Crossed Triangular Flaps Technique for Surgical Treatment of Chronic Pilonidal Sinus Disease

Ahmed E. Lasheen, MD; Khaled Saad, MD; Mahmoud Raslan, MD

Hypothesis: Pilonidal disease is a common chronic disorder of the sacrococcygeal region affecting young people. Although many surgical methods have been suggested, an ideal method is still lacking because of significant morbidity and high recurrence rates. However, the crossed triangular flaps technique, which involves excision and primary closure, with less morbidity and low recurrence rates, appears to meet the criteria for an ideal method.

Design: Case series.

Setting: This study was conducted in the General Surgery Department, Faculty of Medicine, Zagazig University, Zagazig City, Egypt, from January 2003 to November 2004.

Patients: This study included 57 patients with chronic pilonidal sinus disease with a mean age of 29 years.

Intervention: Limited and good excision of all diseased tissues was achieved, followed by a zigzag incision to produce triangular flaps on both sides of the wound. Multiple crossed triangular flaps were used to close the wound with a drain. The follow-up period ranged from 18 to 36 months (mean, 30 months).

Main Outcome Measures: Length of hospital stay and return to normal activities, early wound complications, and recurrence.

Results: The hospital stay for all patients was 24 hours and the mean time to return to work was 9 days (range, 7-12 days). Three cases (5.3%) had early wound complications and 1 case (1.75%) had recurrence.

Conclusion: The crossed triangular flaps technique for pilonidal disease is simple and easy and has favorable results regarding time to return to work, rate of recurrence, and cosmetically acceptable postoperative appearance.

Arch Surg. 2008;143(5):503-505

Pilonidal disease (PD) was first described by Hodges in 1880 and is diagnosed by the finding of a characteristic epithelial track situated in the skin of the natal cleft, a short distance behind the anus and generally containing hair. The onset is rare before puberty and after the age of 40 years. Males are affected 10 times more than females, probably because of their more hirsute nature. It has been long believed that hair follicles alone were the source of PD. However, more recent work on specimens following wide excision has shown that the pits penetrating into the dermis were distended with keratin and debris but not all arose in hair follicles. Hair and debris act as a foreign body causing an inflammatory reaction and can lead to prolonged inflammation and development of chronic PD. Malignant change is a relatively rare complication of PD. Although PD is quite common, controversy still exists about the treatment. While all treatment options are available, the consensus is that an ideal therapy should be simple, with minimal pain, a short hospital stay, a quick return to normal activity, and a low recurrence rate.

Surgical excision and primary closure by the crossed triangular flaps technique meets most of these ideal goals.

Methods

Fifty-seven patients with chronic pilonidal sinus disease (46 primary forms and 11 recurrent forms) were the subjects of this study. There were 42 men and 15 women with a mean age of 29 years (range, 17-35 years). Patients with acute pilonidal abscess or severe inflammation were excluded from study. The procedure was carried out under general or spinal anesthesia with the patient in a prone or jackknife position. After shaving off the hair and cleaning the area with povidone-iodine, methylene blue dye mixed with hydrogen peroxide was injected in the external openings to give a guideline for the tract and branching. A semicircular midline incision including all sinus openings was done, and good and limited excision of all sinus tracts was achieved. A zigzag incision across the wound was done to form multiple triangles, each triangle formed of 2
Figure 1. Crossed triangular flaps technique. A, Drawing the technique (midline and zigzag incisions); the black areas will be excised with sinus tracts. B, Excision of pilonidal sinus tissues. C, Zigzag incision was done to produce multiple triangles on both sides of the wound, each triangle formed of apical and basal parts on both sides of the midline. D, Excision of all apical parts. E, Undermining of all basal parts, with closure of the wound afterward. F, Wound and natal cleft 1.5 years postoperatively.

Figure 2. Diagram of crossed triangular flaps technique. A, Vertical incision to excise the sinus tracts and zigzag incision to produce multiple triangular flaps. B, Crosshatched areas are the apical parts of the triangular flaps, which will be excised. C, Basal parts are moved to replace the excised apical parts. D, The wound is closed in a zigzag line.
In spite of the high incidence of PD affecting the young population and the prolonged disabling period caused by it, surgeons have yet to reach unanimity about the best treatment for this condition. The majority of procedures can be classified in 1 of 2 categories: (1) excision and healing by secondary intention and (2) excision with primary closure or reconstructive flap techniques. The advantage of excision and secondary intention is a low recurrence rate of 6%, but the downside is a lengthy healing time (8-10 weeks) and high direct and indirect costs associated with inpatient care, follow-up wound care, and days lost from work. Despite this, there is a role for widespread excision in those with extensive chronic disease and following failed primary-closure surgical techniques.

Closure of the wound is more cosmetically acceptable for some patients and is associated with a shorter healing time and time off work. However, this potential benefit is offset by the need for bed rest for up to 1 week in the hospital, coupled with a higher risk of postoperative infection. The scar can be sited over the midline or displaced laterally, with 1-year recurrence rates of 18% and 10%, respectively. Excision with reconstruction procedures is more technically demanding and has been generally restricted to recurrent complex PD. These procedures re-shape and flatten the natal cleft to reduce friction, local warmth, moisture, and hair accumulation. The recurrence rate with these procedures is 6%. The recurrence can be divided into 2 groups; early recurrence is usually due to failure to identify 1 or more sinuses at operation and late recurrence is usually due to secondary infection caused by residual hair or debris that was not removed at operation, inadequate wound care, or insufficient attention to depilation.