Repair with Combined Flap of Bilobed and Rotation of a Defect Following Mohs Micrographic Surgery

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A 30-year-old man developed basal cell carcinoma 3 years ago which showed as a pea sized, crusted nodule with extending pigmentation and telangiectasia on the inner side of the right lower eyelid. Five stages of Mohs micrographic surgery were required for the complete eradication of all tumor cells in the lesions of the nodule and extending pigmentation. The defect following the surgery was 4.5 × 3.5cm and was too large to repair with a primary closure or simple single flap. So, the defect was repaired with a combined flap of glabellar bilobed and cheek rotation.

We report that the combined flap of glabellar bilobed and cheek rotation is a useful and relatively simple method for the reconstruction of a large defect on the inner side of the lower eyelid area. (Ann Dermatol 8:1)47~50, 1996).

Key Words : Bilobed flap, Combined flap, Mohs micrographic surgery, Rotation flap

Although Mohs micrographic surgery has the advantages of minimal tissue loss and low recurrence, primary closure or the use of a single flap is not infrequently difficult in reconstructing the defect following Mohs micrographic surgery, so that the use of a combined flap is encouraged. The combined flap is a useful tool for reconstructing large wounds and makes an important backup approach when an attempted single flap closure is not possible.

We present a case of a combined flap on the inner side of lower eyelid area.

REPORT OF A CASE

A 30-year-old man visited our department with a pea-sized crusted nodule which developed 3 years ago on the inner side of the right lower eyelid(Fig. 1). He was already diagnosed as having basal cell carcinoma by histopathological examinations at Korea University Kuro Hospital and was referred in order to receive Mohs micrographic surgery. On physical examination, pigmentation and telangiectases were irregularly extended around the nodule in each direction up to a maximum of 13mm and 7mm respectively. The past and family history was noncontributory.

SURGICAL PROCEEDING

Mohs micrographic surgery was performed through 5 stages. During the first and second stages, numerous nests of tumor cells were extended in all pieces from the main tumor mass. During the third stage, some specimens from the extending telangiectasia and pigmentation area still showed many tumor nests diffusely or focally(Fig. 2). Another two more stages were required until the area was pathologically free for tumor cells. In total, five stages of Mohs micrographic surgery were performed, until finally specimens from the 5th stage did not show any tumor cells. A maximum width of 32mm beyond the nodule was resected and eventually a 4.5 × 3.5cm defect developed on the inner side of right lower eyelid after surgery. This was too large to repair with a primary closure or simple single flap(Fig. 3). A combined flap of bilobed

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Fig. 1. A pea-sized, crusted nodule with extending pigmentation and telangiectasia.

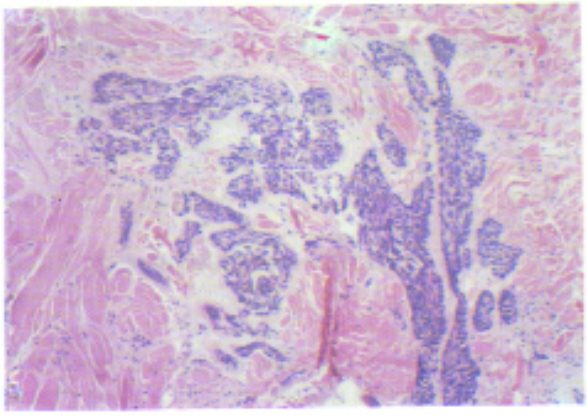

Fig. 2. On the pathologic finding of the 4th stage of Mohs surgery, a piece of specimen from pigmented area still showed several nests of tumor cells in the deep dermis(H & E stain, ×100).

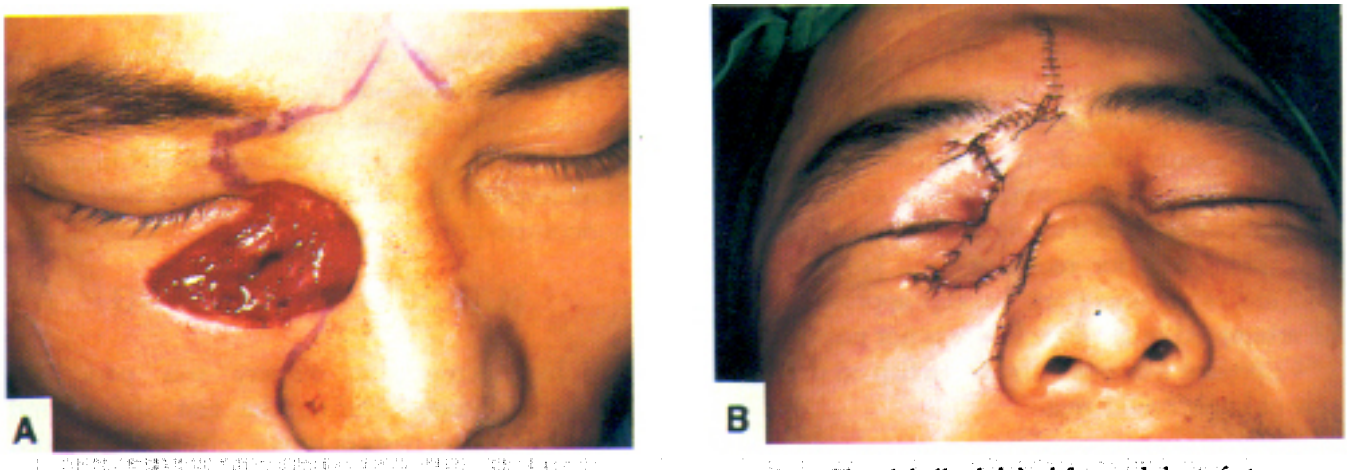

Fig. 3. The defect following five stages of Mohs surgery was 4.5cm × 3.5cm. The glabellar bilobed flap and the inferior-based cheek rotation flap were designed(A) and repaired the defect(B).

transposition and single lobed rotation was designed(Fig. 3A,4). A primary lobe of bilobed flap was designed on the upper eyelid and transferred to the defect. A second lobe was designed on the glabellar area and transferred to the upper eyelid where the primary lobe had been located originally. The defect created by the secondary lobe was closed primarily. The single lobed rotation flap was designed as inferiorly based, along the nasolabial fold, was rotated in a counterclockwise manner and bound to inferior border of transferred primary lobe of bilobed flap(Fig. 3B,4). The wounds healed without distortion and infection, but a trapdoor deformity developed in the round tip of the transferred primary lobe. Excision of the trapdoor and dermabrasion for incision scars were performed 7 weeks after the Mohs micrographic surgery(Fig. 5). The scar lines became inconspicuous and the trapdoor deformity was corrected. The recurrence of basal cell carcinoma has not been observed until one year after surgery.

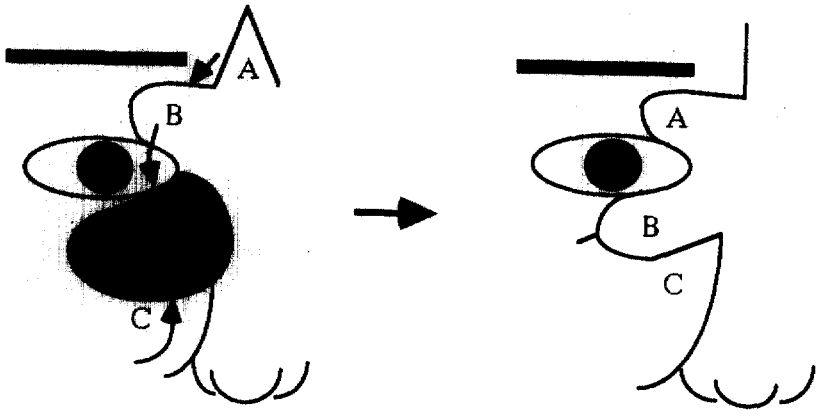

Fig. 4. Diagram of the combined flap design and closure

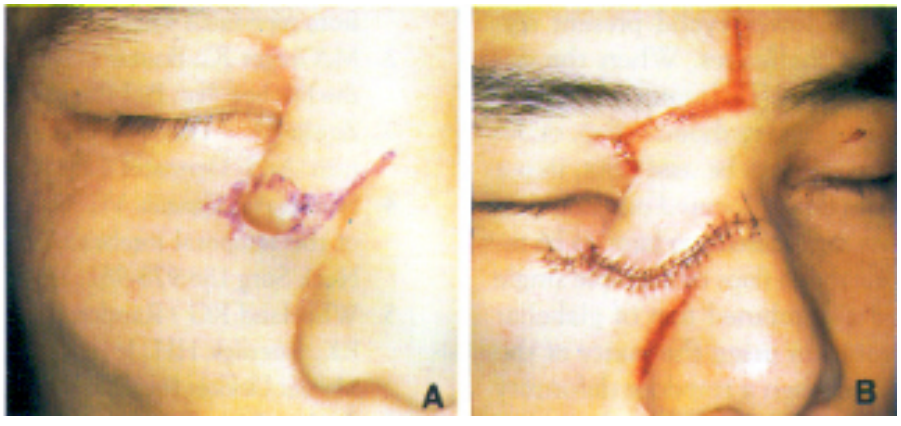

Fig. 5. Seven weeks after surgery, incision lines were drawed with gentian violet for excision of trapdoor deformity(A). After excision of the trapdoor deformity and dermabrasion of other stitch scar lines(B).

DISCUSSION

Esser[1] described the bilobed flap first in 1918. The bilobed flap is used when a defect is in the thick or inelastic tissue but adjacent to relatively loose tissue, mainly the nose[2,3]. Also, a large defect on the temple[4], chin[2], and extremities including palm and sole[2] may be repaired with the bilobed flap. But apart from the face, the bilobed flap has no advantage over other techniques and requires a delayed procedure due to the poor vascularity of the area[2]. This flap provides an excellent color match, is relatively free from distortion and tension, and offers a greater flexibility of tissue movement so that it permits tissue transfer 180 degrees away from the donor area. A possible disadvantage may be the formation of trapdoor deformity because these flaps are round[5].

The rotation flap is one of the simpler types of random pattern flaps. It uses the lateral movement of tissue while at the same time rotating about a pivot point. The major advantage of the rotation flap is safety due to its wide base and good vascularity. Another advantage is that a large amount of tissue may be moved from any side of a defect and this flap is relatively easy to camouflage by placing the curved incision within relaxed skin tension lines. But the rotation flap extends a quater-circle arced-curve line from the superior aspect of a defect so that the scar may appear relativly excessive to the original defect[6].

Dzubow[7] introduced the concept of defect subdivision. The defect subdivision involves segmentation of a defect into smaller wounds, each of which may tap into separate areas of regional laxity for closure. Under this concept, various combined flaps have been used on various regions, such as the temple[7], ckeek[7], and inner canthal area[8] and

the optimal results have been good. The combined flaps would be useful tools for reconstructing large wounds that could not be closed with a single flap, moreover, the use of them makes an important backup approach when an attempted flap closure has failed. The combined flap under the concept of defect subdividion is valuable only when at least two sites of laxity proximate to the defect are available. On the temple, laxity can often be found vertically from the cheek and neck region, and a combination of two rhomboid flaps can be used[7]. On the medial canthus and adjacent lateral nasal root skin may be appreciated from the glabellar area as well as from the lower cheek and the combined flap of glabellar fan and cheek rotation flaps can be used in this area[8].

Defects involving the lower eyelid present significant reconstructive challenges. When the defects are relatively small, A-T closure, McGregor flap, Mustarde-type flap, Limberg rhombic flap, or 30-degree angle flap of Webster can be used[9]. But, in our case the 4.5cm $\times$3.5cm defect located on the inner side of lower eyelid was considered too large to be repaired with one of the above flaps or a simple single flap. So, we planned a combined flap of glabellar bilobed and cheek rotation using the laxity of the glabella and cheek. Although a trapdoor deformity developed partially, there was neither distortion nor necrosis, and the trapdoor deformity was corrected by excision and dermabrasion.

This case of basal cell carcinoma showed a crusted nodule and laterally extending pigmentation from the nodule. 5 stages of Mohs surgery were required, as the pigmented area contained many tumor cells. The maximum width of resected skin in the pigmented area was 32mm from the nodule, which was 2.5 times wider than pigmented area. It means that the pigmented area extending from the basal cell carcinoma contained tumor cells, and this whole area should be warned and planned as cancer invasion from the first stage of Mohs surgery so the number of Mohs surgery can be reduced.

In conclusion, the combined flap of glabellar bilobed and cheek rotation flap is a useful and simple method for the reconstruction of a large defect on the inner side of lower eyelid area.

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