

Original Article

A simple novel technique for closure of simple and complex pilonidal sinus with either simple (tongue-shaped) or bilobed rotation flap

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ABSTRACT

Background: Pilonidal sinus is a common disease in young adults that carries high postoperative morbidity and patients' discomfort; controversy still exists regarding the best surgical technique for the treatment of the disease. We successfully treat it with a rotation flap technique (simple rotation and bilobed rotation flap).

Materials and Methods: Sixty-two patients were randomized to receive surgical treatment in the form of either simple rotation or bilobed rotation flap by eccentric elliptical excision of the diseased tissues down to the sacral fascia and closure of the defect with the flap, then placing a closed suction drain at the base of the wound, with its tip being brought out in the gluteal region at least 5 cm laterally to the lower end of the suture.

Results: All our patients healed completely without recurrence after a mean follow-up of about one year. Mean hospital stay 1.5 days (range 1-3) Mean time to complete healing 11.9 days (range 8-14). Mean time off work was 11.5 days (range 10-21), wound infection and breakdown, three (4.8%), recurrence (0%), and time to sitting on the toilet and walking without pain was 10-15 days.

Conclusions: A tension-free suture and cleft left *via* the rotation flap, either the bilobed flap or monolobed, is the key to success without recurrence and low patient discomfort.

KEY WORDS

Bilobed flap, pilonidal, rotation

INTRODUCTION

Pilonidal disease is a common, chronic intermittent disorder of the sacrococcygeal region. Although it has been surgically treated for more than 100 years, its management remains controversial and recent reports^[1-5] have advocated various different approaches. This study describes our technique for management of primary and complex or recurrent pilonidal sinuses and explains how we overcome the main causes of surgical failure.

MATERIALS AND METHODS

Thirty-two patients were treated with bilobed rotation flap and 30 patients were treated with monolobed rotation flap, during the period from April 2004 to December 2005. Demographic details are given in Table 1. All patients had chronic pilonidal sinus. Eighteen patients had recurrent disease after a failed surgical procedure; the rest (n=44) were primary pilonidal sinuses. All patients were admitted to hospital the day before surgery and operated under

general or spinal anaesthesia. The natal cleft was shaved the day before the surgery. The patients were placed in prone jack-knife position on the operating table with the legs slightly abducted and the buttocks strapped apart by adhesive tapes on the table.

The surgical procedure [Figures 1-6] is a vertical eccentric elliptical excision of all the diseased tissue down to the post sacral fascia. Before the excision of the tissues, we marked the flap either one lobe rotation or two lobes according to the size of the primary defect, the idea being

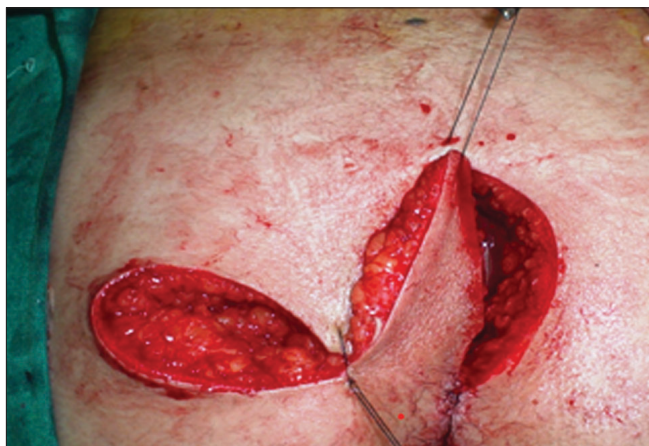


Figure 1: Elevation of the flap



Figure 4: Preoperative marking of bilobed flap



Figure 2: The simple rotation flap after closure of the defect



Figure 5: Immediate postoperative picture after closure of the defect



Figure 3: [Tongue shaped flap] Postoperative picture after one week



Figure 6: Postoperative picture after three weeks

Table 1: Preoperative patient characteristics

Patient characteristics	No %
Age	
17-27	20 (32.2)
27-37	23 (37)
>37	19 (30.8)
Sex	
Male	33 (53.2)
Female	29 (46.8)
Character of sinus	
Primary	44 (70.9)
Recurrent	18 (29.1)

to close the defect with tension-free sutures. The flap was then rotated and advanced, then sutured subcutaneously with 3-0 Vicryl. The stitches should include the post sacral fascia so as not to leave a dead space. The flap donor area was sutured primarily with the same material in a similar fashion. Closed suction drains were placed in potential space in all patients and removed after 10 days.

Wound inspection and dressing were done twice each week associated with compression at the natal cleft site; removal of sutures was done after 10 days. The patients were instructed bed rest, and they were allowed to sleep on their back after one week.

RESULTS

After about one year of follow-up of the 62 patients we had no recurrence. The hospital stay ranged from one to three days. The mean time off work was 11.5 days; the time of complete healing ranged from 8 to 14 days, the time to sitting on the toilet without pain was 10 to fifteen days [Table 2]. One patient had wound breakdown due to early cutaneous stitch removal and infection. Two patients had wound infection and seroma, of which one had partial wound breakdown and the other seroma which completely resolved after three weeks.

DISCUSSION

Excision of the diseased tissue down to the post sacral fascia is generally accepted but the management of the

remaining defect is still a matter of debate. Primary closure of the wound is a simple technique but it has a high recurrence rate due to continuing natal cleft. Tritapepe and Padova 2002^[6] stated that excision and primary closure with a catheter at the bottom of the wound and the use of antiseptic/saline flushing are essential for primary intention healing and the avoidance of recurrences. This data consists of a cohort with five to 15 years follow-up in 243 cases with chronic sinus irrespective of lifting the natal cleft.

Another important issue is wound tension. A tension-free suture improves patient comfort and shortens hospital stay. In this regard, flap procedures have all these advantages. Several flap techniques have been described with various results

The Z-plasty procedure has been described by Monro and Mac Dermott^[7] in 1965. The disadvantage of this procedure is that part of the wound is in the midline which is the main cause of recurrence. Besides, flap tip necrosis has been known to had occur.

The W-plasty technique has been described by Roth and Moorman in 1977.^[8] Part of the wound is still in the midline and recurrence rate is high (8%). To decrease the incidence of recurrence many procedures have been developed to avoid the midline sutures like "D" excision which is a surgical technique of elliptical incision and primary wound closure. The overall success rate is 80%.^[9] Another flap technique that avoids the midline wound is the advancement flap operation described by Karydakis.^[2] After excision of the pilonidal sinus, one of the wound edges is undermined and advanced against the other wound edge and sutured. Its recurrence rate is 1-4%, complication rate 8.5-9% and the mean hospitalization stay is three to four days.^[2] Either D excision or Karydakis and Bascom techniques,^[10] all of them excised the diseased skin and subcutaneous tissue in a limited manner to avoid tension sutures; we closed the defect after wide excision of all the diseased tissue down to the postsacral fascia and closed the primary defect with either simple rotation or bilobed rotation flap without any tension at the suture line and with a minimal arc of rotation versus the elliptical rotation flap done by Nessar *et al*^[11] that needs rotation at right angle. It also had a narrow pedicle which was easy to be compromised.

Despite controversy about the best surgical technique for the treatment of the pilonidal sinus, an ideal operation

Table 2: Postoperative outcome

Mean hospital stay (d) (range)	1.5 (1-3)
Mean time to complete healing (d) (range)	11.9 (8-14)
Mean time off work (d) (range)	11.5 (10-14)
Wound infection (%)	2
Wound breakdown (%)	1
Recurrence (%)	0
Time to sitting on the toilet without pain	12.2 (10-15)

should be simple, should not need prolonged hospital stay, should have a low recurrence rate and should be associated with minimal pain and wound care to decrease time off work.^[12]

The Limberg flap is another transposition technique; it is suitable only for closure of rhomboid defects with angles of 60 and 120 degrees and the flap depends on the looseness of adjacent skin. Reported complication and recurrence rates are 4.9%, 2.5% respectively.^[13]

Closure of the defect with a rotation flap was described by Cherry^[14] and Nessar *et al.* (2004) The technique seems to be similar to elliptical rotation flap at first glance. However, it creates a line of tension along the radius of the arc that may be associated with the risk of decreased blood supply to the flap.^[15] It has an 8% recurrence rate in the Cherry study and no recurrence in the Nessar study.

Simple rotation flap for pilonidal sinus is a random pattern flap based on the subdermal plexus that allows elevation of an elliptical-shaped flap of skin and subcutaneous tissue with a length to width ratio in the range of 2 to 1. It is wise to think that a cutaneous flap with a big arc of rotation can survive in such circumstances without a risk. Thus we apply this type of flap on the same basis depending on a well-vascularized recipient bed. Our basis to use the simple rotation flap for closure of the small primary defect and the bilobed flap for wide primary defect is to decrease the arc of rotation and avoid risk of vascular impairment.

CONCLUSION

The simple and bilobed flap has a big advantage over other flap closure techniques with regard to simple application

for both junior and senior surgeons and it also has an excellent cosmetic appearance and low morbidity.

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