

Limberg Flap Procedure for Sacrococcygeal Pilonidal Sinus

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Abstract:

Background: Sacrococcygeal pilonidal sinus is a common and morbid disease associated with high recurrence rate after surgery. Many conventional surgical procedures have been described for its management with their merits and demerits. The present study aims to evaluate the efficacy and complications of Limberg flap reconstruction surgery

Methods: This hospital based prospective study was conducted on 30 consecutive patients with pilonidal sinus disease attending Surgery Department.

Results: All patients were followed up initially at 2-week interval, then at 1 month and again at six months. Four patients (13.33%) developed complications two (6.67%) had seroma formation, 1 (3.33%) had flap necrosis and the other 1 (3.33%) had superficial surgical site infection.

Conclusion: Limberg flap for reconstruction of the defect after excision of recurrent sacrococcygeal pilonidal sinus is an effective and reliable technique, easily performed, subjectively high patient satisfaction, associated with complete cure and low incidence of post-operative complications.

Keywords: Pilonidal sinus, Limberg, Flap

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Introduction

Pilonidal sinus is a chronic inflammatory process of the skin and subcutaneous tissue of the sacro-coccygeal region. It presents clinically as a depression or one or multiple holes in the midline in the intergluteal cleft. In the course of the disease, the inflammation may exacerbate or even an abscess may form. [1]

Pilonidal cyst is usually diagnosed in young males (4 times more often than in females), usually of Caucasian descent, less frequently African or Asian, most commonly after puberty (mostly in 2nd and 3rd decade of life). In females, the disease develops at a younger age, which is probably due to earlier beginning of puberty. [2]

Treatment of a pilonidal cyst is difficult due to low efficacy of therapeutic methods. Clinical assessment is necessary, and the choice of proper management depends on disease stage. In the case of a shallow (depth less than 2cm) lesion with protruding hair, a trial of conservative treatment may be attempted. However, the patient should accept the risk of developing an abscess on every stage of treatment. Conservative treatment is only possible for non-infected pilonidal cysts. [3] Every abscess requires surgical intervention. Conservative methods used in the past, such as phenol injection, cryosurgery, thermal destruction, local radiation, are no longer

recommended due to high rate of complications and patient's discomfort. While applying conservative methods, it should be remembered to remove all hairs from the pilonidal sinus accessible through the skin opening. [4]

One of conservative methods is application of fibrin glue for cyst closure. This method may only be used in patients with early lesions, with no history of abscesses, who have never underwent surgical treatment and have only one opening of the pilonidal sinus. [5]

A fundamental principle of surgical treatment is total resection of the lesion, including its lateral channels, up to fascia of sacrum. Application of dye to the external opening makes it easier to identify lateral channels of the cyst. [6]

The most commonly used method is simple excision of pilonidal cyst. Primary wound closure shortens healing time, however, it is associated with an increased complication rate, including infection and dehiscence, and recurrence of the disease as a result. Leaving the wound 'open' to heal requires longer convalescence time, but also with lower rate of recurrence. Relocation of flaps should be reserved for patients with extensive chronic lesions. In the case of less extensive pilonidal cysts, deep incisions with

mobilization of subcutaneous tissue allows for faster healing and is more acceptable by patients than flap surgery. [7]

Time spent off work and perceived recurrence rates and methods which includes the laying open the all tracks with or without marsupialization, the excision of all tracks with or without primary closure and the excision of all tracks and then closure by some other means designed to avoid a midline wound (Limberg procedure, Z-plasty, Karydakis procedure) but it is usually surgeon preference, which influence the choice of method. [8]

Material and Methods

This hospital based prospective study was conducted on Patients with pilonidal sinus disease attending Surgery Department.

Inclusion Criteria:

1. Pilonidal sinus in the natal cleft of the sacrococcygeal area
2. Patients aged between 16 and 60 years.
3. All patients diagnosed with pilonidal sinus which are fit for undergoing surgery.

Exclusion Criteria:

- Pilonidal abscess
- Patients having systemic conditions which affect postoperative wound healing like diabetes

mellitus, Human immunodeficiency virus positive patients, on cancer chemotherapeutic drugs, immunosuppressant therapy.

- Patient having spinal deformities.

All patients were subjected to complete history taking and routine clinical, local examination and laboratory investigations. Written consent was obtained from all patients after explanation of the procedure and expected results of the flap in this area. Data of the patients were collected from the forms, which were created preoperatively and used for postoperative follow up period, for each patient. The patients having other local pathologies like eczematous, fungal or other deforming pathologies were excluded from the study. All the patients underwent Limberg flap reconstruction as the surgical procedure. The main outcome of this study was to evaluate the surgical procedure with respect to the surgical area related complications and recurrence rates. Surgical procedure The natal cleft was shaved the day before surgery. Cefazolin 1 gram and Metronidazole 500 mg were administered intravenously prophylactically before placing incision. All operations were performed under spinal anaesthesia. Patients were placed in prone position and the buttocks strapped apart by adhesive tapes. Using a sterile skin-marking pen a rhomboid area of skin was marked over pilonidal sinus involving all midline pits and lateral extension if any.

Results

Table 1. General characteristics of patients

Mean age	24.36±5.02 years	
Male	30(30.00%)	
Spinal anesthesia	30(30.00%)	
Operative time	46.23±9.36 mint.	
Complication	Wound infection	1(3.33%)
	Seroma	2(6.67%)
	Flag necrosis	1(3.33%)

All patients were followed up initially at 2-week interval, then at 1 month and again at six months. Four patients (13.33%) developed complications two (6.67%) had seroma formation, 1 (3.33%) had flap necrosis and the other 1 (3.33%) had superficial surgical site infection.

Discusson

Sacroccygeal pilonidal sinus disease is notorious for prolonged morbidity and recurrence and the ideal treatment should ensure low pain, short hospitalization period, low risk of complications, rapid return to normal activities, better cosmesis, and should have a low recurrence rate. There has been increased realisation of the importance that the midline natal cleft should be avoided for suture placement as it is the site for recurrence. To

minimise the recurrence, the emphasis should not only be on flattening the natal cleft but also of achieving an off-midline closure of the resultant defect in order to minimize wound-related complications and recurrence. [9-11]

Flap reconstructions having a midline lower edge or suture line on intergluteal sulcus are more likely to increase recurrence rates, wound dehiscence and wound infection risk. Limberg flap reconstruction achieves an off-midline closure and ensures flattening of the natal cleft. Reconstruction of the defect with Limberg flap has many advantages as it is easy to perform and design, and it flattens the natal cleft with large vascularized pedicle, sutured without tension. This in turn maintains good hygiene, reducing the friction, preventing maceration, and avoiding scar in the midline. This

flap procedure is found better than simple excision and closure, marsupialization, other flap procedures such as Bescom and Karydakis. [12-15] There are many previous studies on this subject among which, Katsoulis had 25 patients, with 16 of them having complications with no recurrences and Aslam had 110 patients, with 5 of them having complications and 1 recurrence (19)5. [16,17] Mentis and Urhan were other studies. [18,19] Several series with the rhomboid or rhombic flap technique, including more than 50 cases, have reported recurrence rates of 1% to 7%. [20] In our study we had a total of 30 patients among which 4 patients had complications like seroma formation (2), wound infection (1) and flap necrosis (1) which were managed subsequently.

Conclusion

Limberg flap for reconstruction of the defect after excision of recurrent sacrococcygeal pilonidal sinus is an effective and reliable technique, easily performed, subjectively high patient satisfaction, associated with complete cure and low incidence of post-operative complications.

References

- Kratzer G.L.: Pilonidal disease. *Of Man Colon Rectal. Dis.* 1985; 10: 125
- Allen-Mersh T.G.: Pilonidal sinus: finding the right track of treatment. *Br.J. Surg.* 1990; 77: 123-132
- James Bagot Oldham, 1899-1977, surgeon the united Liverpool Hospitals, Liverpool, UK. *Bailey & Love's Short Practice of Surgery* 27th ed. Pg. 1347.
- Bielecki K., Dziki A.: *Proktologia. PZWL, Warszawa* 2000; 187-188.
- Isik A., Eryilmaz R., Okan I. et al.: The use of fibrin glue without surgery in the treatment of pilonidal sinus disease. *Int. J. Clin. Exp. Med.* 2014;7 (4):1047-1051
- Guner A., Aydin B., Ozkan O.F. et al.: Limberg flap versus Bascom cleft techniques for sacrococcygeal pilonidal sinus: prospective randomized trial. *World J. Surg.* 2013; 37: 207 4-2080
- John U Bascom, 1925-2013, American surgeon, formerly of Eugene, OR, USA. *Bailey & Love's Short Practice of Surgery* 27th ed. Pg. 1348-49.
- da Silva J.H. "Pilonidal cyst: cause and treatment." *Diseases of the Colon and Rectum.* 2000; Vol. -43:Pg.1146-1156.
- Petersen S, Koch R, Stelzner S, Wendlandt TP, Ludwig K. Primary closure techniques in chronic pilonidal sinus: a survey of the results of different surgical approaches. *Dis Colon Rectum.* 2002;45(11):1458-67.
- McCallum, King PM, Bruce J. Healing by primary versus secondary intention after surgical treatment for pilonidal sinus. *Cochrane Database Syst.* 2007;17(4). Available at <https://www.ncbi.nlm.nih.gov/pubmed/17943897>.
- Al-Khamis A, McCallum I, King PM, Bruce J. Healing by primary versus secondary intention after surgical treatment for pilonidal sinus. *Cochrane Database Syst.* 2010;1. Available at http://www.cochrane.org/CD006213/WOUND_S_healing-by-primary-versus-secondary-intention-aftersurgical-treatment-for-pilonidal-sinus.
- Akca T, Colak T. Primary closure with Limberg flap in treatment of pilonidal sinus-randomized clinical trial. *BJS.* 2005;5074:10 81-4.
- Azab AS, Kamal MS, Saad RA, About AL, Atta KA, Ali NA. Radical cure of pilonidal sinus by a transposition rhomboid flap. *BJS* 1984;71(2):154-5.
- Mentes O, Bagci M, Biglin T, Ozgul O, Ozdemir M. Limberg flap procedure for pilonidal sinus diseased: results of 353 patients. *Langenbecks Arch Surg.* 2008;393(2):185-9.
- Can MF, Sevinc MM, Hahcerliogullari O, Yilmaz M, Yagci G. Multicentre prospective randomized trial comparing modified Limberg flap transposition and Karydakis flap reconstruction in patients with sacrococcygeal pilonidal disease. *Am J Surg.* 2010;200(3):318-2 7.
- Katsoulis IE, Hibberts F, Carapeti EA. Outcome of treatment of primary and recurrent pilonidal sinus with Limberg flap. *Surgeon.* 2006;4(1):7-10.
- Aslam M, Choudhry A. Use of Limberg flap for pilonidal sinus-a viable option. *J Ayub Med Coll Abbottabad.* 2009;21(4):31
- Urhan MK, Kuckel F, Topgul K, Ozer I, Sari S. Rhomboid excision and Limber flap for managing pilonidal sinus: results of 102 cases. *Dis Colon Rectum.* 2002;45:656-9.
- Mentes BB, Leventoglu S, Cihan A, Tatlicioglu E, Akin M, Oguz M. Modified Limberg transposition flap for sacrococcygeal pilonidal sinus. *Surg Today.* 2004;4(5):419-23.
- Karydakis GE. The etiology of pilonidal sinus. *Hell. Armed Forces Med Rev.* 1975;7:411e-6.