

How to Cite:

Aslam, V., Raza, A. A., Abbas, K., Choudary, A., Khan, A. G., & Hussain, S. A. (2023). Treatment of pilonidal sinus with rhomboid excision and Limberg flap operation. *International Journal of Health Sciences*, 6(S8), 6965–6972. <https://doi.org/10.53730/ijhs.v6nS8.14092>

Treatment of pilonidal sinus with rhomboid excision and Limberg flap operation

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Abstract---Pilonidal sinus is a widespread condition. There have been several surgical methods described for treating the sacrococcygeal pilonidal sinus. The Limberg flap after rhomboid excision is the method that is most frequently utilized. By flattening the natal cleft, a big, well-vascularized flap is used to create a tension-free repair. The best treatment options are said to have a recurrence rate of 0–5% and complication rate during surgery of 0–16%. Aim: This study was held to assess patient characteristics and treatment outcomes for pilonidal sinus patients who had rhomboid excision and reconstruction with Limberg flap in our setting. Methods: Information was collected retrospectively by analyzing the records of patients who were done with rhomboid excision and reconstruction with Limberg flap for sacrococcygeal pilonidal sinus in General Surgery department, Lady Reading Hospital, Peshawar during the period from January 2020 to December 2022. Results: The study included 40 patients in total, 34 (85%) men and 6 (15%) women. The mean age was 25.10. (range 18–45 years). The mean stay in hospital was 4.2 days, with 3 to 7-day of

range. The primary disease affected 38 out of the 40 individuals, and a recurring disease affected 2 patients. Though, 18 (45% of the patients) had previously undergone abscess incision and drainage. Ten patients (25%) experienced infections at the surgery site. The recurrence was seen in 3(7.5%) of patients. Conclusion: The reconstruction with Limberg flap following rhomboid excision of the pilonidal sinus is a successful and effective procedure.

Keywords---pilonidal sinus, Limberg flap, sacrococcygeal pilonidal sinus.

Introduction

Pilonidal sinus is a communal disease. It typically appears in a young individual with a natal cleft containing a lot of hair in the sacrococcygeal region at its midline¹⁻². Because of its significant morbidity and pain, it is an acquired condition³⁻⁴. There are 26 cases per 100,000 people, according to the studies. Cysts, abscesses, or sinus tracts with or without drainage are the most common presentation types. As compared to women, men are affected more⁵⁻⁶. The packing after excision, marsupialization, primary closure after excision, flap techniques like the modified Limberg transposition flap, Limberg flap, rotation advancement and elliptical rotation flap are among the surgical approaches for treating the pilonidal sinus at the sacrococcygeal region⁷. The Limberg flap after rhomboid excision is the method that is most frequently utilized. By flattening the natal cleft, a big, well-vascularized flap is used to create a tension-free repair. The best treatment options are said to have a recurrence rate of 0–5% and complication rate during surgery of 0–16%⁸.

Men with hirsute skin often have a pilonidal sinus. The aetiology of this condition appears to be significantly influenced by the existence of hair in the gluteal cleft⁹⁻¹⁰. A deep natal cleft provides a favorable atmosphere for bacterial contamination, perspiration, hair penetration and maceration. Local trauma or irritability, obesity, family history, sedentary life style, and poor cleanliness are other risk factors. It is generally acknowledged that a pilonidal sinus develops as a result of shed hair shafts penetrating the epidermis. This finally results in a place that is acutely or chronically infected¹¹⁻¹². A clinical examination used to make the diagnosis reveals several pits in natal clefts and sinuses in varied positions¹³. This study was held to assess patient characteristics and treatment outcomes for pilonidal sinus patients who had rhomboid excision and reconstruction with Limberg flap in our setting.

Methods

Information was collected retroactively by analyzing the records of patients who were done with rhomboid excision and reconstruction with Limberg flap for sacrococcygeal pilonidal sinus General Surgery department, Lady Reading Hospital, Peshawar during the period from January 2020 to December 2022. The following information was recorded about the patient: length of symptoms, demographics, prior incision and drainage of the pilonidal abscess, presenting

symptoms, hospital stay, prior pilonidal surgery, surgical site infection (SSI), duration of final healing, second interventions like suturing and suture removal, need for multiple dressings, recurrence and follow-up. SSI was diagnosed on the basis of fluid discharge from the site, an erythematous lesion, the necessity to remove sutures to drain the pus, and the requirement for frequent dressing. The removal of sutures lacking any severe wound complications, it was considered to be fully healed. (Fig 7) The dates of final follow-up date were noted at the time the sutures were removed. At the most recent follow-up, healing, wound complications, and recurrence were noted. SPSS 20 was used to analyse the data. Categorical data were analysed as a percentage, whereas continuous data were given as a mean with range. The institutional review board granted approval.

Procedure

Spinal anaesthesia was used during the procedure. The surgical location was marked before surgery as seen in Figure 1. The procedure was done in the prone position placed on his or her back, with the buttocks secured to the side of the surgical table and separated by adhesive tapes. The midline pits were enclosed by a line AC (C towards the anal region). At the midway of AC, a second line BD (60 percent of the AC length) was drawn at a 90-degree angle, keeping the lengths of both sides equal. The points ABCD were all connected to one another. This technique produces a rhombic region with two angles of 60 degrees and 120 degrees.

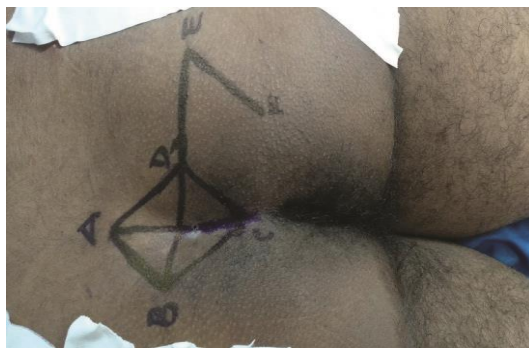


Fig-1: preoperative marking of surgical site

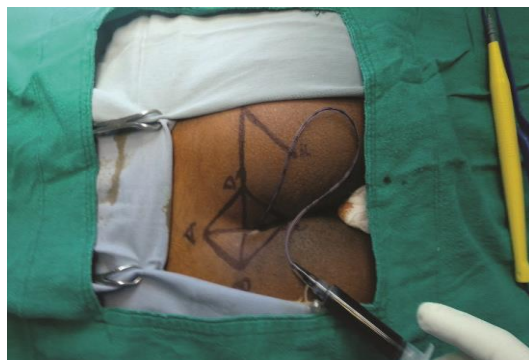


Fig-2: Sinus tract injected with Methylene blue

To prevent any sinus tracts from being left behind during excision, methylene blue was administered into the sinus tracts using a feeding tube to colour them all for complete excision. Figure 2. The deep fascia was reached after incising the skin and subcutaneous tissue sideways the highlighted lines. The removed specimen's rhombic region encompassed the pilonidal sinus and all of its extensions. Fig 3. The flap is then turned to fill the midline rhomboid defect and raised to include subcutaneous fat, the fascia overlaying the gluteus maximus and skin. Fig 3 and 4.

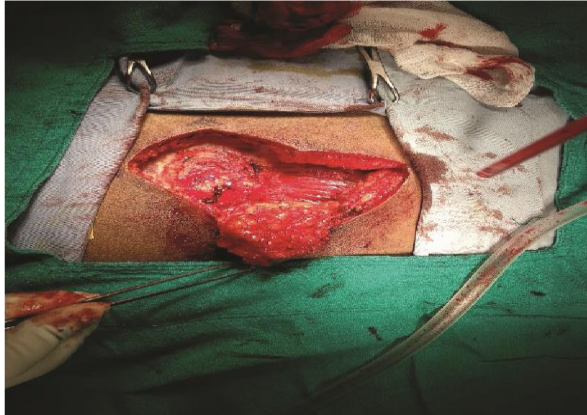


Fig-3: Flap is raised



Fig-4: Flap rotation to cover midline rhomboid

The deep absorbable sutures were applied above the vacuum drain that contains fat and fascia and after that interrupted sutures were applied to close the skin. Fig 5. The procedure produces a scar-free skin and tension-free flap. Figure 6.



Fig-5: Skin closure with interrupted sutures



Fig-6: Tension-free flap of unscarred skin in the midline

Injection of cloxacillin was administered as prophylaxis to treat staphylococcus aureus and that it was maintained orally the following day for seven days. The suction drain was removed when the daily drain output was under 10 ml. With advice of operating surgeon's, sutures were removed during follow-up. The patient was instructed to avoid lying on his back until the incision had healed sufficiently.

Results

The study included 40 patients in total, 34 (85%) men and 6 (15%) women. The mean age was 25.10. (range 18–45 years). The mean stay in hospital was 4.2 days, with 3 to 7-day of range. The primary disease affected 38 out of the 40 individuals, and a recurring disease affected 2 patients. Though, 18 (45% of the patients) had previously undergone abscess incision and drainage.

Symptoms	Frequency	Percent
Discharge	19	47.5
Swelling	4	10
Pain + Swelling	2	5
Swelling + Discharge	4	10
Pain + Discharge	8	20
Pain, swelling, and discharge	3	7.5
Total	40	100

In 19 cases (47.5%), the most typical sign was discharge from wounds in natal cleft. Table 1.

The median time to heal a wound completely was 13.10 days (range 10- 20). Ten patients (25%) experienced infections at the surgery site. The recurrence was seen in 3(7.5%) of patients. To drain the pus, four individuals had their sutures removed early. These patients underwent numerous dressing changes up till the secondary intention full wound healing completed. No patient needed delayed wound suturing. Based on the continuing discharge from minor wound areas even after the majority of the lesion had healed, two individuals (5%) suffered recurrence. These patients do not come for follow-up.

Discussion

Rhomboid excision and Limberg flap surgery are among the many surgical procedures that have gained popularity in recent years¹⁴. This offers a number of benefits, including a decrease in complications and recurrence rates. The natal cleft is made flat with the locally vascularized flap, and the procedure is completed safely¹⁵. When compared to a technique like a straightforward excision, closure, and marsupialization, this flap operation eliminates a midline scar. In terms of issues and recurrences, a few series that discussed this method for treating the pilonidal sinus were comparable to our study. We had a 7.5% recurrence rate and 25% wound complications¹⁶. In a study by Katsoulis, which had 25 patients, 4 (16%) of them experienced complications of wound discharge but without recurrences¹⁷. 110 individuals were studied by Aslam, with 5 experiencing problems and 1 experiencing a recurrence. Mentes and Urhan reported favourable results in all healed patients with recurrence rates of 3-5%, respectively¹⁸⁻¹⁹. In our study, men were clearly in the majority. 85% of the 40 patients in total were men. Several investigations have described similar gender distributions. In one RCT, in 2017, there were 144 males vs. 3 females, although Surrel in 2016 reported a 3:1 male predominance²⁰⁻²¹. We had 25% SSI; the most of these simply needed local therapy, such as dressing and suture removal, and they eventually healed with minimal morbidity. This study has comparable rate of wound infections since this wound fall into the category of a contaminated to dirty wound and because the SSI rates for contaminated wounds are 17-27%, respectively. In contrast to the 26% SSI in our study, A. Cihan and Can MF and in 2016 reported wound infections in a typical rhomboid flap at 13% and 22%, respectively²²⁻²³. We experienced 2 (5.9%) recurrences at the 56- and 90-day follow-ups. After this follow-up, the patient could not be located, and we were unable to learn about their further medical care.

In recent years, we modified our approach to controlling Pilonidal sinus employing this technique. According to our experience, a sutured wound is easier to manage than an open wound when using other techniques²⁴. Patient compliance with this operation is increased by the overall shorter healing time, decreased number of dressing changes, and less complications. This process is simple to teach and learn and is standardized²⁵. By using the same methodology, all of the operating surgeons in our general surgery unit get results that are consistent. This study has some restrictions that come with being a retrospective study.

Conclusion

The reconstruction with Limberg flap following rhomboid excision of the pilonidal sinus is a successful and effective procedure.

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