



Rhomboid Flap Reconstruction for Pilonidal Sinus Disease: An Experience

General Surgery

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ABSTRACT

Objective: to study the outcome of Limberg flap reconstruction in pilonidal sinus disease

Study Design: Prospective study

Place and Duration: The study was conducted at ESIC Medical college Hospital, Hyderabad from April 2016 to March 2017.

Materials and Methods: 20 patients with pilonidal sinus disease underwent rhomboid excision with Limberg flap. Duration of operation, postoperative pain, duration of hospital stay, postoperative complications, and time to recurrence were noted. Follow up of all patients was performed on an out-patient basis, every month for first three months.

Results: There were 18 males (90%) and 2 females (10%), with a mean age of 26.2 years. The mean duration of symptoms was 2.25 months. Mean operative time was about 44.4 minutes. Mean pain score (VAS scale) was 3.65. The mean length of hospital stay was 1.75 days and most patients returned to work within 3 weeks. Three patients presented with post-operative complications

Conclusion: Limberg flap technique is an effective procedure for pilonidal sinus disease associated with fewer complications and an easily mastered technique.

KEYWORDS:

Pilonidal sinus, Limberg flap, Rhomboid excision, Transposition flaps

Introduction

Pilonidal sinus is a relatively common condition affecting men twice as often as women. The estimated incidence is 26 per 100,000 people¹. It is most frequently seen in the sacrococcygeal region². However, it has also been described in the axilla, suprapubic area, periumbilical zone and between the fingers of the hand in the barbers.³ It usually presents as a cyst, abscess, or one or more sinus tracts with or without discharge in the upper part of the natal cleft.¹

Hair tufts within the sinus, seen in about 60% of the cases, are now considered important secondary outcome in the evolution of the sinus.⁴

Male gender, obesity, smoking, family tendency, poor body hygiene, sinus size, and the surgical procedures performed have been sustained in a number of studies as primary risk factors for postoperative complications and recurrence.⁵

The management of pilonidal sinus disease remains controversial, and gold standard treatment modality has yet to be established.³ The simplest is incision and drainage, laying open, open excision, excision and primary closure. The more complex ones include Bascom's, Karydakakis and rhomboid excision with Limberg flap.⁶

Limberg procedure is a safe and reliable technique in the treatment of sacrococcygeal pilonidal sinus disease, with low complication and recurrence rates if performed according to appropriate surgical principles⁷. In this prospective study, the experience with Limberg flap technique in treatment of pilonidal sinus disease is presented.

Materials and Methods

From April 2016 to march 2017, 20 patients with pilonidal sinus disease were operated by rhomboid excision and Limberg flap in Surgical Unit-I ESIC Medical college and hospital, Hyderabad. Patients with primary & recurrent pilonidal sinus disease underwent this operation. The clinical presentation included chronic discharging sinus, pain and recurrent abscess formation. An informed consent was taken and patients were counseled about the merits and demerits of the procedure. All patients underwent operation in the prone position under spinal anaesthesia. Duration of operation, postoperative pain, duration of hospital stay, postoperative complications, and time to recurrence were noted.

Patients were advised to return to normal activities after removal of sutures, after about 10 days. Follow up of all patients was performed on an out-patient basis, every month for first three months.

Operative period was recorded from the time of incision to the completion of wound closure. Postoperatively, pain was evaluated by visual analog scale (VAS). The postoperative hospital stay was noted with the day of surgery being day zero.

Wound infection was defined as purulent discharge from the incision line accompanied by microbiological growth in the wound culture. Flap necrosis was defined as complete necrosis of the flap. Development of hematoma, wound, seroma, and wound infection was defined as minor complications, while flap necrosis was defined as a major complication

Results

The study consisted of 18 males (90%) and 2 females (10%), with a mean age of 26.2 years (range 19–36 years). The mean duration of symptoms was 2.25 months (range 1–4 months). Mean operative time was about 44.4 minutes (range 40–50 minutes). Mean pain score, as calculated by VAS, was 3.65 (range 3–5). The mean length of hospital stay was 1.75 days (range 1–3 days) and most patients returned to work within 3 weeks. The distribution of patients according to demographic characteristics, history of the disease, operative time, pain score and duration of hospital stay are given in Table I.

Table I: Demographic characteristics

Characteristics	Total (n=20)
Age (years)	26.2 (19–36)
Gender	
Male	18(90%)
Female	2(10%)
Duration of symptoms (months)	2.25 (1–4)
Operative time (minutes)	44.4 (40–50)
Pain score (VAS)	3.65 (3–5)
Postoperative hospital stay (days)	1.75 (1–3)

Seventeen patients (85%) had full primary healing without any complication. Two (10%) patients developed seroma formation after

discharge from hospital. One (5%) patient developed wound infection. However all three healed completely with conservative treatment. No patient presented with recurrence, probably owing to shorter periods of follow up. None of the patients had a readmission due to pilonidal sinus disease so far. The distribution of complications is shown in Table II.

Complications	Total
Hematoma	---
Epidermolysis	---
Wound separation	---
Wound infection	1(5%)
Seroma	2(10%)
Flap necrosis	---
Postop recurrence	---

Discussion

Surgical Procedure: For this operation the patient was placed prone. Preoperative hair shave of the part was done on the day of surgery, and all patients received ceftriaxone 1 g intravenously at time of anesthetizing the patient. Buttocks were retracted using adhesive tape to obtain a better visualization of the operative field. After skin preparation, the anus was excluded from the area with surgical drapes.

A rhombic area of skin and subcutaneous fat was excised which includes both the midline pits and any lateral sinus extensions. The long axis of the rhomboid was in the midline and its shape determined by angles of 60 degrees at A and C and 120 degrees at B and D. Accuracy is essential for success, and the rhomboid of tissue to be excised and the flap was measured and marked with indelible pen at the start of surgery. First, the line A-C was drawn and its length measured. C should be adjacent to the perianal skin, and A was placed so that all diseased tissue included in the excision. The line B-D transected the midpoint of A-C at right-angles and was 60 per cent of its length. It was this ratio of lengths which determined the correct shape to the rhomboid. The flap was planned so that D-E was a direct continuation of the line B-D and of equal length to the incision B-A to which it was sutured after rotation. E-F was parallel to D-C, and of equal length. After rotation, it was sutured to A-D. (Figure 1&2) The skin and subcutaneous fat to be removed was excised down to, but not including, the deep fascia. The flap was raised so that it included skin, subcutaneous fat and the fascia overlying gluteus maximus. It was then rotated to cover the midline rhomboid defect, and the defect thus created was closed in a linear fashion. Deep absorbable sutures, to include fascia and fat, were placed over a vacuum drain and then finally the skin was closed with interrupted sutures. This operation produced a tension-free flap of unscarred skin in the midline.



Figure 1&2. Limberg flap the planning and marking of the Incision, as described in the text, is essential for successful healing.

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.

The main objective behind the management of pilonidal sinus disease always remained a high probability of cure with minimum discomfort along with low complication rates of wound infection

and recurrence. Reducing the depth of concave fold is associated with high chances of permanent cure as described by Bascom⁷ in 1998.

The Limberg flap is one of the transposition flaps used after the excision of pilonidal sinus. Important advantages of the Limberg flap procedure include quicker healing time, shorter hospital stay, earlier return to daily life, low complication and recurrence rate.^{3,8}

The mean operative time (44.4 minutes) was shorter in our group of patients, as compared to 60 minutes operating time, documented by Accra et al⁹. In our study, patients perceived less pain as seen by low values of VAS. This is consistent with the findings of a study conducted by Jamal et al.⁶ The main reason is probably the provision of adequate skin cover at the place of excision and less stress at the wound edges.

Urhan et al¹⁰ and Bozkurt & Tezel¹¹ reported a mean hospital stay of 3.7 days and 4.1 days respectively. The total duration of hospital stay was observed to be shorter in our study as compared to them. One can infer from this data that a patient will suffer a shorter period of incapacitation, owing to shorter hospital stay and early wound healing.

Early development of seroma and haematoma formation is a well-recognized problem associated with flap construction. This predisposes to wound infection and flap failure⁶. Insertion of suction drainage has been recommended by many centers. We also employed negative suction drainage in our patients to prevent this group of complications. However, Erdem et al¹² proposed 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%^{8,13}. In the present study, only one patient (5%) developed wound infection. In our Limberg flap, results matched to the previous studies.

Literature has documented a recurrence rate of 4%, 3.1% & 2.91%, associated with Limberg flap, in different series of Katsoulis et al¹⁴, Mentis et al³ & Akin et al⁸ respectively. In our study none of the patient had recurrence of the disease, probably due to shorter periods of follow up.

Conclusion

Despite longer operative time and demanding surgical skills, rhomboid excision with Limberg flap is a preferred treatment for pilonidal sinus disease due to its low rates of recurrence and comparatively few complications. The technique can be mastered easily and provides an effective procedure for primary as well as recurrent disease.

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