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Application of fasciocutaneous V-Y advancement flap in primary and recurrent sacrococcygeal pilonidal sinus disease

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Background: Pilonidal sinus disease is a common disease of young adults, which most frequently occurs in the sacrococcygeal region on the skin's midline. Various procedures, ranging from simple incision and curettage to complex flaps for natal cleft obliteration, have been described in the literature.





Material/Methods: We aimed to present the dermographic characters, post-operative complications, length of stay in hospital, time of return to daily activities, and recurrence rates of the patients in which we applied sinus excision and fasciocutaneous V-Y advancement flap due to primary complicated or recurrent sacrococcygeal pilonidal sinus disease.

Results: Patients with primary complicated and recurrent pilonidal sinus received a fasciocutaneous V-Y advancement flap in the general surgery service of our hospital. Eleven patients had recurrent disease. Thirty-seven patients received a unilateral V-Y flap and 8 patients received a bilateral V-Y flap. None of the patients had post-operative flap necrosis or wound opening. Two of the patients had a self-draining simple seroma and 3 of the patients had delayed wound healing in the perianal region of the incision, which was treated with dressing. The mean time required to return to daily activities was 7 days, and return to work took 17 days. In the mean 25-month follow-ups of the patients, no recurrences were detected.

Conclusions: We think that fasciocutaneous V-Y advancement flap is an easily learned and practicable method that reduces the recurrences in the patients with primary complicated and recurrent pilonidal sinus, length of stay in hospital, and time to return to daily activities and work in the post-operative period.

MeSH Keywords: **Pilonidal Sinus • Sacrococcygeal Region • Surgical Flaps**

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Background

Pilonidal sinus disease is a common disease of young adults, which most frequently occurs in the sacrococcygeal region on the skin's midline. While the exact pathogenesis of the disease is controversial, the hair is thought to play a central role in the formation of infection and the continuity of the granulation in sinuses [1,2]. Because abscess drainage and curettage are sufficient for the treatment in acute disease, a more precise surgical treatment should be performed in recurrent chronic disease. Various procedures, from simple incision and curettage to complex flaps for natal cleft obliteration, have been described in the literature.

In this study, we aimed to present the dermographic characters, post-operative complications, length of stay in hospital, time to return to daily activities, and recurrence rates of the patients undergoing sinus excision and fasciocutaneous V-Y advancement flap due to primary complicated or recurrent sacrococcygeal pilonidal sinus disease.

Material and Methods

We included the patients who underwent total sinus excision and fasciocutaneous V-Y advancement flap with the diagnosis of non-acute primary complicated (with large defect as a result of total sinus excision) and non-acute recurrent sacrococcygeal pilonidal sinus during the period of 2009–2013 in the general surgical service of our hospital. This technique was used on the patients with recurrence (no matter what the first operation was) and 10 cm midline width of defect after total sinus excision.

All the operations were carried out by the same surgeon and under spinal anesthesia. After spinal anesthesia, the patients were positioned face downwards for surgery, and the surgical area was cleaned with povidone-iodine after shaving. The presacral fascia was reached by injection of methylene blue

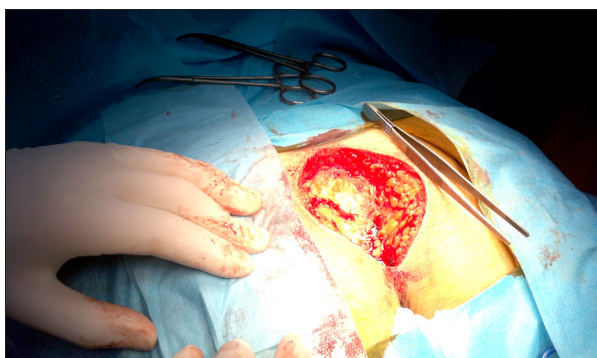


Figure 1. Totally excised sacrococcygeal pilonidal sinus.



Figure 2. Bilateral fasciocutaneous V-Y flap.

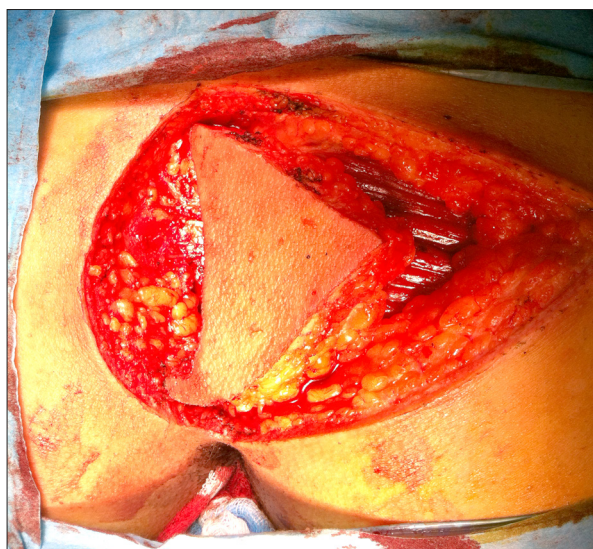


Figure 3. Prepared fasciocutaneous V flap.

through each sinus opening and using cautery with ellipsoid incision embodying all the sinus openings, and the skin was totally excised with subcutaneous tissues (Figure 1). In accordance with the width of the defect, unilateral or bilateral fasciocutaneous V-Y flap (Figure 2) (unilateral ones through the left gluteal region) was set free by being passed cutaneously and subcutaneously in the shape of a triangle (as the top of the triangle is right and/or left gluteus lateral, the base of



Figure 4. Complete unilateral fasciocutaneous V-Y flap.

the triangle is ellipsoid incision) and being mobilized by being lifted towards medial, with the fascia over flap gluteal muscle in the shape of an islet formed after reaching gluteal fascia at the top and the bottom by being bonded at the vertex of the triangle (Figure 3). The whole of this triangle-shaped mobile fasciocutaneous flap was covered with subcutaneous Vicryl no.1 and cutaneous 2/0 Prolene medially (Figure 4). The patients were received 1 g. Cefamezin preoperatively and post-operatively. The patients were ordered to avoid sitting until their sutures were removed, to take short steps, and use a depilatory on the surgical region for about 2 months after removal of the sutures. The patients were examined 1 month and 6 months after the operation by being called for the control examination. In the subsequent periods, the patients were followed-up every 6 months by phone.

Results

Between the years 2009 and 2013, 45 patients with primary complicated and recurrent pilonidal sinus underwent fasciocutaneous V-Y advancement flap in the general surgery service of our hospital. None of the patients had a drain and all the patients were mobilized and discharged on the post-operative first day. Of these patients, 43 (95.5%) were males and 2 (4.5%) were females. The median age of the patients was 28 years (range 17–53). Eleven patients had recurrent disease. Thirty-seven patients received a unilateral V-Y flap and 8 patients received a bilateral V-Y flap. None of the patients had post-operative flap necrosis or wound opening. Two (4.5%) of the patients had a self-draining simple seroma and 3 (6.6%) of the patients had delayed wound healing in the perianal region of the incision, which was treated with dressing. The time required for patients to return to their daily activities was 7 days (SD=2.2) and return to work took 17 days (SD=3.2). At

the mean 25-month (range between 6–48 months) follow-up, no recurrences were detected.

Discussion

Although the etiology of pilonidal sinus disease is not completely known, it has been observed to occur most commonly in young or adolescent males with family history of deep natal clefted wide hip or obesity, as well as some factors such as jobs that require sitting constantly, travelling, or driving, being excessively hairy, and poor regional hygiene [3–7]. It occurs in the deep gluteal space as a consequence of shed hair being pushed into the skin by the rotational movement of the hips during walking [8,9], causing the infected area to develop an acute or chronic foreign body reaction [9]. It is more apparent in obese patients because the skin covering the intergluteal sulcus is usually moist and fragile [9]. It is more common in Caucasians and rarer in Africans and Asians, mainly depending on the hairiness [10].

Many forms of surgical treatment have been suggested for the treatment of pilonidal sinus disease, but an optimal treatment has not been accepted yet. The definitive treatment of the disease is removing the sinus cavity with the sinus tract. For this, many methods are used, from excision and leaving the wound open or not closing it [11,12], to various flap methods (rhomboid, Limberg, V-Y advancement flap, Z-plasty, W-plasty) [13–21]. An ideal operation should be simple, hospital stay should be short, pain should be minimal, and there should be low recurrence rates [22]. The recurrence rates of excision and lay open technique are low, the duration of healing, hospital stay, and time required to resume daily activities are long [23–25]. High recurrence and wound healing rates due to tissue tension in excision and primary closure technique have been reported (16–25% and 50%, respectively) [26,27]. Again, in this technique, incision remains in the midline and fails to flatten the natal cleft. In the excision and primary closure technique that we practiced during the same period in our service, similar problems in similar rates were encountered and in this technique it was also thought that practicing insufficient sinus excision increases recurrences due to concern about not being able to get closer.

After sinus excision in the sacrococcygeal pilonidal sinus, flap methods have been developed to provide tensionless closing in large defects, flatten the natal cleft, remove the incision from midline, and reduce recurrences. These methods are especially suggested in primary complicated and recurrent pilonidal sinus diseases [28].

A comparative study of the patients (LF: 90 patients, V-Y flap: 86 patients) in which Altintoprak et al. [29] applied bilateral

Limberg and V-Y flap reported the respective durations of recurrence, hospital stay, and return to work as 3.3%, 1 day, and 17.1 days in LF; and 6.9%, 4.4 days, and 32.7 days in V-Y flap, respectively. While no recurrence was observed in our series, the patients returned to their daily activities in an average of 7 days (SD=2.2), and returned to work after 17 days (SD=3.2). In the Altintoprak et al. [29] study, different flap methods were performed in different clinics (LF in one clinic and V-Y in another clinic) by different surgeons. In our study, all the operations were performed by the same surgeon in a single institution. In their 25-case V-Y flap series, Shasrabudhe et al. [30] reported an average hospitalization time of 4 days, and total healing periods of 8 days and they also reported that they encountered no recurrences at 6-month and 5-year follow-ups. All of our patients were mobilized and discharged on post-operative day 1.

Because V-Y advancement flap is prepared in V-fashion and closed in Y-fashion, the Y leg supports the flap from behind and this ensures the flap is not under tension, thus even very large defects can be closed easily with the flap or flaps. Because there is no concern about not being able to close, this technique allows a sufficient sinus excision practice, complete

flattening in the natal cleft, and closure with an easy, tensionless flap that prevents midline incision. Therefore, patients mobilize sooner, healing is faster, hospital stay length and recurrences reduce, and patient satisfaction increases. The V-Y flap technique is very easy to learn and there is no need to engage in complicated planning before and after the operation. All of the 45 patients in which we performed a V-Y flap were mobilized and discharged in the first 24 h and they returned to their daily activities in an average of 7 days (sd=2.2), and returned to work after 17 days (sd=3.2). In our follow-ups at an average of 25 months (range 6–48 months), no recurrences were observed in our patients.

Conclusions

We believe that fasciocutaneous V-Y advancement flap is a method that is easily learned and practicable. In the post-operative period, it reduces recurrences in patients with primary complicated and recurrent pilonidal sinus, as well as shortening hospital stay, duration of returning to daily activities, and return to work.

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