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Comparison of Unilateral Fasciocutaneous V-Y Flap Technique with Cleft Lift Procedure in the Treatment of Recurrent Pilonidal Sinus Disease: A Retrospective Clinical Study

Authors' Contribution:

Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABCD E 1 Yavuz Savas Koca
BDG 1 Ihsan Yildiz
CF 1 Selahittin Koray Okur
EFG 1 Bekir Saricik
CEF 2 Mustafa Uğur
BCG 3 Mustafa Tefvik Bulbul
BE 4 Fuat Uslusoy
AF 1 İbrahim Barut

1 Department of General Surgery, Suleyman Demirel University, School of Medicine, Isparta, Turkey
2 Department of General Surgery, Mustafa Kemal University, School of Medicine, Hatay, Turkey
3 Department of Radiology, Nigde Bor State Hospital, Isparta, Turkey
4 Department of Plastic Surgery, Suleyman Demirel University, School of Medicine, Isparta, Turkey

Corresponding Author: Yavuz Savas Koca, e-mail: yavuzsavaskoca@gmail.com
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Background: This study aimed to assess treatment outcomes of the cleft lift procedure and V-Y flap technique in the treatment of recurrent pilonidal sinus disease (PSD).

Material/Methods: A total of 51 patients who underwent cleft lift procedure and 43 patients who underwent fasciocutaneous V-Y flap technique were evaluated. The demographic characteristics, previous operations, duration of symptoms, perioperative complications, duration of operation and hospital stay, duration of draining of all patients, and recurrence of PSD were recorded.

Results: The mean operation time was 35.61 ± 5.254 min in the cleft lift group (CLG) and 57.42 ± 7.327 min in the V-Y flap group (VYFG) ($p=0.001$). No wound dehiscence was found in the VYFG and 5 patients (9.8%) had wound dehiscence in the CLG ($p=0.035$). Draining time was 1.39 ± 0.603 days in the CLG and 2.79 ± 0.638 days in VYFG ($p=0.001$). The mean hospital stay was 1.75 ± 0.523 days in the CLG and 3.77 ± 1.02 days in the VYFG ($p=0.001$). Two patients (3.9%) in the CLG had recurrence and no recurrence was reported in the VYFG ($p=0.189$) in the given time interval.

Conclusions: Both methods in treatment of recurrent PSD can be preferred because of low complication and recurrence rates. Because no recurrence was found after the V-Y flap technique, it appears to be a preferable method despite some disadvantages.

MeSH Keywords: Pilonidal Sinus • Recurrence • Surgical Flaps

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Background

Sacrococcygeal pilonidal sinus disease (PSD) has an incidence rate of 26/100 00. It is more common in young men [1]. The previously preferred technique of leaving the wound open after primary repair had high recurrence rates and prolonged wound healing times and has been replaced by other techniques, including use of asymmetric, oblique, and full-thickness flaps. The most commonly used types of asymmetric lateral oblique flaps are the Karydakias flap procedure and the cleft lift procedure described by Bascom [2,3]. Among full-thickness flaps, the Limberg flap, fasciocutaneous VY advancement flap, Z-plasty, and rotation flaps are used in the treatment of PSD [4,5].

The cleft lift procedure described by Bascom is a successful method for the treatment of recurrent PSD. In contrast to other full-thickness flaps, Bascom's initial results did not reveal any recurrence after the cleft lift procedure, in which the defect was closed only with the skin flap after the excision [3].

The fasciocutaneous V-Y advancement flap is a full-thickness flap that is often preferred for the occlusion of large defects following excision. It is also a preferred method of covering large defects and can be applied unilaterally or bilaterally. Recurrence rates in PSD have been reported to range from 0% to 1.1% [6–8]. In the present study, we assessed and compared the outcomes and advantages of cleft lift and V-Y flap techniques in treatment of recurrent PSD.

Material and Methods

After approval by the local ethics committee, patients who presented to the General Surgery Clinic of Suleyman Demirel University Hospital with the diagnosis of recurrent pilonidal sinus disease between September 2010 and May 2016 were included in the assessment. Written informed consent was obtained from each patient.

Patients

The main inclusion criterion was the presence of recurrent pilonidal sinus disease in patients. We then retrospectively reviewed the results of 121 consecutive patients who underwent either the cleft lift procedure or the unilateral fasciocutaneous V-Y flap procedure for treatment of recurrent PSD (Figure 1). Seven patients whose data were unavailable and 20 patients who could not come to the control examination were excluded from the study. We evaluated the 43 patients who underwent the fasciocutaneous V-Y flap procedure and the 51 patients who underwent the cleft lift procedure.

Figure 1. Study flow diagram.

The demographic characteristics (sex, age, and BMI), previous operation history, duration of symptoms, perioperative complications (seroma, hematoma, wound infection, flap necrosis, and wound dissection), duration of operation, draining time, and length of hospital stay of all patients were recorded.

Examination records of each patient at 1 month, 6 months, and 1 year after the operation were reviewed and findings suggesting recurrence were recorded. All the patients participating in the study were contacted by telephone in September 2017 and invited to undergo a physical examination, and any findings that suggested recurrence were recorded. Data were collected by retrieving the previous examination forms and evaluating the final examination report of each patient.

Diagnosis

Patients were examined in outpatient clinics of the General Surgery Department and were diagnosed preoperatively. Diagnoses of all patients were confirmed by histopathological examination of specimens.

Preoperative preparation

A single dose of prophylactic antibiotic was administered 30 min before the start of the operation. All patients were operated on in the jack-knife position under spinal anesthesia. The hairs in the operation area were shaved on the operating table.

Surgical technique

Cleft lift flap (CL Group)

Boundaries of the natal cleft were identified (Figure 2). Beginning at 2 cm lateral of the midline, an incision was made 1–2 mm on the side of the sinus opening and curving around the anus. The skin from one side of the natal cleft was then elevated and excised. The skin on the opposite side of the cleft was undermined to a distance required to allow primary closure of the defect away from the midline without tension. The

Figure 2. Cleft lift flap.

fat tissue of the natal cleft was approximated using absorbable (2/0 polyglactin) sutures. The wound was closed with 3-0 polypropylene interrupted mattress sutures (Figure 2).

Unilateral fasciocutaneous V-Y flap (VYF Group)

V-Y flap; All the tissues containing recurrent pilonidal sinus tracts were excised with an elliptic incision. A V-shaped fasciocutaneous flap was prepared by going down to the gluteal fascia, and was moved towards the defect. Hemostasis was achieved by electrocautery after the excision, followed by placement of an aspirative drain in the incision. The V part of the flap was sutured to the presacral fascia with absorbable sutures (2/0 Vicryl), the subcutaneous tissue was approximated with 3/0 Vicryl sutures, and the skin was closed using 3/0

Prolene mattress sutures. Primary closure was performed for the opening in Y's leg (Figure 3).

Follow-up

All patients were mobilized on the same day. They were allowed water and food at 6 h after the operation. Drainage was performed daily and the drains were removed after the drainage became less than 20 ml/day. Sutures of all patients were removed on the 12th day after surgery. At 1 month, 6 months, and 1 year after the operation, control examinations were performed. All patients were invited by telephone to come to the clinic in September 2017. Recurrences of PSD were evaluated by physical examination. All patients were asked whether they had recurrent PSD at the first year's examination and

Figure 3. V-Y flap technique.

whether they underwent another operation due to recurrence at the end of the first year.

Recurrence was defined as any sinus opening or pit found after a wound had completely healed. Complete healing was defined as complication-free wound healing along its length. Wound dehiscence was defined as 2 or 3 stitches not completely healed. A seroma was defined as a subcutaneous tumor-like collection of serum that required needle drainage. Wound infection was defined as persistent purulent discharge noticed at wound dressing, which required reopening of the wound and antibiotic treatment. Hematoma was characterized by a subcutaneous entrapped bleeding that needed reopening of the wound for clot removal.

Statistical analysis

Differences between the groups were compared using the chi-square test and Mann-Whitney U test. The data were analyzed with the SPSS software package (version 21.0; SPSS, Inc., Chicago, IL, USA). The significance level was set at $p < 0.05$.

Results

A total of 94 patients were included in the study: 51 in the CLG and 43 in the VYFG. Mean age was 24.47 ± 4.478 in the CLG and 23.74 ± 4.071 in the VYFG, and the difference was not significant ($p = 0.416$). There were 44 males and 7 females in the CLG and 38 males and 5 females in the VYFG, and the difference

was not significant ($p=0.761$). Mean BMI was 23.91 ± 3.404 in the CLG and 24.61 ± 3.481 in the VYFG, and the difference was not significant ($p=0.325$).

When the duration of symptoms between the onset of symptoms and the operation was examined, the median value in the CLG was 9 (min 3, max 32) and it was 9 (min 1, max 38) months in the VYFG. There was no statistically significant difference in the onset of symptoms between both groups ($p=0.523$). The durations of operation were 35.61 ± 5.254 minutes in the CLG and 57.42 ± 7.327 minutes in the VYFG. There was a statistically significant difference between the 2 groups in terms of the duration of operation ($p=0.001$).

In the CLG, operation times were shorter. Draining time was 1.39 ± 0.603 days in the CLG and 2.79 ± 0.638 days in VYFG, and a statistically significant difference was found between the 2 groups ($p=0.001$). The drains were removed earlier in the CLG. Three patients (5.9%) in the CLG and 3 patients (7.0%) in the VYFG had seroma and the difference was not statistically significant ($p=0.829$). Hematoma was observed in 2 patients (3.9%) in the CLG and 2 patients (4.7%) in the VYFG, and there was no statistically significant difference in terms of hematoma formation ($p=0.861$). Wound infection occurred in 3 patients (5.9%) in the CLG and 2 patients (7.0%) in the VYFG, and the difference was not significant ($p=0.791$). Flap necrosis developed in 1 patient (2.0%) in the CLG and 3 (2.7%) patients in the VYFG, and the difference was not significant ($p=0.230$). Five cases (9.8%) had wound dehiscence in the CLG and none of the patients in VYFG had wound dehiscence, and this difference was statistically significant ($p=0.035$). Complications of wound dehiscence were more common in the CLG.

The mean hospital stay was 1.75 ± 0.523 days in the CLG and 3.77 ± 1.02 days in the VYFG. Statistically, there was a significant difference between the 2 groups ($p=0.001$). CLG patients were discharged sooner. The mean follow-up time was 46 (min 12, max 72) months in the CLG and 44 (min 15, max 72) months in the VYFG. There was no significant difference between the 2 groups in terms of follow-up time ($p=0.846$). Two patients (3.9%) had recurrence within this period in the CLG. No recurrence was observed in the VYFG. There was no statistically significant difference between the 2 groups in terms of recurrence ($p=0.189$).

Discussion

The recurrence of the disease remains the most serious problem in PSD treatment. The recurrence rates differ according to the treatment of choice. In the simplest approach, incision and curettage, this rate is reported to be between 1% and 20%. The rate of recurrence is reported to be 2–5% if sinus excision

is done and the wound is left open for secondary healing. This method has one of the lowest recurrence rates among the treatment methods but is used very rarely nowadays because the wound healing time, which lasts 8–28 weeks, is very long. In the case of marsupialization, the healing time can be reduced to 5–6 weeks by bringing the open wound to the fibrotic tissue [9]. Recurrence rates of primer closure after excision have been reported at between 11% and 29%. Many studies have reported recurrence rates ranging from 0% to 11% for the flapping techniques based on the midline replacement principle [3,10,11]. The cleft lift procedure described by Bascom and fasciocutaneous unilateral V-Y flap techniques have been very popular, with a recurrence rate of 0% [3,12].

Since the recurrent disease is seen in larger areas, larger excisions and skin defects occur. Because of the difficulties in primary closure of these defects, many flap methods are used in treatment for skin closure [2–4,12]. PSD is most common in young people and males [1]. In our study, the average age group and sex distribution were similar to previous publications (Table 1). When the patients were evaluated in terms of BMI, there was no significant difference between the 2 groups and our study results agreed with those in the literature [13].

Many symptoms and signs are seen in PSD, such as discharge, itching, stinging, discomfort, fever and pain due to abscess, and bleeding from the sinus [14,15]. In case of recurrence, these symptoms mentioned above can spread over a wider area. The mean time between onset of complaints of the patients and the operation was 9 months in both groups. When the patients were evaluated in terms of the number of operations they had previously undergone for PSD, the median value was 1 in both groups. The maximal number of previous operations was 4 in the CLG and 5 in the VYFG. There was no significant difference between the 2 groups.

The duration of operation was 35.61 ± 5.254 min in the CLG and 57.42 ± 7.327 min in the VYFG. The duration of the operation was significantly shorter in the CLG (Table 1). In the CLG, only skin flap preparation reduced the operation time. In VYFG, the increased length of operation time was due to the full-thickness preparation of the skin and subcutaneous soft tissue in flap preparation. Likewise, the size of the dissection for the flap affects the drainage use. Draining time was found to be 1.39 ± 0.603 days in the CLG and 2.79 ± 0.638 days in the VYFG. In the CLG, drains were drawn in a shorter time than in the other group (Table 1).

In terms of perioperative complications (seroma, hematoma, wound infection, and flap necrosis), the results of both groups were similar to each other and consistent with the literature [11]. However, in terms of wound dehiscence, the 2 groups differed. Five patients (9.8%) in the CLG had wound

Table 1. Results.

	Cleft lift group (CLG) (n=51)	VY flap group (VYFG) (n=43)	p Value
Age (SD)	24.47±4.478	23.74±4.071	p=0.416
Sex			p=0.761
Male	44 (86.3%)	38 (88.4%)	
Female	7 (13.7%)	5 (13.0%)	
BMI	23.91±3.404	24.61±3.481	p=0.325
Symptom (month) (median)	9 (min 3, max 32)	9 (min 1, max 38)	p=0.523
Before operation (median)	1 (min 1, max 4)	1 (min 1, max 5)	p=0.600
Operation duration (min)	35.61±5.254	57.42±7.327	p=0.001
Drainage duration (day)	1.39±0.603	2.79±0.638	p=0.001
Seroma (n)	3 (5.9%)	3 (7.0%)	p=0.829
Hematoma (n)	2 (3.9%)	2 (4.7%)	p=0.861
Wound Infection (n)	3 (5.9%)	2 (7.0%)	p=0.791
Flap Necrosis (n)	1 (2.0%)	3 (2.7%)	p=0.230
Wound Dehiscence (n)	5 (9.8%)	0 (0.0%)	p=0.035
Hospital Duration (day)	1.75±0.523	3.77±1.02	p=0.001
Follow-up (month) (median)	46 (min12, max72)	44 (min15, max72)	p=0.846
Recurrence (n)	2 (3.9%)	0 (0%)	p=0.189

dehiscence, similar to a previous study [14]. In the VYFG, wound dehiscence was not observed in any of the patients, probably because the midline structures are exposed to greater tension by cleft lift procedure, and the flap is composed of only the skin. Since the V-Y flap is an advancement flap, there is less tension in the midline, and because it is a full-thickness fasciocutaneous flap, it is supported by subcutaneous stitches and tissue strength is greater.

The mean duration of hospital stay was 1.75±0.523 days in the CLG and 3.77±1.02 days in the VYFG. Patients in the CLG stayed in hospital for a shorter time and were discharged earlier. The shorter duration of drainage in the CLG played a role in the short duration of hospital stay.

The average follow-up period was 46 months in the CLG and 44 months in the VYFG. No recurrence was seen in the VYFG during this period, whereas recurrence was observed in 2 patients (3.9%) in the CLG. Although there was no statistically significant difference between the 2 groups, recurrence was more frequent in the CLG. These ratios were similar to the ratios in the literature.

This study has some limitations. We did not evaluate the cosmetic results or time off from work due to lack of an objective analysis parameter. The relatively small size of our sample, the lack of a control group, and the single-institution experience are the main limitations.

Conclusions

Both methods may be preferred because of their low complication and recurrence rates in treatment of recurrent PSD. The advantages of the cleft lift procedure over the V-Y flap technique are shorter operating time, less need for drainage, and shorter hospitalization times. The disadvantages are that wound separation is more frequent in cleft lift method. Recurrence is the biggest problem in the treatment of recurrent PSD. No recurrence occurred after the V-Y flap technique; therefore, it appears to be the preferable method despite some disadvantages.

Conflicts of interest

None.

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