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Original Article

Simple Epicanthoplasty with Minimal Scar

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Abstract.
Background: Asian eyelids are characterized by the presence of an epicanthal fold and the absence of a supratarsal fold. Because many Asians desire wide, open, large eyes, elimination of the medial epicanthal fold along with double-eyelid operation frequently are performed for cosmetic improvement. Medial epicanthoplasty enhances the aesthetic result by lengthening the palpebral fissure horizontally, thus producing larger-looking, open eyes. This study describes the author's method for correcting the medial epicanthal fold.
Methods: Simple epicanthoplasty with minimal scar, the author's method, was performed to correct the epicanthal folds of 52 patients from December 2001 to August 2005 at the Catholic University of Korea Kangnam St. Mary's Hospital.
Results: This technique yielded excellent results in terms of inconspicuous scar and long-lasting open medial canthal area during a 3-year follow-up period. Of the 52 patients, 2 showed a depressed scar on the lower eyelid, which was corrected satisfactorily.
Conclusion: Many procedures have been introduced to correct the epicanthal fold, but scarring or undercorrection remains as a dilemma for surgeons to overcome. Simple epicanthoplasty with minimal scar is a simple, easy-to-follow, and effective method that can be applied to various cases of medial epicanthal fold.

Key words: Epicanthoplasty—Medial epicanthal fold

Asian eyelids are generally characterized by thick upper eyelid skin and orbicularis oculi muscle, excessive fat distributed between the orbicularis oculi muscle and the levator palpebrae muscle, laxity of the pretarsal fold and absence of a superior palpebral fold due to lack of the levator palpebrae muscle attachment to the pretarsal skin, and presence of a medial epicanthal fold [8]. Because Asians desire wide, open, and larger-looking eyes, creation of a supratarsal fold (double-eyelid operation) has become the most common cosmetic operation for Asians. However, formation of a supratarsal fold without correction of the epicanthal fold for a patient with a medial epicanthal fold results in a closed, round, surprised-looking eye with a short horizontal palpebral fissure and a long intercanthal distance [3,8]. Epicanthoplasty alone or with a double-eyelid operation undoubtfully enhances aesthetic outcome by lengthening the horizontal palpebral fissure, giving Asian eyes a clear, bright look [3].

Scarring on the nasal skin near the medial canthus causes many surgeons, who want to avoid conspicuous scar, to undercorrect the epicanthal fold and makes patients hesitant about undergoing epicanthoplasty. Many methods have been proposed for correction of the epicanthal fold [1,2,4–7,9]. Some of these procedures are effective but too extensive for correction of Asian epicanthal folds, ultimately resulting in an unsightly scar.

Many procedures still have potential problems such as a difficult design, undercorrection, prominent scarring of the medial canthal and nasal area, and limitation of application. In this study, we present our experience using simple epicanthoplasty with

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minimal scar (SEMS) to correct the medial epicanthal fold. The procedure is simple in design and leaves minimal scarring with long-lasting satisfactory results.

Materials and Methods

Patients

From December 2001 to August 2005, SEMS was performed for 52 patients (7 males and 45 females) with an average age of 26 years (range, 7–55 years). The follow-up period ranged from 6 months to 2 years. Of the 52 patients, 23 underwent a simultaneous double-fold operation.

Operative Procedure

The surgical procedure is performed with the patient under local anesthesia (except for children) and lying in the supine position. First, the new desired medial canthus (point A) is marked on the covering skin of the epicanthal fold between the medial epicanthal fold and the nasal area at a point equal to the actual hidden medial canthus. Point A should sufficiently expose the caruncle, and if needed, overcorrection up to between 1 and 2 mm medially is acceptable. From point A, a horizontal line is extended laterally until it meets the lateral border of the medial epicanthal fold, which is point B. From point B, a line is drawn upward along the lateral border of the epicanthal fold, and point C is marked at the same length as line AB. Next, the nasal skin is pulled medially for complete exposure of the lacrimal lake. From point C, a third line is drawn downward toward the caruncle, and point D is marked at the same length as line BC (Fig. 1).

A skin incision is made through the designed AB line, and the orbicularis oculi muscle of the medial canthal area is released. Then a triangular flap is raised with sharp dissection to include the subcutaneous fat as much as possible and to avoid damaging the lacrimal canaliculus. The base of the flap is made thicker to ensure a good blood supply to the flap. The fibrofatty tissue and muscle that underlie the incision in the epicanthal fold should be released completely. The flap is transposed with a rotation of 90° without tension (Fig. 2). The deep portion of the flap is fixed to the periosteum of the nasal bone to secure its new position and prevent a recurrence of the epicanthal fold.

Depending on the severity of the epicanthal fold, sometimes a small dog ear correction is needed at the lower end of the triangular flap. Subcutaneous and skin suture are used to fix the flap. When a simultaneous double-eyelid operation is performed, the supratarsal fold line is aligned to the upper margin of the flap to avoid abnormal foldings and to obtain a linear, smoothly contoured fold.

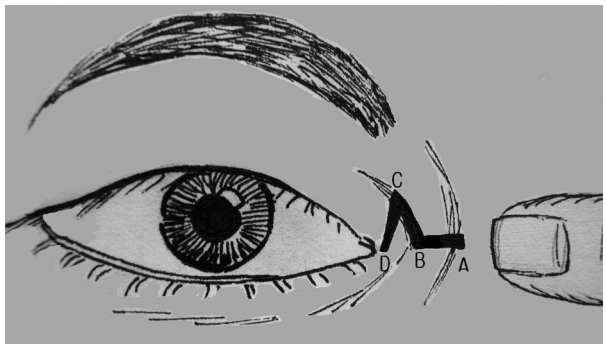

Fig. 1. Preoperative design of the authors' methods for medial epicanthoplasty. (**A**) Newly determined medial canthus. (**B**) Point on the lateral border of the medial epicanthal fold drawn horizontally from point A. (**C**) Point drawn along the lateral border of the fold at the same distance between A and B. (**D**) Point drawn downward from point C to the lacrimal lake (caruncle) at the same distance between B and C. AB = BC = CD.

Results

The SEMS procedure showed excellent results, and most of the patients were satisfied with the result (Figs. 3, 4, 5, and 6). There was no definite relapse, hypertrophic scar, or injury of thelacrimal apparatus. During the long-term follow-up evaluation, two patients with a severe epicanthal fold showed mild recurrence, which was aesthetically acceptable. Of the 52 patients, 2 showed a depressed scar on the lower eyelid, which was corrected satisfactorily.

Discussion

An epicanthal fold is defined as a semilunar fold of skin that runs downward at the side of the nose with its concavity directed to the inner canthus [4,8]. The origin of the epicanthal fold is not defined clearly. It has been suggested that the epicanthus is a universal presentation in the fetal stage, and that "the arrest in development" prolongs its presence into adult life, especially in Mongolians [4].

The anatomic cause of this deformity is explained in various hypotheses. Originally, it was assumed that excessive development of skin at the root of the nose or poor development of the bones of the skull and nose leaves an excess of skin and fibrofatty tissue that tends to lie in a fold. Early techniques were directed at correcting excess skin, but we now know that this approach nearly always creates secondary folds and results in unsightly scars. Currently, a z-shaped kink in the orbicularis oculi muscle fibers or an abnormal attachment of the medial levator aponeurosis is thought to bring about an abnormal tension on the skin, creating a fold [4].

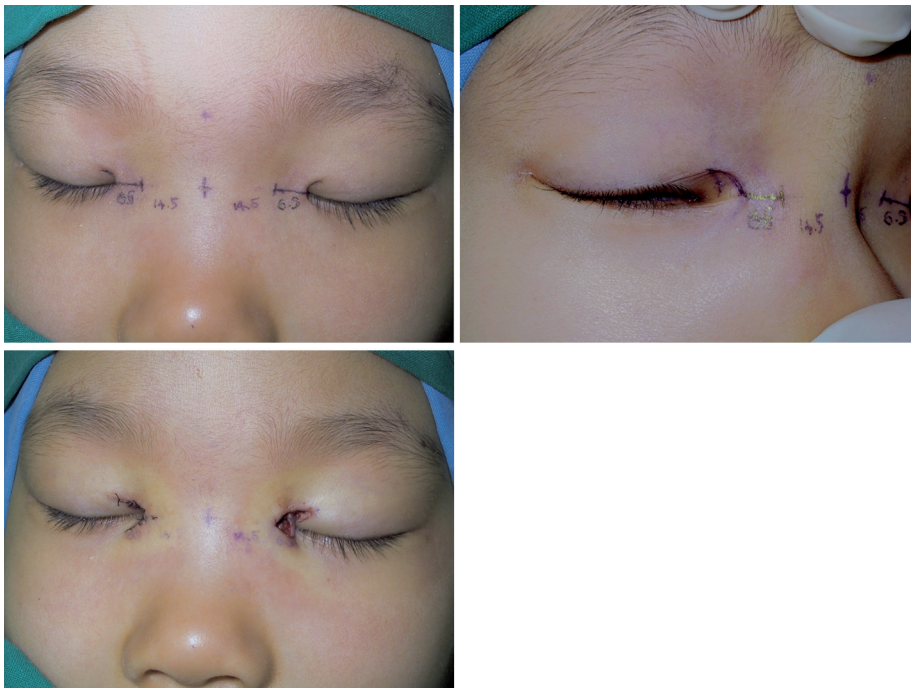

Fig. 2. Surgical correction of the epicanthal fold. *Above right and left:* Preoperative marking. *Below:* The left epicanthal flap is elevated, and the right epicanthal flap is elevated and transposed with a rotation of 90°.

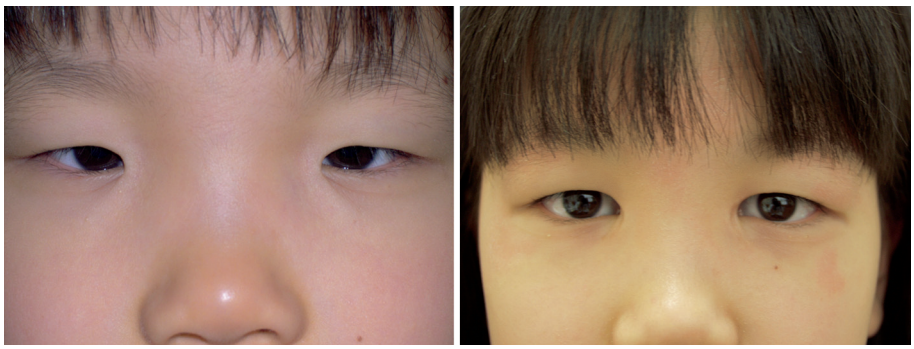

Fig. 3. Case 1. A 7-year-old girl with congenital epicanthal fold. *Left:* Preoperative view. *Right:* Postoperative view 3 years after correction of the epicanthal fold.

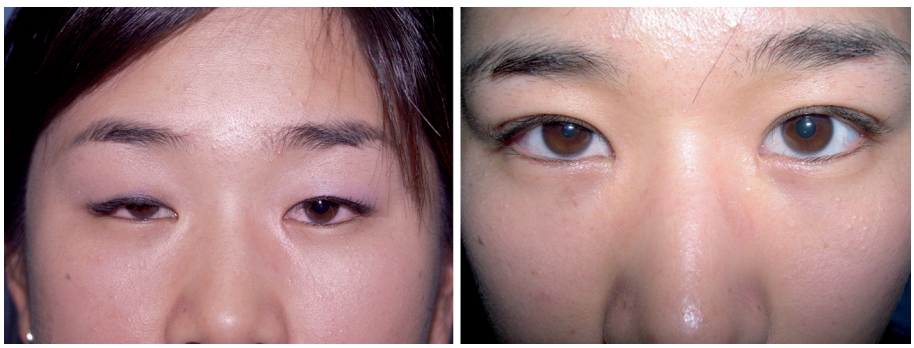

Fig. 4. Case 2. A 27-year-old woman with congenital epicanthal fold and right acquired ptosis attributable to Honor's syndrome. *Left:* Preoperative view. *Right:* Postoperative view 7 months after correction of the epicanthal fold and a double-eyelid operation with levator resection on the right side.

According to the Duke–Elder classification, medial epicanthal folds can be divided into four types: epicanthus supraciliaris, epicanthus palpebralis, epicanthus tarsalis, and epicanthus inversus. Epicanthus palpebralis and tarsalis are the most common [1,4,8]. These epicanthal folds partially cover the eyelash. Consequently, the eyelashes look shorter, the inner eyes seem rounder, and the horizontal palpebral fissure appears shorter. In severe cases, such as case 1, pseudostrabismus is evident.

A double-eyelid operation can create the appearance of large, clear eyes, and epicanthoplasty can enhance the aesthetic result of the double-eyelid operation by lengthening the palpebral fissure. Our

Fig. 5. Case 3. A 12-year-old boy with Down syndrome showing epicanthus inversus. *Left:* Preoperative view. *Right:* Postoperative view 6 months after correction of the epicanthal fold.

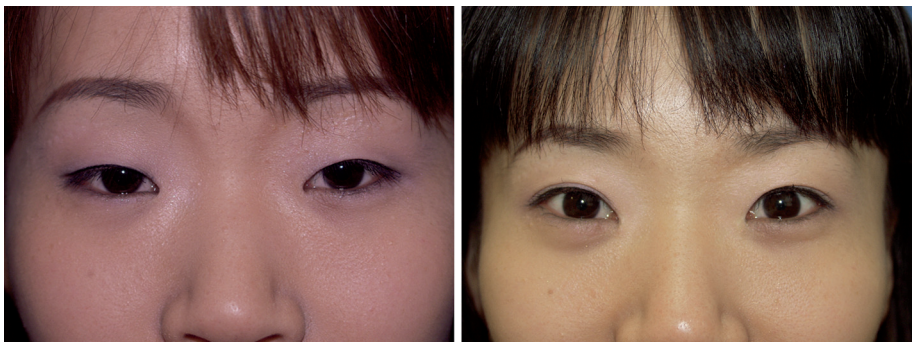

Fig. 6. Case 4. A 22-year-old woman with congenital epicanthal fold. *Left:* Preoperative view. *Right:* Postoperative view 35 months after correction of the epicanthal fold.

SEMS procedure can be applied to cases from mild to severe with satisfactory results in epicanthus inversus.

Repair of the epicanthal fold is commonly performed by a simple or modified Z-plasty [6,7,9], V-Y flap, or modified Y-V flap [5]. Mustarde's four-flap method, Del campo's transposition flap [2], and a modified Uchida V-W plasty are several methods used for medial epicanthoplasty. However, potential problems with difficulty in design, prominent scarring of the medial canthal and nasal area, recurrence because of excessive tension force, and rigidity of application still remain.

The SEMS technique has a simple design, and the procedure does not require geometric planning or great experience. To avoid unsightly scarring, the triangular flap is made from the posterior surface of the epicanthal fold, and the incision line is confined to the margin of the newly formed medial canthus. For long-lasting results without recurrence, the deep thick portion of the triangular flap should be firmly fixed to the nasal periosteum or underlying hard structure. Sometimes a small dog ear correction is needed at the lower end of the triangular flap, but when it is performed delicately, the results are inconspicuous. When a simultaneous double-eyelid operation is performed, the supratarsal fold line is aligned with the upper margin of the flap, creating a natural double-fold line. We believe that SEMS is widely applicable to diverse types of epicanthal folds, resulting in a pleasing look and long-lasting outcome.

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