Original Research Article

Modified Limberg Flap in pilonidal sinus - Our experience

ABSTRACT

Pilonidal sinus disease is common especially in young adult males. Although various surgical procedures have been described for Pilonidal sinus disease, the best surgical technique is still controversial. Modified Limberg flap reconstruction is still one of the most commonly performed procedures for Pilonidal sinus disease because of its low complication and recurrence rate and higher postoperative quality of life.

The aim of this study was to evaluate advantages and long-term results of Limberg flap surgical technique.

Methods From September 2016 to September 2022, patients 27 all male with primary or recurrent Pilonidal sinus disease were operated on under spinal anesthesia by rhomboid excision and modified Limberg flap. Follow-up examinations were made at the end of the 4 weeks and 3, 6, 12, 18, and 24 months after surgery.

Result Average age of Patients was 24 ± 4.2 years with a range of 15-43yrs.. The mean duration of hospital stay was 4.51±2.85 days with a range of 2-19 days. Total wound dehiscence and flap necrosis did not occur in any patient. None had recurrence at the end of the follow up period. The mean duration of symptoms was 10 months, with a range of 2 months to 36 months. The most common symptoms were local pain, swelling, and a seropurulent discharge.

Keywords Pilonidal sinus disease. Limberg flap

INTRODUCTION

Pilonidal sinus is chronic, acquired condition of adult age group mostly seen in the sacrococcygeal region. The estimated incidence is 26 per 1, 00,000 population. Men are affected more often than women(1). It is rare both before puberty and after the age of 40 years. Management of this disease remains controversial and gold standard surgical treatment has not yet been described. Since the most important predisposing factors for the development of Pilonidal sinus is the existence of a deep natal cleft (2). Flap reconstruction techniques theoretically should eradicate the etiology of the disease by flattening the intergluteal sulcus (3). Among these flap techniques, the most commonly used is the rhomboid excision with Limberg flap. With this technique a tension-free repair is made using a wide, well- vascularised flap. It is reported as one of the best treatment methods, with and a recurrence rate of 0-5% (4).

We conducted a prospective observational study, to evaluate the results of rhomboid excision and modified Limberg flap closure in the management of the Pilonidal sinus, in our hospital.

METHOD

Form September 2016 to September 2022, 27 male patients were treated with modified Limberg flap repair (Mentes modification) under regional anesthesia.

Operative Technique

All patients were admitted to the hospital the night before operation and took a shower using a surgical scrub in the hospital on the same night. All patients had enema one in the night and other one 4 h before operation. The sacrococcygeal area was shaved 2 h before surgery with clipper

Patients were operated on under spinal anesthesia in the prone position, with buttocks strapped apart. The area to be excised was mapped-out and the flap was designed. The operative fields were prepared with 10% povidone-iodine. As prophylaxis 1.5 g cefuroxime sodium was administered intravenously in a single dose half an hour before start of procedure. 0.5-1ml of methylene blue without pressure was injected through the most prominent opening of the Pilonidal sinus to help define the margins of the disease tissue. Using a surgical blade and electrocautery, a wide rhomboid-shaped excision was done including the presacral fascia, taking care to remove all sinus tracts en bloc. The flap was completely mobilized from the gluteus maximus muscle to prevent tension. A right-or left-sided fasciocutaneous rhomboid transposition flap, incorporating the gluteal fascia, was

tailored, fully mobilized on its inferior edge, and transposed medially to fulfil the rhomboid defect without tension. . Single 10 F negative suction multiple-hole closed suction drain was placed below the flap, on to the presacral fascia. The modified flap reconstruction as described by Mentes was used where in the rhomboid excision is tailored asymmetrically to place the lower pole of the flap 1-2 cm lateral to the inferior midline. Limberg flap was secured. The subcutaneous layer was approximated with 3/0 polyglycolic and interrupted sutures, and the skin was closed with 3/0 polypropylene interrupted matters sutures. Pressure wound dressing was applied and removed on the 2nd postoperative day. The patients were prohibited from lying on their back for the first 24 h. Their movements were restricted the other days in the hospital drain was removed on 3rd post-operative day, when drain output was less than 10ml/24hr. Skin sutures were removed on the 15th postoperative day. Following data was entered in predesigned Performa: gender, age, duration of symptoms, past history of drainage, type of disease (primary or recurrent), body mass index, site of opening, and duration of hospital stay. Follow-up examinations were made at the end of the 2 weeks and 3, 6, 12, 18 and 24 months after surgery. Complication including wound infection and time required for return to daily activities, and recurrence rates were all recorded. Patients with acute inflammation and or abscess formation were excluded. All data were expressed as the mean ± standard deviation (SD) and percent.

Ethical clearance for the study was obtained from the institute ethical committee and all provisions of the declaration of Helsinki were followed in this study.

RESULTS

Average age of patients was 24 ± 4.2 years, range 15-43years (Table 1) The main symptom was pain in 23/27(85.18%) patients. Symptom description is detailed in Table 2. The mean duration of symptoms was 13 months, range 2-140 months. On examination most common finding was multiple midline pits in 15/27. Other findings are detailed in table No 3. The mean duration of hospital stay was 3.2 ± 2.85 days, range 2-19 days. Median time for removal of drain was 3 days. Mean time to return to normal activity was 16.7 days. Complications are tabulated in table 4. Total wound dehiscence and flap necrosis did not occur in any patient. None had recurrence at the end of the follow up period.

DISCUSSION

Reconstruction of the defect with Limberg is easy to design and perform. It flattens the natal cleft with large vascularised pedicle (5). This in turn maintains good hygiene, reducing 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 Bascom and Karydakis (6).

The length of hospital stay is variable in studies. In studies conducted by Topgul et al it was 3.1 days (7). In our study mean length of hospital study was 3.2 days. In a study conducted by Erden et al. hospital stay was 3.5 ± 1.11 days (8). In the study conducted by Daphan et al. average hospital study was 5.9 days (9). In the literature, pilonidal sinus appears to have a higher frequency in males (male: female ratio range. In present study all patients were males.

The age distribution was similar to that reported in the literature. The reported recurrence rate for Limberg flap varies from 0.8 to 27%. Topgul et al. operated on 200 patients and recurrence was noted 2.5% (7). Daphan et al. operated on 147 patients with a median follow-up time of 13.1 months, and recurrence was noted 4.8% (9). Ertan et al. determined a recurrence rate of 2% in the Limberg flap method and 12% in the primary closure method, and stated that the Limberg method resulted in a better outcome with respect to recurrence, complication, time required for wound healing, time required to return to work, and general health conditions (8). In their study Ahmet et al. have shown recurrence rate was 7.1% in classical Limberg flap and 9.2% in excision with primary closure (p value 1.00). In our study, one patient has recurrence (10).

In a study by Katsoulis et al. Out of 25 patients 16 had complication but none had recurrence in their study on 110 patients (11). Aslam et al. Reported complication in 5 patients and one recurrence (12).

In a study conducted by Aithal et al. Out of 30 patients 6 had complication. No recurrence was reported during then follows up study period (13).

CONCLUSION

In conclusion, low recurrence rates, short hospital stay, and limited time off from work make rhomboid excision and repair with the Limberg transposition flap one of the most appropriate methods for the treatment of sacrococcygeal pilonidal sinus,

Our treatment of choice is the Limberg flap. We try to use this technique in all cases of pilonidal sinus (both primary and secondary), even if the sinus has one opening and seems to be a relatively minor one, because we believe it is important to flatten the natal cleft. We believe that the Limberg procedure is a very effective, safe and reliable technique. Patient comfort is very satisfactory, time to healing and return to full activity are relatively short, and compared to the conventional excision techniques and other plastic surgery procedures, it has very low and acceptable complication and recurrence rates.

Table 1: Demographic profile

Results

Average age (years)	24±4.2
Mean hospital stay (days)	3.2 (1-7)
Median time for removal of drain (days)	3 (2-7)
Return to normal activity (days)	16.7 (1-36)
Average follow-up	18 months (6-38)

Tables 2: List of symptoms

Symptoms	
Mean duration of symptoms	13 months (2 months-36 months)
Pain	23
Chronic discharge	16
Swelling	12
Abscess	2

Table 3 : Findings of the study

Finding on examination	
Single midline pit	8
Multiple midline pits	15
Lateral sinuses	4

Table 4: Complications

Complication and Result	**No. of Cases (%)**
Urinary retention	3
Headache	4
Seroma	2
Wound detachment (early failure)	1
Recurrence (late failure)	1
Hematoma	1
Wound infection	1
Dysesthesia/ hypothesis	3

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