Divided nevi of the eyelids are rare forms of congenital nevi, first described in 1919 by Fuchs. They occur on the margins of the upper and lower eyelids of 1 eye, and the 2 nevi look as 1 when the eye is closed. These nevi are extremely disfiguring and can result in ridicule in school-aged patients. Because the risk of malignant transformation is low, surgical treatment is mostly driven by cosmetic and functional concerns. Divided nevi of the eyelids are clinically classified into 3 groups according to their size: small (<1.5 cm), medium (1.5–20 cm), and large (>20 cm). For medium and large types, an expanded flap and/or a full-thickness skin graft (expanded/nonexpanded) are required in many cases. However, particularly in Asian patients, skin grafts are often conspicuous and do not provide satisfactory results because of different skin types. Here, we describe our novel reconstructive technique using an extended cheek flap and tissue expander for the medium-sized divided nevus of the eyelids and illustrate it using a brief case report.

**SURGICAL METHODS**

**Insertion of an Expander**

In the first operation, a rectangular-type tissue expander is inserted under the zygomatic area through a preauricular incision on the superficial musculoaponeurotic system. After full expansion, partial excision sparing the tarsal plates, lid margins, conjunctiva, and lacrimal drainage function is performed.

**Flap Design and Elevation Technique**

For the upper eyelid, the incision is placed on the double eyelid line and inferior margin of the eyebrow. For the lower eyelid, a subciliary incision is performed. The incision is laterally extended from the outside of the eyebrow at a 30-degree angle, and an incision to the mandible edge along the temporal region hairline is designed (Fig. 1). To prevent webbing, a triangle is interposed in the lateral canthus. An extended cheek flap including the lateral orbital area and temple region is elevated based on the parotid fascia. The elevation of a superficial layer of subcutaneous fatty tissue is started from the temple region; care is taken to avoid injury to the temporal branch of the facial nerve. The capsule around the expander must be preserved. Back cuts are added to the flap base to eliminate tension. The flap is transplanted to the defect by transposing and rotating.
The flap is then divided, and the upper and lower eyelids are repaired at the same time. The flap is anchored with a permanent suture to the periosteum of the lateral orbital wall to prevent ectropion. The donor site is primarily closed.

This study was approved by the Institutional Review Board at Fukuoka Sanno Hospital. This study adhered to the tenets of the Declaration of Helsinki.

**CASE REPORT**

A 15-year-old boy presented with a medium-sized divided nevus of his left eye. The nevus was 5 × 3 and 5 × 3.5 cm, respectively, on the upper and lower eyelids (Fig. 2). The nevus extended from the eyebrow to the eyelash-bearing area with cheek extension. A rectangular-type tissue expander (8 × 4 cm, 100 mL; Koken Co., Ltd., Tokyo, Japan) was inserted (See figure, Supplemental Digital Content 1, which displays the flap design, http://links.lww.com/PRS-GO/A325). After adequate expansion, partial excision was performed, preserving eyelid margins, conjunctiva, and lacrimal drainage function. The extended cheek flap was then elevated (Fig. 3), and the upper and lower eyelids were covered by the divided flap (See figure, Supplemental Digital Content 2, which displays the immediate postoperative view, http://links.lww.com/PRSGO/A326).

**Fig. 1.** Schematic drawing of the surgical methods for the divided nevus of the eyelids with the extended cheek flap using a tissue expander. Dashed line represents flap-dividing incision.

**Fig. 2.** Preoperative view: divided nevus in a 15-year-old boy, extending from the eyebrow to the eyelash-bearing area with cheek extension.

**Fig. 3.** Intraoperative view: the flap was elevated based on the parotid fascia, preserving capsules around the expander.
RESULTS

In the present patient, the flap completely survived without complications. One minor revision was performed 2 years after surgery. Complications such as ectropion, ptosis, and epiphora did not occur during the 3-year postoperative follow-up period. Satisfactory results were achieved for both eyelid function and cosmetic appearance, and the donor-site scar was acceptable (Fig. 4 and See figure, Supplemental Digital Content 3, which displays the postoperative lateral view, http://links.lww.com/PRSGO/A327).

DISCUSSION

The divided nevus of the eyelids remains a major challenge for plastic surgeons because cosmetic and functional results are required. Although postauricular or supraclavicular skin graft is a common approach, the grafts are often conspicuous in Asian patients, unlike white patients, because of the differences in color and texture.5–7 Therefore, it was necessary to devise a method that does not use skin grafts.

The extended cheek flap created using a tissue expander is divided along the long axis after advancement. Therefore, we have essentially introduced a “divided flap for a divided nevus.” This method has the 3 following advantages: the upper and lower eyelids are reconstructed with a skin flap at the same time, tissue adaptability is superior in color and texture because adjacent skin is used, and skin graft is unnecessary. This technique is based on the concept of an expanded flap. In an expanded flap, choke vessels develop because of the effect of delay phenomenon, and the number of angiosomes where blood flow may reach is increased.8 In addition, the richness of the subdermal vascular network of this region9 and capsule formation may also contribute to flap microcirculation.10 We believe that these factors allow the extension and division of this flap. Furthermore, because the flap was divided in a length-to-width ratio of 2:1 for the upper eyelid and 3:1 for the lower eyelid, we succeeded in flap survival without necrosis.

We strongly suggest that this method is a useful choice for the medium-sized divided nevus, although there are some limitations depending on the region and size of the nevus. This method should be applied to the medium-sized divided nevus in which skin is maintained in the lateral orbital and temporal regions in postpubertal patients who have skin laxity. Moreover, the degree of flap extension and requirements for division remain unclear. When venous congestion is intraoperatively detected, it may be better to temporarily fix the flap to the defect with tarsorrhaphy and secondarily divide it.

CONCLUSIONS

We presented a novel procedure for the divided nevus of the eyelids. An extended cheek flap using a tissue expander can be a useful choice for the medium-sized divided nevus of the eyelids. In future, this method can be applied to total reconstruction of the eyelids.

PATIENT CONSENT

The patient and his parents provided written consent for the use of the patient’s images.

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