

## DEFINITIVE TREATMENT OF RECURRENT PILONIDAL SINUS DISEASE USING RHOMBOID EXCISION AND LIMBERG FLAP RECONSTRUCTION.

By

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**Introduction & Aim of the work:** *despite the various techniques described to treat pilonidal sinus still recurrence is a common occurrence. Recurrent pilonidal sinus is a difficult problem to treat , the deep natal cleft and the rolling effect of one buttock surface over the other contribute to the high recurrence rate . The aim of this study was to describe the technical defiles analysis the advantages and present the results of the modified approach applied in patients with recurrent pilonidal disease..*

**Patients & Methods:** *In the period from January 2001 to may 2003,26 patients with recurrent pilonidal disease (24 males & 2 females ) every one of them had endured one or more previous surgical procedure to treat their condition . More than one midline pits were evident in all of our cases . Six patients presented with acute pilonidal abscess and required initial incision and drainage the definitive treatment to the pilonidal disease with the modified limberg flap after one month . The rhomboid (Modified Limberg) flap was applied to all patients after wide rhomboid excision of the pilonidal sinus bearing area and finally closure of the wound after transposing the flap in several layers.*

**Results & Conclusion:** *All the patients tolerated the procedure well, with minimal post operative discomfort, hospital discharge varied from 3 to 12 days. There was one case of limited primary healing due to moderate wound infection which was treated with repeated dressing and antibiotics and did not require any additional surgery. No recurrence has developed in the follow-up period which ranged from 6 months to three years .*

*The suggested modified limberg flap( Rhomboid flap) reconstruction after wide excision of the pilonidal sinus bearing area is an effective, safe, relatively easy to perform, with minimal morbidity and rapid recovery of the patient*

**Keywords:** *pilonidal sinus, Rhomboid excision, Limberg flap.*

### INTRODUCTION

Pilonidal sinus is a common condition that is seen mainly in young adults and occurs often on the inter gluteal groove, however it has also been reported in the penis, axilla, perineum, and supra pubic area, the peri-umbilical area, between the fingers and in the ends of amputated extremities.<sup>(5,13)</sup>

Anderson (1947) and Mason (1854) originally reported this condition while Hodges (1880) suggested the term pilonidal sinus . There are many theories about the sinus of this disease such as the congenital theory or the acquired theory .

Because it is impossible to prevent treatment is more important than these theories . Pilonidal disease is generally characterized by inflammation , abscess and sinus formation .

Pilonidal disease occurs in about 70% of the population and it affects men more than women with a peak incidence at the age 16-25 years old <sup>(2)</sup> . Many surgical techniques are used to treat pilonidal sinus , such as marsupialization , excision and primary closure, simple v-y advancement flap, and the Limberg flap closure. Recurrence is still considered to be the major problem.

The ideal surgical treatment of pilonidal sinus should result in high chance of cure with minimal recurrence rate , short hospital stay . Early return to work and minimal discomfort during the postoperative period (7) .

In this study we described the technical details, analyzed the advantages & evaluated the result of rhomboid excision and Limberg flap closure in the management of the recurrent pilonidal sinus.

## PATIENTS AND METHODS

26 patients with recurrent pilonidal disease underwent surgical treatment using wide excision technique and coverage of the resulting defect with the rhomboid flap (modified Limberg flap) procedure.

Twenty four (92.3%) male patients and two (7.7%) female patients were operated upon between the years 1994 to 2002 , the mean age of the patients was 25 years (22yrs-51yrs).

Six patients presented with pilonidal abscess, these patients were treated with initial incision and drainage, the definitive treatment with the modified Limberg flap was carried out after one month. All patients received prophylactic cefotaxime sodium 1 gm intravenously just before the operation began.

### *Operative Technique:*

All the patients were operated upon under general anesthesia, the patients were placed in a jackknife position, the natal cleft together with the two buttock areas were shaved and disinfected with povidone iodine solution, methelene blue was injected through the sinus opening or openings to mark all branches of the sinus.

Wide rhomboid excision of the sinus bearing area, so that all sinus tracts are excised en block.

Excision was carried out deep to the presacral fascia medially and to the gluteal muscles laterally,

then a modified Limberg flap was prepared from either gluteal regions. The flap included the skin , subcutaneous tissue, and fascia of the gluteal muscle.

Careful haemostasis using both electro cauterization and surface cauterization using the Argon Beam Coagulator was performed, suction drain was placed on the presacral fascia and the gluteal muscle of the donor side. Lateral suction drain was used in all cases, and subcutaneous tissue was approximated with polyglactin sutures in two layers.

The skin was closed using either polypropylene sutures or skin staplers. The drains were removed after drainage decreased under 15-20 ml/day, in an average period of 6 days (4-10 days). Half of the sutures or skin staples were removed on the twelfth post-operative day, the second half on the fourteenth post-operative day. All patients were followed up for a period ranging from 6 months to 3 years, the mean follow up time was 26 months.

Wound infection, time to complete healing, recurrence rate or any other complication were recorded.

## RESULTS

26 patients with recurrent pilonidal disease were operated upon (24 males and 2 females) with a median age of 25 years (range 22-51).

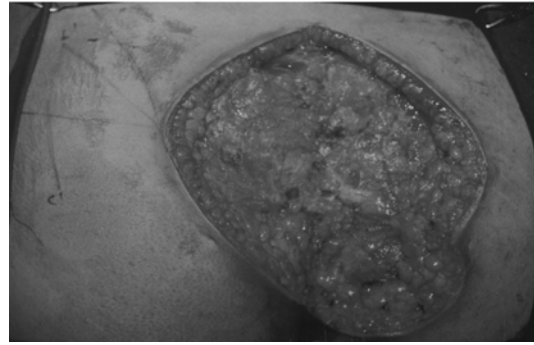
The duration of hospital stay was 3 to 12 days (median 6 days) and the median follow up was 26 months (range 6-36 months). Healing by primary was recorded in 25 patients at the time of suture removal and one patient developed moderate wound infection which was treated with repeated dressing and antibiotics and did not require any additional surgery.

There was neither total nor partial flap loss.

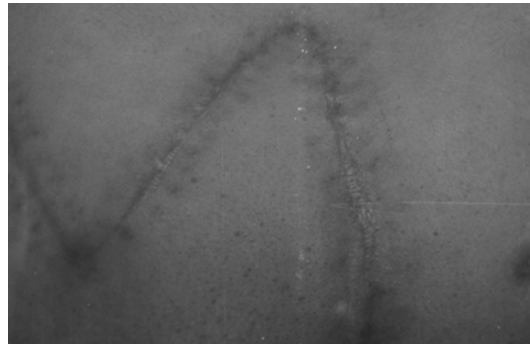
No recurrence was recorded in all 26 patients.



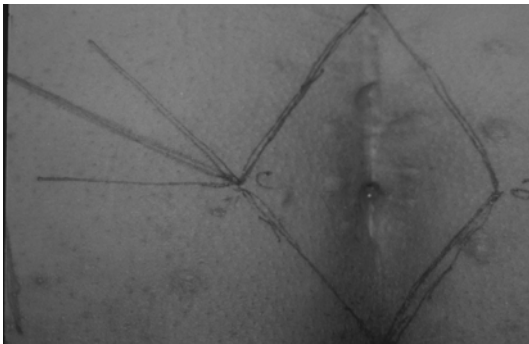
*Fig 1. Pre-operative view of recurrent pilonidal sinus*



*Fig 2. Intra-operative view of the same patient after wide rhomboid excision of the sinus bearing area*



*Fig 3. Post-operative view of the same patient after 6 months.*



*Fig 4. Pre-operative view of recurrent pilonidal sinus*



*Fig 5. Immediate post-operative view of the same patient .*



*Fig 6. Post-operative view of the same patient after 18 months*

## DISCUSSION

There is a long list of procedures to manage pilonidal disease which reflects the need for a safe and efficient surgical method for this common disease. Recurrence is the biggest problem in the treatment of pilonidal sinus. In the different studies, the rate of recurrence has been reported as 21.4 to 100 % for incision and drainage,<sup>(9,10,12)</sup> 10% for incision and curettage,<sup>(10)</sup> 5.3 to 33 % for the excision-open-packing technique,<sup>(3,4,10)</sup> 6.8 to 8 percent for marsupialization,<sup>(3)</sup> and 3.3 to 11 % for Z-plasty.<sup>(3,8,9,11)</sup>

Bose and candy 3 suggested that the predisposing factor for pilonidal sinus and hence recurrence is the presence of the deep natal cleft and the rolling action of the buttocks while walking. According to this suggestion, different techniques have been developed to obliterate the deep natal cleft, such as Z-plasty, rhomboid flaps and primary skin grafting. <sup>(6)</sup> Z-plasty involve transposing two triangular flaps with narrow apices but flap tip necrosis was reported in 20% of cases 3 and primary skin grafting has not stood the test of time.

Our study included patients with extensive and recurrent pilonidal sinus disease, the promising results obtained after a long follow-up of our patients indicate that this method eliminate almost all the reported weak points of the surgical treatment of pilonidal sinus disease. When the Limberg flap is well mobilized, it fits and fills the defect with well vascularized tissue. The donor site being soft and loose facilitates its primary closure. The resultant suture lines not being under tension allow rapid and sound healing which diminishes the chances of recurrence.

In conclusion, the results of this study provided evidence that wide excision with a Limberg transposition flap reconstruction is a very effective operative procedure for recurrent pilonidal sinus disease, associated with a low complication rate, short hospitalization and disability, and a very low recurrence rate.

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