

Beveled Approach for Revisional Surgery in Asian Blepharoplasty

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AQ: 1 **T**his author has advocated¹⁻⁶ the trapezoidal debulking of the preaponeurotic platform through a beveled approach (along the upper incision line) in Asian blepharoplasty as a logical and efficient way of performing primary cases. Included among the advantages are a safe approach to the preaponeurotic space through the orbital septum; allowance for a controlled, uniform debulking of junctional tissues overlying the supratarsal and pretarsal areas; and providing optimal adhesions between levator aponeurosis and the subcutaneous tissues along the lid crease incision line. This approach virtually eliminates any potential for an uneven plane of surgical dissection, thereby lessening the complication rate.

PREAPONEUROTIC SPACE AND THE GLIDE ZONE

The upper eyelid consists of the anterior skin/orbicularis oculi layers and the posterior levator/Müller's muscle/conjunctival layers. In between is the middle zone, where the orbital septum and preaponeurotic fat reside. Normally, the preaponeurotic fat is fluctuant and acts as a glide layer and offers relatively little resistance to movement between the anterior and posterior layers of the upper lid. This middle zone may be conceptually thought of as a glide zone.

After primary upper blepharoplasty, skin, muscle, and preaponeurotic fat are reduced by excision in an appropriate fashion. On closure, the preaponeurotic space is set inferiorly and now reaches an area over the superior tarsal border. Three scenarios may follow after primary blepharoplasty.

First, if there was total excision of exposed preaponeurotic fat, the septum and overlying preseptal orbicularis is now lying directly in contact with the levator aponeurosis, without any fat buffering. There is a good probability that the preaponeurotic space (glide zone) is obliterated. One sees a deep supratarsal sulcus and poor crease formation. Second, if there was only partial or minimal removal of fat, some fat may remain interposed between the preseptal orbicularis (anterior layer) and aponeurosis (posterior layer). Third, in a beveled approach, the upper skin edge is attached to the aponeurosis along the superior tarsal border and the lower skin edge; there is also preservation of the preaponeurotic space and fat down to the superior tarsal border coupled with some fat-buffering in the glide zone. There are more orbicularis fibers removed along the upper incisional edge because the orbicularis was transected in an upwardly beveled fashion. This allows the immediate vicinity of the upper incisional skin edge to be in contact with the preaponeurotic space thus created. In these last two scenarios—where fat was only partially excised (or repositioned superiorly)—the preaponeurotic space over the preseptal midregion of the upper lid has been preserved. There is fat-buffering and a soft-tissue mass (consisting of the preseptal skin, orbicularis, orbital septum, and preaponeurotic fat) bellowing on top of a dynamically elevating tarsal plate. The crease formed is dynamic and natural from an aesthetic viewpoint. The restoration and preservation of this preaponeurotic space is an essential element in the surgical creation of a lid crease for an Asian with a creaseless eyelid, because it is the up-vectoring of the tarsal plate coupled with the attendant presence of fat in the preserved preaponeurotic space, that helps create the aesthetic appearance of a well-formed crease.

Patients seeking revision surgery may present a myriad of findings: often a patient will exhibit a flattened or absent upper lid crease with a mild hollowing of the sulcus. The patient may have poor crease formation caused by a combination of factors including poor surgical adhesion between the skin edges and the aponeurosis through the

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Received for publication July 12, 2005; accepted October 14, 2005.

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DOI: 10.1097/01.prs.0000267578.21219.ea

first operation, or the presence of an amorphous sheet of preaponeurotic fat that appears plastered down over the entire aponeurosis within the preaponeurotic space between skin and levator. The eyelid may show spreading of incisional scar, high placement of eyelid crease, induced lagophthalmos on downgaze, and induced secondary ptosis on straight gaze and upgaze. Intraoperatively, one sees thickened middle lamellar scar involving the orbicularis oculi and orbital septum, or the presence of dense scar tissue plaques that may bind the anterior orbicularis oculi and the posterior levator aponeurosis (Fig. 1). Instead of having a physiologically preserved glide zone where significant preaponeurotic fat pads are still present in the lowest aspect of the glide space, there is now a condensed apron (plaque) of tissue that does not allow the posterior layer to up-vector

properly against a passive and flexible skin/orbicularis. Despite efforts, there is no observable crease formation. The patient often complains of fatigue and a feeling of tightness and may show brow and forehead overaction.

In dealing with revisional cases, whether simple or complicated, one of the greatest dilemmas one faces is where to make the incision such that it does not add to or compound the already scarred field of operation, from both an anterior skin viewpoint (and therefore aesthetic concern) and a middle lamella scarring and contracture viewpoint (with further functional compromise). To come out ahead with improved aesthetic results and without any further functional setback is a major triumph for any surgeon familiar with this type of reoperative surgery. Not only is the surgery difficult but the patient often has a heavily bur-

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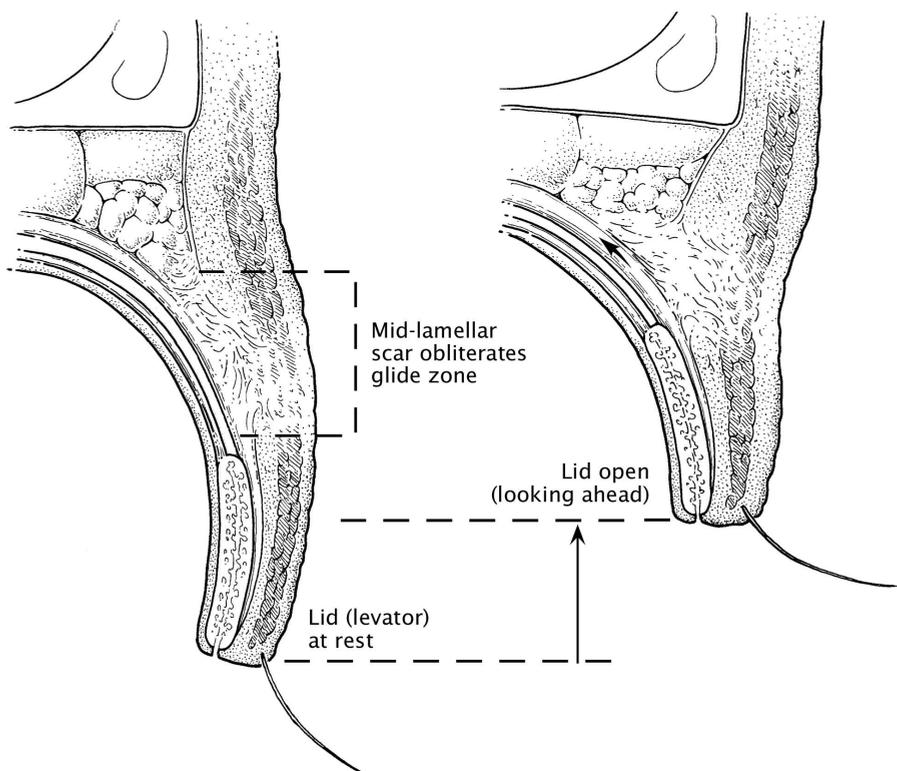


Fig. 1. Scarring seen in suboptimal cases of aesthetic surgery of the Asian upper eyelid may include spreading of incisional skin, high placement of upper eyelid crease, induced lagophthalmos on downgaze, and induced secondary ptosis on straight gaze and upgaze. Intraoperatively, one sees middle lamellar scar involving the orbicularis oculi and orbital septum, or the presence of dense scar tissue plaques that may bind the anterior orbicularis oculi and the posterior levator aponeurosis. Instead of having a physiologically preserved glide zone where preaponeurotic fat pads are still present in the lowest aspect of the glide space, there is now a condensed apron-like plaque of tissue that prevents the posterior layer from up-vectoring properly against a passive and flexible skin/orbicularis. Despite efforts, there is no observable crease formation. The patient often complains of fatigue and a feeling of tightness and may show brow and forehead overaction.

dened heart and is anxious for a rapid outcome, something that is never easily realized in practice when dealing with cicatrix and suboptimal outcome. One is often struck by how devastated these patients are and how grateful they are when the improvement turns out to be significant. It is important for both patient and doctor to be realistic in their expectations and their projection of the time course for healing following revisional surgery.

It is critical that one does not cause further skin short shortage or increased mid-lamellar contraction, with lid retraction and poor eyelid closure, leading to symptoms of exposure and dryness. If there is insufficient skin in reserve, it is unlikely that there is any probability of revisional improvement, unless one wants to supplement it with a full-thickness skin graft. This latter will require exquisite technique, experience, and special splinting over the skin graft to place the skin graft in an aesthetically acceptable fashion. However, there are many young adults or middle-aged patients with severe problems who need revisional surgery and who are unlikely to have any skin reserve “in the bank” any time soon from natural involitional changes. These patients, who possess just enough eyelid closure to avoid corneal exposure problems, can develop these problems if one proceeds to the usual method of performing excision of skin scar and lysis of adhesion of the middle lamella. The amount of skin removed can be as little as 2 mm, and they may become symptomatic of poor eyelid closure.

An ideal solution to this quagmire is to approach this scarred anterior and middle lamellar complex through a superiorly beveled approach. To do this, the following condition must be met.

The crease height is evaluated, and if it is high, the degree of lowering planned by the surgeon (in millimeters) will determine the minimal amount of skin redundancy above the existent crease height (over the preseptal region) that needs to be in reserve. For example, if the suboptimal crease is currently at 10.5 mm and ideally it needs to be lowered to 7.5 mm, the patient will need to have 3 mm of reserve skin *above* the crease before this is feasible. If the patient has only 2 mm, the patient should be informed that one can only revise it down to 8.5 mm at the current situation, or the patient can opt to wait further for some skin to be made available “in reserve” from natural aging before proceeding to revision at that time. If this condition cannot be met and the patient is desperate because of functional and/or psycho-



Fig. 2. (Above) A full-thickness skin incision is made along the upper and lower lines of the crease markings. (Center) Westcott spring scissors are used to lyse along the upper incisional edge in a beveled fashion, involving the skin and orbicularis. (Below) Small, scissoring motions are used as the scissor blades transect the middle lamella scar after going through whitish, scarred fascial layers between the orbicularis and the underlying levator aponeurosis.

logical reasons, one has to discuss the choice for a free skin graft.

TECHNIQUE OF BEVELED APPROACH IN REVISIONAL ASIAN BLEPHAROPLASTY

For the majority of patients who may be candidates for revision without the need for skin grafting, the author's surgical approach to the revision proceeds initially along the same way as his primary cases, with the major exception being that the upper and lower lines of incisions are marked directly next to each other on either side of the existent incisional scar of the upper eyelid. Patients in this category are more likely to have had their lid crease incision made in the 8- to 9-mm range, as measured from the central lid margin.

The separation of the upper and lower lines of incision should be no more than 1 mm (and very rarely, 2 mm). A no. 15 Bard-Parker blade is used to make a full-thickness skin incision along the marked upper and lower incisional lines (Fig. 2, *above*). Instead of using cutting cautery to go through the orbicularis to reach the orbital septum, one uses a sharp-tipped Westcott spring scissors to incise across the upper line of incision in a superiorly beveled fashion, involving skin-to-orbicularis adhesions (Fig. 2, *center*). Small, scissoring motions are applied as the scissor blades transect the middle lamella scar after going through whitish, scarred fascial layers that is between the orbicularis and the underlying levator aponeurosis (involving orbicularis-to-levator adhesions) (Fig. 2, *below*). This is carried out through

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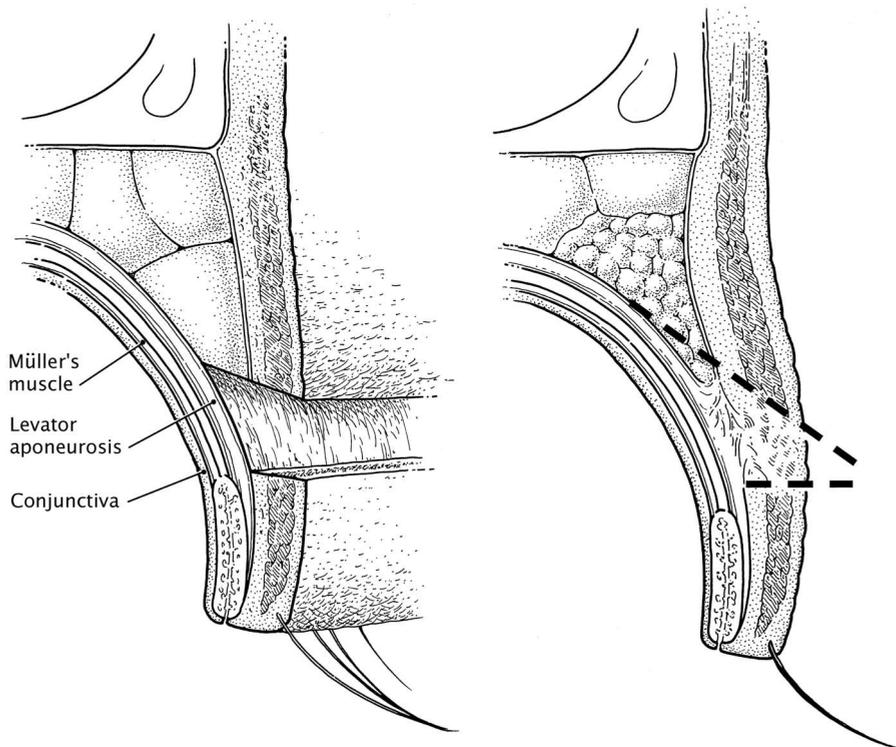


Fig. 3. (Left) Beveled approaches in Asian blepharoplasty; trapezoidal debulking of skin and preaponeurotic platform; and (right) superiorly beveled approach in revisional Asian blepharoplasty. Note the gentler beveled approach in primary cases versus the much steeper beveled (oblique) approach taken in revisional attempts. This is necessary in the latter situation to preserve skin and to allow an approach toward identifying the former preaponeurotic zone. In this scarred middle zone, one frequently finds some residual larger fat lobules combined with scattered smaller amorphous fat globules or aprons of scattered fat droplets. The scarred tissues in the anterior layer and midlamellar zone encompassed by the tissues between the dotted superiorly beveled vector in the drawing and the lower skin incision (along the superior tarsal border) may be excised after the forehead/eyebrow/preseptal skin layer are carefully reset, for as long as the remaining skin still allows passive eyelid closure. All fat is preserved.

F3 the width of the incision along the previous scar. The beveled approach is quite similar but steeper compared with primary cases (Fig. 3). In this scarred middle zone, one will see much less of the preaponeurotic fat pad, as it may have been previously excised; some residual fat lobules combined with scattered, smaller amorphous fat globules or aprons of scattered fat droplets may be seen (Fig. 4). The scarred tissues in the anterior layer and midlamellar zone—encompassed by the tissues between the dotted superiorly beveled vector in the drawing and the lower skin incision (along the superior tarsal border)—may be excised after the forehead/eyebrow/preseptal skin layer are carefully reset (by releasing any restrictive surgical adhesive or head drapes on the patient's forehead), for as long as the remaining skin still allows passive eyelid closure. All fat is preserved. The levator and levator aponeurosis can be identified when the scar is released, and it is important to check for restriction objectively (by gently pulling the tarsal plate down) and subjectively asking the patient to perform upgaze and downgaze.

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F5 After revision using a superiorly beveled approach, the glide space has been partially restored and the scar removed (Fig. 5). The preaponeurotic platform is cleared of any interfering tissues. Although the surgeon is often forced to make a skin incision that is still farther from the lid margin than one would for a primary Asian blepharoplasty, on closure the incision wound is free to indent inward when the levator contracts, forming a better crease. The residual fat pads in the middle



Fig. 4. After the preaponeurotic space is reached, within this scarred middle zone one frequently finds some residual larger fat lobules combined with scattered smaller amorphous fat globules or aprons of scattered fat droplets.

(glide) zone are preserved and allowed to fill in this glide space where appropriate (in severe cases, fat graft may be considered in this space). Skin above the incision is now free to hang down and around to form the contrasting eyelid fold. Figure 6 shows the before and after images of a young woman who underwent revisional correction for a high crease by means of this approach.

F6 By approaching the preaponeurotic space very close to and barely superior to the suboptimal scarred crease line, one can avoid adding additional incision scar or taking out a precious 0.5 or 1 mm of good skin. The beveled approach allows the previously explored preaponeurotic space to be reached again, without injury to underlying levator muscle, Müller's muscle, and anastomotic vascular arcades. In some cases, this beveled maneuver toward the preaponeurotic space frees up the vertical excursion of the upper eyelid significantly, releasing any restriction that may have contributed to lagophthalmos and acquired ptosis. This maneuver in itself may correct the mild ptosis such that resetting of the previously high crease is then feasible. Any residual preaponeurotic fat that may have been spread out and plastered down on the levator muscle can be peeled off and repositioned into a higher level within the sulcus to help reverse some of the concavity. Any mid-lamellar scar that has previously bonded the anterior and posterior layers can be safely removed or reduced, allowing partial restoration of the glide zone.

This reasoning is applied to revisional blepharoplasty: by using the superiorly beveled approach in revision, the integrity of the preaponeurotic space may be restored. If the patient had previously undergone a traditional blepharoplasty with partial excision of fat, this approach will allow one to locate the preaponeurotic space with ease. If the prior surgeon had carried out the trapezoidal debulking method,¹ it is very easy to relocate the preaponeurotic space as this author does when performing touch-up enhancement of the crease. With a prior history of total fat removal, the beveled approach will still allow a higher probability of reaching the preaponeurotic space. The fourth scenario of trapezoidal debulking with complete fat removal has not been encountered by this author as yet, because most surgeons nowadays know not to remove too much fat in Asian eyelids.

Within the author's practice, a series of 26 patients and 48 eyelids underwent revisional blepharoplasty over the past 4 years for the specific purpose of revising a postsurgical high crease to a lower position. Excluded from this series were all primary Asian blepharoplasties including any pa-

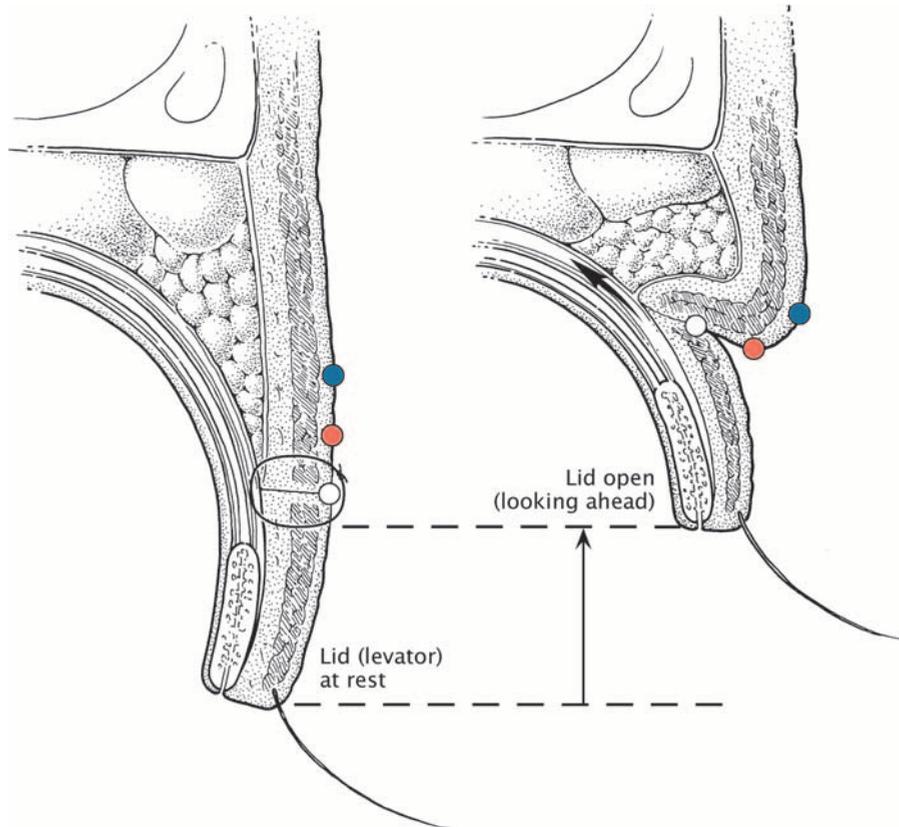


Fig. 5. After revisional Asian blepharoplasty using a superiorly beveled approach (see Fig. 3), the glide space has been partially restored and the scar removed. The preaponeurotic platform is cleared of any interfering tissues. Although the surgeon is often forced to make a skin incision that is still farther from the lid margin than one would for a primary Asian blepharoplasty, on closure the incision wound (*white circles*) is free to indent inward when the levator contracts, forming a better crease. The residual fat pads in the middle (glide) zone are preserved and allowed to fill in this glide space where appropriate. Skin denoted by the *shaded circles* above the incision is now free to hang down and around to form the contrasting eyelid fold.



Fig. 6. (Left) Before and (right) after photographs of a patient who underwent revisional surgery to reset a high crease.

Table 1. Data on Revisional Surgery for High Crease Height in Asian Upper Eyelids

Patient	Age (yr)/Sex	Right Upper Eyelid			Left Upper Eyelid		
		Preoperative	Postoperative	Change	Preoperative	Postoperative	Change
1	42/F	12	7.5	4.5	11	7.5	3.5
2	38/F	11	7.5	3.5	10	7.5	2.5
3	46/F	11	7	4	10	7	3
4	60/F	10	6	4	10	6	4
5	54/F	9.5	7.5	2	9.5	7.5	2
6	32/F	9	7	2	9	7	2
7	32/F	8.5	7	1.5	8.5	6.5	2
8	22/F	8	7	1	8.5	7	1.5
9	23/M	8	7	1	8	7	1
10	63/F	9	7	2	9	7	2
11	36/F	12	8	4	14	8	6
12	58/F	12	7	5	12	7	5
13	65/F	11	7	4	11	7	4
14	29/M	9	7	2	9	7	2
15	22/F	9	8	1	9	8	1
16	55/F	10	7.5	2.5	10	7.5	2.5
17	66/F	9	6	3	8.5	6	2.5
18	30/F	11	8.5	2.5	10	8	2
19	34/F	9.5	8	1.5	8.5	7	1.5
20	25/F	8.5	7	1.5	9	7	2
21	39/F	9	7	2	11	8	3
22	47/F	11	8	3	8	6.5	1.5
23	28/F	10	7	3	9.5	6.5	3
24	63/F	9.5	6.5	3	12	8	4
25	26/F	12	6	6	235	8	3
26	28/F	12	6	6	235	8	4
Subtotal		240.5	172	68.5	235	171.5	63.5
Statistical mean		10.0208333	7.166666667	2.854166667	9.791666667	7.145833333	2.6458333
Overall mean		9.9	7.15	2.75			
Statistical total					475.5	343.5	132
Statistical total mean					9.90625	7.15625	2.75

tients with preexistent high crease, touch-up surgery for the purpose of enhancing (deepening) an existing or surgically created crease, correction of incomplete crease or crease shape alone, and simultaneous correction of acquired or involuntional ptosis in conjunction with primary Asian blepharoplasty. There were five male patients and 21 female patients, and with the exception of four patients who requested unilateral crease revisions, all others were bilateral.

TI, AQ:2 In Table 1, the data were arranged in two separate groups of columns: OD for the right upper lid and OS for the left upper lid. The first two columns reflect the preoperative and postoperative crease height in millimeters. The third column of each of these two clusters of data reflects the difference between the preoperative and postoperative changes in crease height. There were 24 eyelids in each category, for a total of 48 eyelids. The data were pooled together to arrive at the overall mean.

The prerevisional crease height was measured in the office using a millimeter scale and ranges between 8 and 14 mm, with the overall mean being 9.9 mm. The crease height designed during revision (in 0.5-mm increments) varied between 6.0 and 8.5 mm based on the circumstances, with the mean being 7.15 mm; 7 mm was the most often applied measurement during surgery under local anesthesia. The effective lowering of the crease height ranged from 1 to 6 mm when patients were reassessed at their 2-month postrevisional visits. The mean lowering of crease height is 2.75 mm in this series based on 2 months' follow-up. The typical course is such that the crease height will continue to settle down with egress of swelling and wound healing, such that the effective lowering of the crease will likely increase if it is possible for all of these patients to return after a longer follow-up period (Table 1).

The beveled approach allows the surgeon to reach the preaponeurotic space safely, to reposition

or release any residual fat superiorly to fill in the hollow, and to avoid further skin excision. A glide interface and a relatively physiologic crease can be created.

SUMMARY

The use of a superiorly beveled approach in revisional Asian blepharoplasty can allow the glide zone to be partially restored and the middle lamellar scar removed. The preaponeurotic platform can be cleared of any interfering tissues. The combination of techniques described in this article often allows an abnormally high and static scar line to be repositioned into a lower and more dynamic crease, to the point of being acceptable for the patient. The need for skin grafting may often be avoided. The author has applied this technique over the past 10 years, with satisfactory results.

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DISCLOSURE

The author has no financial interest in any of the products, devices, or drugs mentioned in this article.

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