

Open excision with secondary healing versus rhomboid excision with Limberg transposition flap in the management of Sacrococcygeal Pilonidal Disease

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Abstract

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 (SPD).

Methods: A prospective, analytical, comparative study using randomized controlled trial (RCT) was conducted at Liaquat University Hospital (Jamshoro) & Fatima Hospital-Baqai Medical University (Karachi), from June 2004 to July 2007. In total 49 patients, who either underwent open excision and secondary healing (group A: 25 patients) 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 SPD. The exclusion criteria were: cases with incomplete data and those lost to follow-up.

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 SPD (JPMA 59:157; 2009).

Introduction

Sacrococcygeal pilonidal sinus disease (SPD) is a relatively common condition that usually affects young, healthy and hairy males.^{1,2} It is an important health problem because it causes work loss.³ Multiple subcutaneous sinuses or abscesses containing hair characterize the disease. Current consensus favours the acquired etiology. Continuous friction generated in the depths of natal clefts, tend to drive the hair subcutaneously, initiating a foreign body reaction. This is superimposed by secondary infection with abscesses that erupt spontaneously forming multiple discharging sinuses.⁴

The management of this indolent but distressing condition is quite challenging due to infections, delayed wound healing and high rates of recurrence.^{2,5} The optimal surgical method should be simple, associated with short hospital stay and low recurrence rates.³ A number of surgical options are available. The simplest are incision and drainage, laying open,⁶ open excision,⁷ excision and primary closure.⁸ The more complex ones include Bascom's,⁹ Kardaykis^{10,11} and rhomboid excision with Limberg flap.^{11,12} 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%.¹³⁻¹⁵ These high recurrence rates are attributable to a persistence natal cleft in the midline, which provides a portal for hair entry. Once the hair are inside, the vicious circle of abscess formation and discharging sinuses begins.¹⁶

All of these complex techniques are aimed to prevent recurrence by reducing the presence of natal cleft by placing the suture line away from intragluteal sulcus, hence are associated with early wound healing and low recurrence rates.

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.

Patients and Methods

This study was conducted simultaneously at Liaquat University Hospital (Jamshoro) & Fatima Hospital-Baqai Medical University (Karachi), from June 2004 to July 2007. 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, who underwent open excision and secondary healing. Group B had 24 patients, subjected to rhomboid excision and Limberg transposition flap. The inclusion criteria were all patients with primary or recurrent SPD. The clinical presentation included chronic discharging sinus, pain, recurrent abscess formation and bleeding. The exclusion criteria were: cases with incomplete patients' data and

patients who were lost to follow-up.

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.

Operative Procedure

All the patients were operated under general or spinal anaesthesia. Antibiotic prophylaxis was done, using 1gm of intravenous Cefotaxime at the time of induction of anaesthesia. The dose was repeated at six hours interval twice in post-operative period.

Once anaesthetized, patients were placed in Jack-knife position with hips strapped apart. The operative area was shaved. Skin was prepared and draped. Methylene blue was injected in the sinus tract using 6 Fr feeding tube.

Patients in group A underwent excision of ellipse of skin incorporating all the diseased tissue. Once haemostasis was secured, the cavity was packed with wick soaked in antiseptic ointment (polyfax). Postoperatively, the dressing was changed daily after washing the wound with normal saline. Patients were discharged on 5th-7th postoperative day and called on alternate days for change of dressing, till complete epithelialization of the wound. They were then followed at 1-3 months interval for atleast 18 months.

In group B patients, a skin marker was used to define the proposed flap and the area of the skin to be excised. Rhomboid excision of the tissue was done incorporating the whole sinus tract and extending deep into pre-sacral fascia. The Limberg flap was then rotated (transposed) from the gluteal fascia to the area excised. Subcutaneous tissue was sutured using polyglactin 910 2/0 suture and skin by silk 3/0 suture (Figure 1). One or two suction drains were placed beneath the flap as the situation

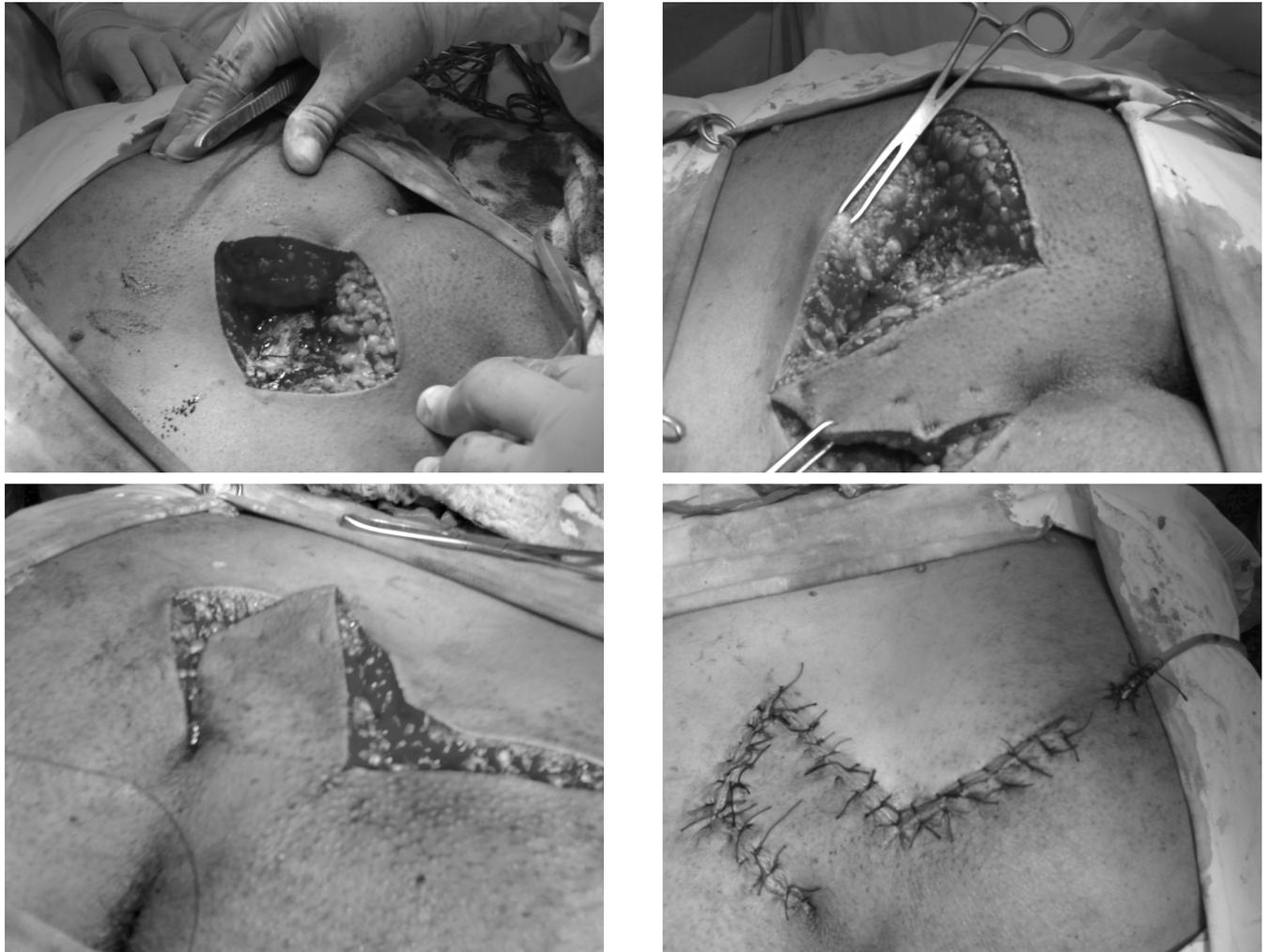


Figure 1: Steps of Limberg flap technique.

warranted. The drains were removed after discharge dropped to less than 30 ml per day. Once the drain was taken out patients were discharged from the hospital usually on 3rd-6th day. Skin sutures were removed on 10th post-operative day. Patients were advised to maintain good hygiene. The follow-up schedule included a monthly follow up for 3 months and a quarterly follow-up for atleast 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 verbal rating scale (VRS). 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. The inferential statistics were calculated using χ^2 test at 5% level of significance.

Results

Group A consisted of 25 patients, 24 males and one female. Mean age was 26.84 ± 6.128 years (range 18-40). In group B (24 patients), females were three and 21 were males with a mean age of 26.04 ± 4.016 years (range 19-37). Although the operative time was longer in Group B patients (35 minutes vs 60 minutes), the severity of pain on VRS score was significantly reduced in this group ($p = 0.003$) [Figure 2]. Mean

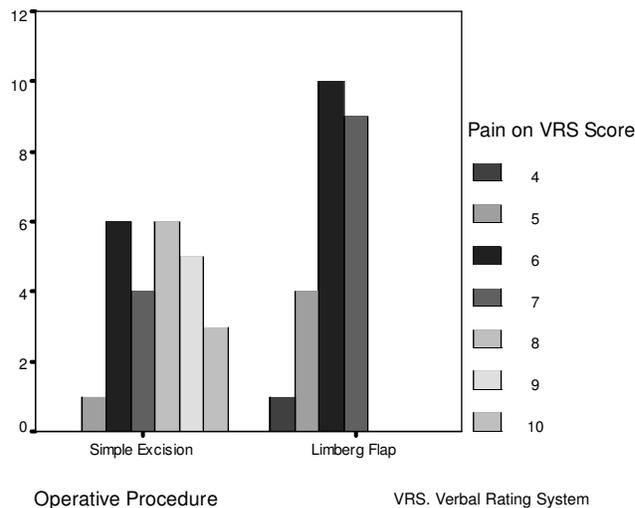


Figure 2: Pain Scoring Chart.

hospital stay of patients in group-A was 5.68 ± 1.25 days (range, 4-8 days). While in group-B, the mean hospital stay observed was 4.04 ± 1.12 days (range, 3-6 days). This was statistically significant.

The mean time for complete healing of wound after rhomboid excision and Limberg flap was 20.13 ± 8.99 days (range 15-60 days). This was markedly increased in patients who underwent simple excision (mean 120.08 ± 31.59 days, and range 60-180). Morbidity developed in 2 patients in

group B (wound infection, 1; flap oedema, 1) and in 7 patients of group A (wound infection, 5; seroma, 1 and wound dehiscence, 1, $p = 0.196$). The average period of follow up was 18 months (12- 24 months). During this period, 7 patients in group-A reported recurrence, 4 were lost to follow up whereas in group B only one patient came back with recurrence.

Discussion

High chance of cure with minimum discomfort along with low complication rates of wound infection and recurrence is the main aim behind the management of pilonidal sinus. The surgery should also avoid prolonged hospital stay and incapacity to resume work for a longer period.

Surgical treatment of pilonidal disease includes open excision, excision with primary closure, just lay open, and excision and flap closure. Open excision technique requires greater wound care and prolonged hospital stay. Wound breakage is another complication, observed due to premature closing of skin edges in a premature wound. Bascom⁹ in 1998 reported that pilonidal abscess never begins on a convex surface and reducing the depth of concave fold is associated with high chances of permanent cure.

Hence, with all the controversies about best surgical technique for the treatment of pilonidal sinus, an ideal operation should be simple, should make hospital stay as minimal as possible, should not be incapacitating for a long period and should have a low recurrence rate. The Limberg flap is one of the transposition flap used after the excision of pilonidal sinus. It has proven efficacy in the management of both primary and recurrent disease.¹⁷ 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.^{2,18}

One recognized problem associated with flap construction is early development of seroma and haematoma formation. This predisposes to wound infection and flap failure. To prevent this, insertion of suction drainage has been advocated by many centers. However, a study published by Erdem et al, suggested no considerable difference in complication rates between two groups who underwent Limberg flap rotation with or without suction drainage.¹⁹ Different series have reported wound infection rates of 1.5-7%.^{15,18} In the present study, it was 8% with Limberg flap (group B) whereas in those patients who underwent open excision (group A) it was increased to 28%.

In our series the patient perceived less pain after Limberg procedure (group B) because the skin cover was

provided at the place of excision whereas it was more when the wound was left open for secondary healing (group A). We also observed that the total duration of hospital stay was shorter in patients who underwent Limberg flap technique as compared to those in group A. Urhan et al¹⁴ and Bozkurt & Tezel¹² had reported a mean hospital stay of 3.7 days and 4.1 days respectively. This is similar to what we have observed in our study. 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 an open wound.

Patients with simple excision technique had to stay away from resuming their work/routine for a longer period as the wound takes more time to heal by secondary intention. From this observation, one can infer that due to shorter hospital stay and early wound healing, a patient will have a shorter period of incapacitation.

If the disease recurs, it commonly presents in first 2-3 years. In our study the recurrence rate observed was 4% with Limberg flap which is similar to Katsoulis²⁰ et al, but more as compared to reported by Mentès et al (3.1%)² & Akin et al (2.91%).¹⁸

Conclusion

Despite of longer operative time and demanding surgical skills, Limberg flap due to its low rates of recurrence and comparatively few complications is preferable over simple excision and secondary healing in the management of sacrococcygeal pilonidal sinus.

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