of the fascia roughly in the midline and was passed in the reverse direction from fat to skin through the opposite side wall as shown in figure. Suction drain (Radivac system) was placed. skin edges and immediate subcutaneous fat were united by vertical mattress sutures of Prolene 2/0. Further gauze pieces and cotton wool were then placed over the anchored dressing and kept in position by several transverse strips of elastic strapping. After recovering from anesthesia patients were shifted to the ward. Proper analgesia, therapeutic antibiotics and fluids were given. Drain was removed on 2nd day and deep sutures were removed on the 4th postoperative day. Wound was examined for early complications and patients were discharged usually on the next day. Patients were asked to come in the outpatient clinic for follow up. Remaining sutures were removed on the 10th day and patients followed for at least one year at regular intervals of 3 months for the evaluation of late complications.

**Open Technique (Group B):** In this technique the sinus at natal cleft was/were excised with some healthy tissue down to sacral fascia. Hemostasis was secured and the cavity was packed with pyodine soaked gauze. This pack was removed after 48 hours of surgery and the patients were treated with daily sits bath followed by dressing for a few days in the ward and then in the outpatient clinic with weekly review till complete healing of the wound. Patients were asked for follow up at 3 months' interval for the evaluation of late complications. Postoperatively wounds were examined regularly and complications were recorded. The wounds were declared infected if there were signs of acute inflammation along with the presence of positive culture of pus for bacteria. Wound dehiscence was defined if there was gaping of skin edges of 1cm in length and more than one cm in depth. Complete healing was defined when there were no signs of inflammation there was no raw area at operation site. After complete healing of wound, patients were followed up at 3 months' interval for the evaluation of recurrence at least for one year. Recurrence of the disease was declared when there was a non-healing sinus with or without discharge of pus.

**RESULTS**

The total number of patients (n) was 27 that presented to the Department of Surgery of Shaikh Zayed Hospital Lahore and were divided into group A and B. Group A consisted of 13 patients while Group B had 14 patients. These patients were analyzed statistically.

The overall age incidence showed that there were 2 patients (7.4%) were less than 15 years of age, 14 patients (51%) belonged to 16-25 age group, 5 patients (18.51%) were between 26-35 years, 4 patients (14.8%) were 36-45 years and 2(7.4%) were above 45 years of age. The most common age group for pilonidal sinus was between 16-25 years of age. The mean age came out to be 26.7 years (Table 1). The overall sex distribution showed a male dominance with 25 out of 27 (92.59%) patients being male and only 2(7.4%) female patients as shown in Table 2. These results were in accordance with the known sex distribution described in literature for pilonidal sinus. The mean healing time was 15 days in group A and 42 days in group B. The duration of hospital stay ranged between 2-8 days for group A and 5-16 days for group B as shown in Table 3. Early postoperative complication seen was infection in 1 patient (7.69%) in group A and 5 patients (35.71%) in group B and these cases were managed conservatively. One (7.69%) case of aseptic gaping of wound after stitch removal was seen in group A and was managed with closed technique. Recurrences reported in group A was 1 case (7.69%) at 6 months and was surgically managed by open technique. There were a total of 4 (28.57%) recurrences which were left open to heal by granulation (Table 4).

Table 1: Age distribution of patients (n=27)

Age (years)	No.	%age
<15	2	7.4
16-25	14	51
26-35	5	18.51
36-45	4	14.8
>45	2	7.4

Table 2: Sex distribution of patients (n=27)

Sex	No.	%age
Male	25	92.59
Female	2	7.40

Table 3: Duration of hospital stay (n=27)

Hospital stay (days)	Duration	(Mean±SD)
Group A	2-8	4.92±2.13
Group B	5-16	8.14±4.11

Table 4: Complications of patients (n=27)

Complications	Group A (n=13)	Group B (n=14)
Infection	1 (7.69%)	5 (35.71%)
Gaping	1 (7.69%)	0 (0%)
Recurrence	1 (7.69%)	4 (28.57%)

**DISCUSSION**

The history of surgical therapy of pilonidal disease now dates back to more than a century. But the management thereof still remains debatable even after introduction of many new methods, as also the appreciable modifications in the conventional ones. The surgeons, however, have reached a consensus that an ideal therapy for treatment of pilonidal disease should be simple, should inflict minimal pain and needing only a short hospital stay<sup>11</sup>. It should allow early return to work; requiring minimal wound care and should have low recurrence rate. It has been reported that simpler treatment methods of pilonidal disease not only carry less morbidity, but also are associated with lower recurrence rate<sup>12</sup>.

Various methods have been described for the treatment of patients with pilonidal sinus, but high recurrence rates continue to be an important problem<sup>13</sup>.

Secondary infections have been implicated as the cause of early recurrence, whereas an inability to eliminate the pathological and physiological process that has caused the disease has been associated with late recurrence. Poor wound care, an inability to completely remove the cyst or draining tract, recurrent hair follicle infection and midline scars are considered the most important causes of recurrence. Healing with granulation being more susceptible to hair penetration and flattening of the large natal cleft are factors that cause recurrence following treatment with the lay open technique<sup>14</sup>.

The most important causes of morbidity during the early postoperative period include wound site infections, seroma, wound dehiscence and flap necrosis<sup>15</sup>. Their prevalence rates vary depending on the surgical method used. An ideal method should reduce these complications while providing early recovery, early return to work and good cosmetic outcomes and have a low recurrence rate. The patients in the present study underwent excision followed by primary closure and excision followed by allowing wound healing by secondary intention. Reportedly, allowing wound healing by secondary intention is associated with shorter length of hospital stay and lower rate of recurrence, but no significant difference has been reported in terms of wound site infection<sup>16</sup>.

The disadvantages of this method include prolonged wound healing and requirement of wound dressing for a longer period. However, there have also been studies reporting that postoperative infection is observed more frequently using the lay open technique than using the primary closure<sup>17</sup>. In a meta-analysis conducted by McCallum et al, the time to return to work

was reported to be 17 days using the lay open technique. Recent studies have reported a recurrence rate of 1% during a 1-year follow-up and a rate of 14.3% during a 2 year follow-up. In our study, the mean time to return to work was 10 days and the rate of recurrence was 5.7% during a 21-month follow-up in the patients who underwent excision and secondary wound healing. Some authors consider primary midline closure following excision as a method that must be discontinued due to its considerably high recurrence rate and increased rate of wound complications,<sup>18</sup> but there are authors supporting its use in recent studies. The rate of recurrence is reported to range from 4% to 28% using the primary closure method<sup>19</sup>.

The rates for wound site infection, wound dehiscence and seroma are reported to be 9-20%, 2.5-16.9% and 0-2%, respectively; the mean time to return to work was reported to be 8.5-14 days.<sup>20</sup> The recurrence rate was 9.1%, rate of wound site infection was 14.5%, rate of wound dehiscence was 3.6%, rate of seroma formation was 1.8% and mean time to return to work was 8 days in the patients who underwent primary closure. Evaluation of surgical methods in terms of their recurrence rates is closely related to the duration of the surgical follow-up period. The recurrence rates associated with the surgical method increases with increasing duration of follow-up.<sup>21</sup> The mean duration of follow-up being 22 months for the current patients is a limitation of the study. During follow-ups, the rate of recurrence was significantly higher among the patients who underwent primary closure following extensive excision than among the other patients ( $p = 0.009$ ). Notably, there were no significant differences in terms of wound site infection, wound dehiscence and seroma formation. Moreover, the operative time was significantly longer with the primary closure method than with the other method ( $p = 0.001$ ), and mean time to return to work was significantly shorter ( $p = 0.002$ ).

## CONCLUSION

As rate of complications like wound infection and recurrence is comparable in both the groups but there is short hospital stay, early wound healing and short duration of work incapacity in patients with primary closure. Therefore, it is concluded that better management option for pilonidal sinus disease is primary closure of defect. So it is suggested that management of pilonidal sinus disease should be individualized but preference must be given to closure of wound after excision. Whenever feasible, coupled with strict compliance to post-operative care and regular follow up to achieve cost effective early healing with minimum morbidity and less recurrence.

**Conflict of interest:** Nil

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