Visible changes in the eyelid are often the first signs associated with facial aging. By addressing the components of skin/lid laxity, fat herniation, a bulging lower eyelid, and deepening wrinkles on the midface, cosmetic lower blepharoplasty attempts to reverse these changes and restore a more youthful contour to the face.

In Asians, unlike Westerners, the dermal tissue of the lower eyelid is thick, there is less wrinkling on the lower eyelid, and the skin is attached more strongly to the dermal tissue. Therefore the Asian midface structure tends to descend less than that of Westerners. Lower blepharoplasty makes up a small percentage of all aesthetic surgeries in Asians. In recent years, however, lower blepharoplasty has been performed with increasing frequency in Asians compared with other aesthetic surgeries.

In this chapter, I describe the anatomy of the lower eyelid, the presentation of lower eyelid aging and a classification of the possible procedures to correct it, surgical techniques for lower blepharoplasty, management of complications related to surgery, and secondary operations of lower blepharoplasty.

ANATOMY OF THE LOWER EYELID

Fig. 29-1 shows a cross-sectional view of the lower eyelid. Compared with the upper eyelid, the lower eyelid has less mobility and is less active. The following list compares the differences between the lower and upper eyelid:

- The lower eyelid features a thin tarsal plate. Its width is approximately half the width of the thin tarsal plate in the upper eyelid, and it is narrower.
- The capsulopalpebral ligament, which originates from the inferior rectus sheath, is attached at the anteroinferior aspect of the tarsal plate of the lower eyelid. This ligament functions like a lid retractor, in a similar manner to the levator aponeurosis in the upper eyelid. If the function of the capsulopalpebral ligament is lost, there would be no tension on the tarsal plate in the lower eyelid, and the skin would not be able to maintain its position. This could cause lid retraction disorders such as entropion. The lower part of the capsulopalpebral ligament is thick and is called the Lockwood ligament because of its strength.
- Unlike the orbital fat of the upper eyelid, the orbital fat of the lower eyelid is divided into three compartments—medial, center, and lateral—instead of two.
Presentation of Aging in the Lower Eyelid

A summary of the structural changes of the eyelid are outlined in Fig. 29-2 and are discussed in detail later.

Palpebral Bag

There are primarily three causes of a palpebral bag:

1. The eyeball droops downward, because there is sagging with age of the Lockwood suspensory ligament that suspends the eyeball and maintains the eyeball position as well as the retinaculum of the lateral and medial canthi that is attached to this ligament. When the eyeball droops down, the gap between the eyeball and the inferior orbital wall decreases, and the orbital fat in it is pushed forward (Fig. 29-3).

2. The orbital septum in front of the orbital fat weakens, the orbicularis oculi muscle shrinks, and the skin of the lower eyelid is stretched. When this happens, the orbital fat can protrude to the front.

3. The soft tissues around the eyes may frequently swell because of an allergy or as a result of liver, kidney, heart, or thyroid disease. Some people have congenitally significant orbital fat.

Fig. 29-1 A cross-sectional view of the lower eyelid.

Fig. 29-2 Characteristics of an aging lower eyelid.
There are three main issues that can cause tear trough deformity:

1. **Muscle defect.** Anatomically, there can be a triangular muscle defect between the orbicularis oculi muscle and the angular head of the quadratus labii superioris muscle inside the inferior orbital rim, and this defect can cause a palpebromalar groove. This groove can form between the septal part of the orbicularis and the attached site of the superior malar part because of differences in muscle volume, depending on the activities of the muscles. The palpebromalar groove is not deep (Figs. 29-4 and 29-5).
2. *Descent of the cheek.* A drooping cheek is caused by sagging of the relaxed orbicularis and skin at the cheek, which mainly occurs in front of the prezygomatic space. The *prezygomatic space* is surrounded by the orbicularis retaining ligament along the inferior orbital rim at the top, the zygomaticocutaneous ligament at the lower boundary of the zygomatic bone at the bottom, the medial end of the levator labii superioris alaeque nasi muscle on the inside, the body of the zygoma at the back, the orbicularis and fat before and after it, and skin. Because of this space, the soft tissues in front of the zygomatic bone are mobile—not firmly attached to the zygomatic periosteum. Although the fat in front of this prezygomatic space is preperiosteal fat, the main areas of fat that sag as a result of aging are the malar fat pad, which is a subcutaneous fat layer, and the suborbicularis oculi fat below the orbicularis. The preperiosteal fat has almost no mobility.

When the suborbicularis oculi fat droops down from aging, the orbicularis adheres to the *arcus marginalis,* where the orbital septum is attached to the bone along the inferior orbital rim, and the malar fat pad sags. The skin layer adheres to the orbicularis layer, and the soft tissue layer in front of the inferior orbital rim becomes thinner, making the tear trough groove deeper.

Because the orbicularis retaining ligament has a tendency to sag more than the zygomaticocutaneous ligament, the palpebral bag can droop more than 10 mm beyond the inferior orbital rim, lowering the boundary between the eyelid and cheek. Thus the distance between the eyelid and cheek in the upper lid margin can increase from 10 to 12 mm when an individual is young and to more than 20 mm in old age. The palpebral and malar bags at the upper and lower ends of the tear trough form a double-convexity contour deformity, making the tear trough deeper.

3. *Suborbital malar hypoplasia or malar retrusion.* The zygomatic bone is retruded at the site of the inferior orbital rim either as a result of congenital malar hypoplasia or malar retrusion from aging. Regardless of the actual cause, this retrusion deepens the tear trough.

**Classification of Lower Eyelid Aging and Possible Corrective Procedures**

Box 29-1 describes the categories of lower eyelid aging.

**Slightly Baggy Eyelid**

If the surgeon thinks that a slight baggy eyelid is caused by congenitally great orbital fat with few wrinkles or drooping of the eyelid, part of the orbital fat is removed by the transconjunctival approach. If the surgeon thinks that a slight baggy eyelid is caused by a weakened orbital septum and there are some wrinkles or drooping of the eyelid, he or she can tighten the orbital septum by plicating the orbital septum at the middle through the subciliary incision, or plicating the lower part of the septum and suturing it to the inferior orbital rim, or suturing the capsulopalpebral fascia to the inferior orbital rim to prevent the protrusion of the orbital fat (Figs. 29-6 and 29-7).

If the eyelid droops and there is extra fat or skin within the eyelid, the redundant fat or skin must be excised.

**Dark Circles and Tear Trough Deformity**

The tear trough is filled through fat grafting, and pigmentation is treated by laser. If the tear trough projects at the medial cheek, suction lipectomy can achieve satisfactory results in most patients (Fig. 29-8).
**Box 29-1  Types of Aging Lower Eyelids**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>Mild wrinkle, no pseudoherniation of orbital fat</td>
</tr>
<tr>
<td>Type II</td>
<td>Pseudoherniation of orbital fat, absence of lid-cheek groove</td>
</tr>
<tr>
<td>Type III</td>
<td>Tear trough deformity, mild drooping lower eyelid, herniation of orbital fat, no palpebromalar groove</td>
</tr>
<tr>
<td>Type IV</td>
<td>Drooping lower eyelid with fat bulging, tear trough deformity and palpebromalar groove, border between palpebral bag and periorbital fat</td>
</tr>
<tr>
<td>Type V</td>
<td>Severely drooping lower eyelid and lowering of lid-cheek junction, herniation of orbital fat, prominent lid-cheek groove</td>
</tr>
<tr>
<td>Type VI</td>
<td>Severe skin drooping on the lateral side of the eyelid, deepening of the nasojugal groove, presence of malar bags</td>
</tr>
</tbody>
</table>
Early Midface Aging

The patients most frequently encountered by plastic surgeons are those with early midface aging. A surgeon must decide which procedure to perform on a patient with early midface aging based on the condition of the patient and a few basic principles. Excision of orbital fat should be avoided as much as possible—except when it is thought that the patient has too much congenital orbital fat. The transconjunctival approach is appropriate if the eyelid skin or muscle relaxation is insufficient and if there is no need for incising the skin or muscle. If an incision is necessary, the better choice is a subciliary incision, which is a transcutaneous approach.

The transconjunctival approach can decrease postoperative edema and scar retraction and can prevent the partial denervation of the orbicularis and ectropion. However, the disadvantages of this approach are limited surgical vision, an inability to remove skin and muscle in patients with a very relaxed eyelid, and difficulty in raising a sagging cheek.

Fig. 29-6 Patients with type I lower lid aging.

Fig. 29-7 Patients with type II lower lid aging.

Fig. 29-8 Patients with type III lower lid aging.
If the palpebral bag and tear trough are conspicuous, the arcus marginalis should be opened, and the orbital fat should slide to the front of the maxillary and zygomatic bones to cover the groove (Fig. 29-9).

Severe Midface Aging and Cheek Ptosis

In a patient with severe midface aging and cheek ptosis, Hamra's composite rhytidectomy may be a good choice.\(^1\) This is a midface lift that can be performed to raise the drooping cheek and treat the palpebral bag and tear trough by sliding the orbital fat to the front of the zygomatic bone. This technique will help to correct the tear trough and eradicate the double-convexity contour deformity. Most of these patients also undergo canthoplasty to prevent ectropion (Figs. 29-10 and 29-11).
The length of the incision line lateral to the lateral canthus should not exceed approximately 10 mm; this will vary, depending on the amount of skin to be excised. The excision width should be approximately 4 to 6 mm, and the incision line should be parallel to or slope upward 30 degrees downward from the naturally formed crow’s-feet line (see Fig. 29-11). However, if the skin excision is wide, dog-ears may form toward the medial side; thus, when the incision line is extended toward the medial side, the surgeon must ensure that the extended incision line does not go down farther than the skin layer and into the muscle layer.

A comprehensive preoperative evaluation should be performed, and a detailed surgical plan should be created. It is important for the surgeon to examine the patient thoroughly to determine whether there are any systemic diseases or any anatomic or functional abnormalities in the eyeballs or eyelids that could affect the results of a lower eyelid blepharoplasty (Table 29-1). The surgeon must determine the proper type of lower blepharoplasty to perform for the specific patient (also see Box 29-1).

<table>
<thead>
<tr>
<th>Type of Deformity</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>Minimal skin excision, filler, or fat grafting</td>
</tr>
<tr>
<td>Type II</td>
<td>Transconjunctival fat removal only</td>
</tr>
<tr>
<td>Type III</td>
<td>Transcutaneous skin excision</td>
</tr>
<tr>
<td></td>
<td>Fat redistribution</td>
</tr>
<tr>
<td></td>
<td>Orbicularis oculi muscle suspension</td>
</tr>
<tr>
<td>Type IV</td>
<td>Transcutaneous skin excision</td>
</tr>
<tr>
<td></td>
<td>Fat redistribution</td>
</tr>
<tr>
<td></td>
<td>Orbicularis oculi muscle suspension</td>
</tr>
<tr>
<td></td>
<td>Suborbicularis oculi fat elevation</td>
</tr>
<tr>
<td></td>
<td>Orbitalomalar ligament release</td>
</tr>
<tr>
<td>Type V</td>
<td>Transcutaneous skin excision</td>
</tr>
<tr>
<td></td>
<td>Fat removal and redistribution</td>
</tr>
<tr>
<td></td>
<td>Orbicularis oculi muscle suspension</td>
</tr>
<tr>
<td></td>
<td>Suborbicularis oculi fat elevation or midface lift</td>
</tr>
<tr>
<td></td>
<td>Lateral canthopexy or lateral canthoplasty</td>
</tr>
<tr>
<td>Type VI</td>
<td>Transcutaneous skin excision</td>
</tr>
<tr>
<td></td>
<td>Fat removal and redistribution</td>
</tr>
<tr>
<td></td>
<td>Orbicularis oculi muscle suspension</td>
</tr>
<tr>
<td></td>
<td>Suborbicularis oculi fat elevation</td>
</tr>
<tr>
<td></td>
<td>Lateral canthopexy or lateral canthoplasty</td>
</tr>
<tr>
<td></td>
<td>Midface or cheek lift</td>
</tr>
</tbody>
</table>

**Table 29-1** Surgical Options for Lower Blepharoplasty

**Preoperative Assessment**

There is a method to determine the rough excision width in which the surgeon finds a little upward area on the patient’s skin and pinches the skin to be excised 2 to 3 mm below the lower eyelid eyelashes with a small angulated forceps, marking the skin at several points with gentian violet (Fig. 29-12). Another method to determine the excision width is based on the degree of the incision line that is covered by the lower eyelid during the surgery, as described later.
from the planned incision line to a point 2 to 3 mm below the lower eyelid edge. The subcutaneous detachment is extended up to approximately 4 to 5 mm below the lower eyelid skin to subcutaneously detach the tarsal plate up to the vicinity of the medial canthal punctum (Fig. 29-13, A). The subcutaneous detachment is extended up to approximately 4 to 5 mm from the planned incision line to a point 2 to 3 mm below the lower eyelid edge.

Using a No. 15 scalpel, the surgeon incises the marked incision line from the region of the lateral canthus to the lateral side (Fig. 29-13, A), and inserts the pointed end of a scissors into the incision line toward the area below the lower eyelid skin to subcutaneously detach the tarsal plate up to the vicinity of the medial canthal punctum (Fig. 29-13, B). The subcutaneous detachment is extended up to approximately 4 to 5 mm below the lower eyelid skin to subcutaneously detach the tarsal plate up to the vicinity of the medial canthal punctum (Fig. 29-13, B). The subcutaneous detachment is extended up to approximately 4 to 5 mm from the planned incision line to a point 2 to 3 mm below the lower eyelid edge.

**Table 29-2** Comparison of Skin Flaps and Skin-Muscle Flaps for Lower Blepharoplasty

<table>
<thead>
<tr>
<th>Indication</th>
<th>Skin Flap</th>
<th>Skin-Muscle Flap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe skin aging or young patients with many fine wrinkles</td>
<td>Thickened orbicularis oculi muscles or severely protruding orbital fat</td>
<td></td>
</tr>
<tr>
<td>Ecchymosis or swelling after surgery</td>
<td>Severe</td>
<td>Less severe</td>
</tr>
<tr>
<td>Patient satisfaction and long-term results</td>
<td>Acceptable but more contraction than skin-muscle flap</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>

8 mm from the center of the lower eyelid, although this too may vary. The surgeon must determine the final excision width when suturing begins, which is after completion of the key suture. Up to 8 or 9 mm may be excised in Westerners; however, the surgeon may want to excise conservatively in Asians.

**SURGICAL TECHNIQUE**

The surgical method used in performing lower blepharoplasty can vary slightly based on the patient’s lower eyelid condition. Skin flaps and skin-muscle flaps are summarized and compared in Table 29-2.

**Detachment of Skin Flaps and Myocutaneous Flaps**

The surgeon must first subcutaneously detach the region from the lower eyelid incision site up to 4 to 5 mm. This region corresponds to the pretarsal portion of the orbicularis oculi muscle. If only a skin flap is formed when the orbicularis oculi muscle is left intact in this region, normal eyelid function will be protected and the role of support will be maintained. This method of detaching the skin flaps and myocutaneous flaps is quite effective. In addition, there is a tendency for an individual’s facial expression to become harsher as they age, because the projection and curvature of the muscle in front of the tarsal plate decreases. The rejuvenating effect of this method restores a youthful, pleasing curvature.

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Using a No. 15 scalpel, the surgeon incises the marked incision line from the region of the lateral canthus to the lateral side (Fig. 29-13, A), and inserts the pointed end of a scissors into the incision line toward the area below the lower eyelid skin to subcutaneously detach the tarsal plate up to the vicinity of the medial canthal punctum (Fig. 29-13, B). The subcutaneous detachment is extended up to approximately 4 to 5 mm from the planned incision line to a point 2 to 3 mm below the lower eyelid edge.
After completing the subcutaneous detachment, the tip of one side of the scissors is used to incise the lower eyelid skin along the planned incision line toward the medial side (Fig. 29-13, C). Next, 5-0 nylon sutures are used on the lower eyelid edge to produce traction on the edge toward the upper eyelid and then another incision line is made on the exposed orbicularis oculi muscle (Fig. 29-13, D). This incision should be placed 4 to 5 mm below the lower eyelid incision site. The muscle is opened with a Bovie or scalpel. The incision ends when the orbital septum can be seen, and the area between the orbicularis oculi muscle and the orbital septum is detached with the hand or a dull scissors, without causing bleeding (Fig. 29-13, E).

Although the detachment may vary depending on the patient’s condition, it is generally conducted up to the infraorbital rim, although detachment can continue up to the front of the zygomatic bone or peristomeum in patients with severely sagging orbicularis oculi muscles or severely bulging orbital fat. The orbital fat may be removed by opening the orbital septum when necessary, or through fat transfer or orbital septum reinforcement, as described later (Fig. 29-13, F).

In the skin flap method, the orbicularis oculi muscle is not incised; rather, a skin flap is detached from the orbicularis oculi muscle to the inferior orbital margin using dull scissors.

**Orbital Fat Removal and Rearrangement**

Any bleeding must be controlled, and the orbital fat should be removed by separating or incising approximately 1.5 cm of the center region of the orbicularis oculi muscle and incising the fat that bulges when the upper eyelid is gently pressed (Fig. 29-14). Any excessive fat should be pinched with a forceps and coagulated.

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**Fig. 29-13** Lower blepharoplasty through a myocutaneous flap. A, Postincisional status. B, Dissection of the tarsal plate with skin. C, Incision of the marked lower eyelid design. D, Exposed orbicularis oculi muscle and the incisional design to approach below this muscle. E, Dissection of the area between the orbicularis oculi muscle and the orbital septum. F, Fat is removed and repositioned.
Orbital fat is present in three sections of the lower eyelid, and the central fat section contains the largest accumulation of fat. Although the amount of fat to be removed should be determined based on the degree of orbital fat bulging, it is recommended that the fat in the central fat section be removed first, followed by the medial fat section and then the lateral fat section (Fig. 29-15). In Asians, the fat should be removed conservatively. If too much orbital fat is removed, the lateral side of the lower eyelid will be depressed; the lower eyelid will be unattractive, with scleral show. In particular, it is important to conservatively excise the fat in the lateral fat section (Fig. 29-16).

**Fig. 29-15**  Excised medial, central, and lateral orbital fat.

**Fig. 29-14**  Protruding fat.

**Fig. 29-16**  Lower blepharoplasty by myocutaneous flap with fat removal. The fat in the lateral fat section was conservatively excised.
Although a local anesthetic solution is injected to minimize pain during fat removal, care must be used when injecting the anesthetic into the deep region of the orbit to avoid damage to the blood vessels and formation of a retrobulbar hematoma. Today methods to move the fat rather than excising it are preferred (Fig. 29-17). If the amount of fat is not excessive, good results can be obtained by detaching the fat, then excising only the skin without removing the fat (Fig. 29-18).

Although the orbital septum is generally not sutured after removing the orbital fat, Hamra1 advised that if the orbital septum were sutured and fixed to the periosteum in the inferior orbital margin, good results could be obtained to correct severe palpebral bags. The detached myocutaneous flap should be pulled with appropriate tension, and the sagging skin should be excised sufficiently, but not excessively.

![Fig. 29-17](image1) Lower blepharoplasty by myocutaneous flap with fat reposition.

![Fig. 29-18](image2) Lower blepharoplasty by myocutaneous flap and skin excision without fat removal.
SKIN FLAP FIXATION OR LATERAL CANTHOPLASTY

The myocutaneous flap should be pulled upward and laterally in accordance with eyelid conditions or the degree of sagging of the orbicularis oculi muscle. Part of the orbicularis or the muscle flap should be removed or fixed, or the myocutaneous flap should be hung to the lateral orbital periosteum or the lateral canthal ligament using 5-0 nylon sutures to prevent early scleral show or ectropion, which may occur from damage to the nerve within the muscle, from postoperative swelling, or from scar contracture caused by incisions on the orbicularis oculi muscle² (Fig. 29-19, A).

When attaching the lateral canthal ligament to the lateral orbital periosteum, I affix it to the periosteum 2 to 3 mm above the lateral raphe, and I draw and attach the fat under the orbicularis oculi muscle in the lower skin flap as well as the fat under the lateral orbital septum or the lateral orbicularis oculi muscle together. If relaxation of the supporting tissue of the lower eyelid is apparent in preoperative examinations, the horizontal length of the eyelid should be shortened with a wedge or pentagonal excision, and the conjunctiva and tarsal plate should be firmly sutured to prevent ectropion. If the condition is not corrected properly with this method, the surgeon should perform a lateral canthoplasty. Regarding the direction of skin flap traction, it is recommended to draw the skin flap upward and laterally at an angle of approximately 45 degrees; however, the surgeon may want to draw the skin flap vertically while deeply drawing the orbicularis oculi muscle downward. Any skin protruding beyond the superior margin of the incision wound should be removed (Fig. 29-19, B through D).

Fig. 29-19  Lower blepharoplasty with a myocutaneous flap. A, Lateral canthoplasty to fix the orbicularis oculi muscle on the periosteum. B, Excision of surplus skin. C, Postexcisional status. D, The patient after suturing.
SUTURE
The surgeon incises the skin vertically at the region of the lateral canthus with a pair of scissors, places the key suture at the site, and excises any remaining skin and muscle. It is recommended to excise the smallest possible amount of muscle to maintain the pretarsal knoll. When excising the remaining skin after the key suture is placed, if the surgery is performed with a local anesthetic, I recommend that the patient should be asked to open his or her mouth wide and gaze upward, and then the skin flap is pulled upward and laterally to design the excision. If a general anesthetic is administered, the surgeon may want to gently press the eyeball downward to place the eyelid at the neutral position, have the lower eyelid edge come up to the peak position, and excise any part of the skin flap protruding beyond the superior margin of the incision wound in the shape of a long triangle. If the eyelid edge appears to roll into a state of ectropion, the surgeon should loosen the key suture to reduce the excision width.

The lower eyelid skin is secured with 6-0 or 7-0 nylon sutures or interrupted sutures, then interrupted sutures are used in the region of the lateral canthus. Suture placement in the lateral side should be somewhat dense, and medial sutures should be placed sparsely. The sutures are removed 3 days later, and I recommend attaching skin tapes to the lateral region of the lateral canthus for approximately 2 weeks after suture removal.

THE SKIN FLAP METHOD
Recently, the skin flap method has been used in lower blepharoplasty. This method is also indicated in patients with little or no excess muscle tissue. One major shortcoming of the skin flap method is that skin flap contracture may occur during the healing period. This is similar to a full-thickness skin graft; however, in most patients, skin flaps with well-developed blood vessels do not contract severely.

OTHER SURGICAL TECHNIQUES RELATED TO LOWER LID BLEPHAROPLASTY
Technique for Excising Protruding Orbital Fat
Until the 1970s, for a lower blepharoplasty to treat a palpebral bag, the orbital septum was opened and the protruding orbital fat was excised. Although this technique initially yields good results, it may cause senile enophthalmos, or the eyelid can become excessively sunken, because the orbital fat shrinks over time. Therefore the recent trend is to preserve orbital fat unless it is extremely excessive.

Techniques for Reinforcing the Front Supporting Structure of Protruding Orbital Fat
Orbital fat begins to bulge as an individual ages, because the orbital septum that supports the orbital fat weakens over time. There are various types of surgery to reinforce the orbital septum. Mendelson advised that excessive removal of orbital fat would move the eyeballs posterior-inferiorly, which would make the patient look old and tired. The surgical methods described next are intended to reinforce or excise the orbital septum that surrounds the orbital fat instead of removing the orbital fat itself.

Orbital Septum Plication
Plication of an orbital septum that has become thin, weak, and stretched tightens the septum to prevent the orbital fat from bulging outward. The middle (Fig. 29-20) or bottom (Fig. 29-21) part of the exposed orbital septum can be plicated and sutured to the periosteum.

Capsulopalpebral Repair
Capsulopalpebral repair is a method of suturing the capsulopalpebral fascia along the inferior edge of the orbit to make a new strong septum to position orbital fat in the orbit. This surgical method is shown in Fig. 29-22.
**Fig. 29-20** Huang technique. *A,* The dashed line indicates where the myocutaneous flap in front of the orbital septum will be dissected by a subciliary incision. *B,* The drooping septa in the middle of the orbital septum are plicated together to invaginate the protruding orbital fat and tighten the orbital septum. The extra myocutaneous flap in front of the orbital septum is excised and sutured to reinforce the role of the septum.

**Fig. 29-21** Septoorbitoperiostoplasty. *A,* The orbital fat is protruding to the front. *B,* The inferior orbital septum has been plicated and sutured to the inferior orbital rim to tighten the orbital septum.

**Fig. 29-22** Capsulopalpebral repair. *A* and *B,* Dissection of the capsulopalpebral fascia of the septoperiosteum. *C,* Fixation on the lower orbital margin.
Septoperiosteoplasty

*Septoperiosteoplasty (septorrhaphy)* is a method to reinforce the orbital septum by suturing the lower part of the orbital septum to the periosteum along the inferior orbital margin in a method similar to capsulopalpebral repair or suturing the orbital septa to each other.

Because capsulopalpebral repair and septoperiosteoplasty do not have much effect on improving regions below the inferior orbital margin, they are generally effective only in patients with minimal or minor sagging of the transitional region between the eyelid and the cheek. A sliding fat pad is effective in patients with fat under the orbicularis oculi muscle covering the inferior orbital margin or patients with weakened orbicularis oculi muscles.

**Techniques for Repositioning Protruding Orbital Fat Beyond the Inferior Orbital Rim**

A technique to reposition protruding orbital fat beyond the inferior orbital rim was first attempted by Loeb and generalized by Hamra. In this technique the skin is detached up to the inferior margin of the orbicularis oculi muscle as in the skin-muscle flap method, opening the arcus marginalis and removing the orbital fat by sliding it across the inferior orbital margin and suturing it to the periosteum.

The orbital fat is generally sutured to a region 1 to 1.5 cm below the inferior orbital margin. This method also has the effect of rearranging the orbicularis oculi muscle, the fat under the orbicularis oculi muscle, and the fat on the cheek; thus this method can be performed together with composite facial lifts.

**Transconjunctival Lower Blepharoplasty**

Transconjunctival lower blepharoplasty is a simple technique that involves inserting an eye-protecting contact lens, making an incision directly below the tarsal plate of the lower eyelid conjunctiva with a scalpel or Bovie, reaching the orbital septum to remove the medial, central, and lateral fat that protrudes when the eyeball has been gently pressed, arresting any hemorrhaging, and leaving the site alone or suturing it with only one stitch.

**Postoperative Care**

Although in some cases the surgical site is left alone without any particular treatment, some surgeons feel that application of gentle pressure on the surgical site is optimal. If both upper and lower blepharoplasties were performed, the surgeon may want to have the patient keep his or her eyes closed. A patient’s use of a cold pack compress is helpful in reducing ecchymosis or swelling during the first 12 to 24 hours postoperatively. If hemorrhage or severe swelling occurs, the site should be reopened and left alone without further treatment, or the site may be covered with gauze.
RESULTS

A successful lower blepharoplasty will produce a more youthful, attractive appearance. However, there are several complications that can result, such as hematoma, epiphora, diplopia and extraocular muscle disorder, exposure keratopathy, eyelid malposition, cicatricial ectropion, asymmetry, and scarring.

This 47-year-old woman presented with an aging face. I performed a lower blepharoplasty using skin excision, central-medial fat removal, arcus marginalis release, and orbicularis oculi muscle suspension. She is shown 2 months after surgery with a younger, refreshed appearance.

This 52-year-old woman presented with an aging face. I performed a lower blepharoplasty using skin excision, central-medial fat removal, and orbicularis oculi muscle suspension. Eight months after surgery, she has a younger and more attractive appearance.
This 57-year-old man presented with an aging face. I performed a lower blepharoplasty using skin excision, central-medial fat removal, orbicularis oculi muscle suspension, canthopexy, and suborbicularis oculi fat elevation. Three months after surgery, he has a younger and more attractive appearance.

**MANAGEMENT OF COMPLICATIONS**

**EARLY POSTOPERATIVE PERIOD**

**Hemorrhage and Hematoma**

Simple petechiae do not require specific treatment, although hematomas with clear boundaries and sutures may require suture removal and appropriate treatment (Fig. 29-26).

A posterior hematoma (retrobulbar hemorrhage) can be a significant complication and can even lead to blindness. An urgent ophthalmic consultation is needed to ensure proper medical management of the hematoma. The sutures of the incision should be removed to release intraocular pressure in the eye, and the surgical wound must be explored for bleeding.

**Epiphora or Dry-Eye Syndrome**

Epiphora, or dry-eye syndrome, is caused by incomplete eyelid closing, temporary eyelid retardation, lagophthalmos, or the phenomenon of evaporation. Epiphora improves spontaneously in several weeks to several months; thus it can be diagnosed as dry-eye syndrome when it persists as a late-phase complication. This condition may cause xerotic keratitis in patients in their sixties through eighties as a result of reduced tear generation. If dry-eye syndrome continuously progresses even after surgery, it may develop into keratitis or keratohelcosis, which should be treated through close consultation with an ophthalmologist.

**Diplopia and Extraocular Muscle Disorder**

Patients rarely complain of diplopia after blepharoplasty; however, many patients complain of temporary binocular or unilocular diplopia caused by dry eyes or eyeball irritation resulting from physiologic causes or lacrimation after surgery. Permanent diplopia is caused by direct damage to the extraocular muscles, especially when the orbital septum above the oblique muscle has been penetrated with direct trauma to the muscle. Ophthalmic consultation is usually required for management of diplopia.
Exposure Keratopathy From Incomplete Eyelid Closure

Exposure keratopathy occurs as a result of excessive skin excision during a blepharoplasty or an adhesion between the orbital septum and part of the eyelid tissue. The condition can lead to eyelid retardation or lagophthalmos. Therefore it is important to evaluate the patient for Bell's phenomenon before surgery.

Because patients with weak or no Bell's phenomenon are likely to develop exposure keratopathy, this possibility should be discussed with an ophthalmologist before surgery is scheduled.

Eyelid Malposition

There is a tendency for patients to develop ectropion after surgery, because the eyelid is lengthened as a result of paralyzed orbicularis oculi muscles and pulled downward by swelling or hematoma. Ectropion may also be caused by scars or contracture, although it disappears by itself in most cases. If ectropion persists longer than 1 week after surgery, it should be actively treated in most patients. Ectropion that has developed because of lengthened lower eyelids is not easily relieved; in many patients, it requires surgical intervention.
**Late Postoperative Period**

*Recurrence of Malar Festoons (Secondary Bags)*

If the patient has malar festoons before surgery and is aware of them, it is important for the surgeon to inform the patient that these may remain after surgery. If malar festoons are noted before surgery, the histories of diseases such as thyroid diseases, chronic rhinitis, allergic conjunctivitis, idiopathic general swelling, and renal diseases should be elicited and carefully examined. If the patient has continuous swelling on the buccal region below the lower eyelid but has no renal disease or thyroid disease, it is recommended that the surgeon inform the patient about the possibility of the development of festoons after surgery. Diuretics or oral steroids may be administered immediately after surgery.

*Cicatricial Lower Eyelid Bowing, Inferior Scleral Show, and Ectropion*

Ectropion is one of the most common complications to develop after a lower blepharoplasty, and only careful preoperative evaluation can help prevent this condition. Ectropion can frequently develop because of swelling, particularly chemosis, that develops normally as a result of surgery. However, this will disappear within several days unless eye tension or elasticity increases.

Ectropion develops easily when the patient has senile ectropion, high myopia, or protruding eyes as a result of Graves’ oculopathy; thus the surgeon must be careful during the surgery to avoid excessive excision of the lower eyelid tissue (Fig. 29-27). The function of the orbicularis oculi muscle should be carefully evaluated. If the eyelid is sagging and muscle tone is poor, a wedge excision, a lateral suspension of the tarsal plate, or a lateral canthoplasty should be performed.

If cicatricial lower eyelid retraction/bowing or inferior scleral show is detected early, it can be treated by pulling the eyelid upward or through repeated massage. After the sutures are removed, the eyelid should be massaged posteriorly in an upward direction three to four times every 5 minutes daily for 10 days.

![Fig. 29-27 Ectropion after lower blepharoplasty.](image-url)
The lower eyelid retraction that develops from the capsulopalpebral fascia pulling posteriorly and downward is also relieved through massage. If it is still not relieved even after massaging for a long time, the lower eyelid should be pulled through a reverse Frost suture.

**Asymmetry and Undercorrection**

Before surgery, asymmetry is prevented to some extent because the skin sags appropriately and orbital fat increases; thus the asymmetry goes unnoticed. However, because skin and fat are removed during a blepharoplasty, the asymmetry becomes more severe, because it is difficult to remove tissue identically on both sides. A comprehensive physical examination is essential before surgery. It is also important to excise excess remaining skin and orbital tissue, so that both sides are symmetrical during surgery.

Undercorrection occurs because the orbital fat or central connective tissue contained in the upper and lower eyelid was not appropriately removed or the remaining skin was insufficiently excised. In some patients, undercorrection occurs when a large amount of fat is removed but only a small amount of skin is removed, increasing the number of folds, which can make the eyelid look undercorrected. Undercorrection can be treated by a repeat blepharoplasty.

**Hypertrophic Scars**

In general, because the upper and lower eyelids have very thin skin, hypertrophic scars rarely become a problem, except in certain patients. Some scars remain after an epicanthoplasty is performed together with a lower blepharoplasty, and some scars remain in patients who have a hypertrophic scar; however, these scars generally disappear approximately 6 months after surgery. If severe hypertrophic scars develop, a steroidal agent may be injected locally, or scar revision can be performed.

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**PEARLS FOR SUCCESS**

- A comprehensive preoperative evaluation should be performed.
- The surgeon must determine the proper type of surgery to perform for the specific patient.
- During a lower blepharoplasty, denervation of the pretarsal orbicularis muscle can be minimized by preserving the orbicularis.
- Hematoma could be minimized by using the skin-muscle flap method.
- During a lower blepharoplasty, the orbitomalar ligament should be released.
- Supporting the lateral canthal area is important to minimize malposition of the eyelids.
- Depending on the amount of relaxation of the lower lid, a lateral canthoplasty or lateral cantholysis could be selected.
- A superficial cheek lift is used to reduce complications and improve aesthetic results.
- The transconjunctival approach can be used for patients who only have excessive orbital fat.
EXPERT COMMENTARY

Kenneth C.W. Hui

The most common practice for bilateral lower blepharoplasty for Asian patients is fat removal through the transconjunctival approach. Although this approach can offer the quickest recovery with no external scar, it is best suited for a milder deformity without a significant infraorbital hollow deformity and skin laxity. Fat removal through the transconjunctival approach requires precise and expertly performed fat removal, and reoperation may be necessary. In the worst case, the inadvertent overresection of fat can result in a delayed sunken inferior orbital region, which is often accentuated with smiling when the lower fibers of the orbicularis contracts. The resultant hollowness is very difficult to fill with artificial filler injection and autologous fat injection. The skin is thin, and even minor unevenness is noticeable. Furthermore, fat necrosis and hardening are almost impossible to rectify.

Instead of fat removal, fat redistribution is gaining popularity, because the three bulging infraorbital fat pads can be utilized to fill the sunken infraorbital groove. This approach is best performed through a subciliary skin incision. A plane can be created by elevating the skin off the pretarsal muscle, and then a skin/muscle flap is developed toward the orbital rim. The orbital-malar ligament is freed, and a wide tunnel is made through blunt dissection, extending 1 to 2 cm below the rim, deep to the orbicularis oculi muscle, and into the cheek (Fig. 29-28, A). After complete hemostasis, the fat compartments are released by opening the orbital septum (Fig. 29-28, B), and the fat is pushed down and stitched to muscle fascia with absorbable sutures (Fig. 29-28, C). On closure, redundant skin below the ciliary margin can be trimmed conservatively if necessary. The fat redistribution method is particularly suitable for more severe (type 3 and 4) lower eyelid deformities, which are commonly seen in the older age group. However, I found fat redistribution to be equally effective for patients in the younger age group who had minimal fat herniation but a deepened groove. The dark shadow half-moon-shaped rim can frequently be flattened.

Because the three fat pads are not detached from their blood supply, fat necrosis and the shrinkage of transferred fat are not expected. An alternative method of fat redistribution through the transconjunctival approach has also been described. Unlike the open subciliary approach, external skin incision can be avoided through the transconjunctival approach. However, because of the tight space used in this approach, it is difficult to secure the fat compartments in the cheek with sutures. Therefore the three fat pads are divided and then pushed under the infraorbital rim as free fat grafts. Because I have encountered cases

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**Fig. 29-28**  
A, A subciliary approach is used to explore the infraorbital septum and fat compartments. B, An infraorbital fat pad is exposed after releasing the septum. C, Three fat pads are redistributed and secured with absorbable sutures.
of fat necrosis resulting in palpable and visible subcutaneous nodules with autologous fat injections in this area, I have not tried this technique.

The main disadvantage of this open approach for fat redistribution is the longer recovery time required. Skin numbness, prolonged edema, and rarely conjunctival swelling are expected, but they are more common in the older age group. Dryness and tearing may last for a few weeks in patients with preexisting dry-eye conditions. The patient has to be informed preoperatively about these potential complications, so that they can decide on the alternatives and appropriate planning made before undergoing surgery (Fig. 29-29).

The preoperative examination for lower eyelid canthal laxity is critical. An additional lateral canthal tightening procedure is indicated when the patient has: (1) horizontal eyelid laxity, (2) lateral canthal tilt (dystopia), (3) lid retraction with or without soft tissue deficiency, or (4) aesthetic correction in conjunction with lower blepharoplasty, if the patient has moderate (3 to 6 mm) or significant (>6 mm) lower eyelid laxity based on the lid snapback test. A lateral canthal tightening procedure (canthopexy or canthoplasty) should be performed during the same surgery as the lower blepharoplasty (Fig. 29-30).

Compared with the transconjunctival approach, transient postoperative ectropion is more common. The lateral canthal tightening procedure is performed more frequently, because swelling of the lower eyelid can be more significant. A nonabsorbable suture can be placed between the lateral edge of the lateral canthal cartilage and the periosteum of the internal orbital rim above the midhorizontal line of the orbit. When the sutures are properly placed, there will be a 2 to 3 mm elevation of the lateral canthus and a minimal gap in the lower lid conjunctival space. Readjusting the tightness and anchoring points of the sutures may be necessary. Compression tapes, such as Steri-Strips, can be placed on the lower eyelid skin after surgery to control swelling. Eyedrops and ointment are helpful for the symptomatic relief of dryness and tearing. It is recommended that patients avoid exercise and the elevation of blood pressure for 3 to 4 weeks after surgery. Cold compress for the first few days after surgery are helpful to reduce swelling, and contact lenses cannot be worn for the first week.
In conclusion, lower blepharoplasty utilizing redundant infraorbital fat to fill in the hollowed infraorbital groove can provide stable and long-term improvement. Even when fat herniation continues above the orbital rim, the already-flattened infraorbital sulcus remains smooth in comparison, so additional surgery may not be necessary. However, performing a lower blepharoplasty utilizing redundant infraorbital fat is more challenging, requiring precise execution and strict hemostasis. Potential complications including ectropion can be prevented by adding lateral canthopexy before final skin closure. The satisfactory rate is high if the patient is informed about the possibility of a long recovery time.

REFERENCES