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RESEARCH ARTICLE

"LIMBERG FLAP FOR SACROCOCCYGEAL PILONIDAL SINUS: A SAFE AND PROMISING SURGERY"

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Abstract

Introduction:Sacrococcygeal pilonidal sinus is a common disease of the adult age group, especially male population, causing significant morbidity from both disease and surgery done for the same. It is essentially a cleavage between the buttocks (i.e., natal cleft), and diagnosis is made by identifying the 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 people1. It generally presents as a cyst, abscess, or sinus tract with or without discharge2. Men affected more often than women1, rare both before puberty and after the age of 40 years3. The etiology of the pilonidal sinus is a matter of controversy.

Aims & Objectives: Literature study showed that Limberg flap reconstruction following rhomboid excision of the sinus area was superior to primary closure and other flap procedures and a safe and reliable method in sacrococcygeal pilonidal sinus disease with low complication and recurrence rates. Hence, 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.

Materials & Methods: The study involves 22 patients, from May 2022 to September 2023. Most of the patients were males; of those 4 were females. Average age was 24 years—the oldest was 29 years and the youngest was 15 years.

Results: In this study 22 patients were included. Among them 18 were males and 4 were females. Mean age was 24 years (range 15–29 years). Of the 22 patients, 14 had primary disease, 6 had recurrent disease, and 2 came up after having previous incision and drainage for abscess. All patients came with pilonidal sinus, from May 2022, were assessed for its severity and investigated, and then they underwent Limberg flap surgery under spinal anesthesia.

Discussion: Sacrococcygeal pilonidal sinus is blind epithelial tract situated in the skin of the natal cleft, close to anal verge, generally

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containing hair. The etiology is matter of debate; initially congenital origin was thought of which is now given up. Main causes for the formation of this sinus are hirsutism, sweating in the area, repeated maceration due to trauma, leading to breakage of the skin barrier, attracting hair inside which initiates a foreign body reaction leading to infection with abscess or sinus formation.

Conclusion: Sacrococcygeal pilonidal sinus is headache to both the patient and the treating surgeon because of its repeated infection, persistent pain with discharge, and high recurrence rates with regular procedures.

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Introduction:-

Sacrococcygeal pilonidal sinus is a common disease of the adult age group, especially male population, causing significant morbidity from both disease and surgery done for the same. It is essentially a cleavage between the buttocks (i.e., natal cleft), and diagnosis is made by identifying the 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 people1. It generally presents as a cyst, abscess, or sinus tracts with or without discharge2. Men affected more often than women1, rare both before puberty and after the age of 40 years3. This condition was probably first described by Mayo in 1833, who suggested that it was due to congenital origin secondary to a remnant of an epithelial lined tract from post coccygeal epidermal cell rests or vestigial scent cells.

Now the view widely shifted toward acquired theory is based on the observations that congenital tracts do not contain hair and are lined by cuboidal epithelium. A widely acceptable view is that they are caused by local trauma, poor hygiene, excessive hairiness, and presence of deep natal cleft4. Karydakis proposed three main factors causing the disease, namely high quantity of hair, extreme force and vulnerability to infection5.

The management of the sacrococcygeal pilonidal sinus varies from clipping of hairs with good hygiene of the area, wide excision of the area, and newer flap procedures, but none is widely accepted6.

Excision and packing, excision and primary closure, marsupialization, and flap techniques are the surgical procedures that have been suggested for the treatment7.

The main concern for the treatment to the patient is the recurrence; the literature review suggested that it ranged from 20–40 % regardless of the technique used.

Many reasons were attributed to recurrence, such as leaving behind some tracts, sutures in midline causing more trauma with repeated infection, accumulation of perspiration and friction with tendency of the hair getting incorporated into the wound8.

Limberg rhomboid flap for sacrococcygeal pilonidal sinus was designed by Limberg in 19469, who described a technique for closing a 60 ° rhombus-shaped defect with a transposition flap. This flap was easy to perform, with sutures away from the midline giving rise to a tensionless flap of unscarred skin in the midline, which helps in good hygiene maintenance, reducing sweating maceration, erosions, and scar formation.

Literature study showed that Limberg flap reconstruction following rhomboid excision of the sinus area was superior to primary closure10 and other flap procedures and a safe and reliable method in sacrococcygeal pilonidal sinus disease with low complication and recurrence rates. Hence, 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.

Materials And Methods:-

The study involves 22 patients, from May 2022 to September 2023.
Most of the patients were males; of those 4 were females.
Average age was 24 years—the oldest was 29 years and the youngest was 15 years.

Procedure:-

The patient was put in prone position, under SA with buttocks strapped apart (Fig 4).

A rhombic area of skin is marked over pilonidal sinus involving all midline pits and lateral extension if any (Fig 5).


4


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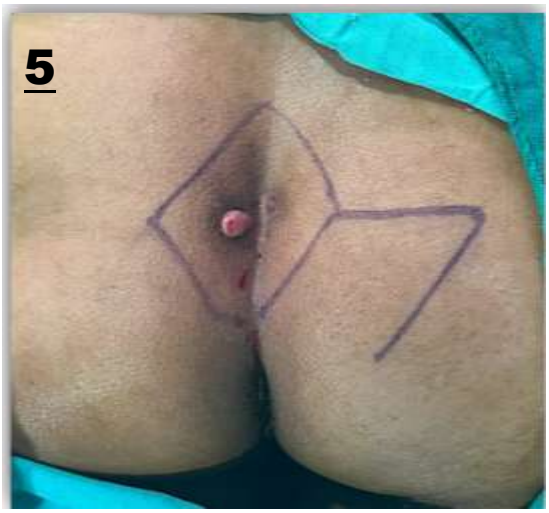
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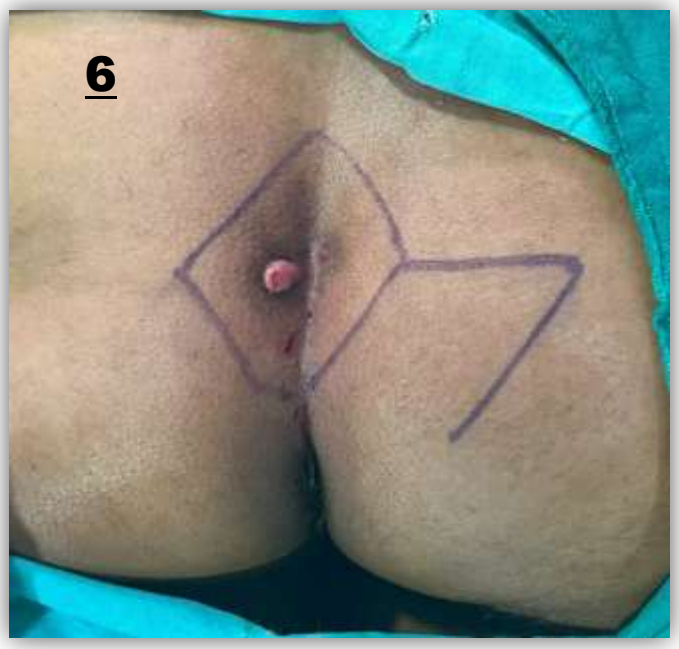
The long axis of the rhomboid in midline is marked as A–C, C being adjacent to perianal skin, A placed so that all diseased tissues can be included in the excision (Fig 6).

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 (Fig 6).

E–F is parallel to D–C and of equal length. After rotation, it will sutured to A–D (Fig 6).11



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.7-9).

Then flap is raised so that it includes skin, subcutaneous fat, and the fascia overlying gluteus maximus, rotated to cover midline rhomboid defect (Fig.10-11).

The defect thus created can be closed in linear fashion (Fig. 12). Deep absorbable sutures to include fascia and fat are placed over a vacuum drain, and then finally the skin is closed in interrupted sutures12.

The operation produces a tension-free flap of unscarred skin in the midline (Fig. 13-15).

Antibiotics were given for 7 days initially intravenously, then orally, suction drain removed after 2 days (Fig. 16-17) and sutures removed around 10th day (Fig. 18-19).

The patient was advised not to put pressure on the flap for 3 weeks.

Results:-

In this study 22 patients were included. Among them 18 were males and 4 were females. Mean age was 24 years (range 15–29 years).

Of the 22 patients, 14 had primary disease, 6 had recurrent disease, and 2 came up after having previous incision and drainage for abscess.

All patients came with pilonidal sinus, from May 2022, were assessed for its severity and investigated, and then they underwent Limberg flap surgery under spinal anesthesia.

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 2nd 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 bimonthly for next 1 year.
3 patients had flap edema, which resolved by 10 days.

1 had persistent serous discharge from the wound.

It took 2-3 weeks to heal completely with regular dressing and usage of antibiotics.

All other patients wound healed well 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:-

Sacrococcygeal pilonidal sinus is blind epithelial tract situated in the skin of the natal cleft, close to anal verge, generally containing hair.

The etiology is matter of debate; initially congenital origin was thought of which is now given up.

Main causes for the formation of this sinus are hirsutism, sweating in the area, repeated maceration due to trauma, leading to breakage of the skin barrier, attracting hair inside which initiates a foreign body reaction leading to infection with abscess or sinus formation.

Surgical treatment for this sinus is by the way of excision of the diseased tissue down to the sacrococcygeal fascia, but the next step of what to do with defect is a matter of concern.

In this regard, one has to take into account of patient compliance, postoperative pain, infection and recurrence rates, hospital stay, frequent wound dressings, and cosmetic outlook with preservation of the bottom.

Reconstruction of the defect with Limberg flap has many advantages as it is easy to perform and design, and it flattens the natal cleft with large vascularized pedicle, sutured without tension13.

This in turn maintains good hygiene, reducing the friction, preventing maceration, and avoiding scar in the midline.

This flap procedure found better than simple excision and closure, marsupialization10 and other flap procedures such as Bascom and Karydakis14,15.

Several series reported recently about the usefulness of this flap in treatment for sacrococcygeal pilonidal sinus have been comparable with our series in terms of complications and recurrences.

Conclusion:-

Sacrococcygeal pilonidal sinus is headache to both the patient and the treating surgeon because of its repeated infection, persistent pain with discharge, and high recurrence rates with regular procedures.

Limerg flap reconstruction after excision of the ilonidal sinus is a promising surgical technique for sacrococcygeal pilonidal sinus and a safe & reliable method in both primary and recurrent disease, with very low complication & recurrence rate and early return to work.

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