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CASE SERIES

Rhomboid Flap Reconstruction for the Treatment of Pilonidal Sinus: A Case Series

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Abstract
Pilonidal sinus disease (PSD) is a chronic inflammatory disease affecting the soft tissue of the sacrococcygeal region and remains a challenging disease for surgeons to treat. With controversies in management to prevent recurrence leading to economic burden to the patient, these cases require special care by expert surgeons. From Jan 2023 to Nov 2023, 10 patients with pilonidal sinus were treated with complete excision of the tract and reconstruction using a rhomboid flap. The factors evaluated included the duration of surgery, postoperative pain, length of hospital stay, and postoperative complications. The patients were followed up on an outpatient basis, monthly for the first three months. The majority of the patients were young males with a mean age of 28 years. The surgery time was 40 to 75 minutes, and the mean operation time was 55 minutes. The stitches were removed after 2 weeks. Among complications, two patients developed mild discharge with infection. In one patient, necrosis at the tip of the flap was noted. We recommend the Rhomboid flap as a method of choice for surgical management of Pilonidal sinus in a postgraduate medical college as it is easy to teach, learn, and perform and gives complete recovery of the patient with negligible recurrence rate.

Keywords: Pilonidal sinus, Bascom procedure, Limberg procedure

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Introduction

The incidence of pilonidal infections and chronic pilonidal sinuses are usually found in the midline of the sacrococcygeal region of young hirsute men with the incidence of disease approximately being 26 per 100,000 population. The hall mark in the pathogenesis of the disease is the presence of hair in the gluteal cleft [1]. The disease rarely occurs in those with less body hair. Other risk factors include obesity, local trauma, sedentary lifestyle, deep natal cleft, and family history. Diagnosis is generally a clinical one; patients usually present with chronic inflammation or a sinus with persistent drainage. They may also present acutely with an abscess or multiple complex subcutaneous tracks. Several surgical procedures have been described to treat pilonidal sinus, each claiming to be the best. But without prospective trials, such claims are just not scientific evidence. Usually, the surgeon decides the treatment plan according to his preference, his perceived recurrence rates, and the patients' ability to be off work and afford treatment. Marsupialisation, Wide excision with laying open of all tracks, the excision of all tracks with primary or secondary closure, and excision with cover by a flap to offset a midline closure through a Limberg procedure, Z-plasty or a Karydakis procedure are the common treatment options [2]. An ideal surgical treatment option for pilonidal disease is still elusive, the most essential factor being tension-free healing with a negligible recurrence rate. The rationale behind selecting a Rhomboid flap in pilonidal sinus is because it maintains continuity of texture, colour, and vascularity with the surrounding tissue, eliciting the most successful aesthetic outcome.

Materials and Methods

This study was conducted from Jan 2023 to Dec 2023 in the Department of Surgery of Mata Gujri Memorial Medical College and LSK Hospital, Kishanganj, Bihar. 10 patients were taken for the study who underwent surgery for pilonidal sinus disease by wide sinus excision followed by rhomboid flap reconstruction procedure. The inclusion criteria were each patient who had undergone operation because of pilonidal sinus and exclusion criteria was patients with acute pilonidal sinus diseases and highly complicated sinuses, past history of pilonidal sinus surgery and history of systemic diseases (DM, malignancy, etc.)

Three patients had a history of perianal abscess drainage in the past. Patients were placed in a jack-knife position with strapping of the buttocks for maximum pull for giving a wide exposure. Preoperative incision and planning were done, and flap lines marked with a sterile marker pen (Figure 1). The marked rhomboid encompassed the pilonidal sinus. The skin incisions (with each side equal in length) were made up to the pre-sacral fascia centrally and to the gluteal fascia laterally (Figure 2), the pilonidal sinus tract was excised in toto until the sacrum or coccygeal bone was exposed. All the hair follicles seen during the excision were removed. A hydrogen peroxide wash was given before flap cover. The flap was raised without undermining the skin up to the presacral fascia (Figure 3). The flap was then mobilised into the defect with minimal tension and primary skin closure was done over a suction drain (Figure 4). The skin

was approximated with 2-0 Nylon, and the excised specimen was sent for histopathology (Figure 5).

Intravenous Metronidazole was given for 2 days, and the drain removed after 72 hours. Skin sutures were removed after the 10th postoperative day. Postoperative sitz bath twice a day was advised, and all postoperative patients were followed up in the outpatient department monthly for 6 months. All the records of the patient were maintained throughout hospitalization including the postoperative course till the date of discharge.

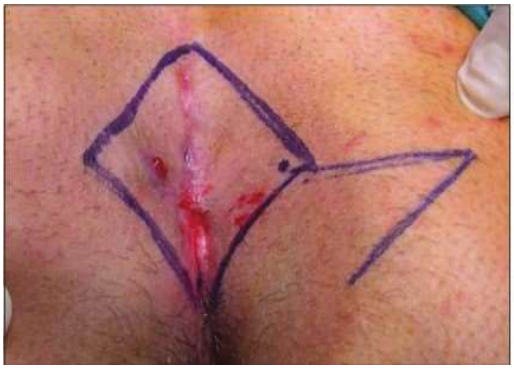

Figure 1. Marking of the rhomboid flap with pilonidal sinus tract

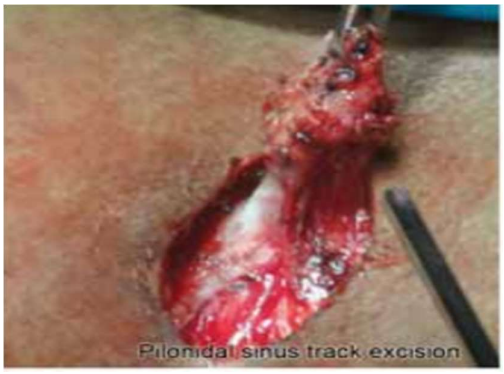

Figure 2. Deepening until presacral fascia

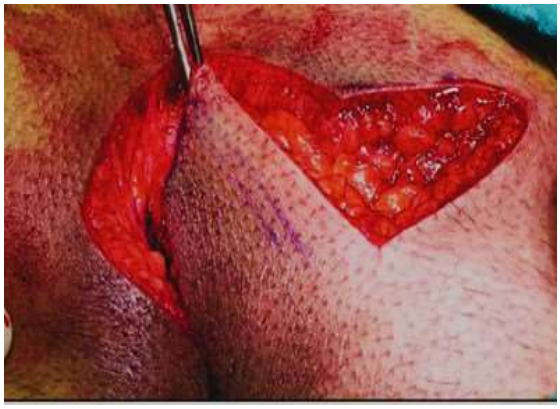

Figure 3. Preparation of the flap

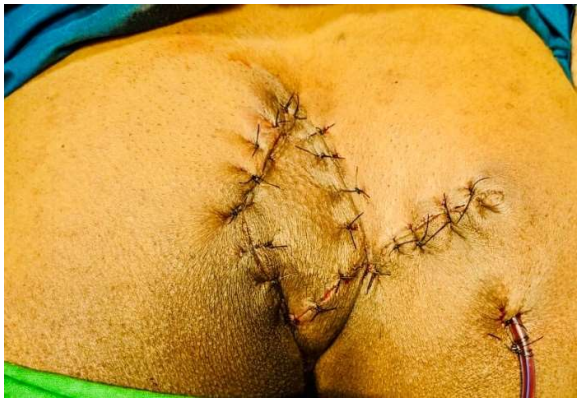

Figure 4. Closure of the flap

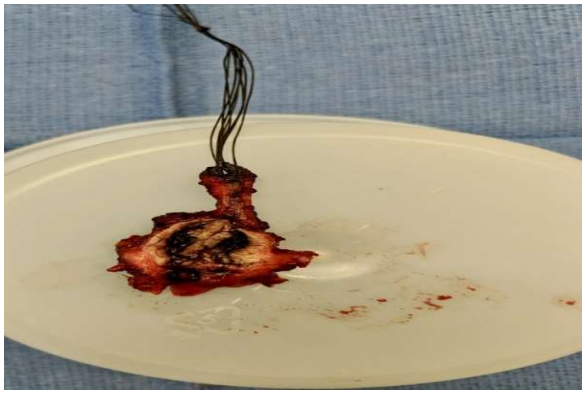

Figure 5. Excised tract with hairs

Results

Our case series consisted of 8 males (80%) and 2 females (20%), with a mean age of 28 years (range 16–50 years) with an average operative time of an hour. Three patients developed mild infection with pus discharge which was treated with Metronidazole for a week. All patients recovered completely except one patient who developed flap necrosis in the tip which healed with conservative management. Most of the patients underwent stitch removal on the 10th day and were advised rest and to avoid sitting for a long duration for the first 2 weeks. All the patients were advised to have a soft cotton pad under the undergarment to prevent soiling of the dress during office work or outside activities. The postoperative course was uneventful and all the patients were completely cured at the time of discharge (Table 1).

Table 1. Postoperative complications

Complications	Number
infection	1
necrosis	1
gaping	0
recurrence	0

Discussion

Though the incidence of pilonidal sinus is 26 per 100,000 population, there is a significant increase of this disease incidence after the Covid-19 pandemic probably due to long hours in sitting posture for online activities, especially among the young generation [2]. According to the latest report, the prevalence of pilonidal sinus is estimated at 6.6% in India with the peak age of incidence at 16 years to 25 years. Males are generally more commonly affected than females and common risk factors are poor hygiene, stiff body hair, obesity, a less bathing habits, and a sedentary lifestyle, especially in those who sit for more than six hours a day [3]. Management requires not only operative management of the pilonidal sinus but also preventing recurrence and complications.

The recurrence rates range from 0.3% for Limberg/Dufourmentel flaps to 6.3% for incision and drainage at 1-year follow-up [4]. A recent study found postoperative wound healing in a case of pilonidal sinus being influenced by the presence of Seborrheic dermatitis, obesity, and psychiatric illness [5].

Given the surgery is being conducted in a postgraduate teaching hospital, it was preferred to perform a rhomboid flap as compared to other choices.

The rhomboid flap is a type of transposition local flap commonly used in the treatment of hidradenitis suppurativa. It is an easy and reproducible surgery, has less

postoperative pain, infection rates, and early return to work with a negligible recurrence rate. The disadvantage of rhomboid flap is in patients with a lower body mass index and with less available skin.

Historically, rhomboid flap design was first described in 1928 by Professor Alexander Alexandrovich Limberg of Leningrad and the first description in English language was a chapter in Modern Trends in Plastic Surgery, edited by Thomas Gibson in the year 1963. It is only after this description, the flap became popular globally [6].

One of the earliest evidence highlighting a randomised controlled trial meta-analysis comparing the rhomboid flap versus primary closure for the defect left behind after excision of sacrococcygeal pilonidal disease on 641 patients found rhomboid flaps significantly cause lower wound infection and dehiscence. The study concluded that the rhomboid flap was superior to primary closure [7].

Finally, the first original research on pilonidal sinus disease was started by Dr AW Anderson in the year 1847, who removed tufts of hair from the sacrococcygeal region of a young man. Currently, Turkey leads globally in the research on pilonidal sinus and literature publications [8].

Conclusion

Given the easy technique with a negligible learning curve, we recommend rhomboid flaps for the surgical management of pilonidal sinus in post-graduate medical institutions where there are no plastic surgeons or colorectal surgeons available. Rhomboid flaps give excellent postoperative recovery with hardly any recurrence.

Statements and Declarations

Conflicts of interest

The authors declares that they do not have conflict of interest.

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Author Contribution

All authors are equally contributed.

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