Restoration of the Medial Epicanthal Fold
Reversely Using the Skin Redraping Method in Patients Unsatisfied With Epicanthoplasty

Yoon Jae Chung, MD,* Jung Sik Kong, MD,† and Yang Woo Kim, MD, PhD†

Background: Many Asians receive epicanthoplasty to improve their medial epicanthal fold.

Excessive performance of such surgery may cause multiple unwanted results, but there is no report on any restoration method for an overcorrected result of epicanthoplasty. Accordingly, the authors have created a new method for reversely restoring the excessively corrected medial epicanthal fold using skin-redraping epicanthoplasty (Plast Reconstr Surg. 2007;119:703-710).

Methods: During the interval between January 2009 and April 2011, 35 patients received surgery for restoration of the epicanthal fold using the authors' method, which involves sufficiently elevating the skin flap and redraping it to reconstruct the epicanthal fold. This method is very simple to design and perform, and it effectively covers the excessively exposed lacrimal lake. In addition, it can be used independently of the type of prior epicanthoplasty.

Results: After the surgery, 2 patients experienced overcorrection, and we repeated the epicanthoplasty. In the other patients, there was no severe complication except for mild redness, a condition that improved after several months. The mean measured distance between the medial canthi after the surgery was 36.8 mm, corresponding to a total lengthening effect of 4.5 mm. This improved the aggressive facial expression caused by the exposed lacrimal lake, and the eyes no longer appeared to be too close together. Moreover, in the case of patients who had more visible scars due to prior epicanthoplasty on the medial epicanthal area, the overall scar length decreased.

Conclusions: This method is simple in design and easy to perform. It can also control the degree of restoration with an additional advantage of reducing a prior scar. Using this method, we could effectively restore the overcorrected epicanthal fold.

Key Words: medial epicanthoplasty, medial epicanthal fold, skin redraping method

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M ost Asians have a few characteristic eyelid patterns that distinguish them from other ethnic groups. One such pattern is a unique medial epicanthal fold that leads many Asians to seek cosmetic improvement by epicanthoplasty. After the first attempt by Von Ammon, many surgeons further developed and modified the epicanthal fold correction method.1-8 However, when epicanthoplasty is excessively performed, there can be multiple unwanted results: eyes can look closer together, the inner mucosa and lacrimal lake can be exposed, facial expression can be aggressive, eyes can look sunken, or there can be added scars on the medial epicanthal area. In such patients, surgery to restore the exposed part is required, but no clear restoration surgery has yet been reported. We therefore reversely used one of the standard methods for epicanthoplasty, skin redraping epicanthoplasty, to restore the excessively corrected medial epicanthal fold with good results.

MATERIALS AND METHODS

Material

Restoration of the medial epicanthal fold was performed on 35 patients from January 2009 to April 2011. The patients’ age ranged from 19 to 39 years, and the mean age was 25.5 years. There were 7 men and 28 women in the patient group. The major patient complaint was aggressiveness of their facial expression due to the overexposed mucosa and lacrimal lake and also that their eyes appeared too close to one other. Six of the patients complained about scars around the medial epicanthus caused by the prior surgery. Twenty-nine patients received medial epicanthoplasty using the skin redraping method, and 6 of them received epicanthoplasty using Park Z-epicanthoplasty method.2-4 The mean width between the medial canthus was 32.3 mm.

Surgical Method

All surgeries were performed under local anesthesia in the supine position. Point A was defined as the 1-mm medial part of the lacrimal lake. With that point as the baseline, an elective line for the incision was drawn until one third along the lower lid, following the subciliary line. The end point of that line was called point C and was located approximately 12 mm from point A. From point A to 70 degrees upward, we designated point B to be 3 mm away from point A. A straight line was then drawn between points A and B (Fig. 1).

After identifying points A, B, and C and drawing the elective incision mark, local anesthesia was introduced around the incision line. An incision was made with a number 15 blade. After the incision, as shown in Figure 1, subcutaneous dissection was performed from the upper eyelid in the direction of the lower eyelid, undermining a wide range of the medial side. This is a very important step in the restoration process because it reduces the skin-flap tension and allows it to move easily. In patients who had received prior epicanthoplasty, there was broad scar tissue around the medial epicanthus, so it was very difficult to find enough tissue for remaking the epicanthal fold. The skin around the medial canthal area alone will not be sufficient to restore the epicanthal fold. Because the skin around upper and lower eyelids was so pliable, it was essential to widely dissect these areas.

To redrape the skin, an assistant’s thumb pulled the flap toward the nose. Point A was then shifted medially, and this shifted point was defined as point A’. After placing A’B’A on a virtually straight line, we sutured at points A and B, respectively, to corresponding points of the lower flap. After suturing, with the thumb removed, the pulled flap shifted back laterally, with the folding at point B that became the new epicanthal fold. Length AB formed the invisible inner part of a newly created epicanthal fold. We then evaluated the
degree of the skin flap covering the overexposed inner mucosa and lacrimal lake. If the amount of coverage was insufficient, we untied the sutures at points A and B and relocated the skin flap more medially. Conversely, if the amount of coverage was excessive, we shifted the skin flap more laterally and sutured again at points A and B, respectively. When the appropriate locations of both points A and B were determined, we sutured the incision (Figs. 2 and 3). Point A, located at 1 mm medial to the lacrimal lake before the surgery, was then hidden by the restored epicanthal fold. Moreover, the AB portion was finally located on the inner curve of the fold. This effectively hid the scar, length BA (Fig. 4).

**Aesthetic Evaluation**

Aesthetic results were evaluated based on satisfaction of scar, eye appearance, and overall outcome by the patients themselves. They scored their impression with a 4-point Likert scale from 1 to 4. For data analysis, scores of 1 corresponded to very dissatisfied result; 2, to somewhat dissatisfied result; 3, to somewhat satisfied result; and 4, to very satisfied result.

**RESULTS**

From January 2009 to April 2011, the authors performed restoration of the epicanthal fold on 35 patients, with 29 of them having received epicanthoplasty via the skin redraping method. Six patients received epicanthoplasty through Park Z-epicanthoplasty. Before the surgery, we measured the distance between the medial epicanthi in all patients. This distance ranged from 25.4 to 39.0 mm, with a mean distance of 32.3 mm (Fig. 5). Regardless of the previous surgical method used for epicanthoplasty, we performed restoration of the epicanthal fold by reversely using the skin-redraping method. After the surgery, there were no severe complications. However, 2 patients...
were more overcorrected than what we had anticipated before the surgery. Accordingly, 6 months later, we reduced these 2 patients’ over-restored epicanthal fold by repeating skin-redraping epicanthoplasty.

A few patients complained about mild redness around their wounds, but after several months, most of them improved in this regard. Moreover, the patients who had the most visible scars in the medial epicanthal area because of prior epicanthoplasty showed high satisfaction with the result because the overall lengths of the visible scars decreased. The mean distance between the medial epicanthi, measured after the surgery, was 37.0 mm, a total effect of 4.7 mm lengthening (Table 1). This improved the aggressive facial expression that had been caused by the exposed lacrimal lake, and the eyes also no longer look too close together. Furthermore, this surgery can allow the change of the double-fold type from out-fold to in-fold (Figs. 6–8).

According to the aesthetic evaluation, most of the patients were satisfied with their results (Table 2).

DISCUSSION

In Asians, more than 80% of people have a medial epicanthal fold, a unique feature compared with other ethnic groups. To improve the appearance of this feature, various kinds of epicanthoplasties are used.1–8 However, there is no report on the restoration method for overcorrected results of such epicanthoplasty. We therefore made an attempt to address this issue by reversely using skin redraping epicanthoplasty, a method that could elevate sufficient skin flap with reduced tension. In the case of patients who had received prior epicanthoplasty, there can be a problem of having insufficient flap due to scar adhesion after the first surgery. Moreover, the amount of the flap needed for restoration is much greater than we expected.

In a close view of the medial epicanthal fold as illustrated in Figure 9, point D is a folding point of the epicanthal fold, and point E is the most medial part of the lacrimal lake. Point E’ is the projecting point of point E projected to the overlying skin. When pulling tissues around the medial epicanthal fold toward the nose, point E’ is shifted medially, producing line E’DE. However, before pulling the tissue,

<table>
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<th>TABLE 1. Intercanthal Distance of the Patients</th>
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<td>Preoperative Value, mm</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
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FIGURE 4. A’B becomes the front side of the newly formed epicanthal fold, and BA becomes the inner side of the fold. Part of the prior scar is located on the inner side of the newly formed epicanthal fold, with the effect of reducing the scar in general.

FIGURE 5. Preoperative and postoperative intercanthal distance change of all patients.
line DE was curved and was much longer than line E’D. Consequently, the total length of E’DE is more than twice the length of E’D (Fig. 9). So, for restoring the medial epicanthal fold, much greater flap amount was needed than what was expected. To solve this issue, instead of using only the skin at the medial epicanthal area, we used additional much thinner and more pliable tissue around the upper and lower eyelids. By widely dissecting on that area, it was possible to obtain an amount of tissue sufficient for making the new epicanthal fold.

Skin redraping method described by Oh et al\(^1\) is the most commonly used method for epicanthoplasty. We used that method reversely to restore the excessively corrected medial epicanthal fold. So, our procedure and design were very similar to theirs in the manner that the main focus of the surgery is to make a tension-free skin flap. Oh et al, however, made a curvilinear incision line from the point on skin over the medial epicanthus to the point on subciliary line. Because there was no epicanthal fold due to the prior surgery, we designed similar incision line from the point near the lacrimal lake to the point on the subciliary line. In addition, we made another incision marking along the upper eyelid to get more available skin flap and to make a new fold.

The method used in this study has several advantages. It is possible to make a large-enough flap with minimized tension by dissecting over a wide area, and it also makes it possible to easily control the degree of restoration. The skin flap is temporarily sutured at 2 points, and if the degree of restoration is either not enough or excessive, it can be untied and corrected. This makes a possible immediate correction during surgery. The method can also be helpful in reducing visible

### TABLE 2. Assessment of Patients Satisfaction

<table>
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<tr>
<th>Satisfaction with scar</th>
<th>3.2 (0.52)</th>
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<tr>
<td>Satisfaction with eye appearance</td>
<td>3.0 (0.41)</td>
</tr>
<tr>
<td>Satisfaction with overall outcome</td>
<td>3.1 (0.51)</td>
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Values are presented as mean (SD).
scars on the medial epicanthal area due to the previous surgery. In addition, using this procedure, the type of double fold can be changed from the out-fold type to the in-fold type.

CONCLUSIONS

In Asians, epicanthoplasty is widely performed because they exhibit a common feature of epicanthal fold. There has been, however, no report regarding restoration surgery to correct for overdone procedures, so the authors have created a new method for reversely restoring excessively corrected medial epicanthal fold using skin-redraping epicanthoplasty. This method is simple in design and easy to perform, and it can be helpful in controlling the degree of restoration with an additional advantage of reducing visible prior scars. It can thus be an effective restoration surgery for overcorrected epicanthal fold.

REFERENCES