Hong Kong J. Dermatol. Venereol. (2006) **14**, 75-77

Pearls in Dermatology

How I perform rhombic skin flap surgery

SK Hui 許紹基

Skin flaps are useful techniques in dermatological surgery. They can be considered when relative large lesions are required to be excised for diagnostic or therapeutic purposes, and can be performed under local anaesthesia in dermatological clinic.

Keywords: Dermatological surgery, skin flaps

Introduction

A skin flap is a segment of skin tissue with its own blood supply partially and dissected from its original site for the purpose of covering a primary defect. Skin flaps are useful techniques for excising relatively large cutaneous lesions and can be performed under local anaesthetics as an office procedure. While both skin graft and skin flap are auto-transplantation of skin tissue; skin graft differs from skin flap in being stripped of its own blood supply.

Method

Evaluation

Four factors should be considered for a successful skin flap surgery:

Social Hygiene Service, Department of Health, Hong Kong

SK Hui, MRCP(UK), FHKAM(Medicine)

Correspondence to: Dr SK Hui

Sai Ying Pun Dermatology Clinic, 3/F, 134 Queen's Road West, Sai Ying Pun, Hong Kong

1. *Location and direction of the suture lines*: suture lines are better to be in parallel to the relaxed skin tension lines and are better to lie along the borders between esthetic units of the face.
2. *Blood supply*: a given block of skin tissue has its blood supply from five directions, four from adjacent skin horizontally and one from deep perforating vessels vertically. Usually, only one to two direction of blood supply is preserved through the pedicle of a flap. The ratio of the length to the width of the flap is an important consideration. Face and scalp are better sites for skin flaps because the perfusion there is good.
3. *Skin laxity*: the laxity of skin can be determined by pinching the skin. Advancement flaps are preferred when the direction of skin laxity is parallel to the short axis of a wound. When the direction of skin laxity is perpendicular to the short axis of a wound, transposition flaps are preferred.
4. *Tension on closure*: tension on closure of a wound can compromise perfusion and healing. It is evident when the skin blanches or a 6-0 suture breaks on closure. Efforts should be made to achieve a tension free closure.

Details of different skin flaps can be referred to standard textbooks of dermatological surgery.[1,2] In this issue, a simple rhombic flap is discussed below.

Technique

A rhombic flap is a transposition flap. The skin defect and the flap are idealised as rhombic shape with equal length in all sides. Figure 1 illustrates the principle of a classical rhombic flap. The first suture is to close the secondary defect (HG to DG), and then, the second suture is to bring the flap in situ (EF to AB). Figures 2-5 are clinical photos of a modified rhombic flap performed on an elderly lady with a keratotic lesion on her nasal bridge.

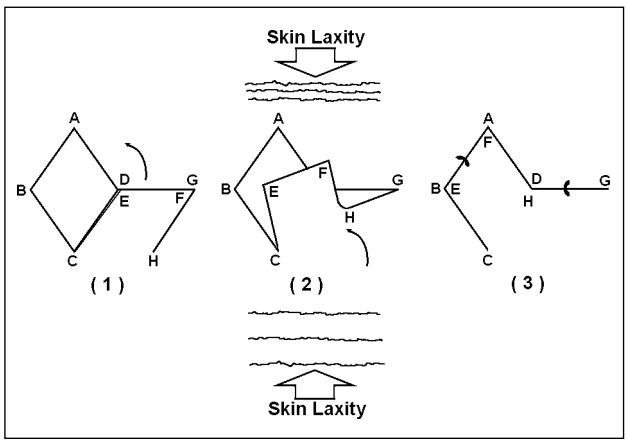

Figure 1. This figure illustrates three steps of a classical rhombic flap. Actual operations vary with individual patient, nature and locations of lesions in daily practice. (1) An illustration the plan of an idealised rhombic flap with equal length in all four sides and incision lines EF and HG. (2) The primary defect is going to be covered by the flap CEFH (E to B, F to A). The secondary defect DGH is going to be covered by advancement of the skin tissue below and lateral to CHG (H to D). (3) The first stitch is better to be made to close the secondary defect; this will help to reduce the tension on suturing of the flap (HG to DG).

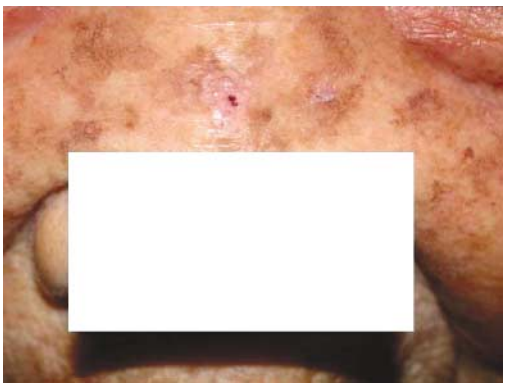

Figure 2. The original lesion was a hyperkeratotic plaque over the nasal bridge of an 80 years old lady with history of occasional bleeding for two years.

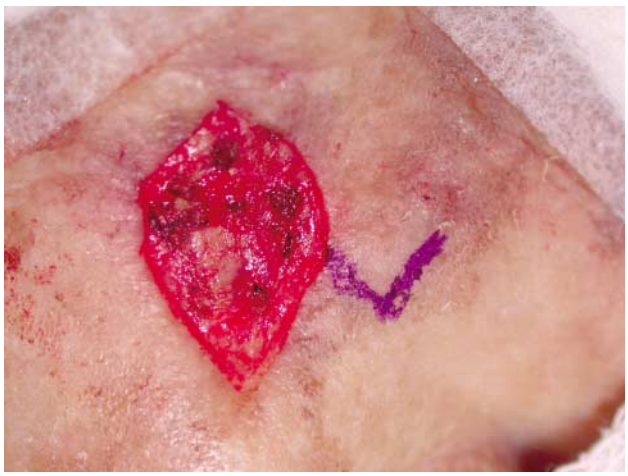

Figure 3. The actual flap was smaller than a classical rhombic flap as the skin laxity was abundant.

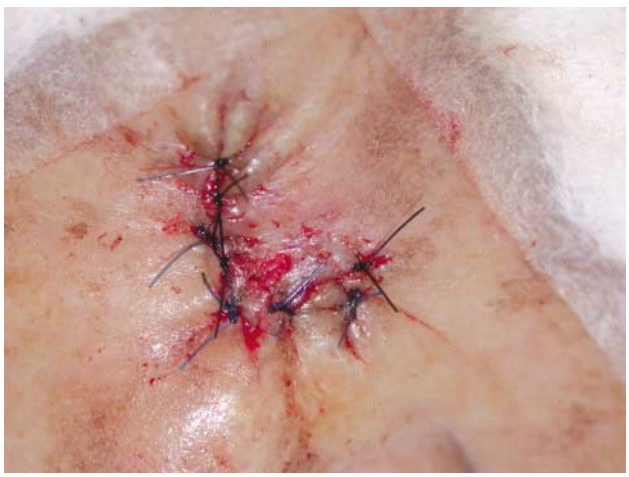

Figure 4. Stitches were made.

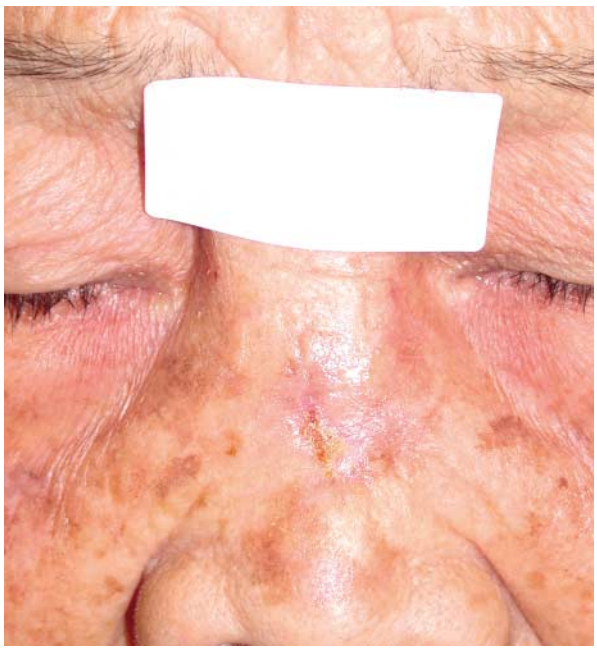

Figure 5. Healed wound on day 21. Histological diagnosis was actinic keratosis.

Comment

In good hands, complications are uncommon. Flap necrosis may occur if its blood supply is severed during surgery. Smokers have a high risk for flap necrosis and must be forewarned to stop smoking well before surgery to reduce the risk. Infection is uncommon on face and scalp for the abundant blood supply over this area. Peri-operative haemorrhage and post-operative haematoma may occur. Meticulous haemostasis is important. Pre-operative assessment for risk factors such as use of anti-platelet agents and anticoagulants should be known and stopped appropriately. Altered sensation such as temporary paraesthesia or anaesthesia over the flap may occur as terminal sensory nerve branches are severed. Damage of important neuro-vasculature causing impaired function and cosmetic disfigurement might occur. The anatomy of important structures should therefore be studied and assessed on individual cases before the operation. It is important to keep staying in the correct plane to prevent accidental neurovascular damage.

Small flaps can be performed under local anaesthesia by experienced dermatologist. Like other form of surgery, skin flap is a surgical intervention; the operator must be well acquainted with local anatomy. Prior full patient assessment for fitness and written consent are mandatory. Clinicians must be vigilant on any complications that may occur.

References

1. Khouri R. Skin flaps. In: Nouri K, Leal-Khouri S, eds. Techniques in Dermatologic Surgery. 1st ed. Philadelphia, USA: Elsevier Ltd.;2003:141-52.
2. 邢新。鼻與鼻旁組織缺損與畸型的皮瓣修復。In:邢新。Atlas of clinical application of skin flap transfers. 1st ed. Liaoning. PRC. Liaoning Science and Technology Publishing House;2004:73-94.