Original Article

SURGICAL EXCISION WITH SECONDARY HEALING VERSUS LIMBERG TRANSPOSITION FLAP IN THE MANAGEMENT OF SACROCOCCYGEAL PILONIDAL DISEASE

Muzaffar Aziz, Tariq Jamil Choudhary, Jamil Zahid and Khalid Hussain Qureshi

Objective: To compare the outcome of Open excision and secondary healing with rhomboid excision and Limberg flap in the management of sacrococcygeal pilonidal sinus disease.

Methods: A comparative study using randomized controlled trial (RCT) was conducted at Nishtar Hospital Multan & Ghazi Khan teaching Hospital DG khan from November 2012 to July 2016. In total 49 patients, who either underwent open excision and secondary healing (group A: 25 patients out of which 4 patients did not reported during follow up so actual figure of 21 was included in this group) or rhomboid excision and Limberg flap (group B: 24 patients), were enrolled in the study. Duration of operation, postoperative pain, duration of hospital stay, postoperative complications, and time to recurrence were noted. The inclusion criteria were all patients with primary or recurrent Disease. Diabetics, patients with other co morbid condition, patients with poor follow up and patients with incomplete record were excluded from study.

Results: Duration of operation was longer in group B patients (p=0.004) but pain perception was markedly reduced in this group (p=0.003). Total hospitalization period was shorter in patients in group B (p=0.002) and so was the time for complete healing of the wound (p=0.002). The recurrence rate was also significantly lower in patients who underwent Limberg rotation flap (p=0.005).

Conclusion: Limberg flap is advantageous over simple excision and secondary healing in the management of pilonidal disease.

Keywords: Pilonidal disease, Limberg Flap, Excision and Secondary healin

Introduction

Pilonidal disease was first reported in 1833. This process was first described by Anderson in 1847 and later named pilonidal sinus by Hodges in 1880.[1] The word pilonidal derives from the Latin words *pilus* ("hair") and *nidus* ("nest"). Sacrococcygeal pilonidal sinus is a common disorder among young adults. Observed most commonly in people aged 15-30 years, with a 3:1 male-to-female ratio, it occurs after puberty, when sex hormones are known to affect the pilosebaceous gland and change healthy body hair growth. The onset of pilonidal disease is rare in people older than 40 years.[2] One of the simplest medical treatments of pilonidal sinuses is to shave the sacral area free of hair and to pluck all visible imbedded hair in the sinus,[3] phenol injections into sinus track.[4,5] Another newer medical therapy that is applied after simple curetting of the sinus tract is fibrin glue.[6] Radio frequency ablation techniques have also been studied in an attempt to reduce the pain associated with the procedures.[7] Primary wound closure and wound healing by secondary intention are the two principal surgical options for a chronic pilonidal sinus.[8,3] Primary closure is considered better then healing by secondary intension.[9] Bascom and Edwards described a procedure in which pilonidal disease was treated with only removal of the hair and the follicles.[10,11] Karydakis procedure,[12,13] begins with excision of the wound and en-bloc removal of the sinuses with an elliptical specimen of overlying skin. Flap procedures (rhomboid flap/Limberg flap, V-Y advancement flap and Rotational flap[14-18] are performed for complex and recurrent disease. Simple excision techniques are associated with high morbidity and recurrence due to presence of natal cleft. Different studies have reported recurrence rates of 0-5 %.[19-21] these high recurrence rates are attributable to a persistence natal cleft in the midline, which provides a portal for hair entry. Once the hair is inside, the vicious circle of abscess formation and discharging sinuses begins.[22] The experience with rhomboid excision and Limberg transposition flap versus open excision and secondary healing in the management of primary and recurrent SPD is presented.

Methods

This study was conducted simultaneously at Nishtar Hospital Multan and Ghazi Khan teaching Hospital

DG Khan, from Nov 2012 to July 2016.

It was a prospective, analytical, comparative study using randomized controlled trial (RCT). Blocked randomization was used for allocation of patients in 2 groups (A and B). The patients are divided in blocks of two, and within each block the first patient was allocated in group A and the second patient in group B.

A total of 49 patients were enrolled in the study. Group A, comprised of 25 patients. 14 patients have primary disease while 11 patients have recurrent pilonidal sinus. Open excision and secondary healing was the procedure performed in these patients. 4 patients did not reported for follow up so they were excluded from study so in Group A, 21 patients were included in study. Group B had 24 patients, subjected to rhomboid excision and Limberg transposition flap. 12 patients in this group had primary disease and others have recurrent pilonidal disease.

Inclusion criteria were all patients with primary and recurrent disease. Diabetic and patients with co morbid disease (cardiac, renal disease, asthmatic) were excluded from study. Patients those were lost to follow-up and incomplete records were also excluded from study. An informed consent was taken and patients were counseled about the merits and demerits of both the procedures. Duration of operation, postoperative pain, duration of hospital stay, postoperative complications and time to recurrence were noted. The average period of follow up was 18 months (12- 24 months).

Operative technique:

All the patients were operated under general anesthesia. Antibiotic prophylaxis was done, using 1gm of intravenous Ceftezidime were given to all the patients. Patients were placed in Jack-knife position with hips strapped apart. Methylene blue was injected in the sinus tract. Patients in group A underwent excision of all the diseases area as lined by Methylene blue. The wound was packed with pyodine soaked dressing. Postoperatively, the dressing was changed daily after washing the wound with normal saline. Patients were discharged on 4-6th postoperative day.[23] The patients were followed up in ward on weekly basis till complete healing of wound. They were then followed at monthly basis for 18 months. Patients were advised to keep the area hair free.

In group B patients, the proposed flap was marked on the skin. Rhomboid excision of the tissue was done incorporating the whole sinus tract and extending deep into pre-sacral fascia (Figure 1).[36] The Limberg flap was then rotated from the gluteal fascia to the area excised. Subcutaneous tissue was sutured using polyglactin 2/0 suture and skin by prolene 3/0 suture. Homeostasis was secured and no drain was used for drainage purpose.[28] The patients were discharged from the hospital usually on 2-3 day. Skin sutures were removed on 14th post-operative day. Patients were advised to maintain good hygiene and to keep the area hair free. The follow-up schedule included a monthly follow up for 3 months and a quarterly follow-up for at least 18 months.

Operative time was defined as the time between the placements of incision to the last suture applied. Severity of pain was defined using visual analogue score and need and type of analgesia. Return to the normal routine was considered as the period of first day of admission to hospital until the patient resumed work. Statistical analysis was done using SPSS.

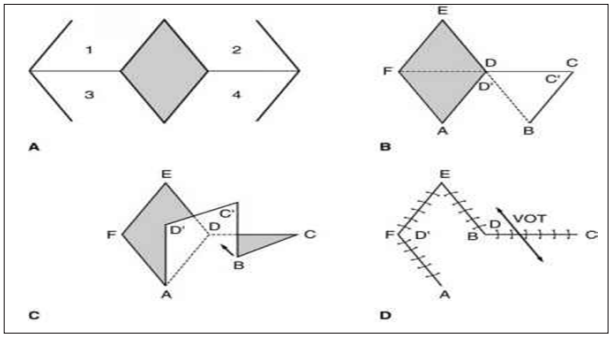

Fig-1: Diagrametic Presentation.[36]

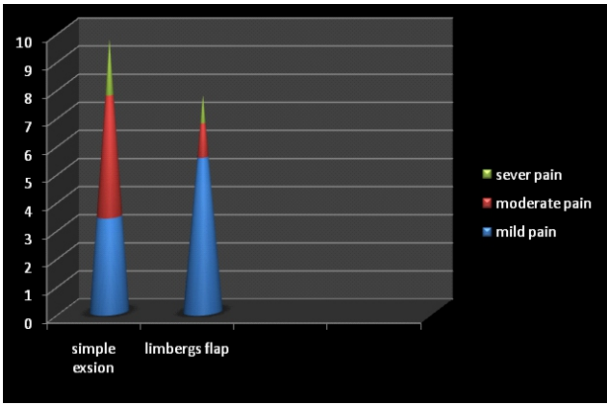

Fig-2: Pain response and need of painkillers.

Discussion

After surgery for pilonidal sinus wounds healed more quickly when primary closure (Limberg Flap) was used as compared to excision of the sinus. Significant difference was found in rate of complications between

and benefits of each should be made when considering surgical treatment. A clear benefit was, however, found with Primary closure (Limberg Flap) compared with excision only is assessment of variables (pain, hospital stay, return to routine activity and recurrence of disease). In present study, the pain perception in group A was significantly high as compared to Group B where proper skin coverage was provided by Flap. When compared to the literature, similar results were found by Akmal Jamal et al.[24] Faisal Bilal Lodhi et al[27] Urhan et al[25] and Bozkurt & Tezel[26] reported a mean hospital stay of 3 days, 3.7 days and 4.1 days respectively similar to what we have observed in our study (mean hospital stay in Group B being 4 days). In contrast to that, patients who underwent simple excision of the sinus tract had to stay for a longer time in hospital due to presence of open wound. The longer hospital stay results in delay in return to routine activity resulting in social and financial impacts. One main problem recognized with flap construction is early development of seroma/haematoma formation resulting in wound infection and flap failure. To prevent this, insertion of suction drainage has been advocated by many centers. However we did not placed darin in any patient, a study published by Erdem et al,[28] suggested no considerable difference in complication rates between two groups who underwent Limberg flap rotation with or without suction drainage. Different series have reported wound infection rates of 1.5-7 %.[21,29] in the present study, it was 4.1% with Limberg flap (group B) whereas in those patients who underwent open excision (group A) it was increased to 24%. Akmal Jamal et al[24] reported the similar results. If the disease recurs, it commonly presents in first 2-3 years. In our study the recurrence rate observed was 4.1% with Limberg flap. Recurrence rate remained quite high in Group A. Akmal Jamal et all[24] reported the similar results. Our results are close to results reported by Mentes et al (3.1%),[30] Hizbullah Jan et al.[31] & Akin et al (2.91%).[29] Hence, with all the controversies about best surgical technique for the treatment of pilonidal sinus, an ideal operation should be simple and with low complication rate. Less hospital stay and early return to activity must be considered. The Limberg flap has proven efficacy in the management of both primary and recurrent disease.[32,34] Quick healing time, short hospital stay, early return to daily life, low complication and recurrence rate are the important advantages of the Limberg flap procedure.[29,30,33,34,35]

Conclusion

We conclude that the excess terminal hair growth is more common in overweight women having less hirsutism score.

Department of Surgery
Nishtar Medical college Multan

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References

1. Hodges RM. Pilonidal sinus. Boston Med Surg J. 1880. 103:485-586.
2. Doll D, Friederichs J, Dettmann H, et al. Time and rate of sinus formation in pilonidal sinus disease. Int J Colorectal Dis. 2008 Apr. 23(4):359-64. [Medline].
3. Keighley MRB, Williams NS. Surgery of the Anus, Rectum, and Colon. 3rd ed. Philadelphia: WB Saunders; 2008.
4. Stansby G, Greatorex R. Phenol treatment of pilonidal sinuses of the natal cleft. Br J Surg. 1989 Jul. 76(7):729-30. [Medline].
5. Dag A, Colak T, Turkmenoglu O, Sozutek A, Gundogdu R. Phenol procedure for pilonidal sinus disease and risk factors for treatment failure. Surgery. 2012 Jan. 151(1):113-7. [Medline].
6. Lund JN, Leveson SH. Fibrin glue in the treatment of pilonidal sinus: results of a pilot study. Dis Colon Rectum. 2005 May. 48(5):1094-6. [Medline].
7. Gupta PJ. Radiofrequency sinus excision: better alternative to marsupialization technique in sacrococcygeal pilonidal sinus disease. J Natl Med Assoc. 2005 Jul. 97(7):998-1002. [Medline].
8. Sondenaa K, Nesvik I, Andersen E, et al. Recurrent pilonidal sinus after excision with closed or open treatment: final result of a randomised trial. Eur J Surg. 1996 Mar. 162(3):237-40. [Medline].
9. New (ref in introduction nur saeed) Nur Saeed, Junaid Siddique, Asim Bhatti. Primary closure a prefferd technique for pilonidal sinus Isra Med J Jun - Sep 2013;5(3):207-10.
10. Bascom J. Pilonidal disease: origin from follicles of hairs and results of follicle removal as treatment. Surgery. 1980 May. 87(5):567-72. [Medline].
11. Edwards MH. Pilonidal sinus: a 5-year appraisal of the Millar-Lord treatment. Br J Surg. 1977 Dec. 64(12):867-8. [Medline].
12. Ersoy E, Onder Devay A, Aktimur R, et al. Comparison of the short-term results after Limberg and Karydakis procedures for pilonidal disease: randomized prospective analysis of 100 patients. Colorectal Dis. 2008 Jul 15. [Medline].
13. Kulacoglu H. Choosing the

correct side for Karydakis flap. Colorectal Dis. 2008 Nov. 10(9):949-50. [Medline].
14. Abu Galala KH, Salam IM, Abu Samaan KR, et al. Treatment of pilonidal sinus by primary closure with a transposed rhomboid flap compared with deep suturing: a prospective randomised clinical trial. Eur J Surg. 1999 May. 165(5):468-72. [Medline].
15. Mahdy T. Surgical treatment of the pilonidal disease: primary closure or flap reconstruction after excision. Dis Colon Rectum. 2008 Dec. 51(12):1816-22. [Medline].
16. Basterzi Y, Canbaz H, Aksoy A, et al. Reconstruction of extensive pilonidal sinus defects with the use of S-GAP flaps. Ann Plast Surg. 2008 Aug. 61(2):197-200. [Medline].
17. Kaya B, Eris C, Atalay S, Bat O, Bulut NE, Mantoglu B, et al. Modified Limberg transposition flap in the treatment of pilonidal sinus disease. Tech Coloproctol. 2011 Dec 15. [Medline].
18. Kirkil C, Böyük A, Bülbüller N, Aygen E, Karabulut K, Coskun S. The effects of drainage on the rates of early wound complications and recurrences after Limberg flap reconstruction in patients with pilonidal disease. Tech Coloproctol. 2011 Dec. 15(4):425-9. [Medline].
19. Mentes BB, Leventoglu S, Cihan A, Tatlicioglu E, Akin M, Oguz M. Modified Limberg transposition flap for sacrococcygeal pilonidal sinus. Surg Today 2004; 34: 419.
20. Muhammad Israr, Waseem Yar, Niamat Ullah, Mukhtiar Ali, Saeeda. Outcome of excision and primary closure of pilonidal sinus disease Pak J Surg Oct - Dec 2013;29(4):285-8.
21. Kapan M, Kapan S, Pekmezci S, Durgun V. Sacrococcygeal pilonidal sinus disease with Limberg flap repair. Tech Coloproctol 2002; 6:27-32
22. Karydakis GE. Hair insertion (pilonidal sinus). Hellenic Armed Forces Med Rev 1968; 2: 273-85.
23. Nazim Hayat, Saira Saleem, Khalid Ahmad, Ag Rehan. Limberg`s flap: our experience of 50 patients at MTHJ Uni Med Dent Coll Jan - Mar 2016;7(1):62-6.
24. Akmal Jamal, Fazila Hashmi, Muhammad Idrees Qureshi, Muhammad Shamim. Open excision with secondary healing versus rhomboid excision with Limberg transposition flap in the management of Sacrococcygeal Pilonidal Disease. JMPA 2009; 59:157-8.
25. Urhan MK, Kucukel F, Topgul K, Ozer I, Sari S. Rhomboid excision and Limberg flap for managing pilonidal sinus. Dis Colon Rectum 2002; 45: 656-9.
26. Bozkurt MK, Tezel E. Management of pilonidal sinus with the Limberg flap. Dis Colon Rectum 1998; 41: 775-7.
27. Faisal Bilal Lodhi, Saira Ijaz, Shafiq M, Riaz Hussain. Pilonidal sinus; use of Limberg flap in the treatment Professional Med J Jul - Sep 2006;13(3):435-9.
28. Erdem E, Sungurtekin U, Nessar M. Are post-operative drains necessary with the Limberg flap for treatment of pilonidal sinus? Dis Colon Rectum 1998; 41:1427-31.
29. Akin M, Gokbayir H, Kilic K, Topgul K, Ozdemir E, Ferahkose Z. Rhomboid excision and Limberg flap for managing pilonidal sinus: long-term results of 411 cases. Colorectal Dis 2008. [Epub ahead of print].
30. 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: 185-9.
31. Hizbullah Jan, Atta Ullah Khan, Mah Muneer Khan, Mohammad Salman Rafique. Rhomboid Flap and the Pilonidal Sinus Disease Pak J Surg Jan - Mar 2015; 31(1):16-9.
32. Eryilmaz R, Sahin M, Alimoglu O, Dasiran F. Surgical treatment of sacrococcygeal pilonidal sinus with the Limberg transposition flap. Surgery 2003; 134: 745-9.
33. Bilal Fazal Shaikh, Qambar Laghari, Ahsan Laghari, Tahir S M, Atif Jawed Bhatti, Adnan Maqsood Choudhry. Treatment of modalities for reconstruction of pilonidal sinus defects Med Channel Apr - Jun 2011;17(2):36-8.
34. Faisal Shabbir, Mahmood Ayyaz, Muhammad Waris Farooka, Hassan Sarwar, Awais Amjad Malik, Asad Ali Toor. Modified Limberg's flap versus primary closure for treatment of pilonidal sinus disease: A comparative study J Pak Med Assoc Nov 2014; 64(11):1270-3.
35. Muhammad Waqas Raza, Syed Fahad Ali Zaidi, Afzaal Amin Mughal, Haroon Rasheed, Aurangzeb Khan, Saleem Shahzad Gondal, Waseem Iqbal Sheikh. Limberg flap for pilonidal sinus J Rawal Med Coll Jul - Dec 2012;16(2):132-4.
36. Anthony P Sclafani, MD; Chief Editor: Arlen D Meyers, MD, MBA. Rhombic Flaps Treatment & Management. http://emedicine.medscape.com/article/879923-treatment#d10. Updated September 02, 2015.