INTRODUCTION

Divided nevus of the eyelids, which is also known as “kissing nevus” or “panda nevus,” is a rare form of congenital nevus that usually occurs on the margins of the upper and lower eyelids of one eye. Each nevus forms one large nevus when the eyelids are closed; therefore they are named “kissing” or “divided” nevi.1–3 Because it usually involves the upper and lower eyelids margins, it causes functional and esthetic problems, and makes the reconstruction procedure difficult.4 The risk of malignant transformation in congenital facial nevi seems to be small; however, the functional and cosmetic problem can be profound, especially in young patients.5 If the nevus of upper eyelid becomes too large, it will cause ptosis and may affect visual development particularly in childhood.4

We present 3 cases of divided nevus where we applied the idea of esthetic subunits in treatment and propose a new classification of divided nevus of the eyelids.

PATIENTS AND METHODS

In general, the important anatomical landmarks of divided nevus of the eyelids are as follows: (1) ciliary margin; (2) upper and lower eyelid creases; (3) upper eyelid eyebrow junction; and (4) lower eyelid cheek junction. By checking how much the nevus is extending these anatomical landmarks, we classified each nevus and planned treatment strategy. We present a detailed report of the management of 3 patients of divided nevus of the eyelids.

CASE 1

A 6-year-old boy with a medium-sized congenital divided nevus of the right eyelid was referred to our de-
The dark brown nevus was sized 18 mm, and the upper part originated from the ciliary margin, crossing the upper eyelid crease, and extending to the upper eyelid. The lower part was within the lower eyelid crease (Figs. 1 and 2B). The entire nevus was excised and reconstructed by orbicularis musculocutaneous flap following the new idea of esthetic subunits of the eyelid (Figs. 2B and 3A). A portion of the medial canthus was used to reconstruct the defect of upper ciliary margin to the upper eyelid crease (Fig. 3B), and a portion of the lateral canthus was advanced as a musculocutaneous flap to cover the region between the upper eyelid crease and the eyebrow (Fig. 3C). The defect between the lower ciliary margin and the lower eyelid crease was replaced by a lateral cheek flap (Fig. 3D).

Four years after the final operation, there was a small portion of pigment left on the ciliary margin, and the superior palpebral fold line did not match with the contralateral side. However, no functional deficiency such as ptosis or ectropion was observed and the flap color and texture were well matched with the surrounding skin, and the patient was satisfied with the result functionally and esthetically (Fig. 4).

**CASE 2**

A 9-year-old boy with a large-sized congenital divided nevus of the left eyelid presented to our department. The nevus covered the whole length of left eyebrow and extended to the left cheek along the nasolabial groove covering majority region of his left cheek (Fig. 5A). Although he had undergone 28 episodes of CO₂ laser and Q-switched YAG laser therapy, the nevus still remained and due to the multiple episodes of laser treatment, it became hard and hypertrophic causing an ectropion of the left lower eyelid.

We planned to expand the skin of the preauricular region using a rectangular tissue expander (90×50mm², 150mL; KOKEN CO., LTD, Japan). The expander was placed under the subcutaneous tissue of the preauricular area and above the superficial musculo-aponeurotic system (Fig. 5B).

After 11 weeks of repetitive filling, adequate expansion was achieved. In the second operation, the pigmented lesion over the left cheek, the eyelids, and the left eyebrow
was excised leaving only the pigmented lesion at the ciliary margins. The expanded flap (15 × 18 cm²) with a part of sideburn was elevated and placed over the defect reconstructing the affected area including the eyebrow (Fig. 5C,D).

The flap became slightly congestive after the operation, which recovered within a week, and no necrosis was observed. To ensure flap perfusion, dog ear correction and the palpebral fissure creation were performed 2 weeks after the reconstruction surgery.

Six months after reconstruction, minor revision surgery was performed to correct the sagging of the lateral canthus by using Z-plasty and the pigmented residue was excised from the nasolabial fold. Four years after reconstruction, the recurrence was observed in the lower eyelid, considered to be originating from the ciliary margin. A skin graft from the posterior auricular region was used to reconstruct the lower eyelid. Five years after the final operation, no functional deficiency such as ectropion or keratitis was observed. The volume of the reconstructed eyebrow was a little smaller than the unaffected side, but the direction of hair growth resembled that of the unaffected side. There was a small portion of pigment migration in the grafted skin, but the flap color and texture were well matched and the patient was satisfied with the result functionally and esthetically (Fig. 6).

**CASE 3**

A 57-year-old woman presented with a medium-sized divided nevus of her right eye. The nevus was sized 34 mm,
and the upper part originated from the ciliary margin, crossing the upper eyelid crease, and extending to the upper eyelid especially in the lateral region. The lower part was within the lower eyelid crease medially, but the lateral part was extending to the lower eyelid (Fig. 7A). We first excised the entire nevus, leaving only the ciliary margin, and reconstructed the defect using modified V-Y orbicularis oculi musculocutaneous flap or so-called Pacman flap named after a famous Japanese video game (Fig. 7B). The flap was elevated from the lateral orbital rim to reconstruct the lateral canthus, the upper eyelid, and the lower eyelid (Fig. 7C). We performed a few touch-up operations to correct upper eyelid crease and sagging of the lateral lower eyelid canthus (not quite sever as lagophthalmos) by Z-plasty. Five years after the first operation, although there was some residual pigment on the ciliary margin, the postoperative appearance was satisfactory, especially because the residual nevus resembled eye makeup (Fig. 8).

**DISCUSSION**

Divided nevus of the eyelids is a rare form of congenital melanocytic nevus, and its treatment is challenging because it must meet functional and cosmetic requirements. Skin grafts may be used for replacement of a large nevus, but they often do not suffice patients’ requirements, especially in Asian population due to the color and texture mismatch. Laser treatments are often employed, but as in the second case, the results are usually not satisfactory in terms of cosmesis. Reconstruction of facial nevi using local flaps offers satisfactory texture and color match results. When planning treatment strategy, it is essential to classify the nevus according to its size and the anatomical area.

First, in terms of size classification, congenital melanocytic nevi of the body are classified into 3 groups according to their size: (1) small (<1.5 cm in diameter); (2) medium (1.5–20 cm); and (3) large (>20 cm). Lu reported 6 cases of divided nevus with the traditional size classification, and they all fit into the medium size (1.5–20 cm). However, because most children’s faces are less than 20 cm in diameter, most divided nevus of the eyelids will fall into “medium” class; this classification may be too coarse and not adequate for divided nevus of the eyelids.

Second, in terms of anatomical area, Yap and Earley reported 4 cases of divided nevus, attempting to make a systematic treatment plan, splitting the periorbital region into the following 5 anatomical zones: (1) the eyebrow to the upper eyelid crease; (2) the upper eyelid crease to the upper eyelid margin; (3) the eyelash-bearing area; (4) the lower eyelid margin to the lower eyelid crease; and (5) the zygoma and the cheek (Fig. 9A). The eyelash-bearing area cannot be removed, so the actual reconstructive regions that are considered in this classification are only 4 zones. Margulis et al added regions of the medial canthus and the dorsum nasi to this classification, but these added areas do not follow anatomical zones or esthetic subunits.

To solve these problems and to obtain more practical scheme for divided nevus reconstruction, we integrated the idea of esthetic subunits with the classification of divided nevus of the eyelids.

Gonzales-Ulloa first described the esthetic units of the face and emphasized the need for restoring facial
skin units in regions. Since then, many modifications have been proposed for further classification into subunits for each reconstruction purpose14–16 (Fig. 9B).

We divided the periorbital unit into subunits and created a new classification for divided nevus of the eyelids. As in Figure 2A, we divided the facial esthetic units of 3A and 3B into subunits and labeled new inner units 3A’ and 3B’, respectively, and classified divided nevus into 3 classes. Class 1 is composed of 3A’ and 3B’ (Orange area in Fig. 2B), where the nevus is within the area between the ciliary margin and the palpebral fold, and referred to as “small” group. Class 2 is “medium” group (Yellow area in Fig. 2B) where the nevus is present from the upper palpebral fold to the eyebrow superiorly, and from the lower palpebral fold to the lower eyelid inferiorly. The medial and lateral canthi are included in this group. Class 3 is referred to as “large” group (Light Beige area in Fig. 2B) where the nevus extends to the eyebrow, the forehead, the nose, and the cheek (Table 1).

As already mentioned, the new classification is simply applying the idea of esthetic subunits to the classification of divided nevus of the eyelids. The classification of Yap and Earley3 classification do not separate the lower eyelid by the lower eyelid cheek junction, so we separated the unit into 3A’ and 3A with the junction. It also does not have subunits like the medical canthus, the lateral canthus, and other facial subunits; therefore, we applied the idea of esthetic subunits in this region, too. Because congenital melanocytic nevi classification is too coarse for use in the face, a finer classification for facial nevi is warranted. For example, with the conventional classification, a “medium size divided nevus” includes one with a size ranging from 1.5 to 20 cm, and the exact location of the nevus would not be clarified.

Table 1. The Proposed Classification for Divided Nevus of the Eyelids

| Class 1 (Small) | Class 2 (Medium) | Class 3 (Large) |
|----------------|------------------|-----------------|
| Area           | Upper eyelid crease to eyebrow. Lower eyelid to lower eyelid cheek junction | Extends to eyebrow, forehead, nose, cheek, and lips |
| Subunits       | Class 1 + 3A, 3B, 3C, 3D | Class 2 + subunits 1, 2, 4, 5, 6, 7 |

By using the new classification composed of facial esthetic subunits, surgeons can apprehend the affected area simply by knowing the class and subunits of the nevus. For example, a medium size or class 2 divided nevus affecting 3A’, 3B’, and 3B indicates the size and the precise location of the lesion. Furthermore, because the classification is based on the idea of esthetic subunits, surgeons can reconstruct the defect with minimal conspicuousness to achieve satisfactory surgical results.

According to this classification, the first case is classified into class 2 (medium) with subunits of 3A’, 3B’, 3B [the superior nevus originates from ciliary margin (3B’) and ends in the subunit 3B]. We replaced each subunit (3B’ and 3B) by different flaps and were able to create the upper eyelid crease. The inferior nevus was within subunit 3A’, and thus, we used the flap from adjacent subunit 3A to cover the defect. As a result, reconstructed subunit obtained great color and texture match.

The second case is classified into class 3 (large) where the superior nevus extended to the eyebrow (1C), and the inferior nevus affected the left cheek (4A). By expanding the adjacent subunit (4B, 4C, and 4D) com-
plying with the idea of facial esthetic subunits, we were able to replace the “large” nevus with excellent color and texture match, and reconstruct the eyebrow at the same time.

The third case is classified into class 2 (medium) with subunits of 3A, 3B, 3A, and 3B (the upper and the lower nevus originate from the ciliary margin and end in the subunit 3A and 3B, respectively). We replaced the defect by using the adjacent subunits 3C and a part of 1B as a modified V-Y orbicularis oculi musculocutaneous flap and were able to reconstruct the upper and lower eyelid and also the eyelid creases.

CONCLUSIONS

Reconstruction of facial nevi using local flaps offers satisfactory texture and color match results. The use of our proposed classification and esthetic subunits for the divided nevus of the eyelids allows systematic surgical planning, leading to improved reconstructive outcomes.

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