

# LIMBERG FLAP PROCEDURE FOR MANAGING SACROCOCCYGEAL PILONIDAL SINUS DISEASE: OUR EXPERIENCE

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## Abstract

**Background:** Sacrococcygeal pilonidal sinus is a common morbid disease in young adult patients with high recurrence rate. There are several surgical procedures for managing pilonidal sinus. The present study aims to evaluate the efficacy of limberg flap reconstruction surgery for the management of sacrococcygeal pilonidal sinus.

**Methods:** A prospective study was conducted over a period of more than two years from January 2017 to June 2019. A total of 21 patients were included in this study. All patients underwent Limberg flap reconstruction. Data collected in data collection sheet regarding demographic data, post operative complications and analyzed in tabulated form.

**Results:** Total 21 patients were included in our study. Age ranged from 20-50 years. Male were 18(85.71%) and female were 3(14.29%). Post operative complications were seroma 2(9.52%), wound infection 1(4.76%). But no flap necrosis and recurrence had occurred.

**Conclusion:** Limberg flap for reconstruction of the defect after excision of sacrococcygeal pilonidal sinus is an effective and safe technique with low complication rate.

**Keywords:** Limberg flap, Sacrococcygeal, Pilonidal sinus

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## Introduction

Sacrococcygeal pilonidal sinus is a common disease especially in male population, causing significant morbidity and difficult to manage. The name pilonidal is taken from Latin meaning “nest of hairs”. 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 postcoccygeal epidermal cell rests or vestigial scent cells. Now the view widely shifted toward acquired theory<sup>1</sup> is based on the observations that congenital tracts do not contain hair and are lined by cuboidal epithelium. Karydak is proposed three main factors causing the

disease, namely high quantity of hair, extreme force and vulnerability to infection<sup>2</sup>. The estimated incidence is 26 per 1,00,000 people. Men affected more often than women<sup>3,4</sup>. It generally present as a cyst, abscess or sinus tracts with or without discharge although pilonidal sinus can be treated using several defined conservative and surgical methods, recurrence rates remain high<sup>5-6</sup>. Complete removal of the pilonidal sinus or sinuses and appropriate reconstruction can lead to successful recovery<sup>7</sup>. Among different surgical modalities for treatment of sacrococcygeal pilonidal sinus, flap reconstruction techniques eradicate the aetiology of the disease by

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flattening the inter gluteal sulcus with much less hairy fasciocutaneous flaps and less perspiration<sup>8</sup>. Limberg rhomboid flap for sacrococcygeal pilonidal sinus was designed by Limberg in 1946 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 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<sup>9</sup>.

### Materials and methods:

This study was carried out in the surgery department of Dhaka Dental College Hospital in between January 2017 to June 2019. Total 21 diagnosed cases of sacrococcygeal pilonidal sinus those attending in and out patient department of this hospital at the age ranged from 20-50 years were enrolled in this study. Most of the patients were males; of those 3 were females. Pilonidal abscess, recurrent sacrococcygeal pilonidal sinus were excluded in this study. There were no ethical problems as before study procedure conducted, verbal comment of patient was taken. Surgery was performed under spinal anaesthesia. Patients were placed in prone jack-knife position with buttocks strapped for wide exposure. After painting and drapping the area were marked. The rhomboid incision including the sinus was made down to the presacral fascia. The flap was made by extending the incision laterally down to the fascia of the gluteus maximus muscle. The flap was transposed to the rhomboid defect created by excision of the sinus. Then haemostasis was meticulously maintained and a drain tube kept in situ by giving separate incision. Subcutaneous tissue was approximated with interrupted 2-0 vicryl suture. The skin was closed with interrupted 3-0 prolene suture. Drain was removed 5-6 days later. The suture were removed on the 12<sup>th</sup> - 14<sup>th</sup> POD. Post-operatively patients were advised to avoid prolonged sitting or moving for two weeks. Patients were followed up in OPD monthly for 6 months and at least upto 1 year. Post-operative complications and recurrence were recorded. All the data were collected and analyzed and the results were established in a tabulated form.

## Results

**Table I**

*Age distribution of patient (n=21)*

Age group	Number	Percentage
20-30	10	47.62%
31-40	9	42.86%
41-50	2	9.52%

**Table II**

*Sex distribution (n=21)*

Sex	Number	Percentage
Male	18	85.71%
Female	3	14.29%

**Table III**

*Post-operative complications (n=21)*

Post operative complication	Number	Percentage
Seroma formation	2	9.52%
Wound infection	1	4.76%
Flap necrosis	0	0
Recurrence	0	0

### Discussion:

Pilonidal sinus disease is an acquired condition affecting young adults recurrence is the main problem associated with all surgeries described which ranged from 21.4% to 100% for incision and drainage, 5.5%-33% for excision and open packing, 8% for marsupialization, 3.3%-11% for Z-plasty. Flap techniques have been associated with lower complication and recurrence rates. With the limberg flap technique, internal flap cleft can be flattened and tissue can be approximated without tension<sup>10-11</sup>.

Total 21 patients were included in this study. Sacrococcygeal pilonidal sinus was more in younger patient in this study and it was 47.62% between 20-30 age group. Srikanth K showed average age was 24 years (40.02%) – the oldest was 29 years and the youngest was 15 years<sup>12</sup>.

Sacrococcygeal pilonidal sinus more commonly occur in male patients. In our study males were 18(85.71%) and females were 3(14.29%). Jethuwani U, Singh G showed that male and female pilonidal sinus 74.6% and 25.37% respectively in which male were predominant<sup>13</sup>.

This study reported post-operative seroma formation 2(9.52%) which were reevaluated and managed by aspiration of fluid. Post-operative wound infection were 1(4.76%) which was treated by dressing and medicine. Singh PK et al showed in their follow up period seroma formation (6.2%), wound infection (3.1%) and flap necrosis (3.1%) but no recurrence<sup>14</sup>. There were no flap necrosis and recurrence after operation in our series. Katsoulis had 25 patients with 16 of them having complications with no recurrence<sup>15</sup>. Aslam had 110 patients with 5 of them having complications and 1 recurrence<sup>16</sup>.

### Conclusions

Sacrococcygeal pilonidal sinus is very much notorious to both the patient and the surgeon because of its repeated infection, persistent pain with discharge and high recurrence. Limberg flap reconstruction after excision of the pilonidal sinus, the patient got immense relief from this disturbance without distortion of the contour of the bottom. The technique is very effective for pilonidal disease with low complication rates, short hospitalization, low recurrence rates, earlier healing and shorter time off work. The results of this study favour rhomboid excision and Limberg flap reconstruction for pilonidal disease.

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