

How to Cite:

Rambabu, S. P., Puvvula, P. M. K., Kumar, G. B., & Ramu, P. (2022). A study of surgical management of pilonidal sinus . *International Journal of Health Sciences*, 6(S6), 1029–1038. <https://doi.org/10.53730/ijhs.v6nS6.10342>

A study of surgical management of pilonidal sinus

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Abstract--Background: Pilonidal sinus literally means a cavity or sinus containing hairs it is minor disease process has baffled physician, as demonstrated by the multiple theories of its aetiology and management. Numerous surgical techniques are employed for postnatal sacrococcygeal pilonidal sinus. The exact procedure is determined by nature of disease presentation and the surgeons choice. Aims: Study aimed in Pilonidal sinus and different predisposing factors and the various surgical procedures with regards to Duration of hospital stay, time taken wound healing, recurrence, wound infection and time taken for return to work. Materials and methods: Observational descriptive study done in 31 patients who had pilonidal sinus. But one female patient was hypothyroid and was receiving thyroxine supplements and was operated and followed up in an euthyroid state. Results: In the present study 31 cases of pilonidal sinus were studied. The commonest age of presentation was between 16 – 25 years. sex ration: M:F = 6.75:1. Majority were students (35.48%) and auto drivers (48.38%). Majority were individuals (74.19%) and 25.81% were non hairy. Out of 31 cases admitted 13 cases were selected for excision and primary closure and 18 cases were selected for excision and lay open method. Majority complained of pain, discharge and sinus and only few with history of swelling. Swelling is an unusual complaint and presentation in most of the

cases. In the present study recurrences were not observed. However, one case presented with a recurrence following Z plasty. The procedure was done in this case an year prior to the beginning of the study. In the present study, both the methods had a similar range and average duration of hospital stay. Conclusion: On the other hand, primary closure procedures have lower wound infection rates, a shorter hospital stay, and a faster return to work. Recurrences are more common in this category, but they are not a common occurrence. Many predisposing characteristics, such as a deep natal cleft, can be corrected using flap techniques.

Keywords---pilonidal sinus, primary closure procedures, wound infection.

Introduction

Pilonidal sinus literally means a cavity or sinus containing hairs (Pilus = hair, Nidus = nest) it is minor disease process has baffled physician, as demonstrated by the multiple theories of its aetiology and management. Presentation range from asymptomatic pits to painful draining lesions in the intergluteal region. Pilonidal sinus has a male preponderance and usually affects patients from mid-teens into early thirties. ¹Congenital and acquired theories have been proposed. Initially, the entity was referred to as jeep riders disease. Over 80,000 US army soldiers were hospitalized during World War II contributed much information about the disease, what we have today. The pathology of pilonidal sinus is an established one.^{2,3} There are one or more pits in the midline of the natal cleft. These pits lead to a cavity lined by granulation tissue and contain hairs. Usually, from this cavity one or more track run cranially or caudally and open either on the right or left of the midline. The secondary sinus is always laterally placed while the primary sinus is in the midline.^{4,5} Numerous surgical techniques are employed for postnatal sacrococcygeal pilonidal sinus. The exact procedure is determined by nature of disease presentation and the surgeons choice.

Materials and Methods

Observational Descriptive Study done in Osmania General Hospital from August 2014 to July 2016 in 31 cases of pilonidal sinus.

Inclusion criteria

Cases of pilonidal sinus admitted in Hospital.

Exclusion criteria

Uncontrolled co morbid conditions None of the 31 patients had Diabetes or Hypertension.

But one female patient was hypothyroid and was receiving thyroxine supplements and was operated and followed up in an euthyroid state . 31 patients with

pilonidal sinus, who were admitted to Osmania General Hospital were included in the study. All the cases were diagnosed in the outpatient department of Osmania General Hospital and admitted to the in-patient department. Detailed history of the patients was recorded including the age, sex, duration of sinus, discharge, pain and other associated problems. During the general examination, the presence of hair and obesity was specifically looked for. During local examination, the site, number, type of sinuses, tenderness, any hair protruding from the sinuses, condition of the skin surrounding the sinus were noted. Digital rectal examination and proctoscopy were done to rule out fistula-in-ano. Surgical fitness of the patient was assessed clinically and with the help of a battery of investigations which included Complete Blood Picture, Erythrocyte Sedimentation Rate, Clotting time, Bleeding time, Random Blood Sugar, Blood Urea, Serum Creatinine, Serum Electrolytes, Urine for albumin, sugar and microscopy, ECG in all leads, Chest X ray PA view and special investigations like X Ray LS spine and sonogram in a few cases.

All cases were treated surgically. No conservative management was used. Preoperatively the surgical plan was decided to be either excision with lay open method or excision with primary closure. Primary closure methods were transposition flaps using either Z plasty or Limberg flap. Case selection for primary closure. Intraoperatively when there is no wide ramification of secondary track when injection methylene blue in the sinus track in all the cases. The rest of the cases were excised and laid open without primary closure. Out of the 31 patients, 18 were taken up for excision and open healing while 13 were taken up for primary closure (10 underwent Z Plasty and 3 underwent Limberg flap closure).

Preoperative preparation

Informed consent was taken. Nil by mouth after 10pm on the day before surgery. Preparation of parts i.e., shaving of the back intergluteal region and suprapubic region. Injection Tetvac 0.5ml intramuscularly, Xylocaine test dose was done. Soap water enema on the previous night and the morning of surgery. Injection Ceftriaxone 1g and injection Metronidazole 500mg were given one hour before surgery. All 31 patients were operated under spinal anaesthesia and in the jack knife position. Exposure of the natal cleft was obtained by strapping and separating the gluteal region. The operative site was prepared by painting twice with betadine followed by surgical spirit.

Methylene blue was injected through the primary sinus and an elliptical incision was given placed longitudinally circling the sinus/sinuses and deepened vertically till the fascia covering the sacrum and coccyx. Using sharp dissection, tissue enclosed within the incision was separated from the sacrococcygeal fascia and removed. The ramification from the secondary sinus tracks were identified from the methylene blue extension and excised. Then according to the procedure planned whether Z plasty or Limberg flap, Skin flaps were planned by marking with a permanent marker and flaps were fashioned. Haemostasis was obtained by ligating the bleeding points. The fashioned flaps were then transposed to cover the defect. The deep part of the wound was approximated with No.

Chromic catgut after removing the strapping of the gluteal muscle. The sutures were placed from the subcutaneous tissue on one side to the other and including the midline fascia. The skin was approximated using silk thread or prolene. Suction drains were used in these cases when they had a large defect. Firm bandage was placed in the midline and reinforced with a T bandage. In case of Excision with lay open method, after injecting with methylene blue wide excision of all the tracks was done. Haemostasis was secured and the wound as packed with betadine ribbon gauze followed by a firm bandage application and a T bandage was applied. The specimen was examined for the presence of hair and was sent for histopathological examination. Post operatively all the patients were kept on nil by mouth till the next day morning and all cases were treated with ciprofloxacin and metronidazole for 5 – 7 days. Patients were placed on NSAIDs for analgesia. All patients were allowed to sleep on their back only. In all patients the wound was inspected after 48 hours removing the T bandage and pressure bandage. Incase of primary closure, none of the patients had any post-operative complications. The primarily sutured wound was cleaned with betadine and spirit and dressed. It was inspected once it two days till the sutures were removed and patients were discharged from the hospital.

In case of excision with primary closure. Sutures were removed on the 8th to 10th post-operative day and discharged the next day. Patients were advised to come for follow up once every 15 days for the first 3 months and then once a month for the rest of the year. And during this follow up period the patient was assessed for wound healing and return to work. For patients with primary closure, patients could be assessed for wound healing prior to discharge itself. In the 31 patients selected, one patient presented with a recurrence after a Z plasty that had been done an year prior to the study.

Results

In the present study 31 cases of pilonidal sinus were studied. The commonest age of presentation was between 16 – 25 years. sex ration: M:F = 6.75:1.

Table1
Demographic distribution in present study

Age in years	Number of patients	Percentage
16-20	9	29.1
21-25	15	48.4
26-30	5	16.1
31-35	1	3.2
36-40	1	3.2
Total	31	100
Gender		
Male	27	87.1
Female	4	12.9
Occupation		
Students	11	35.48
Drivers	15	48.38

Clerks	4	12.9
Barbers	0	0
Total	1	3.2
Site		
Sacrococcygeal	31	100
Hair distribution		
Hairy	23	74.2
Non-hairy	8	25.8
Non-hairy		
Hair in specimen	3	37.5
Hair absent in specimen	5	62.5
Hair in the pilonidal sinus		
Present	21	67.7
Absent	10	32.3
Family predisposition		
No family history	31	100

In the present study 31 cases of pilonidal sinus were studied. The commonest age of presentation was between 16 – 25 years. The male and female ratio was 6.75:1. Majority were students (35.48%) and auto drivers (48.38%). Majority were individuals (74.19%) and 25.81% were non hairy.

Table 2
Pilonidal sinus in relation to operative procedures

Operative procedure	Number of patients	Percentage
Excision and lay open	18	58.1
Excision and primary closure	13	41.93
a)Z plasty	10	32.2
b)Limbery flap	3	9.67
Total 31	31	100

Out of 31 cases admitted 13 cases were selected for excision and primary closure and 18 cases were selected for excision and lay open method.

Table 3
Complaints and Type of patients in present study

Complaints	Number of patients	Percentage
Pain	31	100
Discharge	31	100
Sinus	31	100
Swelling	1	3.22
Type of patient		
Non obese	27	87.1
Obese	4	12.9

In the present study majority complained of pain, discharge and sinus and only few with history of swelling. In the present study, swelling is an unusual complaint and presentation in most of the cases.

Table 4
pilonidal sinus in relation to patients in present study

Recurrence	Number of patients
Primary closure (13 cases)	Nil
Laying open method(18 cases)	Nil
Wound Infection:	
Primary closure (13 cases)	Nil
Laying open method(18 cases)	1
Duration of hospitalisation	
Excision with primary closure	10-15 days (average=12.15 days)
Excision with lay open	10-15 days (average=12.67 days)
Wound Healing	
Excision with primary closure	40-62 days (average=45.78 days)
Excision with lay open	10-14 days (average=11.76 days)
Abstinence from work	
Excision with primary closure	Average=14.07 days
Excision with lay method	Average= 30 days

In the present study recurrences were not observed. However, one case presented with a recurrence following Z plasty. The procedure was done in this case an year prior to the beginning of the study. In the present study, both the methods had a similar range and average duration of hospital stay.



Pilonidal sinus with buttocks strapped



Lay open technique of pilonidal sinus



Figure 1. Images in present study

Discussion

In the present study 31 cases of pilonidal sinus were studied. The commonest age of presentation was between 16 – 25 years. The male and female ratio was 6.75:1. Majority were students (35.48%) and auto drivers (48.38%). Majority were individuals (74.19%) and 25.81% were non hairy. Hair in the excised specimen was found in 67.74% cases. In the non-hairy individuals hair was found in 37.5% cases. 13% of the individuals were obese. Almost all the patients presented with pain, discharge and sinus. Only and presented with a swelling. Out of the 31 cases operated, 18 underwent excision plus lay open and 13 underwent primary closure after excision. No recurrences were observed. Although one case

presented as a recurrence following Z plasty done an year prior to the study. The following are the results of other studies shown as recurrences/no. of cases studied.⁶ Wound infection occurred only in one case treated by lay open method. In other studies also, wound infection was found to be marginally higher in open healing method but was found to be statistically insignificant. Duration for wound healing was found to be an average of 45.78 days in open healing method and 11.76 days in primary closure method.

Table 5
Other studies Wound infection and healing

Wound infection	Open primary	Healing closure (Z , T plasty Limberg flap)	Percentage
Krongborg et al ⁷	4/32	14/67	12.5,20.8
Al Hassan et al ⁸	5/42	8/40	11.9,20
Khawaja et al ⁶	0/23	0/23	0,0
Sondenna et al ⁹	3/60	6/60	5,10
Fuzun et al ¹⁰	0/45	2/46	0,4.34
Miocinovic et al ¹¹	2/25	6/25	8,24
Hameed et al ¹²	1/20	2/23	5,8.6
Testini et al ¹³	1/50	3/50	2,6
Fazelli et al ¹⁴	3/66	3/72	4.54, 4.16
Wound healing			
Sondenna et al ⁹	18/60	8/60	30,13
Fuzun et al ¹⁰	1/55	2/55	1.8,3.6
Hameed et al ¹²	1/20	2/23	5,8.69
Gencosmanoglu et al ¹⁵	0/73	4/69	0,5.79
Fazelli et al ¹⁴	10/72	7/72	13.8, 9.7

Table 6
Hospital stay and Average time in comparision studies

Study	Open healing	Primary closure (Z plasty Limberg flap)
Hospital stay		
Al Hassan et al ⁸	3	3
Fuzun et al ¹⁰	2.4	4.7
Mohammed et al ¹⁶	1.9	3.76
Testini et al ¹³	0.33	0.46
Fazelli et al ¹⁴	1.76	2.86
Average Time		
Al Hassan et al ⁸	28	14
Sondenna et al ⁹	27.39	15.4
Fuzun et al ¹⁰	17.6	10.7
Testini et al ¹³	25.7	10.4
Fazelli et al ¹⁴	17.5	11.9

Results of other studies⁶ the results of the present study are similar to that of khawaja et al.⁷ The average length of hospital stay was 12.15 days for primary closure and 12.67 for open healing. This is not in correlation with other studies probably because the patients in the present study were discharged only after suture removal was done in the primary closure group and after an appreciable amount of granulation development in the open healing group. Results of other studies show much shorter stay especially in the open healing group given the lesser need of antibiotics and attention to the wound during the initial part of the treatment. The average time to return to work was found to be 14 days in the primary closure group and 30 days in the lay open method group. Other studies also showed similar results.

Conclusions

Excision with lay open or primary closure (simple closure, Z plasty, limberg) are both radical methods of treatment given the relatively benign appearance of a pilonidal sinus. The ideal operation should be simple, with no wound infection or recurrence and should have a short hospital stay and aid in early return to work. Both groups of surgeries have their own unique characteristics. Open healing methods have a low recurrence rate (nil in the present study) but are likely to get infected and take a great deal of time to heal (45.78 days vs 11.76 days for primary closure). These patients are also less likely to return to work early for the same reason. Besides the loss of pay, the patient also incurs the cost of dressings for the duration of wound healing. The primary closure methods on the other hand have less wound infection rates, shorter hospital stay and early return to work (14 days vs 30 days in open healing). Although recurrences are more common in this group, they are not a frequent event. And many of the predisposing factors like a deep natal cleft are corrected by flap methods. These benefits rule in favour of primary closure methods whenever they are possible.

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