The Limberg flap in sacrococcygeal pilonidal sinus disease

Pilonidal sinus disease can sometimes pose a surgical challenge because of prolonged wound healing problems and recurrence rates. This article describes a simple transposition flap which can be used for pilonidal sinus disease by general surgeons with good results.

Pilonidal disease is a painful chronic suppurative condition usually occurring in the natal cleft. It was first described by Mayo in 1833. Hodges in 1880 coined the term 'pilonidal' from Latin pilus (hair) and nidus (nest) (Hull and Wu, 2002). The magnitude of the problem first came to light during World War II where, from 1941–4, 78 924 soldiers were treated for pilonidal disease. This was the leading cause of non-traumatic sick days taken by American soldiers with recovery times of approximately 100 days. So many servicemen were affected with pilonidal disease that it was renamed 'jeep disease'.

The medical evidence regarding the aetiology of pilonidal sinus disease has shifted from being congenital in nature to acquired. The acquired theory postulates that pilonidal disease is a result of hair and cellular debris finding a portal of entry into the skin and hair follicles aided by a vacuum force caused by the tautening of skin when the patient bends over (Lanigan, 2009). Pilonidal disease in the general population has a male preponderance (the reason for which is not clearly understood), commonly affecting adults in the second to third decade of life and is relatively uncommon after the age of 40 years. Presentation of the disease ranges from asymptomatic midline natal cleft pits to acute abscess formation. Commonly patients present with chronic suppurative pilonidal sinus tracts, which are often multiple; at surgery, only 50–75% of all pilonidal sinuses actually contain hair (Lanigan, 2009).

Surgical treatment

Although there are many treatment options for sacrococcygeal pilonidal sinus disease ranging from simple excision and primary closure to Karyadakis procedure, Bascom's procedure and complex local flaps, this article describes the surgical treatment via an excision of all the sinus tracts and reconstruction with a Limberg flap for patients with chronic sinuses and recurrent disease. The Limberg flap is a rhomboid transposition flap initially designed to cover head and neck defects (Lister and Gibson, 1972). Its use has been further extended to treat sacrococcygeal pilonidal sinus disease.

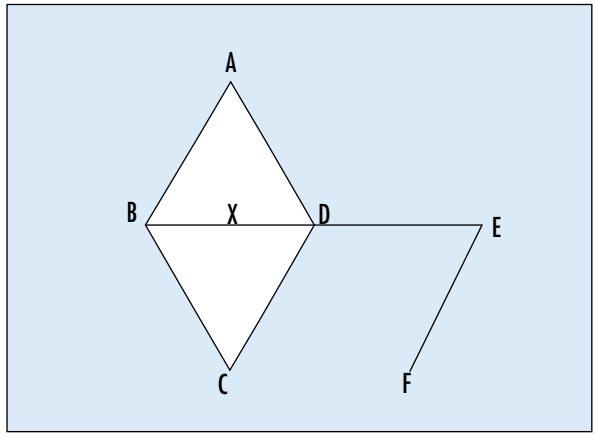
Marking of the rhombus and the flap

The operation is performed under general anaesthesia. Co-amoxiclav is given at induction and continued postoperatively for 3 days. The patient is positioned prone jack-knife on the operating table with the sides of the buttocks strapped to open out the natal cleft. Before marking the flap, the natal cleft, buttocks and back are meticulously shaved to remove all hair.

The rhombus is designed by first marking the cephalad and caudal extent of the disease by the two points A and C (*Figure 1*). The midpoint of this length is then marked as X. Since each side of a rhombus corresponds to roughly 60% of its length (Faux et al, 2005), the points BD are marked horizontally across the midpoint X, so that the distance between BD is 60% of the length from A to C. Now all four points are joined together so that all the sides of the rhombus are 60% of its length (Faux et al, 2005). This forms the area of excision of the disease which incorporates all the sinus tracts (*Figure 2*).

The flap is then marked by two points E and F, with E being a horizontal extension along the midpoint of the same length as the distance from B to D, and F lies along an imaginary straight line extending from AD so that the distance AF is equal to the distance between A and C and the length EF is equal to DE.

Figure 1. Geometrical marking of the flap.



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Procedure

The skin is incised with a knife and the subcutaneous tissue is excised as a rhombus down to the presacral fascia with diathermy dissection (*Figure 3*).

The flap is then mobilized by incising down to include the gluteal fascia (*Figure 4*). This is rotated to fill the defect without tension (*Figure 5*). Absolute haemostasis is achieved. A suction drain is placed under the flap. The flap is closed in layers with absorbable sutures, vicryl 2/0 for the subcutaneous fat and vicryl 3/0 subcuticular for the skin (*Figure 6*).

Melolin (Smith & Nephew, Victoria, Australia) dressing is used to cover the wounds and drains.

Postoperative care

The patient is nursed on the side or in the prone position. Patients are discharged on day 3 or 4 at which time the drain is removed. The dressing remains undisturbed for 1 week. Patients are advised to avoid sitting for prolonged periods during the first 2 weeks following surgery and regular hair removal is required, either with depilatory cream or shaving, preferably on a long-term basis (Katsoulis et al, 2006). The wound is reviewed 1 week postoperatively with further follow up at 6 weeks, 6 months and 1 year.

Figure 2. Rhombus and flap marking on patient.

Figure 3. Excision of the rhombus.

Figure 4. Mobilization of the flap.

Discussion

The Limberg flap has consistently produced good results for both primary and recurrent pilonidal sinus disease. It obliterates the deep natal cleft and places the sutures away from the midline which ensures good wound healing by first intention (Azab et al, 1984). The operation is also suitable where other operations have failed. It is simple to perform, reliable and is cosmetically acceptable. It is reproducible from surgeon to surgeon, even in those with little plastic surgical experience (Faux et al, 2005), without the fear of flap ischaemia and necrosis (Azab et al, 1984). In addition, the short time off work with low recurrence rates of 0–3% (Akin et al, 2008; Mentes et al, 2008) makes it the operation of choice for sacrococcygeal pilonidal sinus disease. BJHM

Conflict of interest: none.

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Figure 5. Flap rotated to fill the defect.

Figure 6. Flap sutured.

KEY POINTS

- Pilonidal sinus disease is a common surgical problem seen mostly in young adult males.
- Prolonged wound healing and recurrence rates have a significant impact on lifestyles and productivity at work in the young.
- No surgical procedure has gained universal popularity because of the lengthy wound healing times and recurrence of the disease.
- The Limberg flap is a versatile flap which can be used for primary and recurrent sacrococcygeal pilonidal sinus disease.
- It can be performed by general surgeons with little plastic surgical experience with excellent results.