

Partial-incision Technique for Creation of the Double Eyelid

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Background: Three principal techniques exist with which to create the Asian double eyelid: the suture, partial-incision, and full-incision methods. The partial-incision method is reliable and long-lasting without many of the drawbacks of the full-incision method.

Objective: The surgical technique of the partial-incision method is reviewed in a stepwise fashion so that the reader can reproduce this method for double-eyelid creation.

Methods: Preoperative lid measurements were made with the patient in an upright sitting position to account for the effects of gravity on the lid. An incision was made through both the skin and orbicularis muscle to expose the underlying orbital septum. The lateral septum was lifted upward and a small wedge of elevated septum removed to permit entry into the preaponeurotic adipose tissue, which was then teased forward through the aperture in the orbital septum. Normally, only half of the exposed fat is removed, leaving a small adipose cuff on the hemostat. The remaining adipose cuff was cauterized and the wound inspected for hemostasis. Suture fixation was accomplished with a 7-0 nylon suture to tack the levator aponeurosis to the inferior skin edge along the incision line. The suture was passed through the epidermis to ensure permanence.

Results: We have successfully used the partial-incision method of double-eyelid correction in 1500 cases. The 3 notable complications that can occur are loss of the lid crease, suture extrusion, and asymmetry. All of these complications occur in approximately 2% to 3% of cases but are easily corrected. The apparent elevated appearance of the lid height during the postoperative period is attributed to edema and diminishes by 1 to 2 mm to a more natural position after 3 to 12 months.

Conclusions: The partial-incision approach is a simple, safe, and straightforward approach to double-eyelid creation that can be performed even by surgeons with relatively little experience in the technique. (Aesthetic Surg J 2003;23:170-176.)

The creation of the double eyelid was first described in 1896 by the Japanese surgeon Mikamo¹ at a time when Meiji-ruled Japan had opened its doors to trade with the West. In this cultural context, the double-eyelid surgery has long been thought of as Westernization of the Asian eyelid. However, this misnomer belies the inherent complexity of the Asian upper-eyelid anatomy, the variations of the surgical procedure, and the intended aesthetic objectives.

As many as 80% of Asians have been noted to have some form of a supratarsal crease, albeit smaller and more camouflaged than that of Caucasians.¹ Adipose fullness, an epicanthal fold, and a narrow palpebral fissure are other hallmarks that distinguish the Asian upper lid from the Caucasian version. However, none of these attributes are uniformly present, and subtle variants dictate surgical intervention.² In addition, the aesthetics of the Asian upper lid differ from those of the Caucasian

upper lid. The very high lid crease and deep palpebral sulcus that define the normative Caucasian upper lid make an Asian upper lid appear unnatural and aged.

Three principal strategies exist with which to create a double-lid appearance: the suture, the partial-incision, and the full-incision techniques. The suture method purportedly offers rapid and versatile construction of a double eyelid but carries the drawbacks of potential impermanence and inability to correct adipose fullness or a hooded epicanthus. The full-incision technique is a more laborious and technically exacting method that permits more complete adjustment of the epicanthus, adipose fullness, and skin. However, the surgical result is permanent, and upper-lid height cannot be further adjusted unless sufficient skin redundancy remains with which to lower the lid crease.

The partial-incision technique remains a reliable method for correction of the upper lid that balances the

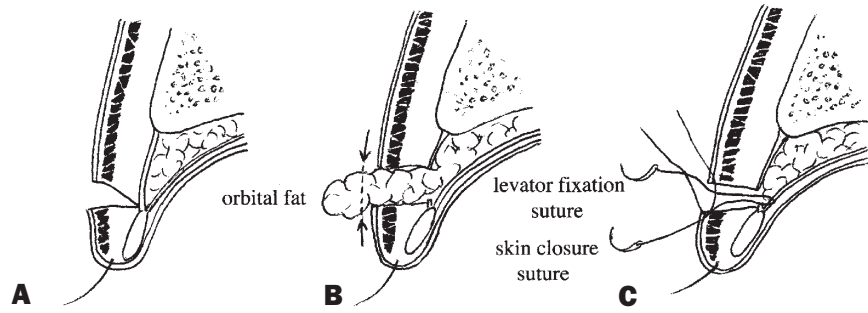


Figure 1. **A.** An incision was made through the skin and orbicularis oculi muscle to expose the underlying orbital septum. **B.** The postseptal fat was teased out and half of it (at most) removed. **C.** Sutures were passed through the levator and skin edge (levator suspension suture) and through the skin edges only (skin-closure suture).

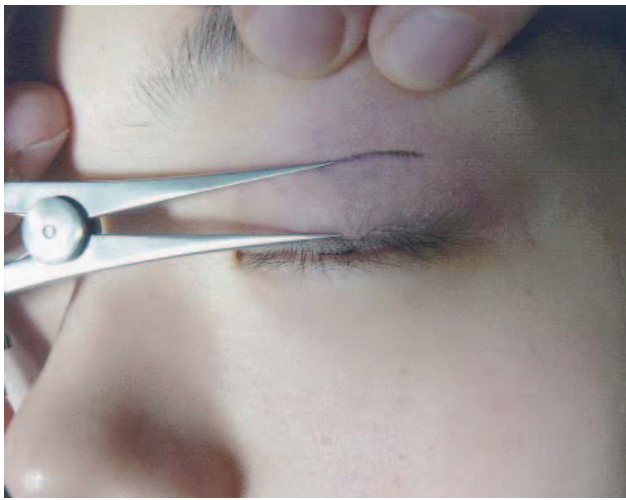


Figure 2. Measurement of the proposed lid crease was undertaken with calipers while the upper-lid skin was retracted upward until incipient eyelash eversion was noted.



Figure 3. Initially a small opening was made in the septum, through which the preaponeurotic fat was teased out.

benefits of both methods. This method permits a consistent and permanent fixation of the lid crease with adjustment of the lid fullness by way of adipose extraction but retains the essential Asian quality of the lid — that is, the epicanthal fold. For the patient who desires to eradicate the epicanthal fold, the full or near-complete incision is recommended. The partial-incision technique is also technically facile and requires limited surgical time, which translates into a shorter learning curve for the surgeon and a shorter period of postoperative edema for the patient. This technique has been used in more than 1500 cases over a 10-year period.

Surgical Technique (Figure 1)

Marking the upper-lid crease

The most critical measure of success of the double-eyelid procedure is postoperative symmetry. Perhaps just as important from the patient's point of view is an appro-

priate lid-crease height that conforms to the patient's aesthetic wishes. Both of these aspects rely on accurate and symmetrical measurement of the proposed lid crease.

The patient was instructed to remain in the upright sitting position while the desired lid height was corroborated with a curved, open paper clip, or an equivalent wire, pressed into the level of the proposed lid crease. Lid measurements are not as accurate when the patient is reclining because the gravitational force exerted on the lid is eliminated. To re-create the tension on the upper lid by gravitational pull, the upper lid was retracted upward until incipient eyelash eversion was noted (Figure 2). At this point, the lid was measured again with the calipers at the designated height, and a dot was placed at the central aspect of the proposed line. The typical lid height was approximately 9 to 10 mm for an average lid crease and 12 to 13 mm for a slightly larger lid crease, measured with the patient supine and the eyelid under the prescribed tension. When the patient returned to a sitting



Figure 4. The levator mechanism was exposed under the displaced adipose tissue.



Figure 5. The remaining orbital septum was incised along the length of the incision to provide an unimpeded view of the underlying levator complex.

position, gravity returned the fold to about half of the measured distance (eg, a lid measured at 10 mm appears to be 5 mm when the patient is in a sitting position).

An abbreviated line parallel to the ciliary margin was marked at this height; the line measured approximately 1.5 cm, with the medial extent of the incision at the medial border of the pupil. The incision was slightly longer (2 to 3 mm) than 1.5 cm if the patient had a thicker, heavier lid, so that a broader area of fixation could be undertaken to ensure permanence of the crease. This small variation in incision length was not a critical factor but reflects the authors' experience gleaned from clinical observation.

The contralateral lid was marked in the same fashion. The height of both lid creases was confirmed several times before surgery. In addition, the distance from the medial canthus to the medial aspect of the proposed incision was measured with the calipers, so that this distance was confirmed to be equal bilaterally. The calipers were then used to determine the length of each incision to confirm bilateral symmetry. In addition to lid height and symmetry, careful attention was paid to lid fullness owing to adipose deposits so that proper adipose resection could be estimated. The amount of lid-fat removal was based on the patient's desires.

Incision and adipose resection

A solution of 1% lidocaine with 1:100,000 epinephrine was infiltrated into the subcutaneous tissue below both marked incisions. Just 0.3 mL of anesthetic per side was used in an effort to minimize postoperative edema and ensure symmetrical evaluation of crease height dur-

ing surgery. After 10 minutes had elapsed to permit maximal hemostasis and anesthesia, the incision was made on both sides with a Bard-Parker number 15 blade through the skin and orbicularis muscle to expose the underlying orbital septum (Figure 1, A). Bipolar cautery was used to achieve hemostasis along the transected edges of orbicularis oculi muscle before entry into the orbital septum. The lateral portion of the orbital septum was lifted upward with a pair of fine forceps, and a small wedge of elevated septum was removed to permit entry into the preaponeurotic adipose tissue (Figure 3). The adipose tissue was then gently teased forward through the surgically created aperture in the orbital septum (Figure 1, B). Often, only a small amount of adipose tissue could be exposed because of persistent restriction by the orbital septum, and the septum had to be transected several times before the fat was freely released. Only the central fat pocket was addressed in the example shown here because the medial fat pocket was inaccessible through the limited incision. Furthermore, medial fat removal is not recommended even in the full-incision technique, as it offers very little cosmetic advantage and predisposes the patient to hypertrophic scarring and epicanthal webbing (in contradistinction to the medial-fat prominence typically found in upper blepharoplasty in aging Caucasian subjects). The fat was atraumatically swept away to expose the underlying levator complex, which appears as a glistening Caucasian surface (Figure 4). The adipose tissue was gently retracted out of the way, and the overlying remaining septum was completely transected with a pair of fine scissors along the length of the incision from a lateral to a medial direction (Figure 5). The levator should



Figure 6. The hemostat was applied to only half of the retracted adipose tissue so that this conservative amount of fat could be excised. The adipose tissue resected from the other side was laid down on the cheek to guide symmetrical fat resection.



Figure 7. The suture needle was passed through the levator complex in a superior-to-inferior direction, catching only a small, partial-thickness bite of the levator aponeurosis.



Figure 8. The same needle was then passed through the full thickness of the inferior wound edge, until incipient eyelash eversion was noted, to complete the fixation of the levator to the skin.

not be confused with the overlying septum; the fat separates these two structures and the septum should have been transected before levator exposure. In addition, the levator should move freely when grasped gently with forceps, whereas the orbital septum remains relatively trans-fixed.

Once the fat was fully exposed on one side, we proceeded to the contralateral side before resecting adipose tissue. Working on both lids in tandem permitted constant confirmation that surgery was proceeding symmetrically. The contralateral eyelid was approached in the manner prescribed above for the initially dissected eyelid. When both adipose beds were exposed, the amount of fat to be

removed could be estimated. Normally, only half of the exposed fat was excised (Figure 6) in an effort to avoid a hollowed upper eyelid immediately after surgery or, in younger patients, 20 years later. However, if minimal lid fullness was noted preoperatively, proportionately less fat was resected, or none at all if no visible lid fullness was evident. In accordance with the rule of conservative adipose resection, half of the exposed fat was clamped with a fine hemostat and resected, leaving a small adipose cuff on the hemostat. The remaining adipose cuff was thoroughly cauterized with a bipolar instrument before the clamp was released. We then carefully inspected the wound for hemostasis before proceeding to the contralateral side. The same technique of adipose resection was performed for the other upper eyelid.

Suture fixation and skin closure

Adipose resection and septal transection permitted an unimpeded view of the underlying levator mechanism. A 7-0 nylon suture was then used to tack the levator aponeurosis to the inferior skin edge at multiple points along the incision line. We took a small partial-thickness bite of the levator, passing the needle from a superior to an inferior direction (Figure 1,C, and Figure 7). The amount of levator that the needle should purchase was approximately equal to the caliber of the needle (ie, only a fraction of a millimeter). The first suture bite was placed at the central aspect of the incision line and roughly at the mid-incision. The needle was then passed through the full thickness of the inferior skin edge (ie, through both the dermis and epidermis), again from a

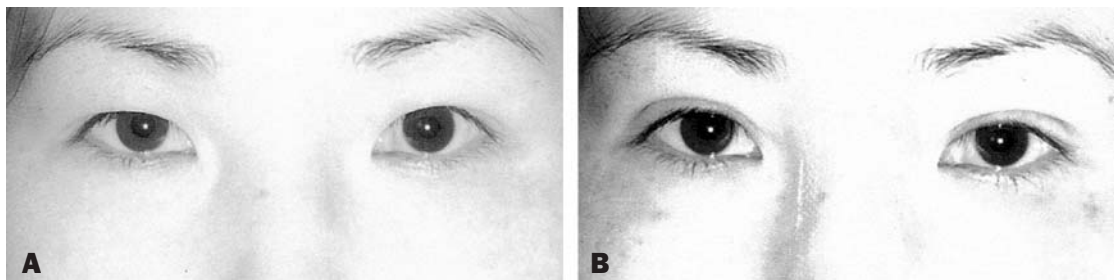


Figure 9. **A**, Preoperative view of a 29-year-old woman with minimal fat and a relatively wide palpebral fissure. **B**, Postoperative view immediately after double-eyelid creation with the partial-incision technique, involving minimal fat removal and a marked eyelid distance of 10 mm. Little postoperative edema is evident.

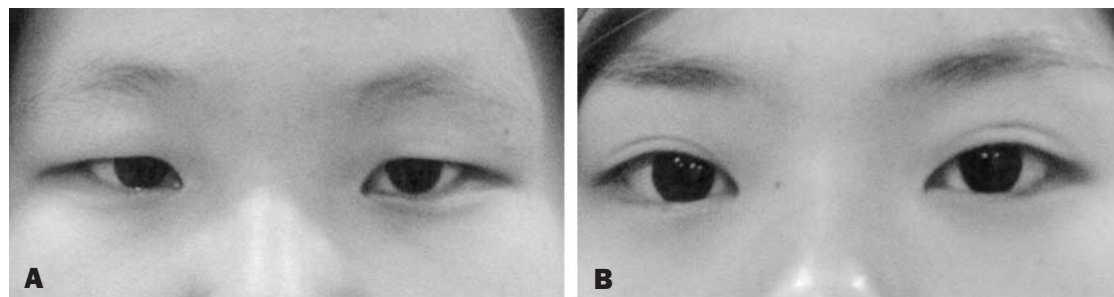


Figure 10. **A**, Preoperative view of a 23-year-old woman with significant adipose fullness of the upper lid and, consequently, a narrow palpebral fissure. **B**, Postoperative view 6 weeks after double-eyelid blepharoplasty with the partial-incision technique, involving moderate fat removal and a 12-mm marked lid crease. The patient shows a natural-appearing lid height that will further diminish by 1 to 2 mm during the next few months.

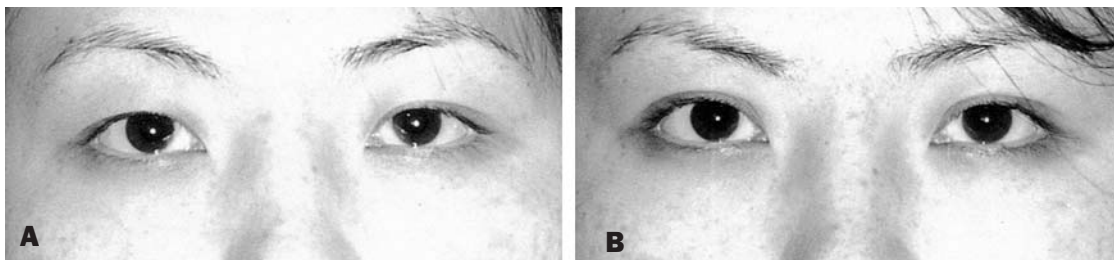


Figure 11. **A**, Preoperative view of a 28-year-old woman with minimal upper-lid fat and a relatively wide palpebral fissure. **B**, Postoperative view 1 year after double-eyelid surgery, involving the partial-incision technique, in which minimal fat was removed and a lid crease of 10 mm was marked in the supine position. The lid crease appears natural.

superior to an inferior direction (Figure 2, C, and Figure 8), purchasing only the same restricted bite as described for the levator.

The position of the eyelid was carefully inspected when the suture is passed through the inferior skin edge, noting that the eyelashes are just beginning to evert. If the eyelashes did not evert on suture fixation, the eye will not open significantly from its preoperative “sleepy” expression, known as pseudoptosis orientalis. However, once the orbital fat was removed, the eye might open up naturally because the obstructive adipose tissue had been eliminated. If insufficient eyelash eversion was noted, the suture was placed higher through the levator before it

was passed through the inferior skin edge again. Excessive eyelash eversion is also an unfavorable endpoint; eyelash position might remain overly everted after surgery, which would look unnatural and might lead to dry-eye symptoms. If this occurred, the sutures were replaced in the postoperative setting.

The suture was then tied down with a single knot and the patient was asked to open his or her eyes. The height of the lid crease was confirmed as favorable before the suture was completely secured with additional knots. If the height of the lid crease was not satisfactory, we adjusted the crease level by grasping the levator either slightly higher or lower than the initial bite to raise or lower the

crease, respectively. After the suture was tied down, the suture tails were trimmed close to the knot so that these permanent knots remained buried beneath the skin. Before suture fixation was continued on the same eyelid, the central suture was placed on the contralateral eyelid and symmetry verified similarly. The fixation sutures were placed one at a time, alternating between the two eyelids, until a total of 5 to 7 sutures were secured along the length of each incision. Skin closure was commenced once symmetry and lid height were satisfactory to both the patient and the surgeon. The skin edges were approximated with interrupted 7-0 nylon sutures, which were placed at intervals between the fixation sutures. Typically, only 2 or 3 skin sutures were needed to hold the wound edges together (Figure 2, C). These skin sutures were removed on the third postoperative day. However, the levator fixation sutures remained in place permanently.

Results

The partial-incision technique has proved a reliable method of upper-eyelid creation in approximately 1500 cases (Figures 9 to 11). Notable complications that have arisen during the past 10 years of experience include loss of the created fold, suture extrusion, and asymmetry.

Loss of the lid crease is rare, occurring in just 2% to 3% of cases. We attribute this low rate to the fixation of the suture through the epidermis itself. The slight inversion of the epidermal edge into the wound permits more vigorous adhesion of the lid crease, partly as a result of the foreign-body reaction engendered by the outer cornified layer of the epidermis. This modification of the standard technique should be emphasized for its importance in permanent lid adhesion.

However, because the suture is fixed through the epidermal edge, it may become exposed and require excision at a later date. This phenomenon is rare and can be addressed with simple excision of the exposed knot in the office setting. Typically the knot will become evident within 1 month of surgery. However, if the lid crease is in a favorable position, it is advisable to wait a full 3 months (from the time of surgery) before electing to remove the knot. At this time, the lid crease has achieved permanent fixation and it is safe to undertake excision of the fixation suture.

Asymmetry occurs infrequently in experienced hands, with a revision rate of approximately 2% in our series. If any obvious asymmetry is noted on the third postoperative day, when the patient returns for suture removal, the surgeon can correct any height disparity at that time by

removing the fixation suture and replacing it. As mentioned earlier, the fixation suture can be positioned higher or lower in the levator apparatus to raise or lower the lid crease, respectively. However, if only slight asymmetry is noted, the most likely cause is postoperative edema. Therefore the patient should be asked to return after 15 days for reevaluation. At that time, almost all of the edema should have subsided, so that an accurate assessment can be made and correction undertaken, if necessary.

Although lid-crease height is permanent after 3 months, asymmetry noted thereafter can still be corrected. The adhesion must be dissected free, the old suture removed, and the new suture placed in the desired location. Any request by the patient for a significant change in lid-crease height would be quite difficult to fulfill. Fortunately, this problem has not arisen for us in the past 10 years.

Another important postoperative consideration that should be mentioned is the apparently high lid crease that occurs immediately after surgery. This unnatural appearance will subside over time, for two reasons. First, the lid height appears higher than it actually is because the edema creates a much fuller lid below the crease. Most, if not all, of the swelling should dissipate by the 15th postoperative day. Secondly, we have noted that lid-crease height tends to diminish over time between the third and the 12th postoperative months. As previously described, lid height is typically marked at approximately 10 mm with the patient supine and the lid tensed to initial eyelash eversion. When the patient is in a sitting position, this lid height will drop to 5 mm, which is a more normal lid height for the Asian patient. After 3 to 12 months, lid height will decrease further, by roughly 1 to 2 mm, to its final position. The surgeon and the patient should exercise patience when it comes to the transitory elevated appearance of the lid height.

Discussion

Although the surgical steps involved in the partial-incision technique are rather straightforward, mastery of precise incision placement and levator fixation requires skill and experience. These two aspects of the procedure merit the surgeon's diligent attention to ensure symmetry and a proper lid-fold height. Careful planning and marking of the proposed incision line should follow defined caliper measurements and should be corroborated by the patient before surgery. Levator suspension sutures should be placed in an alternating fashion and each suspension suture verified before the surgeon advances to the next fixation point. If the surgeon exercises discretion and

judgment at every step of the procedure, rather than mechanically undertaking surgery, the optimal aesthetic result can be achieved.

It should be noted that in suture fixation, passage of the needle through the cornified layer of the epidermis is critical to ensuring permanence of the lid crease. This represents a deviation from the standard textbook recommendation but has proved indispensable in reliable lid-crease fixation in our clinical experience. Note especially that the surgeon does not pass the needle through the entire thickness of the epidermis but stops just short of doing so. The needle should exit just a fraction of a millimeter shy of the cut wound edge. Loupe magnification may help the surgeon guide the needle to the correct position. Another significant modification of the standard technique is that no preseptal fat or orbicularis muscle is resected. Retention of the preseptal fat and muscle gives the surgically created lid a more natural contour.

The partial-incision technique combines the best elements of the suture and the full-incision methods. The suture method has often been condemned for its impermanence, with dermal adhesion alone cited as insufficient for long-term fixation. Although this contention remains controversial, one study has reported a low revision rate with the suture technique.³ In our experience, the partial-incision method permits a more tenacious fixation between the skin and the levator, which facilitates longer-term maintenance of the surgical result. Although the suture method may be suitable for lid-crease construction alone, lid fullness attributed to excessive adipose tissue cannot be addressed with this method.

The partial-incision method permits appropriate fat removal that can enhance the surgical result. Because

only the central fat pocket need be partly removed, limited incision is sufficient to access the undesirable fat. A full incision is unnecessary to ensure complete crease fixation; the partial incision that spans roughly a third of the length of the lid can adequately fix the new lid crease. More extensive medial-lid incision may be warranted in select patients who desire correction of the epicanthal fold. However, if the surgeon can avoid medial dissection, the risk of hypertrophic scarring and webbing can be markedly reduced.

Conclusion

The partial-incision technique has proved safe, simple, straightforward, reproducible, and permanent in more than 1500 cases. With experience, the surgeon will be able to achieve consistent results. However, even surgeons with relatively little experience in the technique can perform this procedure with minimal difficulty.

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