Ptosis Repair and Blepharoplasty in the Adult

J. Justin Older, MD

ABSTRACT
When contemplating upper lid ptosis and blepharoplasty surgery, preoperative evaluation is essential so that the patient and the surgeon have similar expectations as to the final result of the surgery. Blepharoplasty and ptosis repair can be performed as a combined procedure in the adult. The procedure involves excising excess skin and underlying orbicularis muscle, and in some cases, orbital fat. The levator aponeurosis is advanced onto the tarsus and the excess levator excised. An eyelid crease is formed during closure by passing a suture through the advanced aponeurosis.

As life expectancy increases, there are more elderly people who are socially active. Many of these people continue to contribute to the work force and may also participate in various sports. Although their internal health is improved, the aging changes of the face continue. Two of the changes which have an effect on self image, and often activity, are dermatochalasis and ptosis of the upper lids. Mild to moderate ptosis and significant dermatochalasis can cause problems with driving, athletic activity, and reading. In the educated, mature adult, these types of problems can be treated appropriately in an efficient matter with little risk to the patient’s health. The ophthalmic community can serve these adult patients with proper surgical correction when it is indicated.

COSMETIC VERSUS FUNCTIONAL
The issue of cosmesis versus functional disability is primarily one of payment. Most insurance companies, including Medicare, will pay for correction of “drooping lids” if vision is affected. However, the definition of affected vision is made by the insurance company, and these definitions vary. With most private insurances, a preoperative determination can be requested and is usually required. Required information includes a superior visual field with the patient in the relaxed position, as well as with the eyelids manually lifted. Straight-ahead photos, and sometimes side-view photos, also are required. In general, the insurance company personnel will evaluate the level of the lid in relationship to the pupil and also will evaluate how much of the superior field of vision is blocked by the drooping lid. Medicare does the same determination but does it after the surgery has been done and the claim is submitted.

When taking the photos and doing the visual field, it is very important to be sure that the patient relaxes his or her brows. People with ptosis or dermatochalasis, which interrupts vision, often raise the brows subconsciously in order to see better. When they are being tested for a visual field, they are concentrating and often may lift the brows. Also, when the photo is taken, they are concentrating and may lift the brows. It is, therefore, very important that the patient be instructed to relax completely. Some elderly people with involuntary ptosis find that reading is difficult because the lid droops when they have the eyes in the

Dr Older is Clinical Professor and Director, Oculoplastic Service, Department of Ophthalmology, University of South Florida College of Medicine, Tampa, Fla.
Reprint requests should be addressed to J. Justin Older, MD, 13601 Bruce B. Downs Blvd, Suite 210, Tampa, FL 33613.
downward position and the brows are relaxed. However, these same people often do not have a significant field loss superiorly in the straight ahead position, and the lids are often above the pupil in the straight ahead position. Therefore, a history of holding the lids in order to read must be elicited in order to recognize the functional difficulty of reading with these patients.

**PREOPERATIVE EVALUATION**

One of the most important aspects of the preoperative evaluation is a discussion with the patient to be sure that the patient's expectations are the same as the doctors. This can often be accomplished with a hand held mirror with the physician showing the patient exactly what is intended by manually holding the lids up or holding the excess skin away from the lashes. Many older people have decreased tear production, and this must be elicited in the preoperative evaluation. In the dry eye patient, a perfect ptosis repair might result in a significant increase in dry eye symptoms because of the increased area for evaporation of tears once the lids are elevated. More significant, however, is the problem of incomplete closure in the patient with dry eyes. Poor tear production should alert the physician to be conservative in the surgical approach.

Recognizing whether the eyelid problem is solely dermatochalasis, dermatochalasis and ptosis, or just ptosis is essential in achieving a satisfactory result. Blepharoplasty alone will not lift the eyelids if ptosis is present, and ptosis repair without removing some excess skin in the older patient will result in an apparent exacerbation of the dermatochalasis. If unilateral ptosis repair is contemplated, the surgeon must be aware of Hering's law of equal innervation and warn the patient of the possibility of relative ptosis in the unoperated eye after surgery, or the surgeon must somewhat undercorrect the operated eye in order to have both eyes equal after surgery. Preoperative photos should be taken as part of the patient's record.

**PREOPERATIVE MEASUREMENTS**

The most important preoperative measurement for ptosis repair is levator function. My method is to manually hold the brow up so that it is not involved in movement and then ask the patient to look all the way down and all the way up. The excursion from down gaze to up gaze is the levator measurement. In most cases of acquired involutional ptosis, this is greater than 10 mm. However, if function is 6 mm or less, then it is unlikely that levator aponeurotic surgery can correct the ptosis, and one must look for a cause of the ptosis other than involutional. Neurologic causes, such as progressive external ophthalmoplegia or even a congenital ptosis, which has been untreated over the years, must be considered. With good levator function, levator aponeurotic surgery can be expected to have a range of correction from 2 mm to 6 mm.

**Technique**

To achieve the best results for a ptosis repair via the levator route, I prefer the patient to be awake during the operation so he or she can sit up for measurements during the procedure. A blepharoplasty, without ptosis repair, can be performed with sedation.

After the patient is brought into the operating room, I draw lines to outline the amount of excess skin to be removed. My first line is in the upper lid crease, or where I want the upper lid crease to be. In some elderly patients with levator aponeurosis deficiencies, the lid crease is very high. I usually prefer my lid crease to be about 9 mm above the lash line in the center of the lid. I then use a fixation forceps to gather the excess skin together to see how much skin I wish to remove.

In the younger woman, where cosmesis is primary and there is no evidence of dry eye, I will try to pinch the skin together so that the lashes begin to turn up or perhaps the eye opens a millimeter. In the older patient, and especially in the patient with dry eyes, I gather less skin together so that the eye will be completely closed when the excess skin is removed.

In the male patient, I tend only to remove a moderate amount of skin because, in general, the male of any age does not wish to have a high lid crease. A second line is drawn to outline an ellipse of skin and underlying orbicularis muscle to be removed. The medial end of the ellipse goes no further medially than the upper punctum. The lateral end can be 5 mm to 15 mm lateral to the lateral canthal angle. For lesser amounts of skin, the outline is usually an ellipse. If the skin is excessive, the lateral and medial ends of the inferior incision are curved upward, giving a somewhat sinusoid appearance to the lower line.

At this point, I ask the anesthetist or anesthesiologist to administer intravenous sedation so that the discomfort of the injection is minimized. The lids are then prepped with a cleansing solution and injected with 2% lidocaine and epinephrine mixed 10 to 1 with sodium bicarbonate. The sodium bicarbonate is added to decrease the discomfort of the injection.

The patient then receives the full face prep and is draped in the usual sterile manner. While the patient is being prepped and draped, the surgeon scrubs. Surgery is begun by making an incision in the previously drawn lines. I will start my incision in the lateral aspect of the line with a #15 blade and then...
If ptosis repair is planned, then the levator aponeurosis is identified after the fat has been removed or after the skin is removed if no fat removal is done. Levator aponeurosis lies directly below the preaponeurotic fat. In the elderly patient, it is often attenuated, but usually there is a band which is at least several millimeters in the inferior to superior direction, or it might be as much as 15 mm in the younger patient. The superior edge of the aponeurosis blends in with the levator muscle, which has obvious muscle fibers in the young but may appear as a membrane with adipose infiltration in the elderly. Care must be taken to remove or at least open all of the orbital septum. There is usually a thin fibrous capsule around the preaponeurotic fat, and this capsule is connected to the orbital septum. This capsule must also be opened or removed so that there will not be any adhesions causing lid lag postoperatively.

Once the levator aponeurosis is well identified, the anterior superior surface of the tarsus is exposed. I usually expose about 5 to 7 mm of the anterior surface of the tarsus. I remove all of the attachments of the levator to the tarsus. In the older person, these attachments can be very flimsy, whereas in the younger person, they may be firm. Underneath the levator aponeurosis, just at the superior border of the tarsus, the very vascular Mueller's muscle can be identified.

If bilateral surgery is done, I perform the same maneuver on both sides. Once the levator and the tarsus are exposed, I use a 5-0 polyglyactin 910 suture on an S-24 needle and pass it in a mattress fashion through the levator in an anterior to posterior direction (Fig 1). This may exit in Mueller's muscle because Mueller's muscle has not been surgically cut. I then pass the needle through the anterior surface of the tarsus, somewhere between 2 mm to 5 mm below the superior border. It is necessary to have a very sharp spatula needle in order to get a good tarsal bite without going through full thickness tarsus and exiting on the conjunctival side. The needle is then passed back through the levator, close to where the needle first entered. The mattress suture is tied in a loop.

The patient is asked to sit up, and the amount of ptosis correction is evaluated. If I have a patient with good levator function and a small amount of ptosis, I will plan to put the needle further inferiorly on the levator or higher up on the tarsus. With greater ptosis repair needed, I will place the needle more superiorly in the levator or more inferiorly on the tarsus. A distance of 10 mm from the levator bite to the tarsal bite is a good starting point.

I prefer not to place the needle through the levator muscle itself since this will often result in bleeding. If
In the older person, I will look very carefully for orbital septal adhesions. I might also consider decreasing the amount of lift in order to get good postoperative closure. Excess levator aponeurosis is then excised, leaving about 3 mm to 4 mm beyond the suture line. Closure is then done with a 7-0 polypropylene suture in a running fashion. I take several bites of the advanced levator with this suture in order to form a good lid crease.

As a safety precaution, I place lubricating ointment in each eye, since closure might be compromised during the postoperative period. I usually use antibiotic ointment on the wounds and use cold compresses on the lids for about 2 days. Skin sutures are removed in about 1 week.

**POSTOPERATIVE COMPLICATIONS**

The most common complication I have found has been undercorrection. This occurs in about 5% of ptosis repairs and about the same amount of blepharoplasties. In both cases, I advise the patient to wait at least 3 months, but hopefully longer, for all healing to occur. If the patient is still dissatisfied with the
amount of skin removal, I will take more skin. If the ptosis is still undercorrected, I will approach this as a new procedure and reoperate to elevate the undercorrected eyelid.

Suture cysts occasionally occur, and these can be treated by incising the cyst in the office with a sharp blade. Overcorrection has been quite rare in my hands, but if significant overcorrection occurred, then I would suggest waiting 6 months and proceeding with levator recession.1 There are many potential complications for blepharoplasty and ptosis repair, but it is not the purpose of this article to discuss all of them.

In conclusion, with this technique, the surgeon can repair 1 mm to 5 mm of ptosis if the patient has good levator function. Ptosis can be combined with a blepharoplasty if needed. Since the patient is able to sit up during the procedure, adjustments can be made during the procedure allowing the surgeon to achieve a very high success rate (Fig 2A and B, 3A and B).

REFERENCE