

Comparative outcome study between simple closure and flap technique in Pilonidal sinus disease

Dr. Ram Magar¹, Dr. Rupali Magar²

¹Assistant Professor, Department of Surgery, ²Senior Resident, Department of Ophthalmology, DVVPF's Medical College & Hospital, Ahmednagar-414111, Maharashtra, India

Abstract:

Introduction: Pilonidal sinus disease (PSD) is a disease of natal cleft in sacrococcygeal region. The main goal of treatment is low recurrence rate, short hospital stays, early return to work and decrease post-operative work. Present study was undertaken to compare and find clinical outcome between simple closure and flap techniques. **Methodology:** 30 patients of Pilonidal sinus disease (PSD) which were fit to undergo surgery were included. 15 patients undergone simple closure and 15 undergone flap technique (Limberg). **Result:** Wound Infection, Post-operative discharge and Recurrence rate was found higher in group I patients (20 %, 23.33 %, 30 % and 26.66 % respectively) compared to Group II cases. Difference is statistically significant (p Value 0.03, 0.04, 0.008 and 0.02 respectively). **Discussion:** Recurrence of the sinus probably depend mainly on the ability of the procedure to obliterate the depth of natal cleft. In the present study we found flap procedures superior in combating the disease recurrence than excision with simple closure. **Conclusion:** It is recommended that Limberg flap method should be used in the treatment of pilonidal sinus disease over other modalities.

Keywords: Pilonidal Sinus Disease, PSD, Limberg flap technique

Introduction:

Pilonidal sinus disease (PSD) is a type of skin infection typically occurring as a cyst between upper end of buttocks in natal cleft in sacrococcygeal region. It is characterized by presence of one or more openings communicated by fibrous track lined by granulation tissue. Symptoms presented in patients include pain, swelling, redness, drainage of fluid and rarely fever if infection exist.[1]

Obesity, family history, prolonged sitting, sedentary lifestyle, greater amounts of hairs, male gender and young age are some of the risk factors.[2] However, underlying mechanism is thought to be involving mechanical process like local trauma, poor hygiene and deep natal cleft. Lesions often contains hair and skin debris. Diagnosis of the condition is mainly on the basis of clinical history and examination. Pilonidal sinus disease (PSD) was first described by Mayo in 1833. About 3 per 10,000 people per year

are affected with male and young preponderance.[3]

Treatment of the condition generally consist of incision and drainage off the midline. Also shaving the area and laser hair removal may prevent its recurrence.[1] Apart from these treatment modalities surgery remains the mainstay of treatment. Surgery is aimed with a minimal post-operative pain, minimal wound care, rapid wound healing, shorter hospital stays, early return to daily activities and low recurrence rate.[4] Various different surgical techniques ranging from Wide local excision to complex rotation flaps techniques have been developed up till now but no single method is designated as the ideal treatment. The main goal of treatment for pilonidal sinus is low recurrence rate, short hospital stays, early return to work and decrease post-operative work. Postoperative complications and recurrence are partly contributed by poor body hygiene, obesity, smoking and size of sinus.[5,6]

Corresponding Author: Dr. Ram Magar

Email ID: rammagarsurg@gmail.com

Address: Department of Surgery, DVVPF's Medical College & Hospital, Ahmednagar-414111, Maharashtra, India

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With this perspective present study was undertaken to compare and find clinical outcome between simple closure and flap techniques in treatment of Pilonidal sinus disease (PSD) which will help surgeons in their future choice of surgical procedure for reduction in morbidity of the disease.

Methodology:

Present study is a case controlled cross sectional prospective study conducted in the department of surgery at Vithalrao Vikhe Patil medical college and hospital, Ahmednagar from January 2020 to February 2021. Approval of the institutional ethics committee was taken prior to commencement of present study. All the participants were explained about the study and written consent was obtained from all.

Inclusion criteria:

30 patients of Pilonidal sinus disease (PSD) which were fit to undergo surgery were included.

Exclusion Criteria:

1. Patients with comorbidities i.e. malignancy, diabetes mellitus.
2. Patients with spinal deformities
3. Patients of Paediatric age Group
4. Patients with Recurrent and purulent discharging sinuses.

Procedure:

Detailed history and clinical examination were performed in all patients. 30 Participants were divided into two groups of 15 each based on the technique of Simple Randomization as

1. Group I (N=15): Patients undergoing simple closure
2. Group II (N=15): Patients undergoing flap technique (Limberg)

Flap technique (Limberg):

Patient was placed in prone position. Skin was marked by a marker pen after methylene dye injection. Involve area was excised by a rhomboid excision (Fig 1). An incision line (DE) of equal length to the line (AB) was created midway between extension of line (CD) and horizontal axis. Another incision line (EF) of the same length is created on vertical axis. After this flap is raised at fascio-cutaneous plane and all the pilonidal sinus and its extensions were excised. Subcutaneous tissue and skin were sutured separately without tension using polyglactin (Vicryl) and polypropylene interrupted

suture and compression dressing were applied.

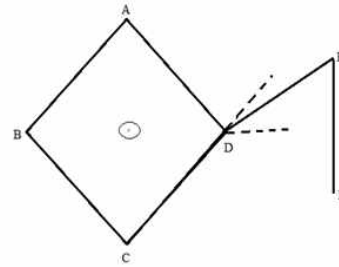


Fig 1: Rhomboid Excision

Simple closure

Pilonidal sinus tract is excised by vertical elliptical incision and primary closer done with interrupted prolene suture.

After surgery dry dressing was done for 48 hours. Wound was examined for any signs of surgical site infection, swelling, redness and discharge. Both groups of patients were given prescribed same analgesics. Subsequent dressing was done daily. Stitches were removed on 10th post-operative Day. Patients were assessed post-operatively on Day 7, 14 and 21 for the variables included in the study. Data obtained were compiled and analysed by standard statistical analytical tools using SPSS 11.5 Software. Chi square test for categorical data and “t” test for continuous data were used. P-value of ≤ 0.05 was considered statistically significant.

Results:

Table 1: Age and Sex distribution

Sr No.	Age	Group I		Group II		Total N (%)
		Male N (%)	Female N (%)	Male N (%)	Female N (%)	
1	= 20	1 (3.33 %)	0 (0 %)	2 (6.66 %)	1 (3.33 %)	4 (13.33 %)
2	21 to 30	8 (26.66 %)	2 (6.66 %)	7 (23.33 %)	2 (6.66 %)	19 (63.33 %)
4	> 30	3 (10 %)	1 (3.33 %)	2 (6.66 %)	1 (3.33 %)	7 (23.33 %)
Total		12 (40 %)	3 (10 %)	11 (36.66 %)	4 (13.33 %)	30 (100 %)

Table 1 shows Age and Sex distribution amongst study participants. It shows higher prevalence of Pilonidal sinus disease (PSD) in young age group between 21 to 30 years (10 out of 15 patients in Group I and 9 out of 15 patients in Group II). Also, higher prevalence was observed in male (12 out of 15 patients in Group I and 11 out of 15 patients in Group II)

Table 2: Type of discharge distribution

Sr No.	Type of discharge	Group I N (%)	Group II N (%)	Total N (%)
1	Purulent with serous	1 (3.33 %)	2 (6.66 %)	3 (10 %)
2	Serous	14 (46.66 %)	13 (43.33 %)	27 (90 %)
Total		15 (50 %)	15 (50 %)	30 (100 %)

Table 2 shows distribution of types of discharges found in various cases. In group I patients Serous discharge was observed in 14 (46.66 %) cases and Purulent with serous in only 1 (3.33 %) case. In group II patients Serous discharge was observed in 13 (43.33 %) cases and Purulent with serous in only 2 (6.66 %) cases.

Table 3: Outcome Variable distribution

Sr. No.	Outcome Variable	Group I (15)		Group II (15)		Total N (%)	Chi-square	P Value
		Present N (%)	Absent N (%)	Present N (%)	Absent N (%)			
1	Wound disruption	6 (20 %)	9 (30 %)	1 (3.33 %)	14 (46.66 %)	30 (100 %)	4.65	0.03
2	Wound Infection	7 (23.33 %)	8 (26.66 %)	2 (6.66 %)	13 (43.33 %)	30 (100 %)	3.96	0.04
3	Post-operative discharge	9 (30 %)	6 (20 %)	2 (6.66 %)	13 (43.33 %)	30 (100 %)	7.03	0.008
4	Recurrence	8 (26.66 %)	7 (23.33 %)	2 (6.66 %)	13 (43.33 %)	30 (100 %)	5.4	0.02

Table 3 shows various outcome Variables and their prevalence amongst group I and II. Wound disruption was found in 6 (20 %) Group I cases and only 1 (3.33 %) Group II cases. Wound Infection was found in 7 (23.33 %) Group I cases and only 2 (6.66 %) Group II cases. Post-operative discharge was found in 9 (30 %) Group I cases and only 2 (6.66 %) Group II cases. Recurrence was found in 8 (26.66 %) Group I cases and only 2 (6.66 %) Group II cases. All the findings of outcome variables showed statistically significant difference amongst group I and II (p Value 0.03, 0.04, 0.008 and 0.02 respective).

Graph 1: Outcome Variable distribution

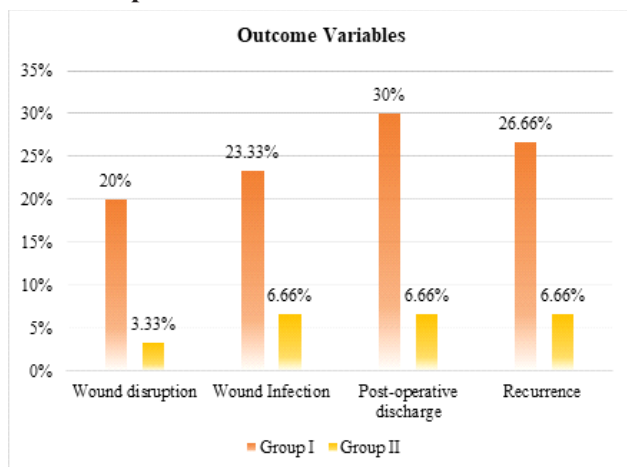


Table 4: Hospital stay distribution

Sr. No.	Hospital stay (days)	Group I N (%)	Group II N (%)	Total N (%)
1	2	3 (10 %)	11 (36.66 %)	14 (46.66 %)
2	3	12 (40 %)	4 (13.33 %)	16 (53.33 %)
Total		15 (50 %)	15 (50 %)	30 (100 %)

Table 4 shows hospital stay durations amongst group I and II. In group I maximum patients i.e. 12 (40 %) had 3 days of hospital stay and in group II maximum patients i.e. 11 (36.66 %) had 2 days of hospital stay.

Discussion

Amongst various modalities available for pilonidal sinus surgery there is still dilemma regarding best treatment option. Ideal surgical procedure in addition to eradicating the disease should also low in postoperative complications and should eliminate the natal cleft which is anatomical predisposition for recurrence of pilonidal sinus. Procedure should also take a note of technical simplicity, work off, hospitalization duration and patient's aesthetic satisfaction. From this perspective two group of simple closure and Limberg flap method was compared for various outcome variables. In the present study most of Pilonidal sinus disease (PSD) cases were found in young age group between 21 to 30 years (63.33 %). Also, higher prevalence was observed in males (76.66 %). In the similar study by Gopal Ram et al (2015)[7] they found 70 % of the patients were from the age group 21 to 30 years in simple closure group and 50 % in limberg flap group. 83.3 % were males in in simple closure group and 90 % in limberg flap group. Menten et al (2008)[8] also showed in their study that Pilonidal sinus disease is common especially in young adult males.

Osmanoglu and Yetisir et al (2011)[9] in their study described that Pilonidal Sinus Disease (PSD) is an acquired condition usually seen in young adult males. Tavassoli et al (2011)[10] shows that pilonidal disease is a common chronic disorder, mostly affecting young adult males. In the present study Serous discharge was observed in maximum i.e.14 (46.66 %) cases in group I and 13 (43.33 %) cases in group II. In the similar study by Gopal Ram et al (2015)[7] they found 93.3 % of the patients were having serous discharge in simple closure group and 90 % in limberg flap group. Omar Abdelraheem et al (2017)[15] in their found 37 % of the patients were having discharge in simple closure group and 30 % in limberg flap group.

In the present study amongst various outcome variables wound disruption, Wound Infection, Post-operative discharge and Recurrence rate was found higher in group I patients (20 %, 23.33 %, 30 % and 26.66 % respectively) compared to Group II cases.

Difference is statistically significant (p Value 0.03, 0.04, 0.008 and 0.02 respectively). In the similar study by Gopal Ram et al (2015)[7] they found 20 % of the patients were having wound disruption in simple closure group and 3.3 % in limberg flap group. 26.7 % of the patients were having wound infection in simple closure group and 10 % in limberg flap group. 36.7 % of the patients were having postoperative discharge in simple closure group and 10 % in limberg flap group. 36.7 % of the patients were having recurrence in simple closure group and 10 % in limberg flap group. Yamout et al (2009)[11] described that rhomboid excision with Limberg flap (RELF) repair has been shown to be effective in the management of pilonidal disease (PD) in adults. Darwish and Hassanin et al (2010)[12] in their study concluded that the use of superiorly based Limberg flap in reconstruction after excision of sacrococcygeal pilonidal sinus is reliable, easily performed, associated with complete cure and low postoperative complications.

Müller et al (2011)[13] in their study reported excellent healing and low recurrence rates for rhomboid flaps for pilonidal sinus disease. Muhammad Sohail Jabbar et al (2018)[14] 20% in Open Procedure And 16.67 % in Limberg Flap procedure exhibited wound infections. Omar Abdelraheem et al (2017)[15] found 13.3 % of the patients were having wound dehiscence in simple closure group and 3.3 % in limberg flap group. 20 % of the patients were having wound infection in simple closure group and 6.7 % in limberg flap group. In the present study in group I maximum patients i.e. 12 (40 %) had 3 days of hospital stay and in group II maximum patients i.e. 11 (36.66 %) had 2 days of hospital stay. These clearly showed difference in duration of hospital stay amongst two groups with higher duration in group I cases. In the similar study by Gopal Ram et al (2015)[7] they found 76.7 % of the patients were having 3 days of hospital stay in simple closure group and 70 % in limberg flap group were having 2 days of hospital stay. Omar Abdelraheem et al (2017)[15] found 3.26 ± 0.32 mean days of hospital stay in simple closure group and 2.82 ± 1.36 in limberg flap group. Recurrence of the sinus probably depend mainly on the ability of the procedure to obliterate the depth of natal cleft. From the present study we can state that

flap procedures are superior in combating the disease recurrence than excision with simple closure due to extensive dissection of the sinus tracts and shallower cleft that flap procedures provide. Early postoperative surgical outcome of our patients showed that the incidence of wound infection, wound disruption and postoperative discharge were less among the flap group in comparison with another group.

Conclusion:

According to the results obtained in present study Limberg flap method has found better outcome with less wound infection, wound disruption, postoperative discharge and recurrence rate compared to simple closure group. In addition, it is safe and easy procedure. Therefore, it is recommended that Limberg flap method should be used in the treatment of pilonidal sinus disease over other modalities

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