

GLUTEAL V-Y ADVANCEMENT FASCIOCUTANEOUS FLAP FOR TREATMENT OF CHRONIC PILONIDAL SINUS DISEASE

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Abstract. Although pilonidal disease is quite common, controversy still exists about the treatment. The procedure should cure the patient, and allow speedy resumption of normal activities by reducing pain and disability. This retrospective study was conducted to evaluate our experience with the V-Y fasciocutaneous advancement flap and to review current publications about flap surgery for the treatment of sacrococcygeal pilonidal sinus. We describe the application of the fasciocutaneous V-Y advancement flap for reconstruction of defects after radical excision of recurrent pilonidal sinus in 11 cases. Primary and uneventful wound healing was achieved in all patients but two who developed minor wound breakdown. Large defects after excision can easily be closed using the V-Y advancement flap. This type of flap closure in selected cases offers tension-free, recurrence-free, and reliable skin coverage while flattening the natal cleft that predisposes to recurrences. Reliable flap closure reduces hospital stay, costs, as well as disability and time spent off work.

Key words: pilonidal sinus, V-Y fasciocutaneous flap.

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There is still controversy about the relative merits of conservative and excisional treatment in the management of pilonidal sinus. There are many surgical techniques ranging from excision and open granulation to primary closure (1–5). Other treatment options are cryotherapy, phenol injections, and marsupialisation, local flaps after excision, and most recently laser excision (6, 7, 13, 14, 17). However, results are usually inconsistent and recurrence rates vary from 5%–50% (1, 8). Though most cases have been handled well by conventional procedures, a small number of patients have been plagued with frequent recurrences despite appropriate surgical and medical treatment. Furthermore, the width of the sinuses poses difficulties in the closure of the defects that are created after radical excision. Instead of using complex transpositional or rotational flaps with their inherent drawbacks, we have used unilateral and fasciocutaneous V-Y advancement flaps for reconstruction of defects after radical excision of recurrent and wide pilonidal disease. This report is a retrospective study of 11 consecutive patients who underwent reconstruction with a V-Y fasciocutaneous advancement flap for chronic and persistent pilonidal disease.

PATIENTS AND METHODS

Eleven patients with recurrent pilonidal sinus disease of the sacrococcygeal region were managed surgically with the unilateral fasciocutaneous V-Y advancement flap. They had previously had several unsuccessful treatments. There were 11 men, mean age 30 years (range 24–38). They had all had previous attempts (mean 3.5) at surgical treatment which had failed. Many complex abscesses had recurred, and they were all desperate to be cured. The duration of the disease ranged from 2–7 years (mean 4.5). Patients were operated on when the disease was quiescent. Those with acute pilonidal abscess or active discharging infection were treated primarily by drainage and conservative treatment and given a course of metranidazole and erythromycin for three to four weeks according to the size and severity of the infection (2). All patients had preoperative mechanical bowel preparation with laxatives.

Surgical technique

The patient was placed prone (Fig. 1a). The extent and direction of the sinus was assessed by methylene blue

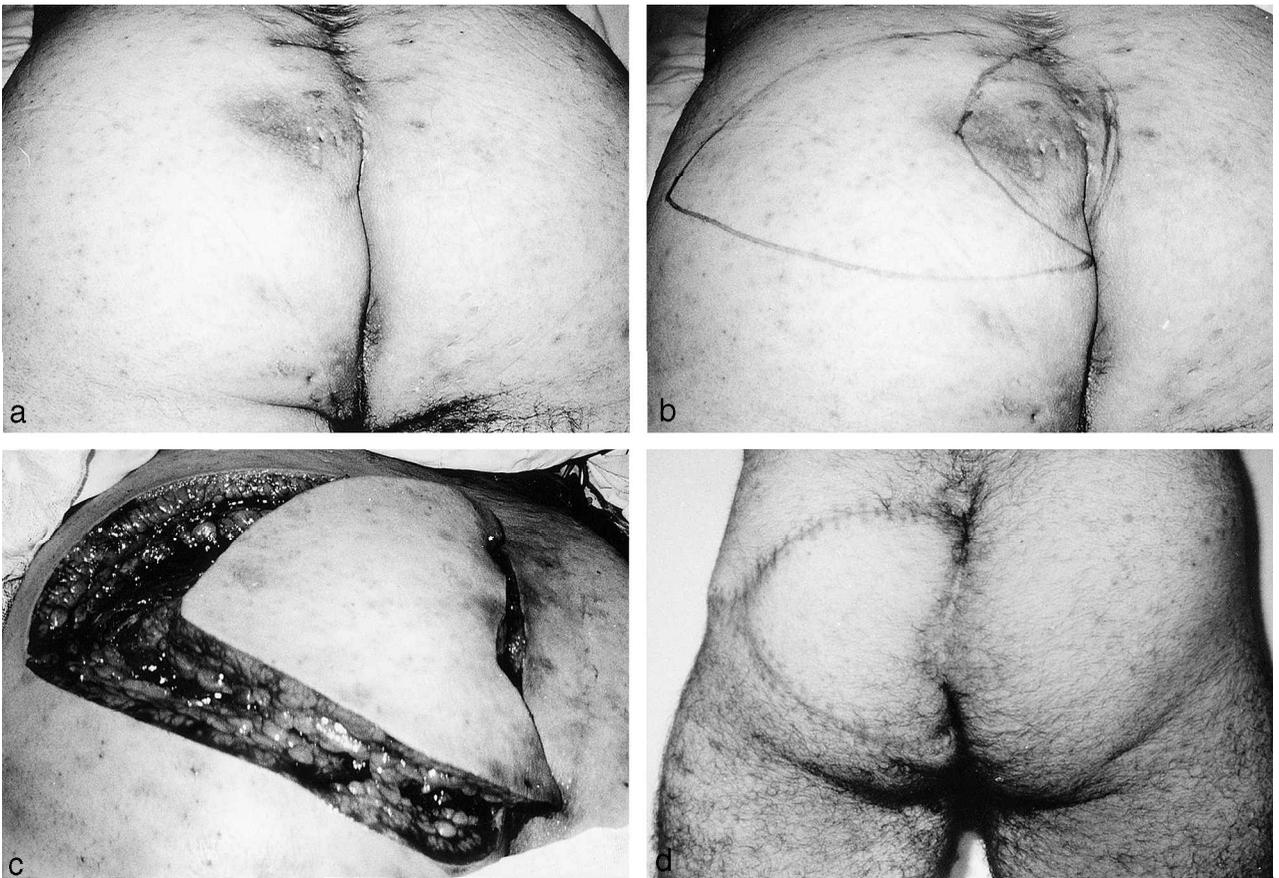


Fig. 1. (a) Preoperative view of wide, recurrent pilonidal sinus. (b) Design of the unilateral V-Y advancement fasciocutaneous flap. (c) Advancement of the flap and closure of the defect after excision of the pilonidal sinus. (d) Appearance of the wound one year postoperatively. Note the flattening of the cleft.

injection that marked all the pilonidal sinuses and their tributaries. An elliptical excision line was marked with its long axis oriented anteroposteriorly. The excision was then carried down to the postsacral fascia and laterally to the surrounding fat and normal fascia. The sinus tracts, side fistulas, cyst walls, and scar tissue were then resected completely. After we made sure that all tracts had been completely excised, the wound was temporarily packed, gloves and instruments changed, and the patient redraped (9).

The unilateral V-shaped flap was drawn on the skin of the buttock to cover defects of up to 6–8 cm in diameter, whereas another mirror-image flap can be raised on the opposite buttock for defects larger than 8 cm (Fig. 1b). It is essential that the V-Y advancement flap should include the underlying fascia of the gluteus maximus. The fasciocutaneous flap was raised as described by Park and Park (18) and later by Ohjimi et al. (16) (Fig. 1c). One-third of the sacral aspect of each flap was separated from fibrotic tissue and dense fascial attachments in the parasacral region to increase mobility and to ensure a tension-free closure. The skin

donor site was closed in a V-Y advancement fashion and a suction drain placed beneath the flap. To prevent stitch abscesses, we used a running intradermal monofilament suture. Fusidic acid ointment was applied to the wound, which was then dressed with non-adherent material. Patients were nursed on their sides for 24 hours, and were then encouraged to mobilise. They were usually discharged on the fourth postoperative day. Skin sutures were removed on day 14 and patients were told about the importance of anal hygiene to prevent contamination (Fig. 1d).

RESULTS

Eleven patients with chronic pilonidal sinus were operated on by this method. All wounds but two healed primarily with no complications. The two developed minor wound breakdown and superficial wound infections. These were treated by appropriate oral and topical antibiotics and healed secondarily (Table I). In all patients, a unilateral V-Y fasciocutaneous flap was used to provide coverage and no additional flap was

Table I. Details of patients who were treated by a V-Y advancement flap

Case No.	Age (years) and sex	No. of recurrences	Operating time (min)	Blood loss (ml)	Time to mobilisation (days)	Follow-up (months)	Hospital stay (days)	Width of defect (cm)	Time off work (days)
1	24/M	3	110	100	4	16	6	8	18
2	33/M	4	100	120	5	18	4	7	14
3	28/M	3	90	100	1	12	3	7.5	12
4	30/M	4	90	130	2	24	3	6.5	18
5	32/M	4	105	130	3	24	4	7.5	14
6	26/M	3	120	140	2	23	4	5	20
7	38/M	3	105	110	3	16	3	6	16
8	25/M	3	100	100	2	20	6	8	18
9	31/M	4	100	100	1	21	5	6.5	12
10	29/M	4	80	150	1	22	3	6	18
11	30/M	4	90	120	1	24	3	7.5	12

There were no complications except minor wound breakdown in cases 1 and 6.

needed. The average duration of the procedure was 99 minutes (range 80–120), and median blood loss was 118 ml. All flaps survived. None of the patients developed local haematomas, seromas, or serious wound infection leading to complete disruption of the sutures. Patients made a relatively pain-free post-operative recovery and remained in hospital for at most five days, except for cases 1 and 7 whose hospital stays were extended because of minor pulmonary atelectasis and sinus tachycardia, respectively. The duration of hospital stay ranged from three to six days (mean four days). All patients discharged from the hospital were able to walk relatively easily and had resumed all their daily activities after three weeks. The follow-up ranged from 12–24 months (mean 20). During the follow-up period, no additional operation was required, and there was no evidence of wound breakdown or recurrence.

DISCUSSION

In a review of publications about the treatment of pilonidal sinus, it is clear that most of the techniques aim at total excision or destruction of the sinuses without any regard for predisposing factors, which are currently considered important in the formation of the sinus. It is not surprising, therefore, that the recurrence rate after standard procedures such as excision and open granulation, or excision and primary closure, is high and everybody would welcome a procedure with a lasting result (2, 4, 6). Eventually several flaps were introduced for use after radical excision in chronic and widespread disease to eliminate recurrence. These included Z-plasty, W-plasty, the rotation flap, the rhomboid/Dufourmentel flap, the gluteus maximus myocutaneous rotation flap, and the V-Y advancement flap (1, 3, 4, 7, 9, 11, 13, 14, 19, 20, 22–24).

Z-plasty can be useful for flattening the natal cleft and seems to offer several advantages such as short hospital stay, rapid healing time, and diversion of the hair from midline that helps wound healing and avoids a midline scar (3). Authors who have used Z-plasty flaps have reported 5%–10% recurrences in their series and hospital stay ranging from four to 16 days (3, 11, 13, 23). The Z-plasty technique uses two triangular flaps with narrow ends, and complications such as 20% tip necrosis of triangular flaps, and 10% wound infection have been reported (3, 11). Bose and Candy stated that the elliptical defect covered by Z-plasty seldom exceeded 1 cm in width, and we know that Z-plasty has several inherent drawbacks such as tip necrosis, limitation of size of defects that can be covered, and wide undermining and dissection that predispose to seromas and haematomas (3, 11).

The rhomboid flap, Limberg flap, and Dufourmentel-plasty are variants of Z-plasty and have been reported to have few or no recurrences (4, 20). No complications related to vascularity of the flaps were reported by the authors but Lee et al. did not report such successful results as Quinodoz et al.; Lee et al. had 42% wound dehiscence after the Dufourmentel flap procedure, which significantly prolonged hospital stay, and they concluded that complex flap procedures were no more advantageous than the 'lay open' technique (12, 14, 20). The W-plasty, in which the zigzag excision spares the healthy skin, is useful for axial or unilateral forms but has inherent drawbacks such as limitation of coverage, wide dissection, and predisposition to haematoma or seroma (7, 23).

Use of a gluteus maximus myocutaneous flap for reconstruction of chronic pilonidal sinus as reported by Perez-Curri et al. and later by Rosen and Davidson would be overtreatment of the condition (19, 22). Perez-Curri et al. reported success in one case by using

a moderate-sized gluteus maximus flap. It can be hypothesised that the use of a large functioning muscle group in an otherwise healthy person might have potential drawbacks, but Rosen and Davidson stated that none of their patients complained of any loss of function, and the aesthetic outcome was reasonable while eliminating intergluteal cleft (22). The V-Y advancement flap does not sacrifice the gluteus maximus muscle, so preserves its function. Though the gluteus maximus flap provides a good blood supply, the use of a myocutaneous flap requires removal of the muscle, and more blood loss is unavoidable as well as prolonged operating time (21). Because the gluteus maximus flap requires the sacrifice of a portion of the gluteal muscle, it is always possible that the patient's ability to walk and climb stairs will be adversely affected (21).

The V-Y fasciocutaneous flap, either unilateral or bilateral, was used by Khatri et al. and later by Schoeller et al. for covering defects after excision of recurrent and widespread pilonidal disease (9, 24). It has the distinct advantage of requiring minimal dissection compared with the extensive mobilisation needed for raising rhomboid flap, rotation flaps, and gluteus maximus myocutaneous flaps, with its attendant morbidity (14). Minimal dissection reduces the incidence of postoperative haematoma and so minimises morbidity. Though they are uncommon, seromas or haematomas are reported after Z-plasties, rotation flaps, and gluteus maximus rotational flap applications (13). The V-Y advancement flap allows a tension-free closure, rapid wound healing, and totally obliterates the defect without leaving any dead space. Uneventful wound healing offers several benefits such as a lessening of postoperative pain, swift resumption of daily activities, and shorter hospital stay. Conversely, authors who have used conventional methods have reported prolonged hospital stay and wound healing, and increased time spent off work (1, 2, 11, 20).

It is speculated that positioning of the scar in the midline predisposes to a higher rate of recurrence by acting as a port of entry for reinsertion of hairs (2, 8). However, Obeid, and later Khatri et al. did not report any failures, despite the incisional scar in the midline, though Kitchen and Karydakakis had recurrences in their series even though they had placed the incisions laterally (8–10, 15). We have not encountered any recurrences during 1–2 year follow-up in our patients who had midline sacral scars after a V-Y advancement flap.

The deep hirsute natal cleft predisposes to the ingrowth of hair and formation of the pilonidal sinus disease, and the skin itself is not congenitally affected. Treatment should therefore aim at flattening the natal cleft, thereby reducing skin friction and preventing

puncture of the skin by hair, which results in a particular form of foreign body granuloma (25). Satisfactory wound healing, few or no recurrences, shorter hospital stay, minimal discomfort, and little time off work are the targets of ideal treatment (24, 25). Reliable flap coverage enables the surgeon to resect all sinus tracks without any restriction, as being unaware of this option during excision may result in cautious and incomplete resection that makes recurrences highly likely (24).

We advocate primary excision and closure by primary or secondary intention as the first choice of treatment in pilonidal sinus disease. However, chronic, recalcitrant, and troublesome cases that will certainly result in defects that are not amenable to simple primary closure should be candidates for the V-Y advancement flap. The critical width of the defect is 5–7 cm and the size and subsequent defect governs whether a unilateral or bilateral flap will be used. Most of the recurrences are noted within two years post-operatively and achieving recurrence-free results in 11 patients encourages us about the success and outlook of the technique. Further studies with a large group of patients will enable us to draw more definite conclusions on the definite indications and treatment of pilonidal disease.

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