Research Paper

Volume : 4 | Issue : 9 | Sept 2015 • ISSN No 2277 - 8179

Pilonidal Sinus - Randomized Study of Flap Reconstruction Vs Simple Closure

Medical Science

KEYWORDS : Pilonidal sinus (PS); Limberg Flap (LF) ; Simple closure

Laxmana Sastry G — Associate Professor , Department of General Surgery ; Malla reddy Medical College for Women

Bharat Kumar — Postgraduate student Yashoda Hospital, Secunderabad; Telangana state

ABSTRACT

Background: Various treatment modalities are developed for Pilonidal sinus disease till date, including non-operative management to surgical management including various flap reconstructions. While excision and primary closures have certain advantages, including shorter surgical time and shorter hospitalization time, flap methods are expected to have lower recurrence rates.

Objective: To ascertain the role of Limberg Flap (LF) method in achieving low recurrence against simple closure method

Method: Randomized Comparative Study of 60 patients

Results: The group of 30 patients who underwent Limberg flap technique had Less recurrence, Less postoperative pain and Early return to work ,when compared to the other group of 30 patients who were treated by simple closure.

Conclusion: Limberg Flap reconstruction is more effective and more comfortable to the patient than simple excision with primary midline closure in pilonidal sinus disease.

Introduction:

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.

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 pilosebaceous glands and change in healthy body hair growth.[3]

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.[4]

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.[5]

The surgical wound may be left to heal by open healing (**secondary intention**). Alternatively, the wound may be closed to heal by primary closure (**primary intention**).

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.[6, 7]

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.

Materials & Methods:

Study Design: Randomized Comparative Study

Study Population: A sample size of 60 patients was taken. Patients were randomized into two groups; group A consists of 30 patients undergoing simple excision with midline primary closure and group B included 30 patients undergoing excision with limberg flap reconstruction. Study duration is August 2013 to April 2015 at Yashoda Hospital , Secunderabad , Telangana state.

INCLUSION CRITERION:

- Patients within age group of 18 to 60 years of either sex and fit for surgery, willing to contact postoperatively, and who have signed the written informed consent
- 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.

RESULTS:

- The mean age of group A is 26.90±4.39 years and group B is 26.26±3.92 years (p = 0.558). The duration of OT time was more in group B (46.23±4.34 min) compared with group A (33.76±2.54 min) with p <0.00001. Hospital stay (days) was less marginally less in group B (3.73 days) than group A (3.93 days) with p 0.3408.
- Postoperative pain VAS score (mean) in group A (4.2) is more than group B (2.33) with p value < 0.01.
- The number of days off work was more in group A (15.76±2.78 days) than group B (13.56±1.67 days) with p < 0.0001. Recurrence was observed in 6 patients (20%) in group A and in 1 patient (3.33%) in group B with p 0.045. Postoperative complications like wound infection, seroma and wound dehiscence was seen in 6(20%), 4(13.33%), 1(3.33%) patients respectively in group A and 1(3.33%), 1(3.33%), 0 patients respectively in group B with p values 0.0415, 0.1665, 0.321

Variable	Simple Excision	S.D	Limberg Flap	S.D	T Test	Probability		Mann Whitney	Probability	
Age	26.900	4.397	26.267	3.930	0.588	0.559		426.000	0.365	
Sex	1.100	0.305	1.133	0.346	0.396	0.694		117.000	0.000	***
OT Time Minutes	33.767	2.542	46.233	4.345	13.566	0.000	***		0.000	***
Hospital Stay In Days	3.933	0.828	3.733	0.785	0.960	0.341		402.000	0.243	
Recurrence	0.200	0.407	0.033	0.183	2.047	0.045		257.000	0.002	**
Wound Infection	0.200	0.407	0.033	0.183	2.047	0.045		234.000	0.001	***
Seroma	0.133	0.346	0.033	0.183	1.401	0.167		181.000	0.000	***

Wound Dehiscence	0.033	0.183	0.000	0.000	1.000	0.321				
Days Off Work	15.767	2.788	13.567	1.675	3.705	0.000	***	255.000	0.002	**
VAS Score	4.200	0.714	2.333	0.479	11.883	0.000	***	29.000	0.000	**

Follow up

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

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

DISCUSSION

Although certain nonsurgical treatment options for treating the condition are still available, but now the consensus for treating it surgically has evolved. A full basket of techniques ranging from simple curette to extensive flap techniques have been published so far. Conceptually, an ideal procedure, in addition to eradicating the disease, should also eliminate the natal cleft so as to take off the anatomical predisposition for the recurrence of the sinus. The procedure should also count well on other parameters such as technical simplicity, hospitalization period required, and off work period.

Impact of a procedure on the recurrence of the sinus probably depends mainly on the ability of the procedure to tease the depth of natal cleft. Leftover primary residual sinus tracts, a dead space which opens at the gravitational pit of the cleft, regularity of the hair shave of the cleft, and obesity also have contribution to the recurrence of the sinus. So, looking that way one expects flap procedures to combat the disease recurrence better than excision with simple closure, keeping in view extensive dissection of the sinus tracts and the shallower cleft that flap procedures provide.

In the current study, group A (simple excision with primary closure) consists of 30 patients (27 males and 3 females), group B (LF) 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 AS[5]. p value is 0.693 which is statistically insignificant.

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 siting for long duration, wearing tight jeans and obesity due to junk food. These entire factors play an important role in disease incidence in young age people. p value is 0.558 between the two groups stating statistically insignificant.

In most of the previous studies recurrence was 0-3%[8-11] for LF technique and 7-42%[13, 14] 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. This states that LF is having less recurrence rates than simple excision with primary closure.

Akca et al.[15] 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. Whereas Abu Galala et al.[16] have observed an insignificant difference in the operative time periods of the two techniques. 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. Because of the extensive dissection and raising the flap above from gluteal fascia and suturing the flap over the defect led to longer OT time for flap technique. And current results are comparable with the previous studies.

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). Rendering hospital stay as less significant difference between the two groups. Near similar values of these parameters for the two procedures should render them a less important factor in determining the relative superiority of one procedure over the other.[17, 18] The minor difference between the two group is not statistically significant. Demerit of less significant p valve may be due to smaller sample size. As the complications were addressed immediately in our hospital, there was no much difference in the duration of hospital stay between both the groups.

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 Mahdy[19] and Akca et al[15]. 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. Therefore LF is more comfortable to the patient.

The consideration of a financial burden in the surgical management of pilonidal sinus assumes more importance because the disease is an affliction of mainly the second and third decades of life. Previous studies reveal 7–17.5 days[20, 12, 21] work off period for the LF and 21–23 days[16, 22] for the midline primary closure. In current study, group A had mean 15.76±2.78 days off work and group B had 13.56±1.67 days off work (p value 0.00047) rendering faster healing and early ambulation and early return to duty in group B patients. Faster healing has a good impact on social and financial condition of the patient.

Published studies documented a wound infection rate and a wound disruption rate of up to 12.4% [23] and 5– 10% [3], respectively, for the primary midline closure technique, while published values of such parameters for the LF group are 1.5–6.5% [15, 24] and 0.9– 3.9%[25, 26] respectively. In my current 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. The results were in comparison with previous studies. In current study, wound infection in comparison between both the groups is statistically significant with p value of 0.0415.

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).

The significant high wound infection in group A is because of high wound tension in midline closure causing disruption of the sutures and leading to wound infection.

As drains were used in both the study groups, there is no statistical significant p value for seroma incidence. These drains regularly remove the serous discharge which is formed postoperatively.

CONCLUSION

- Pilonidal sinus is more common in third decade of life.
- It is more common in males than females.
- Surgical treatment is the cornerstone in the management of PSD.
- Midline closure techniques causes increased wound tension on suture lines causing recurrence.
- Limberg flap technique is more time consuming procedure than simple excision with primary closure but has many advantages over it:
  - Less postoperative pain
  - Decreased hospital stay
  - Early return to work
  - Decreased postoperative complications like wound infection, seroma and wound dehiscence
  - Less recurrence.

I conclude in my study that excision with LF reconstruction is more effective and more comfortable to the patient than simple excision with primary midline closure in pilonidal sinus disease.

REFERENCE

1. Hodges RM. Pilonidal sinus. Boston Med Surg J. 1880;103:485–486. | 2. Karydakis GE. Easy and successful treatment of pilonidal sinus after explanation of its causative process. Aust N Z J Surg. 1992;62:385–389. | 3. Lee HC, Ho YH, Seow CF, Eu KW, Nyam D. Pilonidal disease in Singapore: clinical features and management. Aust N Z J Surg. 2000;70:196–198. | 4. Tocchi A, Mazzoni G, Bononi M, Fornasari V, Miccini M, Drumo A. Outcome of chronic pilonidal disease treatment after ambulatory plain midline excision and primary suture. Am J Surgery. 2008;196:28-33. | 5. Azab AS, Kamal MS, El Bassyoni F. The rationale of using the rhomboid fasciocutaneous transposition flap for the radical cure of pilonidal sinus. J Dermatol Surg Oncol. 1986;12:1295–1299. | 6. Spivak H, Brooks VL, Nussbaum M, Friedman I. Treatment of chronic pilonidal disease. Dis Colon Rectum. 1996;39:1136–1139. | 7. Anderson AW. Hair extracted from an ulcer. Boston Med Surg. 1847;36:74. | 8. Azab AS, Kamal MS, Bassyoni F (1986). The rationale of using the rhomboid fasciocutaneous transposition flap for the radical cure of pilonidal sinus. J Dermatol Surg Oncol. 12:1295–1299. | 9. Mentes BB, Leventoglu S, Cihan A et al (2004). Modified Limberg transposition flap for sacrococcygeal pilonidal sinus. Surg Today. 34:419–423. | 10. Eryilmaz R, Sahin M, Alimoglu A et al (2003). Surgical treatment of sacrococcygeal pilonidal sinus with Limberg transposition flap. Surgery. 134:745–749. | 11. KapanM, KapanS, PekmezciSetal. Sacrococygealpilonidal sinus disease with Limberg flap repair. Tech Coloproctol. 6:27–32. | 12. Topgul K, zdemir E, Kilic K et al (2003). Long term results of Limberg flap procedure for the treatment of pilonidal sinus: A report of 200 cases. Dis Colon Rectum. 46:1545–1548. | 13. Sondenaa K, Nesvik I, Andersen E, Soreide JA. Recurrent pilonidal sinus after excision with closed or open treatment: final result of a randomised trial. Eur J Surg. 1996;162:237–240. | 14. Iesalnieks I, Furst A, Rentsch M, Jauch KW. Primary midline closure after excision of a pilonidal sinus is associated with a high recurrence rate. Chirurg. 2003 May;74(5):461-468. | 15. Akca T, Colak T, Ustunsoy B, Kanik A, Aydin S. Randomized clinical trial comparing primary closure with the Limberg flap in the treatment of primary sacrococcygeal pilonidal disease. Br J Surg. 2005;92(9):1081-1084. | 16. Abu Galala KH, Salam IM, Abu Samaan KR et al (1999). Primary closure with a transposed rhomboid flap compared with deep suturing: a prospective randomised clinical trial treatment of pilonidal sinus. Eur J Surg. 165:468–472. | 17. Kronborg O, Christensen K, Zimmermann-Nielsen C (1985). Chronic pilonidal disease: a randomised trial with a complete 3year follow-up. Br J Surg. 72:303–304. | 18. Aydede H, Erhan Y, Sakarya A et al (2001). Comparison of three methods in surgical treatment of pilonidal disease. Aust N Z J Surg. 71:362–364. | 19. Mahdy T. Surgical treatment of the pilonidal disease: primary closure or flap reconstruction after excision. Dis Colon Rectum. 2008;51(12):1816-1822. | 20. Ballas K, Psarras K, Rafailidis S, Konstantinidis H, Sakadamis A. Interdigital pilonidal sinus in a hairdresser. J Hand Surg Br. 2006 Jun;31(3):290-291. | 21. Bozkurt MK, Tezel E (1998). Management of pilonidal sinus with the Limberg flap. Dis Colon Rectum. 41:775–777. | 22. Khaira HS, Brown JH (1995). Excision and primary suture of pilonidal sinus. Ann R Coll Surg Eng. 77:242–244. | 23. Petersen S, Koch R, Stelzner S. Primary closure techniques in chronic pilonidal sinus: a survey of results of different surgical approaches. Dis Colon Rectum. 2002;45(11):1458–1467. | 24. Mentes O, Bagci M, Bilgin T, Ozgul O, Ozdemir M. Limberg flap procedure for pilonidal sinus disease: results of 353 patients. Langenbecks Arch Surg. 2008;393(2):185-189. | 25. Daphan C, Tekelioglu MH, Sayilgan C. Limberg flap repair. 233-237. | 26. Bascom JU. Pilonidal disease: correcting overtreatment and under treatment. Contemporary Surg. 1981;18:13–28.