The Limberg flap for cutaneous defects – a two year experience

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Abstract

Aim To evaluate the Limberg or rhomboid flap done during the past 2 years with regard to applicability, reliability and complications.

Methods All Limberg flaps done were reviewed by inspecting case records and directly following up patients. The indications, suitability, post-operative course and complications were noted.

Results Eleven Limberg flaps were done during this period. Seven patients underwent the procedure for cutaneous malignancies. Rest for various benign lesions. All the flaps survived. One patient developed a hematoma under the flap. A significant cosmetic defect was noted in two patients.

Conclusion The Limberg flap is a safe and reliable flap for the coverage of various cutaneous defects if properly planned.

Keywords Rhomboid flap · Transposition flap · Cutaneous malignancy.

Introduction

The Limberg or rhomboid flap was first described by Limberg in 1946. It is used for coverage of a rhomboid shaped defect. It is particularly useful for coverage of defects after excision of cutaneous malignancies; especially of the face. Hence it is of importance in dermatosurgery. But it requires a critical assessment of tissue redundancy in the direction of flap movement. We have been using this flap occasionally in our practice. This is an attempt to critically evaluate the 11 Limberg flaps done in the past 2 years.

Materials and methods

The details of all the patients for whom Limberg flaps were done from April 2003 to April 2005 were retrospectively reviewed. The original diagnosis, defect size, site and donor areas were critically analyzed as were the post-operative course of all patients. An attempt was made to analyze the problems and complications associated with the flap.

Results

Between April 2003 and April 2005, 11 patients underwent the Limberg flap for freshly created cutaneous defects. The ages ranged from 45 to 76 years. Nine patients were males and two were females.

Three patients had basal cell carcinomas of the face, three had squamous cell carcinomas of the face, and one

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patient had squamous cell carcinomas of the natal cleft. Hence, seven patients underwent the procedure for malignancies.

Out of the four benign lesions, first was a long standing single lesion of discoid lupus erythematosus in the face; second was a defect following excision of a pilonidal sinus, third, a calcinosis cutis on the natal cleft; and fourth, an ischial pressure sore.

The seven patients with malignant lesions were kept on regular follow-up, which ranged from 2 months to 2 years. The benign lesions were followed up only for a month after discharge.

The hospital stay ranged from 2 days to 16 days, the average being 3.6 days. There were no recurrences in the malignant group, and none had positive margins on histopathological examination. Two patients had close margins, and are kept on regular follow-up.

There were no instances of flap necrosis, either total or partial. One patient had a hematoma under the flap, which was evacuated. He recovered fully and the flap was not affected. On follow up, none had trap-door scarring, a feature characteristic of all flaps with rounded margins.

Local tissue distortion, leading to a cosmetic complaint was noted in two patients., with pulling down of the lateral canthus for an adjacent lesion. The flap was taken from the skin over lying the left zygoma. Another patient complained of pulling up of the right oral commissure, with an adjacent lesion. The flap was taken from the right nasolabial area.

Discussion

The Limberg flap is a versatile flap for the coverage of facial defects. First, a parallelogram with angles of 60 and 120 is drawn around the excision margin (Fig. 1). Only an elliptical lesion can be comfortably turned into such a defect. For a circular defect, use of the Limberg flap will lead to excessive resection. Next, a line equal in length to the short diagonal is extended from the parallelogram as a continuation of the short diagonal. Drawing a second line from the distal end of the first line forms the apex of the flap. This second line must be equal in length and parallel to one of the adjacent defect sides.

The flap and the surrounding tissue are undermined in the subdermal plane after creating the rhombus defect.

Fig. 1 Planning of the rhomboid flap

(A)

(B)

Fig. 2a Squamous cell carcinoma of the central forehead

Fig. 2b The flap after transposition

(A)

(B)

Fig. 3a A basal cell carcinoma above the right oral commissure

Fig. 3b The flap after transfer showing distortion of the upper lip

Fig. 4a A squamous cell carcinoma of the natal cleft with the planned markings

Fig. 4b The flap after transposition

When possible, take skin from a donor site where it will have the greatest relative laxity. The line of maximum tension is the line of closure of the donor site. This should be planned to lie in the line of maximum extensibility in the face [2].

Our series indicates that the Limberg flap is a very safe flap, if properly used. The flap must be planned in such a way that the donor site closure line is from a lax area. The nasolabial area, the temple, and the glabella are examples. Three of our flaps were from the glabellar area, 2 from the nasolabial crease, 2 from the temple and one from the malar region.

Fig. 2 shows squamous cell carcinoma of the central forehead and the planned flap is marked out in the glabellar region.

Fig. 3 shows a patient with a basal cell carcinoma in the right oral commissure. The flap has produced a pulling up and eversion of the commissure despite a slight modification of the flap taking this into account. This could have been avoided by the use of a longer transposition flap.

Bray DA(1983) reviewed the 22 rhombic flaps he has done [3]. He stresses the importance of pre- operative design and attention to placement in relation to skin extensibility. He reports no instances of necrosis.

The area of the natal cleft is a good indication for Limberg flap cover. Fig. 4 illustrates a case of squamous cell carcinoma of the natal cleft, closed by the flap taken from the right gluteal region. Mentis BB et al (2004) reports on successful reconstruction of the natal cleft defect after removal of pilonidal sinus in 238 patients [4].

We conclude that the Limberg flap is a safe and versatile flap for the coverage of various defects provided enough attention is given to proper planning.

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