Dr. Ronit Malka:

Hey there, and welcome back to another episode of ENT in a Nutshell. My name is Ronit Malka, and today we're joined by facial plastic and reconstructive surgeon Dr. Marc Hohman to talk about periorbital aging, brow ptosis, blepharoptosis and dermatochalasis. Welcome back, Dr. Holman.

Dr. Marc Hohman:

Thanks for having me, Ronit.

Dr. Ronit Malka:

Starting off, the terms blepharoptosis, blepharochalasis, and dermatochalasis are often used somewhat interchangeably. Could you briefly differentiate these terms for us and describe how these patients present in clinic?

Dr. Marc Hohman:

They're not really interchangeable terms. I think it's good to start off with some definitions, and I'm glad you asked. Blepharochalasis is actually a rare variant of angioedema in which patients, typically adolescents and young adults, have recurrent bouts of painless eyelid swelling that, over time, can result in hyperpigmentation and skin laxity. Blepharochalasis isn't something we can usually dress surgically, but I suppose the resulting skin laxity could be eyelid skin laxity, whether from blepharocalasis or, much, much more commonly, from aging is called dermatochalasis as the primary indication for blepharoplasty.

Dr. Marc Hohman:

The last term you mentioned is blepharoptosis, often just known as ptosis, which is sagging of the entire upper eyelid rather than just the skin. Someone with dermatochalasis will have excess skin of the upper lid, sometimes enough that it falls over the eyelashes, and we call that pseudoptosis. But someone with true ptosis will have an eyelid that droops such that the lash line itself is low, making the eyelid partly closed. Both blepharoptosis and dermatochalasis can cause visual field deficits.

Dr. Ronit Malka:

And how does that compare with brow ptosis?

Dr. Marc Hohman:

Well, brow ptosis is another important component of periorbital aging. It's the descent of soft tissue of the soft tissue brow below its ideal position. It's most commonly caused by aging, but we see it in facial paralysis as well as other neuromuscular disorders like myasthenia gravis. The ideal position is classically described as at the level of the bony brow in males and above it in females. The female brow is also classically described as having a high arch that peaks somewhere between the lateral limbus and the lateral canthus, with the brow itself starting at the medial canthus and ending on a line that connects the nasal ala to the lateral canthus and proceeds superolaterally to the temple.

Dr. Marc Hohman:

The classical definitions are good for academic facial analysis, but they mostly reflect historical fashion trends. Marilyn Monroe and Grace Kelly provide great examples of the classical female brow shape and

position. But these days we see more prominent lower and less arched brows, and many women generally acknowledge to embody Western ideals of beauty, like Cara Delevingne and Jennifer Connelly. In fact, even the great Audrey Hepburn had fairly flat brows.

Dr. Marc Hohman:

What's probably more consistent is the male ideal, mostly because we have to be aware that inadvertently elevating or arching a male eyebrow too much can feminize its appearance, which is obviously a suboptimal surgical outcome.

Dr. Marc Hohman:

Most patients who come to see you won't mention brow ptosis at all actually, because they'll be fixated on their eyelids. They'll complain of droopy eyelids or bags or dark circles under their eyes. So it's our job to translate those complaint into diagnoses that can be addressed, looking for all the other problems we just mentioned.

Dr. Ronit Malka:

Great. Can we briefly discuss normal periorbital anatomy and the underlying anatomical changes that occur with periorbital aging?

Dr. Marc Hohman:

Aging affects multiple periorbital structures, including the soft tissue of the brow, the skin of the eyelids, the orbital septum preaponeurotic fat, your orbicular sofital muscle, and the levator palpebrae superioris muscle. It's important to understand the underlying anatomy in order to be able to identify the defects that need to be addressed.

Dr. Marc Hohman:

The skin of the brow is thicker than forehead skin and more sebaceous medially than it is laterally. Under the skin is a thin subcutaneous layer with more fat in the brow than in the forehead, particularly around the hair follicles. Beneath that are the muscles, which are, from superficial to deep, the procerus, the frontalis, and the corrugator supercilii. The frontalis is contiguous with the galea aponeurotica, more superiorly corresponding to the A in the scalp acronym, deep to which is some looser, realer tissue and then periosteum.

Dr. Marc Hohman:

When the brows start to sag, not only do you get brow ptosis, but that downward push also tends to exacerbate the appearance of excess skin in the upper eyelids, which we call dermatochalasis.

Dr. Marc Hohman:

The eyelids also have multiple layers. From superficial to deep they are skin, then orbicularis oculi, septum or, if you're closer to the lash line, the tarsal plate, which is about 10 millimeters tall on the upper lid and four millimeters in the lower. Deep to the septum is the preopaneurotic fat, then the levator palpebrae superioris and Mueller's muscle in the upper lid or the capsule palpebral fascia, which is the retractor of the lower lid. And then, lastly, is the conjunctiva.

Dr. Marc Hohman:

The levator muscle is a little tricky to conceptualize because it lies deep to the fat, but it's aponeurosis inserts into the dermis in most Caucasians, which keeps the fat higher in the eyelid and causes an upper lid crease. In the classically described Asian eyelid, there's no supratarsal crease, because the levator aponeurosis actually inserts onto the tarsal plate and doesn't retain the fat which causes fullness of the upper eyelid. The fact is, though, actually only about 50% of Asians are missing the upper lid crease, although, in many cases, the crease is substantially lower in the Asian eyelid than it is in Caucasians. It's usually about eight to 10 millimeters above the lash line.

Dr. Marc Hohman:

A much more consistent finding actually in Asian eyelids, more consistent than the absent crease, is the epicanthal fold, which is present in at least 90% of East Asians, but also appears in other ethnicities, including some South Asians and even some northern Europeans.

Dr. Marc Hohman:

A useful way, at least to me, to visualize eyelid anatomy is with the concept of lamellae. Different surgeons will think about this differently, but most will tell you that there are either two or three lamellae in each eyelid. The anterior lamella consists of skin and orbicularis oculi muscle, which itself is divided into two parts, the orbital and palpebral portions, with the palpebral portion of your obicularis oculi further divided into the preseptal and pretarsal parts.

Dr. Marc Hohman:

Beyond the anterior lamella is where descriptions start to vary. Some folks will tell you that the posterior lamella is the tarsal plate and conjunctiva and that the orbital septum separates the anterior and posterior lamellae. Others will call the tarsal plate and septum the middle lamella, with the posterior lamella then consisting of the conjunctiva and lid retractor, either the levator muscle in the upper lid or the capsular palpebral fascia in the lower.

Dr. Marc Hohman:

Fortunately, when we start talking about the fat compartments, there isn't much debate. The lower eyelid has three preopaneutoric fat compartments, medial, central and lateral, with the medial and central compartments separated from each other by the inferior oblique muscle and the medial fat appearing wider because of different embryonic origin from the other fat pads. The upper eyelid is usually thought of as having only two fat compartments, medial and central, because the lateral is occupied by the lacrimal gland, although, in practice, there can actually be some fat in the lateral compartment as well. We sometimes see fat prolapse in the upper eyelid, but it's more common in the lower and often causes those bags under the eyes that patients dislike so much.

Dr. Marc Hohman:

The underlying mechanism isn't actually fat hypertrophy or weight gain but rather thinning and weakening of the orbital septum and pseudoherniation of the fat forward into the eyelid. Occasionally, though, we'll see hypertrophy of the orbicularis oculi muscle, particularly in the lower eyelid, and that can also cause bags that we call festoons, which we'll talk about more in a little bit.

Dr. Marc Hohman:

The last thing that's worth touching on in terms of eyelid pathophysiology is blepharoptosis. The majority of the ptosis you're likely to see is age related [inaudible 00:07:21] of the levator aponeurosis, which typically also causes a higher than usual supratarsal crease, which is a very convenient clue to the etiology of the ptosis.

Dr. Marc Hohman:

There are a good number of causes of acquired blepharoptosis, though, and they're often thought of in four categories: myogenic, neurogenic, mechanical, and aponeurotic. Myogenic causes might be myositis or muscular dystrophy. Neurogenic might be myasthenia gravis, multiple sclerosis, or Horner syndrome. Mechanical could be a tumor on the eyelid or an injury to the levator from trauma or surgery. And then aponeurotic would be the levator dehiscence that we just talked about. Of course, there's also congenital ptosis as well.

Dr. Ronit Malka:

And what are the different conditions that you think of on your differential that can lead to periorbital aging?

Dr. Marc Hohman:

Yeah, great question. So I think the critical thing is to have a mental checklist of the different problems that bother a patient in the periorbital area. You need to look at the brow position to see whether there's any brow ptosis, which can exacerbate dermatochalasis in addition to being a problem in its own right. Then you need to look at the upper eyelid to check for dermatochalasis as well as blepharoptosis. In the lower eyelid, you're going to look for skin laxity as well, but most of the time fat pseudoherniation will be the major issue, and you're going to want to check for festoons.

Dr. Marc Hohman:

In terms of an etiology-based differential diagnosis, though, we've touched on it already. Aging is at the top of the list, followed by neuromuscular issues like facial palsy, Horner syndrome, myasthenia gravis, and then potentially neoplasms as well.

Dr. Ronit Malka:

Great. So now we've reviewed the pathophysiology and presentation of periorbital aging. Onto physical exam. When these patients present to your clinic, what are you making sure to evaluate?

Dr. Marc Hohman:

Well, the physical exam is going to parallel that mental checklist. So I'm going to go from top to bottom, trying to identify exactly what anatomical problems the patient has for the sake of preoperative planning.

Dr. Marc Hohman:

Before getting into the details of the periorbital exam, though, it's worth mentioning that I always ask the patient about history of dry eyes, prior periorbital surgery, and I'll order a visual field evaluation to determine whether insurance will cover the surgery. Preoperative photographs are useful as well, from the front and in profile in the Frankfort horizontal plane. I also like to get a shot with a patient looking upward, which emphasizes any lower lid [fatsia 00:09:30] herniation.

Dr. Marc Hohman:

After that, I'll start the exam by having the patient close her eyes and relax her brow, and then I'll ask her to open her eyes without elevating her brow to get an idea of where the brow naturally sits and to see if there's any brow ptosis. Then I'll manually elevate the brows with my hands to a good position and see if there's any dermatochalasis in the upper eyelids, because that gives me a good idea of how much excess skin is from the brow ptosis and how much is from the eyelids themselves. With the eyes closed, I'll push on the globe to evaluate fat psuedoherniation in the upper and lower eyelids and to see if there's any significant tear trough deformity, which is a noticeable valley at the medial aspect of the inferior orbital rim right where the eyelid meets the cheek. If there's a significant tear trough, I may want to do a fat transfer as part of lower blepharoplasty.

Dr. Marc Hohman:

After that, I look at the skin quality to see whether there's any hyperpigmentation or dermatochalasis.

Dr. Marc Hohman:

I also usually do a snap test with the lower eyelid to check tone since that can have an impact on the risk of developing postoperative ectropion. When you distract the lid from the globe, normal lid margin should snap right back into position when it's released. But if it takes more than two or three seconds, or if the patient has to blink to get the eyelid back into place, I'll start thinking that maybe a lower lid tightening procedure will need to be done.

Dr. Marc Hohman:

Along the same lines, I'll look at the vector of the lower eyelid from the side when the patient is positioned in the Frankfort horizontal plane. If the anterior-most aspect of the cornea is directly above the cheek skin at the inferior orbital rim, we call this a neutral factor. If the cornea is posterior to the cheek, the vector is considered positive, which is common in youth. And if the cornea is anterior to the cheek, the vector is negative, which we commonly see in the aging face.

Dr. Marc Hohman:

The relevance of the vector is that a negative one may be more likely to result in ectropion if the lower eyelid is tightened in the same way that you can imagine a belt being tightened on a potbelly might slip below the pannus, so the lid margin may be drawn inferiorly by contractile forces during the healing process.

Dr. Marc Hohman:

It's also worth assessing the lower eyelids for festoons, which really do look like actual bags under the lower eyelids. They can be differentiated from fat pseudoherniation fairly easily because festoons will extend below the inferior orbital rim, which pseudoherniated fat will not because it's bounded by the septum, and fat will pooch out when the globe is retropulsed, which festoons will not. Additionally, since festoons are muscle, if you ask the patient to close your eyes tightly, you'll see the festoons contract, which fat obviously will not do. That said, some patients of course do have both.

Dr. Marc Hohman:

The last thing I usually do is to look for blepharoptosis by evaluating the height of the palpebral fissure and the margin reflex distances. The palpebral fissure height, or the distance between the margins of

the upper and lower eyelids when the eyes open, should be about a centimeter. The first margin reflex distance, or MRD1, is the distance between the cornea; light reflex and the upper eyelid margin in the midline. It should be about four to five millimeters. MRD2 is the distance between the corneal light reflex and the lower eyelid margin in the midline, which should be about five to six millimeters. If the MRD1 is less than two to three millimeters, that's a blepharoptosis that may benefit from surgical correction.

Dr. Marc Hohman:

Sometimes ptosis is bilateral and symmetric, but oftentimes it's asymmetric or unilateral. And when it appears to be unilateral only, it's frequently actually bilateral but asymmetric, which means that fixing the worse side may actually unmask the ptosis on what you thought was the good side, because the levator and frontalis will no longer be working so hard to keep the worse eyelid elevated. That frontalis is often a clue to asymmetric blepharoptosis. If you see significant eyebrow height asymmetry but the eyelids appear to be in identical position, it may be that there's actually blepharoptosis on the side of the elevated eyebrow, but the lid is being held up by frontalis contraction. Oftentimes, though, the eyelid on the side of the higher eyebrow will still be just a little lower than its counterpart, giving you a hint of what's going on.

Dr. Marc Hohman:

Another important physical exam finding to look for in blepharoptosis is Hering's phenomenon, which is the unmasking of a symmetric lid ptosis or the lid switch phenomenon. If you see what appears to be unilateral blepharoptosis, you should manually elevate that eyelid and watch the other side to see if it droops, which it may if the patient was working both levators to keep the worse ptotic eyelid elevated. Once the worse ptotic eyelid is allowed to relax, because you've elevated that lid, the less ptotic one may become more apparent. It's important to recognize this preoperatively so that you can correct both sides and prevent the patient coming back to see you after surgery complaining that you've somehow magically managed to switch the eyelid that was droopy.

Dr. Ronit Malka:

And what are the main indications for performing a brow lift or blepharoplasty?

Dr. Marc Hohman:

Well, for a brow lift, the main indication would be brow ptosis, especially if it's exacerbating dermatochalasis and/or causing visual field deficits. Depending on the type of brow lift, though, you can also potentially address glabella [inaudible 00:14:24] by resecting the corrugator and procerus muscles or even adjust the hairline.

Dr. Marc Hohman:

For blepharoplasty, the main functional indication, that insurance would cover anyway, would be visual field deficits, although, from a cosmetic standpoint, we see aging face indications like dermatochalasis, fat pseudoherniation, and festoons. And let's not forget that younger folks sometimes want to pursue blepharoplasty as well, particularly to create a supratarsal crease in an Asian eyelid, which they often call double eyelid surgery.

Dr. Ronit Malka:

In terms of working up these patients, are there any additional tools you use to quantify the degree of impairment in blepharoptosis and brow ptosis?

Dr. Marc Hohman:

Yeah, you bet. So we've already mentioned photographs and visual field testing, which can be very useful when evaluating patients for blepharoplasty entosis correction, especially when fields are checked with and without the eyelids elevated with tape. You can also do a Schirmer test in which a piece of filter paper is placed into the inferior fornix and the length of the paper that is damp at the end of five minutes is measured, with 10 millimeters or more being normal and less than that indicating xerophthalmia. To be honest, though, I've never even seen a Schirmer done.

Dr. Ronit Malka:

And are there any other conditions you want to rule out or contraindications to brow lift or blepharoplasty?

Dr. Marc Hohman:

I'm not sure there's anything really specifically that I would want to rule out, but it's good to take a thorough history to be aware of any issues that might arise because of bleeding diatheses, cardiopulmonary comorbidities, allergies, medications, and the like. I definitely want to know if there's been prior surgery or trauma in the area, and I want to know about history of dry eyes, because that will make my blepharoplasty more conservative. It's important to know about history of suboptimal scarring. And likewise, the patient's hairline may have an impact on the approach I choose, but I wouldn't necessarily rule out operating on a bald patient. Certain surgical approaches are better for certain patients, whether because of hairline position or hair density, brow symmetry or just the patient's overall goals.

Dr. Ronit Malka:

So now that we've covered relevant pathophysiology, presentation, and workup, let's move on to treatment. Starting with brow lifts, what are our major surgical options?

Dr. Marc Hohman:

Yeah. There are a lot of different options for brow lifting, and selection of the appropriate one depends a lot on the patient's individual characteristics, particularly hairline position and hair density, brow symmetry, and the degree of lift desired. Most folks with age-related brow ptosis are going to be candidates for upper blepharoplasty as well because of age-related dermatochalasis and vice versa. In fact, there are a couple of good papers that demonstrate a high likelihood of pulling the brows down as much as three or four millimeters when upper blepharoplasty is performed without a brow lift. So, most of the time, certainly in my practice anyway, upper blepharoplasty and brow lift go hand in hand.

Dr. Marc Hohman:

Probably the most commonly performed type of brow lift these days is the endoscopic brow lift, or endobrow, which is best suited to patients with low to average hairlines because it can be difficult to reach the orbits when the hairline is high, even with proper instrumentation, particularly if the forehead is very curved. The procedure involves making four to five small incisions about two to three centimeters in length behind the hairline in the midline, above the peaks of the brows, and in the

temporal hair tufts. A scope and long instruments are used to elevate the periosteum of the central forehead down to the orbital rim. Laterally, the contra [inaudible 00:17:40] is divided and the elevation is performed on top of the temporalis fascia so that the frontal branch of the facial nerve, which is located deep within the temporoparietal fascia, stays elevated and out of harm's way.

Dr. Marc Hohman:

The keys to completing this operation successfully are keeping the periosteum intact, because that gives you a way to pull up on the Browse, and dividing the arcus marginalis around the superior and lateral orbits thoroughly in order to allow the brow to be elevated.

Dr. Marc Hohman:

Once the elevation is complete the forehead periosteum has to be suspended in its new location and held in place for at least six weeks while it refixates to the frontal calvarium. The two most common ways of achieving this are with endotine implants, which are essentially bio-resorbable hooks made of polylactic polyglycolic acid polymer that are drilled into the bone. They usually take six months or more to disappear completely, and patients can usually feel them as tender spots while they are dissolving. Alternatively, a bone bridge system can be used to drill a shallow tunnel into the frontal bone that then allows you to pass a suture and anchor the periosteum directly to the bone. In both cases, the surgeon will usually fixate the forehead in two spots over the desired peaks of the brow, which means that it's important to mark the brow preoperatively while the patient is sitting upright in order to get an accurate idea of where those points are.

Dr. Marc Hohman:

The procedure tends to provide a fairly subtle lift of maybe five millimeters or so with minimal impact on the hairline. It's not very good for correcting brow asymmetry since the whole forehead is lifted as a unit, but it is a very effective means of stabilizing the brows against that downward pull from blepharoplasty that we mentioned, and it avoids placing any scars on the face.

Dr. Marc Hohman:

Another commonly performed procedure is the direct brow lift, which is effectively the opposite of the endobrow. It uses incisions placed immediately above the hair-bearing brows to remove skin and pull up the brows however much or little is required. Some surgeons will suture the dermis of the brow up to the periosteum as well, but not everybody thinks that's necessary. Because the two brows are done independently, the operation is well suited to correcting brow asymmetry, but it does leave scars on the face. Some surgeons avoid carrying the incisions over the medial portions of the brows because the skin is more sebaceous near the glabella and the scars are therefore more visible once they've healed. But if you do that, you can really only address the lateral brow with a direct brow lift technique, and that doesn't really take full advantage of its potential. As with the endobrow, preoperative marking while the patient is upright is critical to help determine how much skin can be removed safely.

Dr. Marc Hohman:

Classically, surgeons have used a coronal approach to brow lifting, which allows an exposure similar to that obtained with the endoscopic lift except that it's all open through a long incision over the top of the head. Variants of this approach include the pretrichial approach, in which the incision is made just anterior and parallel to the hairline, and the trichophytic approach, in which the incision is placed just

behind the hairline. Elevation for coronal lift is typically performed in the subgaleal plane, diving below the periosteum about one to two centimeters superior to the superior orbital rim, but the whole elevation can also be performed in a subperiosteal plane as well, and that's what I typically do. No endotine or suture fixation is required because the forehead is closed under tension after the excess scalp is resected.

Dr. Marc Hohman:

As a side note, the pretrichial approach can be used to modify the hairline by resecting a widow's peak in the middle or temporal bald patches laterally, which is particularly useful in facial feminization. On the other hand, when the incision is placed across the top of the scalp, the hairline may be elevated substantially.

Dr. Marc Hohman:

A more recent addition to the brow lift lineup is the trans-blepharoplasty browpexy, a technique in which the brows are suspended via an upper blepharoplasty incision. This procedure is usually done in combination with upper blepharoplasty. The bleph is done first, and then you dissect along the orbital septum until you reach the superior orbital rim. At that point, you can either pass a suture from the periosteum to the dermis of the brow and pull the brow upward, which by the way is very difficult to do symmetrically on both sides, or you can elevate the periosteum as you would for an endoscopic brow lift and insert a smaller endotine specifically designed for browpexy, and that's my preferred method of doing this hands down.

Dr. Marc Hohman:

The last brow lift method worth mentioning is the mid-forehead lift, which actually is probably not really worth mentioning. It's an older technique that essentially removes skin, like you would have a direct brow lift, but does it right in the middle of the forehead, attempting to hide the incision in a transverse [ridded 00:21:47]. I've never seen one of these heal as well as we'd like it to, and the patients are commonly displeased with a scar, so, honestly, I'm not even sure that people really do these anymore.

Dr. Ronit Malka:

That's a really fantastic summary. Moving on to blepharoplasty, what surgical options exist for us there?

Dr. Marc Hohman:

As with brow lift, there are a number of different options that you can employ in upper blepharoplasty. But, at its heart, upper blepharoplasty is actually a very straightforward surgery. You mark the supratarsal crease in the preoperative holding area with a patient upright. Then, back in the operating room, you measure out how much skin you want to remove and cut it out, taking care not to go immediately past the canthus to avoid webbing and not laterally past the orbital rim in males to avoid a scar that they want to wear eyeshadow to cover.

Dr. Marc Hohman:

The hardest part really is the marking, to make sure you take just the right amount. I like to use Von Graefe forceps to pinch the upper lid skin until I've identified how much skin I can take without causing lagophthalmos. Typically, when you pinch enough skin that the eyelashes just start to revert but the eye doesn't yet open, you're pretty much right on target. Generally, when you do that, you should still be

leaving between 15 and 20 millimeters of intact skin between the lash line and the inferior aspect of the brow. If you want to measure that out, make sure that you put the lid on stretch, though, otherwise you won't get a consistent measurement.

Dr. Marc Hohman:

Once you've marked out your incision, you can inject the local anesthetic. But, remember, you never inject before you mark or it will completely distort the eyelid and you'll have to wait for that local anesthetic to diffuse completely away before you can draw your incisions. Since you'll be putting in a decent amount of local anyway, this operation can usually be done without general anesthesia, but sometimes the patient will need to be all the way asleep anyway if, for example, you're also doing a brow lift or a face lift.

Dr. Marc Hohman:

Once the skin excision is marked, you can remove the skin any number of ways. I prefer Westcott scissors, but some folks use a knife, some use a needle-tip bovie, and some even use a CO2 laser.

Dr. Marc Hohman:

If the patient has very dry eyes, you may just close up at this point. But, for most folks, excising a strip of orbicularis oculi muscle will help define the lid crease a little better and debulk the eyelid a bit.

Dr. Marc Hohman:

If the eyelids are really poofy, you can incise the orbicularis and then expose and open the septum to access the fat pads for debulking, but be conservative with fat resection, particularly in the upper lid, because the orbits will tend to hollow with age and what looks good now may look terrible later. Also, if you take too much fat centrally, you can be left with what's called an A-frame deformity. So, really, just think twice before moving fat from the upper eyelid. And, remember, the levator palpebrae superioris muscle is quite superficial, sitting right above the tarsal plate in the midline, but is deeper more superiorly. So, if you do decide to go after the fat, make your septotomy fairly high to avoid injuring the muscle. If there's excess fat laterally, you can debulk that as well, but sometimes slimming down the lateral compartment requires tacking the lacrimal gland up to the periosteum of the orbital roof to pull it back out of sight.

Dr. Marc Hohman:

While you're doing the upper lid blepharoplasty, you can also perform a browplex if you like. There are a couple of other options you have with this exposure as well. You can perform a ptosis correction if necessary by shortening the levator palpebrae superioris, and this is usually done with a patient awake so that you can accurately gauge how much to tighten the muscle by having the patient open and close her eyes. If you over-tighten it, you'll notch the eyelid margin and make it hard to get complete closure. Mueller's muscle can also be shortened, but this is often approached transconjunctivally since Mueller's muscle lies deep to the levator.

Dr. Marc Hohman:

The other maneuver that's commonly performed as part of an upper blepharoplasty is creation of a crease in the Asian eyelid, which involves closing the incision with full [inaudible 00:25:08] bites that go through skin and levator aponeurosis using a [6-O 00:25:13] non-absorbable suture, alternating with the

superficial skin closure. The deep sutures are removed about a week or so after surgery, and this procedure creates a scar attachment of the levator aponeurosis to the dermis, which replicates that insertion of levator aponeurosis into the dermis that we usually see in Caucasian eyelids.

Dr. Marc Hohman:

Lower eyelid blepharoplasty is a little more complicated than upper eyelid blepharoplasty. While it can also involve excision of excess skin, it actually tends to focus more on removal or repositioning of pseudoherniated fat.

Dr. Marc Hohman:

Incisions for the lower lid can be external, as in a subciliary approach, or transconjunctival. When fat removal is the main objective, a transconjunctival approach may be preferred because it avoids a visible scar and lowers the risk of ectropion compared to an external approach. But if skin excision is required, an external approach or combination approach may be necessary. Transconjunctival approaches are categorized as preseptal or postseptal depending on where the dissection occurs relative to the orbital septum.

Dr. Marc Hohman:

Preseptal is my preferred method, which involves making an incision about two millimeters inferior to the tarsal plate and should theoretically provide a cleaner dissection plane between the orbicularis oculi and the septum until you're ready to enter the fat compartments. But sometimes the septum is so attenuated that the fat pops out at you anyway.

Dr. Marc Hohman:

In the most subtle approach, though, you make an incision deeper in the fornix and dive straight into the fat, which can make the exposure and dissection a little messier, but it doesn't violate the orbital septum, which theoretically lowers the risk of cicatricial ectropion postoperatively.

Dr. Marc Hohman:

With either approach, the medial and central fat can be transferred over the inferior orbital rim to fill in a teardrop deformity, although pulling the fat too far inferiorly can also result in scarring and lower lytic ectropion.

Dr. Marc Hohman:

Another caveat is the inferior oblique muscle, which separates the central and medial fat compartments. It's usually very apparent if you're looking for it, and it's very important to leave it alone. It's like a rattlesnake, more scared of you than you are of it, but, still, you should stay away for safety sake.

Dr. Marc Hohman:

If there is excess skin, you can do a skin pinch via a subciliary incision. Don't carry the incision immediately past the punctum, and laterally ensure the incision is at least five millimeters inferior to the upper blepharoplasty incision at the lateral canthus in order to avoid a scar contracture. Some surgeons suggest having the patient open her mouth while pinching the skin prior to excision to see how much excess there truly is in the lower eyelid in order to avoid ectropion. Also, you'll want to avoid cautery on your obicularis oculi to lower the risk of ectropion. If the patient had a slow snap test, you can also place

a lateral suspension suture to tighten the lower eyelid, pulling the inferior canthal ligaments upwards by anchoring them to the periosteum inside the orbital rim and coming out through the upper blepharoplasty incision to tie the suture. On the other hand, sometimes it's easier and less risky to perform a laser or chemical resurfacing instead of a skin excision in patients with the appropriate skin complexion.

Dr. Marc Hohman:

Alternative to transconjunctival blepharoplasty with subsidiary skin pinch is the skin muscle flap, lower lid blepharoplasty. This involves a subsidiary incision and raising of a skin flap over the pretarsal portion of your obicularis oculi. The dissection then dives deep under the muscle for the rest of the elevation sort of like a deep plane facelift. The reason for leaving muscle on the tarsal plate is to stabilize the lower lid and decrease the risk of ectropion. This approach allows removal of excess skin and also provides access to the fat compartments without violating the conjunctiva. It also permits suspension of the lateral aspect of the orbicularis oculi muscle with an orbital [inaudible 00:28:31] suture, which can be useful for mild festoons. Major festoons are trickier to treat, though, and may actually require direct excision straight through the skin with or without a big facelift in order to provide support and prevent recurrence of the festoons later or prevent ectropion.

Dr. Ronit Malka:

If a patient is indicated to receive both a brow lift and a blepharoplasty, do you have a preference which comes first?

Dr. Marc Hohman:

Yeah, definitely. I personally prefer to work from top to bottom, but actually not everybody does that. I like to go from top to bottom because I feel like the amount of skin that can be removed from the eyelids during the upper blepharoplasty depends greatly on the brow position, and I don't know the final brow position until I've completed the brow lift. But, again, some surgeons feel that you can go the other way around, because simply laying the patient supine provides enough of a temporary brow lift that they can tell how much skin is safe to take from the eyelid before even operating on the brow, and that seems to work just fine for them too.

Dr. Ronit Malka:

In terms of outcomes and expectations, what are your expectations for surgical correction of periorbital aging and what defines a good outcome?

Dr. Marc Hohman:

Well, ultimately, a good outcome is one that makes the patient happy, one that restores self confidence and addresses the patient's specific complaints. On the whole, the satisfaction rate for these operations should approach or ideally exceed 90%, and most patients are pretty pleased, whether cosmetic or functional, as long as you recognize the individual issues preoperatively, counsel the patients appropriately, and choose the correct surgical options.

Dr. Ronit Malka:

And what are the most common complications from brow lifts and blepharoplasty?

Dr. Marc Hohman:

Brow lift complications are going to depend somewhat on the approach, but most approaches will run the risk of producing temporary or permanent numbness of the forehead and scalp from injury to the supratrochlear and/or supraorbital nerves. Itching and paresthesias are also potentially manifestations of nerve injury that may be more common actually than frank numbness and occur in up to 25% of patients.

Dr. Marc Hohman:

For coronal approaches, by which I mean classical coronal as well as trichophytic and pretrichial, it's not so much at risk as a guarantee really of at least some degree of permanent postoperative hypoesthesia of the scalp posterior to the incision.

Dr. Marc Hohman:

Endoscopic and coronal brow lift approaches also put the frontal branch of the facial nerve at risk, although the risk of permanent injury to the nerve is less than 1%. The frontal branch lies along a line running from half a centimeter below the tragus to one and a half centimeters above the lateral brow, as described in a classic 1966 paper by Pitanguy and Ramos.

Dr. Marc Hohman:

Incisions in the scalp run the risk of causing alopecia in about 5% of patients, and when the incisions are made on the forehead, as in a mid-forehead or direct brow lift, the scars will almost certainly be visible to some extent even if they are well hidden and carefully closed.

Dr. Marc Hohman:

Techniques that address the eyebrows separately, such as the direct brow approach and the trans-bleph browpexy are best suited to correcting asymmetry as we mentioned but also run the greatest risk of producing asymmetry postoperatively.

Dr. Marc Hohman:

With respect to blepharoplasty, asymmetry is one of the more common complications, whether in the amount of skin or fat resected, the height of the lid crease, or the final appearance of the scar, which may be widened, red, or webbed medially.

Dr. Marc Hohman:

Patients will commonly experienced dry eyes after upper blepharoplasty, but this usually resolves within a few days. However, overaggressive resection can certainly lead to lagophthalmos, particularly in revision procedures.

Dr. Marc Hohman:

Occasionally, the suture line in the upper eyelid can produce milia, which are not usually difficult to unroof with the needle in the clinic, although laser resurfacing of the scar may be helpful as well.

Dr. Marc Hohman:

And lower blepharoplasty, as a longterm complication, we worry the most about ectropion, which you can probably tell because I've mentioned it like 12 times already, and that can result epiphora, lagophthalmos and potentially exposure keratopathy. But in the short term, we focus mostly on avoiding injury to the inferior oblique muscle, because that can cause permanent diplopia and supramedial gaze.

Dr. Marc Hohman:

The other most feared complication, of course, is extremely rare but gets a lot of attention: retrobulbar hematoma and subsequent blindness.

Dr. Marc Hohman:

At the end of the day, though, as with any procedure that has a cosmetic component to it, the most common complication will probably actually be patient dissatisfaction.

Dr. Ronit Malka:

You've already touched on this a little, but how do you prevent and handle these complications typically?

Dr. Marc Hohman:

Well, prevention of complications comes from selecting the correct surgery and executing it carefully. I realize that's a pretty vague answer, but a good example would be staying in the correct tissue plane during an endoscopic brow lift, which keeps the periosteum elevated centrally to improve the efficacy of the lift and keeps the temporoparietal fascia elevated laterally so that the frontal branch or the facial nerve is out of harm's way.

Dr. Marc Hohman:

Being cognizant of fatalities line and the medial zygomaticotemporal or sentinel vein, which is typically located within about a centimeter of the frontal branch of the facial nerve and is easily seen endoscopically, will help to avoid postoperative brow paresis.

Dr. Marc Hohman:

Careful use of cautery is important as well. Overcauterizing the scalp can kill hair follicles and cause alopecia, and overcauterizing in the lower eyelid can cause scarring and ectropion, which can be very challenging to manage in the long run and may require steroid injections, posterior lamellar grafting, or canthopexy. That said, insufficient use of cautery, particularly when removing fat, can increase the risk of intraorbital bleeding and hematoma formation. And while I've never personally had to deal with a retrobulbar hematoma in one of my blepharoplasty patients, the textbook response would be to perform a lateral canthotomy and cantholysis and administer steroids, topical beta blockers, and diuretics within about 90 minutes to avoid permanent ischemic retinal damage.

Dr. Ronit Malka:

And can you briefly comment on any commonly comorbid conditions blepharoplasty and browlift do not correct?

Dr. Marc Hohman:

Yeah. The biggest one is probably wrinkles. Some patients have trouble differentiating soft tissue descent from cutaneous [riddeds 00:33:59] and may expect that a brow lift or blepharoplasty will have a significant impact on their crow's feet, creepy lower eyelid skin, or lower eyelid hyperpigmentation.

Dr. Marc Hohman:

Certainly some skin issues can be corrected with surgery, like glabellar frown lines that can be reduced with corrugator and procerus myotomies. Transverse forehead riddeds often improve when the frontalis is able to relax after a good brow lift, and dermatochalasis usually resolves with eyelid skin resection. But frequently chemodenervation and/or resurfacing are needed to give patients the results they really want.

Dr. Marc Hohman:

Another issue that sometimes comes up is where to stop, because if you fix the eyes and the forehead, then it may become more obvious that the cheek needs some help. And mid-facelifting or [mailer 00:34:39] volume augmentation is commonly performed in patients who are undergoing lower lid blepharoplasty. Of course, then the same issue arises with respect to the lower face and then the neck, so this all needs to be addressed as part of the preoperative counseling in order to determine beforehand exactly what the patient is willing to pursue and exactly what benefit should be expected.

Dr. Ronit Malka:

All right. So you've done a really wonderful job walking us through assessment and treatment of periorbital aging. For how long do you usually follow these patients postoperatively?

Dr. Marc Hohman:

I usually follow them for about a year, starting with a one-week follow up for wound check. Then I see them at one month, three months, six months, and a year. I like to maintain good longterm relationships with my patients so that, if they ever need anything else done in the future, they come back to see me. Longterm follow-up also facilitates clinical research and helps me to keep track of my own outcomes over time.

Dr. Ronit Malka:

Do you expect any change or progression in the final aesthetic result over time?

Dr. Marc Hohman:

That's a great question. And yes, absolutely. Most patients ask how long the surgery lasts, and I tell them that, if all goes according to plan, the results will last forever, but you have to remember that the goal isn't to hit the pause button on aging but rather to hit rewind for about 10 years or so, after which you immediately hit play again. So they will always hopefully appear younger than their actual age by about 10 years or so, but they will still continue to age.

Dr. Ronit Malka:

Great. Thank you so much. So to briefly summarize what we've talked about today, periorbital aging can be generally divided into two separate but often co-occurring issues, brow ptosis, or droopy eyebrow, and blepharoptosis, or droopy eyelid. These are usually secondary to aging but can also be due to other

causes generally categorized as neurogenic, such as myasthenia gravis or Horner syndrome, myogenic, such as myositis, aponeurotic, such as levator dehiscence, or mechanical, such as tumor.

Dr. Ronit Malka:

When evaluating these patients, it's important to ask about history of xerophthalmia. And, on physical exam, we should be looking for festooning, pseudoherniation, and Hering's phenomenon to assess for asymmetric bilateral blepharoptosis in addition to doing normal facial analysis and assessing for any visual defects. You should also measure MRD1 and MRD2 for the distance between the cornea light reflex and the upper and lower eyelids respectively, or perform a Schirmer test or snap test to quantify degree of blepharoptosis.

Dr. Ronit Malka:

Surgically, brow lifts can be performed via endoscopic, coronal, mid-forehead, and direct techniques, with the coronal approach having pretrichial and trichophytic variants based on location of incision relative to hairline. The endoscopic approach involves a subperiosteal dissection, and the coronal approach a subgaleal dissection, but both tend to elevate the hairline whereas direct techniques and the much lesser used mid forehead technique do not affect the hairline but have a more prominent incision placement on the forehead.

Dr. Ronit Malka:

Upper lid blepharoplasties are mainly composed of skin excision but can also include creation of a supratarsal crease, but lower lip blepharoplasties can be performed through preseptal or postseptal transconjunctival approaches, which vary in whether the orbital septum is violated to achieve different dissection planes, and the subciliary approach.

Dr. Ronit Malka:

When assessing surgical outcomes, we want to keep in mind the ideal eyebrow and lid positions for the patient based on their gender and whether or not they have a supratarsal crease, as with the termed Asian eyelid. The major complication associated with brow lift that we want to avoid is frontal branch damage, which can be avoided by meticulous identification of the frontal branch using the sentinel vein and the Pitanguy line. Other complications of browlift include pruritus, alopecia, numbness, or excessive brow elevation, and for blepharoplasty include milia, lagophthalmos, ectropion, diplopia, A-frame deformity, lid webbing, and hematoma, particularly retrobulbar hematoma that can lead to blindness.

Dr. Ronit Malka:

Results from browlift and blepharoplasty are expected to be permanent, but notably aging continues normally for these patients after surgery.

Dr. Ronit Malka:

Dr. Hohman, did you have anything else you wanted to add?

Dr. Marc Hohman:

No. I just wanted to say thanks very much for giving me the opportunity to come and chat with you today. I really enjoyed it.

Dr. Ronit Malka:

Thank you.

Dr. Ronit Malka:

So before we end, we'll finish up with a couple of review questions. As usual, I'll ask the question, pause for a few moments to allow you to think of the answer or to pause the podcast, and then I'll read off the answer.

Dr. Ronit Malka:

To start off, what is the difference between blepharoptosis, blepharocalasis, and dermatochalasis?

Dr. Ronit Malka:

Blepharoptosis generally describes an eyelid that is less open than normal, usually defined as MRD1 less than 45 millimeters. Dermatochalasis refers to excess skin of the superior eyelid, which, when extending beyond the eyelashes, is sometimes referred to as pseudoptosis. Blepharochalasis is a specific variant of angioedema with recurring periorbital swelling that leads to stretching of the periorbital skin, particularly of the upper eyelid.

Dr. Ronit Malka:

What patient factors might steer the facial plastic surgeon away from a coronal approach to a brow lift?

Dr. Ronit Malka:

A high hairline, particularly in women, male pattern baldness, and asymmetric brow ptosis are all patient factors that might steer a facial plastic surgeon away from a coronal approach to a brow lift. With asymmetric brows, a direct brow life may be desired for titration to ideal brow height on each side.

Dr. Ronit Malka:

And, finally, what are two landmarks used to identify the frontal branch and how are they defined?

Dr. Ronit Malka:

Two commonly referenced landmarks used to identify the frontal branch are the sentinel vein and the Pitanguy line. The sentinel vein, also known as the medial zygomaticotemporal vein, lies between the temporoparietal and deep temporal fascia and typically points toward the frontal branch of the facial nerve. The Pitanguy line is an imaginary line tracing the course of the frontal branch that runs from half a centimeter below the tragus to one and a half centimeters above the lateral brow.

Dr. Ronit Malka:

Thanks again for listening, and we'll see you next time.