



STUDY ON COMPARISON BETWEEN EXCISION WITH SIMPLE PRIMARY CLOSURE AND EXCISION WITH LIMBERG'S FLAP RECONSTRUCTION IN PILONIDAL SINUS DISEASE

Surgery

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ABSTRACT

Aim: The aim of the present study is to compare excision with simple primary closure and excision with Limberg flap reconstruction in pilonidal sinus disease. **Objectives:** To compare: the operative time, postoperative pain, duration of hospital stay, loss of work time, postoperative complications like wound infection, seroma, wound dehiscence, Recurrence rate among 2 groups. **Material And Methods:** All patients who presented to general surgery department of OSMANIA HOSPITAL AFZAL GUNJ between August 2018 to April 2021 satisfying the inclusion criterion with the informed consent were included in the study. population size was taken as 60, with two groups. Group A including 30 patients undergoing simple excision with primary mid line closure and, Group B including 30 patients undergoing My study design is a prospective comparative randomized controlled. **Inclusion Criterion:** Patients within age group of 18 to 60 years of either sex, Patients with discharging sinus at the natal cleft, Patients who are fit for surgery, Patients who are willing to contact postoperatively, **Exclusion Criterion:** Patients < 18 years and >60 years, Patients with poor general condition with malignancy, renal failure, bleeding diathesis, fistula in ano, actinomycosis, tuberculosis, acute pilonidal abscess. **Conclusion:** Pilonidal sinus is more common in third decade of males. Midline closure techniques causes increased wound tension on suture lines causing recurrence. Limberg flap technique is more time consuming, but has many advantages : Less postoperative pain, Decreased hospital stay, Early return to work, Decreased postoperative complications like wound infection, seroma and wound dehiscence, Less recurrence.

KEYWORDS

Pilonidal sinus, Limberg flap

INTRODUCTION

Pilonidal sinus is a tract or cavity that contains loose hair and is associated with repeated infections and abscess formation. It is a blind track, which extends from the skin of natal cleft up to the pre-sacral fascia.

History In 1880, **Hodges**¹ coined the term "pilonidal sinus" (Pilus, meaning **hair**, and Nidus, meaning **nest**) to describe the chronic sinus containing hair and found between the buttocks. **Incidence** PS incidence is higher in male than female and increase with obesity and hairy skin.² PS is more common in people aged 15–30 years, after puberty due to the effect of sex hormones on pilo-sebaceous glands and change in healthy body hair growth.³ Incidence of the PSD is 26 per 100,000 inhabitants. It is 2.2 times more often in men than in women. Age at presentation is 21 years for men and 19 for women.⁴ **Etiopathogenesis** PS is most frequently seen in the sacrococcygeal region resulting in localized inflammation with abscess formation causing fistulae, sinus and chronic inflammation in the sacrococcygeal region.

Earlier it was considered as a congenital disease but currently known to be an acquired condition.⁵ **Treatment** Various treatment modalities are developed for Pilonidal sinus disease till date, including non-operative management to surgical management including various flap reconstructions. The ideal treatment for pilonidal sinus should ensure low pain, short hospitalization period, low risk of complication, rapid return to normal activities, and should have a low recurrence rate.⁶

Options Available : Postoperative complications and recurrence are contributed by several factor like poor body hygiene, obesity, smoking and size of sinus.⁷ Different surgical approaches have been used to manage sacrococcygeal pilonidal sinus, none of these approaches eliminate the postoperative morbidity including delayed wound healing, discomfort and high rate of recurrence which ranges between 1% and 43% in different studies.⁸ Methods can be broadly categorized as midline closure techniques (with the wound lying within the natal cleft) or other techniques (where the wounds placed away from the midline). Advocates of primary closure perceive benefits of faster tissue healing.^{9,10} Mid line closure techniques resulted in tension over the suture line and lead to poor wound healing, dehiscence of the wound which resulted in recurrence of the disease. This problem lead to new surgical modalities like lateralization of the suture line away

from the midline as done in flap techniques. Still there is a lot of controversy on the best surgical modality for the pilonidal sinus.

MATERIALANDMETHODS

All patients who presented to general surgery department of OSMANIA HOSPITAL AFZAL GUNJ between August 2018 to April 2021 satisfying the inclusion criterion with the informed consent where included in the study. Sample size was taken as 60, with two groups.

Group A including 30 patients undergoing simple excision with primary mid line closure and, **Group B** including 30 patients undergoing rhomboid excision with LF reconstruction.

Inclusion Criterion: Patients within age group of 18 to 60 years of either sex, Patients with discharging sinus at the natal cleft,

Exclusion Criterion: Patients < 18 years and >60 years, Patients with poor general condition with malignancy, renal failure, bleeding diathesis, fistula in ano, actinomycosis, tuberculosis, acute pilonidal abscess.

Surgery: After giving spinal anesthesia patient should be placed in jack knife position and the buttocks are retracted using adhesive tape to obtain a better visualization of the operative field. After positioning sterile draping is done excluding the anus region.



Figure 1 Skin sutured with drain in situ.

The external opening of the sinus is gently cannulated by a stile, and methylene blue was injected through the external opening of the sinus tract. Thereafter, all the tracts are excised by a vertical elliptical incision up to the presacral fascia. After appropriate hemostasis using unipolar and bipolar cautery and thorough wash given a 14F romovac suction drain inserted into the defect. Defect is then closed using interrupted 3-0 Polyglactin (vicryl™; Ethicon) and the skin edges are approximated with 3-0 Polypropylene (prolene™; ethicon).

Rhomboid Excision With Limbergs Flap Reconstruction:

The skin is marked by a marker pen and after methylene blue injection. The involved area is excised by a rhomboid excision. An incision line equal to the sides of rhomboid is created midway between extension line and the horizontal axis. Another incision of the same length is made on the vertical axis to raise a fasciocutaneous rhomboid Limberg flap. Once adequate hemostasis is attained, after thorough wash, a 14F romovac suction drain kept in the defect and sutured to the surrounding skin. This flap is transposed to the excised area. Subcutaneous tissue and skin were sutured separately without tension using polyglactin and polypropylene interrupted sutures and dressing done.



Figure 2 Skin marking prior to surgery.

Postoperative Instruction:

- Post operatively patient is advised not to flex the hip joint from where the flap was raised.
- Not to sleep in supine position for 5-6 days.
- Postoperatively patients are instructed not to exercise and do strenuous works.
- Patients are advised not to squat while defecation and advised to use western toilet or bath chair for at least two weeks.
- Patients are instructed to shave hair regularly around the surgical site and natal cleft every 10 to 12 days.

Five hours after surgery patient is given oral liquids. And on pod 2 patient is ambulated. Wound is inspected on pod 2 and dressing done. Generally drain is removed on third pod. Once the wound is healthy, patients are discharged generally on pod 3 or 4. Patients are advised to take oral antibiotics for one week and analgesics for 3 days.

Patients are advised to come after one week for wound inspection and suture removal is done generally 2 weeks after surgery.

Patients can even undergo laser epilation of hair at the natal cleft by consulting dermatologist. Follow up is done 1, 2 and 4 weeks and 3, 6 and 12 months after surgery.

Post Operative Complications:

Postoperative complications like wound infection, seroma/hematoma, wound dehiscence is observed.

Wound infections are managed by taking culture swab from the infection site and sent for culture sensitivity. In pilonidal sinus predominantly, anaerobic organisms were **Bacteroides species** and **anaerobic cocci**. The predominant aerobic organism were **Escherichia coli**, **group D Streptococcus**, and **pseudomonas**.

Seroma is generally managed by syringe aspiration and appropriate antibiotics are given to prevent any infections. There is less incidence of seroma comparison to literature in our study.

OBSERVATIONS AND RESULTS:

Sex Distribution:

Table 1

Sex	Group A n=30	Group B n=30
Males	27(90%)	26(86.66%)
Females	3(10%)	4(13.33%)

p value for sex is 0.693 which is insignificant between the two groups.

Age:

Table 2

Age group(years)	Group A	Group B
≤20	1(3.33%)	0
21-30	23(76.66%)	28(93.33%)
≥30	6(20%)	2(6.66%)
Total	30(100%)	30(100%)

P value is 0.558. That implies no statistical difference pertaining to age in both the group that implies both the groups are comparable based on age.

Duration Of Hospital Stay:

Table 3

Hospital stay (days)	Group A	Group B
Mean	3.9333	3.7333
S.D	0.8277	0.7849

p value 0.34. There is no significant difference statistically in terms of hospital stay in both the groups.

Postoperative Pain:

Table 4

Vas score	Group A	Group B
Mean	4.2000	2.3333
S.D	0.7144	0.4795

p value 0.00001. There is statistical significant difference. That implies LF definitely ensures less pain postoperatively that compared with excision and midline closure.

Complications:

Table 5

	Group A(n=30)	Group B(n=30)	p value
Wound infection	6(20%)	1(3.33%)	0.04518
Seroma	4(13.33%)	1(3.33%)	0.16658
Wound dehiscence	1(3.33%)	0	0.32146

Recurrence:

Table 6

	Group A (30)	Group B (30)
Recurrence	6(20%)	1(3.33%)

p value 0.045. ANOVA applied.

p value is less than 0.05, it is statistically significant.

This implies LF is beneficial to patient in preventing recurrence.

DISCUSSION

A full basket of techniques ranging from simple curette to extensive flap techniques have been published so far. In the current study, group A (simple excision with primary closure) consists of 30 patients (27 males and 3 females), group B (RELf) consists of 30 patients (26 males and 4 females). The sex distribution in our study indicates PSD is more common in males than females as stated in study conducted by Azad AS⁸. p value is 0.693 which is statistically insignificant.

Age

In the current study the mean age of patients in group A is 26.9±4.39 years (range 19-38) and mean age in group B is 26.26±3.92 years (range 21-38) which is in comparison with the previous studies.³ It is more common in younger age group due to the hormonal influence, sedentary working condition like sitting for long duration, wearing tight jeans and obesity due to junk food. p value is 0.558 between the two groups stating statistically insignificant.

Recurrence Rates

In most of the previous studies recurrence was 0-3% for LF technique and 7-42%⁶ for simple excision with primary midline closure. In current study, recurrence is observed in 1 (3.33%) patient who underwent LF technique and 6 (20%) patients who underwent simple excision with mid line closure. p value 0.045 is significant.

Concordance With Other Studies

Akin onder et al. in their study to analyze the risk factors for complications and recurrence in pilonidal sinus disease. The prospective study consisted of 144 patients with pilonidal sinus disease. Patients receiving the LF totaled 106 (73.6%), while 38 (26.4%) had primary closure. Postoperative complications developed in 42 subjects (29.2%), and recurrence occurred in 19 (13.2%). Regarding recurrence, family tendency (p value 0.011), sinus number (p value 0.005), cavity diameter (p value 0.002), and primary closure (p value 0.001) were found to be risk factors.

Operating Time

Akca et al.¹⁴ have documented a median operative period 60 min for the LF group against 45 min for the primary midline closure group, and the difference has been found to have p value of 0.001. In current study, the mean OT time for LF was 46.23±4.34min, while for simple excision with primary closure it was 33.76±2.54min with a p value of less than 0.000001 rendering it statistically significant.

Hospital Stay

Literature documents a hospital stay of 1–5 days and 2–4 days for the primary midline closure and LF techniques, respectively. In the current study, hospital stay of 3.93±0.8 days was observed in simple excision and 3.73±0.7 days was observed in patients of LF (p value 0.340).

Postoperative Pain

In the current study, postoperative pain VAS score is 4.2±0.71 in group A and 2.33±0.47 in group B with a significant p value of less than 0.001. The results were similar to those obtained for Mahdy¹⁷ and Akca et al.¹⁴. The significant less pain in LF group was because it avoids the wound tension at the suture sight due to lateralization of the suture away from the midline rendering less pain to the patients.

Wound Infection Rate

Published studies documented a wound infection rate and a wound disruption rate of up to 12.4% and 5–10%, respectively, for the primary midline closure technique, while published values of such parameters for the LF group are 1.5–6.5%¹⁴ and 0.9–3.9% respectively. In our study, wound infection is observed in 6 patients (20%), wound dehiscence is seen in 1 patient (3.33%) and seroma is seen in 4 patients (13.33%) in group A. In group B, Wound infection seen in 1 patient (3.33%), seroma is seen in 1 patient (3.33%) and there is no wound dehiscence seen in this group. Wound infection in comparison between both the groups is statistically significant with p value of 0.0415.

Seroma

Seroma and wound dehiscence has a p value of greater than 0.05 which is statistically insignificant (wound dehiscence p 0.321, seroma p 0.166 between both the groups).

CONCLUSION:

Pilonidal sinus is more common in third decade of males. Midline closure techniques causes increased wound tension on suture lines causing recurrence. Limberg flap technique is more time consuming, but has many advantages : Less postoperative pain, Decreased hospital stay, Early return to work, Decreased postoperative complications like wound infection, seroma and wound dehiscence, Less recurrence.

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