

TENSION FREE LIMBERG FLAP PROCEDURE FOR SACROCOCYGEAL PILONIDAL SINUS, A RELIABLE SURGICAL INTERVENTION: A PROSPECTIVE STUDY IN THE DEPARTMENT OF SURGERY, MKCG MCH

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Abstract

Sacrococcygeal pilonidal sinus is an acquired condition usually seen in young adults especially males. The aim of this prospective study was to determine the efficacy, patient feasibility, compliance and outcomes of wound infection, postoperative pain relief, recurrence rate and return to work with the Limberg flap rotation surgery for the sacrococcygeal pilonidal sinus. A total of 15 patients were operated in the department of surgery from January 2020 to June 2022, including both primary and recurrent diseases, and patients with previous incision and drainage done for the pilonidal abscess. All patients successfully underwent surgery, with very minimal postoperative pain, stayed in hospital for average 7 days, returned to work after 3 weeks, with 3 patients having flap edema, 2 having flap necrosis, and no recurrences. Patients with flap edema and flap necrosis took 2–3 weeks to heal with antibiotic usage and regular dressing. Limberg flap for sacrococcygeal pilonidal sinus was found to be useful and sound in terms of postoperative pain, infection rates, and with almost nil recurrences.

Introduction

Sacrococcygeal pilonidal sinus is common of the adult age group, especially male population and cause significant morbidity. It is essentially a cleft between the buttocks (i.e., natal cleft), and diagnosis is made by identifying the opening of epithelialized follicle opening (i.e., sinus). The name *pilonidal* is taken from Latin meaning “nest of hairs.”

The estimated incidence is 26 per 1,00,000 people [1, 2]. It commonly presents as a cyst, abscess, or sinus tract with or without discharge [3]. Males are affected more frequently than women [1] and it rarely occurs both before puberty and after the age of 40 years [4]. Rarely may it present in the fourth decade [4].

The aetiology of the pilonidal sinus can be a depend of contention. This situation become possibly initially portrayed by Mayo in 1833, who suggested that it become because of inherent starting auxiliary to a rest of an epithelial lined tract from postcoccygeal epidermal cell rests or minimal fragrance cells. Presently the see widely moved in the direction of procured hypothesis [5] is primarily based totally at the perceptions that innate tracts do not include hair and are lined by cuboidal epithelium. A broadly nice see is that they are due to nearby injury, destitute cleanliness,

intemperate shagginess, and nearness of profound natal cleft [6]. Karydakos proposed three essential variables causing the illness, to be specific tall amount of hair, splendid drive, and helplessness [7].

Treatment for the sacrococcygeal pilonidal sinus varies from clipping of hairs with maintaining hygiene, wide excision of the area, and newer flap procedures, but none of which are widely accepted [8]. Excision and packing, excision and primary closure, marsupialization, and flap techniques are the surgical procedures that have been suggested for the treatment [9].

The biggest concern in patient care is recurrence. It ranged from 20–40 % regardless of the technique used [10]. There are many possible reasons for recurrence including leaving behind few tracts, midline suture causing greater amount of trauma with repeated infection, sweat build-up, and friction with tendency of the hair getting trapped in the wound [11].

The Limberg rhomboid flap for the sacrococcygeal pilonidal sinus was designed by Limberg in 1946 [12], who described a technique to close a 60° rhomboid defect with a transposition flap. This flap was easy to perform and the sutures away from the midline provide a tension free flap of unscarred midline skin to maintain good hygiene and prevent sweating maceration, erosions, and scarring.

A review of the literature study showed that Limberg flap reconstruction following excision of the sinus was superior to primary closure [13] and other flap surgeries [14] and method in sacrococcygeal pilonidal sinus disease with fewer complications and recurrence rates. It has been shown to be a safe and reliable method in disease.

Therefore, this study was performed in our setup to evaluate the usefulness of Limberg flap procedure in sacrococcygeal pilonidal sinus, patient compliance, complications, and long-term recurrence rates following the procedure.

Material and Methods

The study involves 15 patients, from January 2020 to June 2022. Most of the patients were males (11); of those 4 were females. Average age was 24 years—the oldest was 39 years and the youngest was 12 years

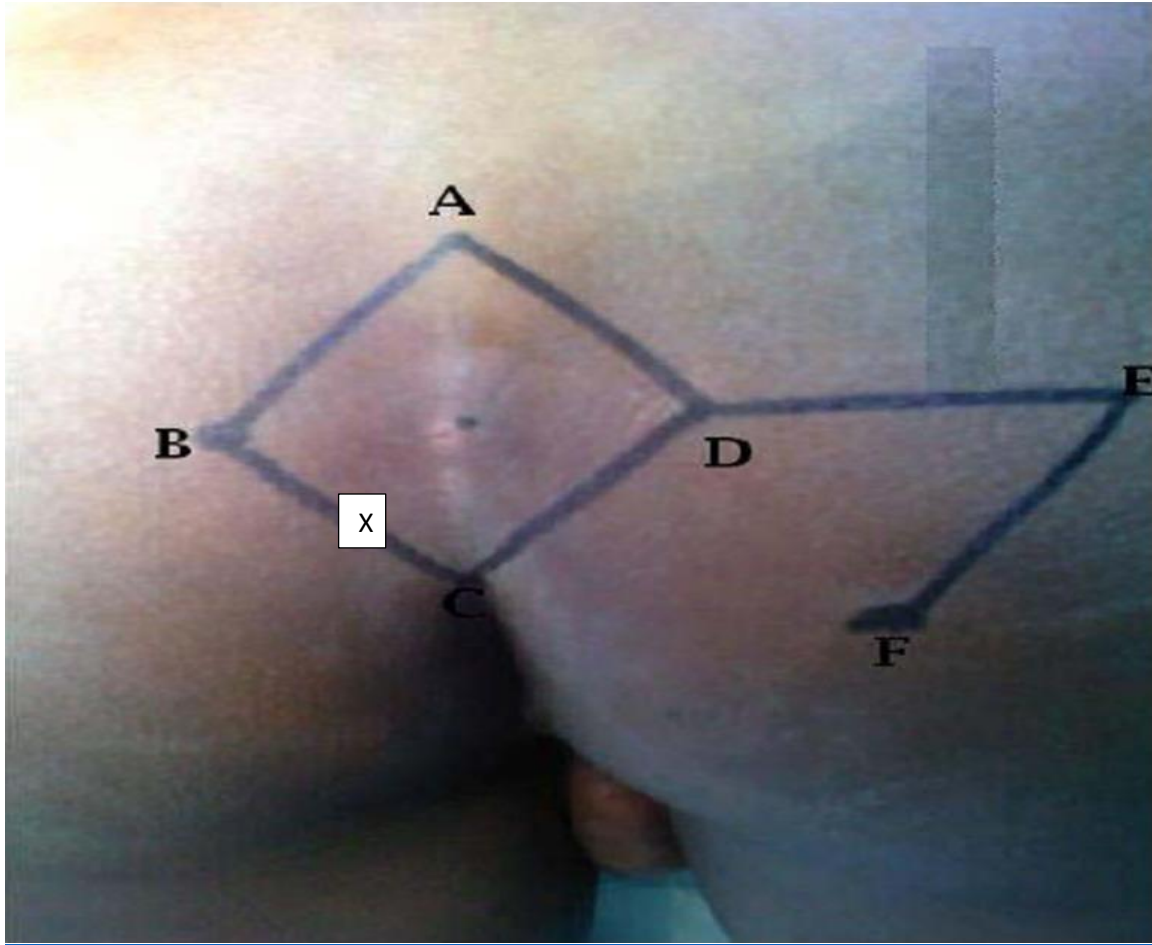
Procedure

The patient was put in prone position, under SA with buttocks strapped apart.

A rhombic area of skin is marked over pilonidal sinus involving all midline pits and lateral extension if any. The long axis of the rhomboid in midline is marked as A–C, C being adjacent to perianal skin, A placed so that all diseased tissues can be included in the excision. The line B–D transects the midpoint of A–C at right angles and is 60 % of its length. D–E is a direct continuation of the line B–D and is of equal length to the incision B–A, to which it will be sutured after rotation. E–F is parallel to D–C and of equal length. After rotation, it will sutured to A–D (Figs. 1 and [and2\)2](#)) [16].



[Fig. 1](#)



[Fig. 2](#)

Marking with letters

The skin and subcutaneous fat to be removed is excised down to deep fascia, and a rhomboid area of specimen including pilonidal sinus and its all extensions are removed (Fig. [3](#)). Then flap is raised so that it includes skin, subcutaneous fat, and the fascia overlying gluteus maximus, rotated to cover midline rhomboid defect (Fig. [4](#)). The defect thus created can be closed in linear fashion (Fig. [5](#)). Deep absorbable sutures to include fascia and fat are placed over a vacuum drain, and then finally the skin is closed in interrupted sutures [[15](#)].



[Fig. 3](#)

Excision till deep fascia



[Fig. 4](#)

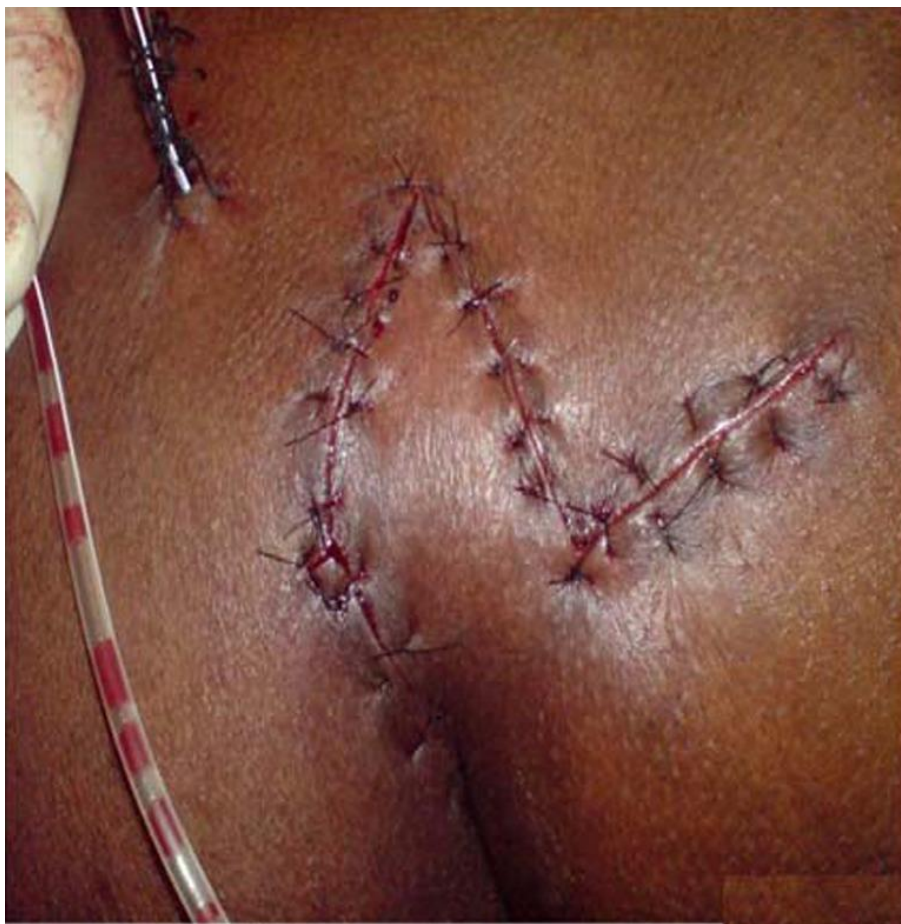
Raising of flap and rotating over the defect



[Fig. 5](#)

Suturing in linear fashion

The operation produces a tension-free flap of unscarred skin in the midline ([Fig. 6](#)). Antibiotics were given for 7 days initially intravenously, then orally, suction drain removed after 2 days, sutures removed around 10th day. The patient was advised not to put pressure on the flap for 3 weeks.



[Fig. 6](#)

Final outcome after suturing

Results

In this study 15 patients were included. Among them 11 were males and 4 were females. Mean age was 24 years (range 12–39 years). Of the 15 patients, 7 had primary disease, 3 had recurrent disease, and 5 came up after having previous incision and drainage for abscess.

All patients came with pilonidal sinus, from January 2020, were assessed for its severity and investigated, and then they underwent Limberg flap surgery under spinal anaesthesia. Postoperatively patient made to lie on sides, then made them ambulant after first postoperative day, with drain in situ. The patient received antibiotics and regular dressing of the wound. Drain was removed approximately on the second postoperative day, following which the patient got discharged with advice of not to pressure for 3 weeks. Sutures were removed during follow-up around 10th day. All patients are followed up initially 2 weekly intervals, then monthly for next 1 year. **One** female patient had complications of flap necrosis. It took 3 weeks to heal completely with diligent dressing and usage of antibiotics. **Two** male patients had flap edema, which resolved by 10 days. All other patients wound healed nicely with minimal scarring, with very less postoperative pain, with no recurrence so far. None needed readmission due to pilonidal sinus, and most patients returned to work after 3 weeks.

Discussion

The sacrococcygeal pilonidal sinus is a blind epithelial tract that exists in the skin of the natal cleft near the anal verge and generally contains hair. The main causes of the formation of this sinus are hirsutism, sweating in the area, repeated maceration from trauma, leading to rupture of the skin barrier, attracting hair causing a foreign body reaction leading to infection with abscess or sinus formation.

Surgical treatment of this sinus is performed by excision of the diseased tissue down to the sacrococcygeal fascia, but the next steps to address the defect are worrisome. Patient compliance, postoperative pain, infection rates and recurrence rates, hospitalisation, frequent wound dressings, and cosmetic prospects with preservation of the buttock.

The Limberg flap reconstruction has many advantages as it is easy to perform and design, and it flattens the natal cleft with large vascularized pedicle, sutured without tension. This ensures good hygiene, reduces friction, prevents maceration, and avoids scar in the midline. This flap procedure found superior to simple excision and closure, marsupialization [13, 14]. Several recently reported series on the usefulness of this flap in treatment for sacrococcygeal pilonidal sinus have been comparable to our series in terms of complications and recurrences. In our series we had two minor flap edemas, and one flap flap necrosis—all healed in due time. No recurrence was reported with in this study period January 2020 to jun 2022.

Conclusions

The sacrococcygeal pilonidal sinus causes headaches for both the patient and the treating physicians due to repeated infection, persistent pain associated with discharge and high recurrence rates with routine procedures. After the Limberg flap was reconstructed after excision of the pilonidal sinuses, the patient experienced significant relief from the weeping and smelling buttock without distorting the contour of the buttock.

The technique quick and easy to perform has very low complication and recurrence rates and useful in both primary and recurrent diseases. This can be further reduced by meticulous skin closure, without skin edge eversion, with a wide flap to obliterate the midline natal cleft.

Other advantages are quick healing time, short hospital stay, and early return to daily life.

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