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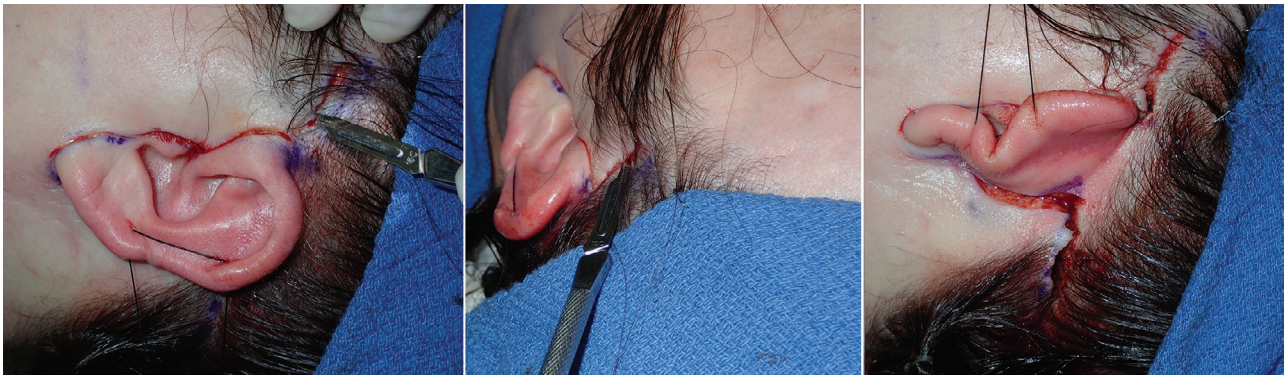


Fig. 3.38 My best postoperative scars involve hyperbeveled transfollicular incisions made in an irregular pattern within the hairlines. The jagged or irregular pattern makes a less noticeable scar than a straight-line incision.

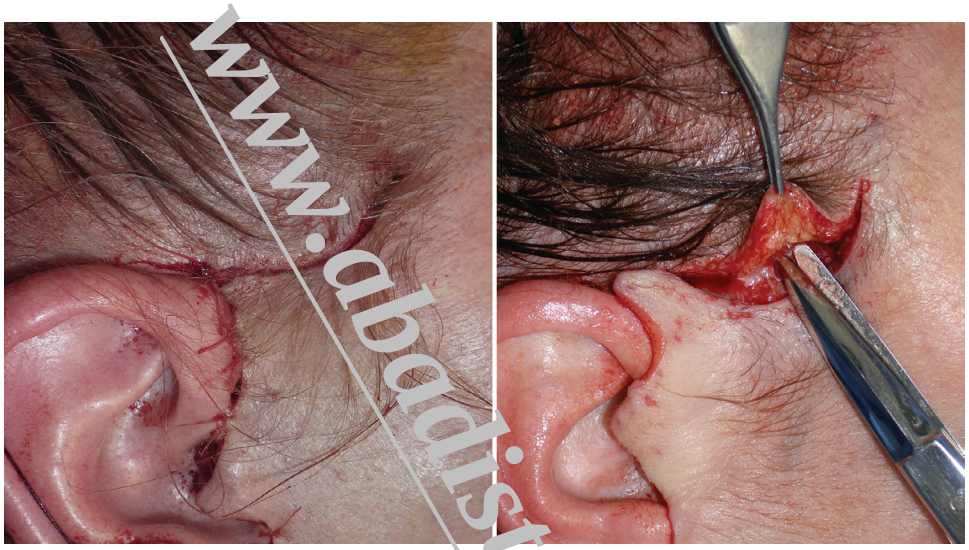


Fig. 3.39 Keeping the sideburn incision in the hairline helps disguise the scar *(left)*. Undermining the temporal tuft can assist in making this tissue passive and facilitate mobilization and closure *(right)*.

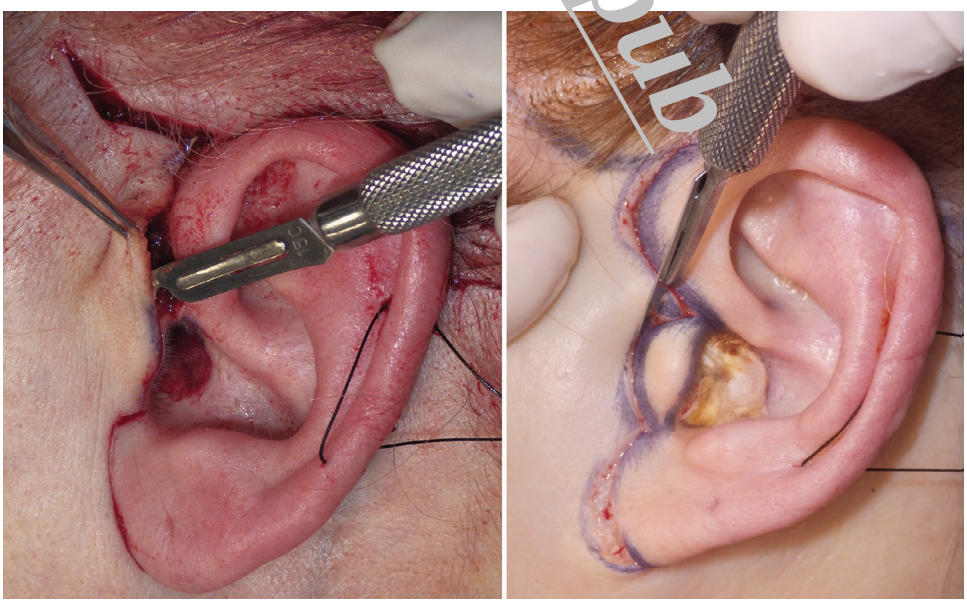


Fig. 3.40 A retrotragal incision *(left)* and a pretragal approach *(right)* are shown.

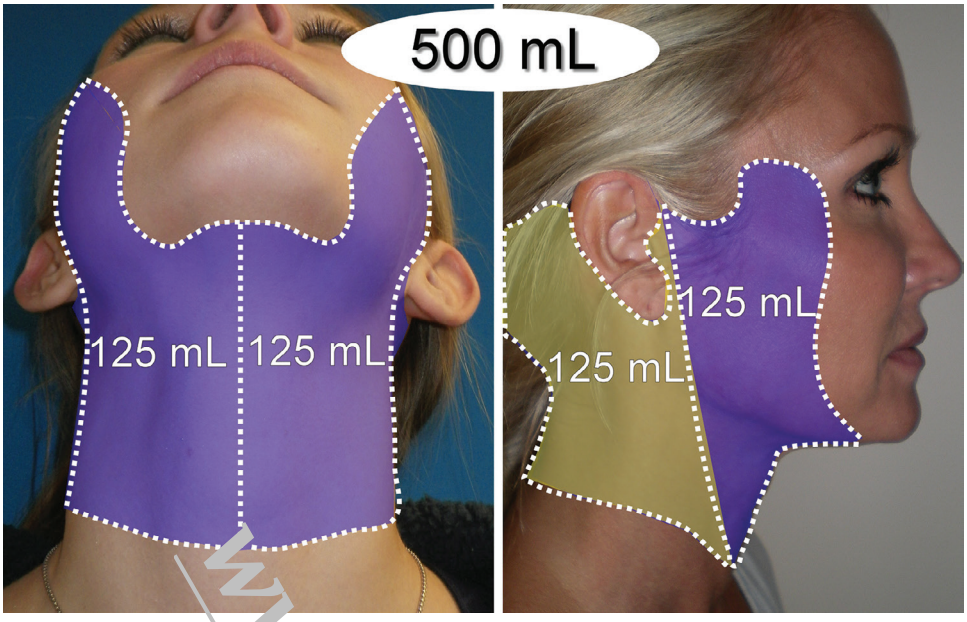


Fig. 3.73 The average face and neck lift patient uses 500 mL of tumescent solution.

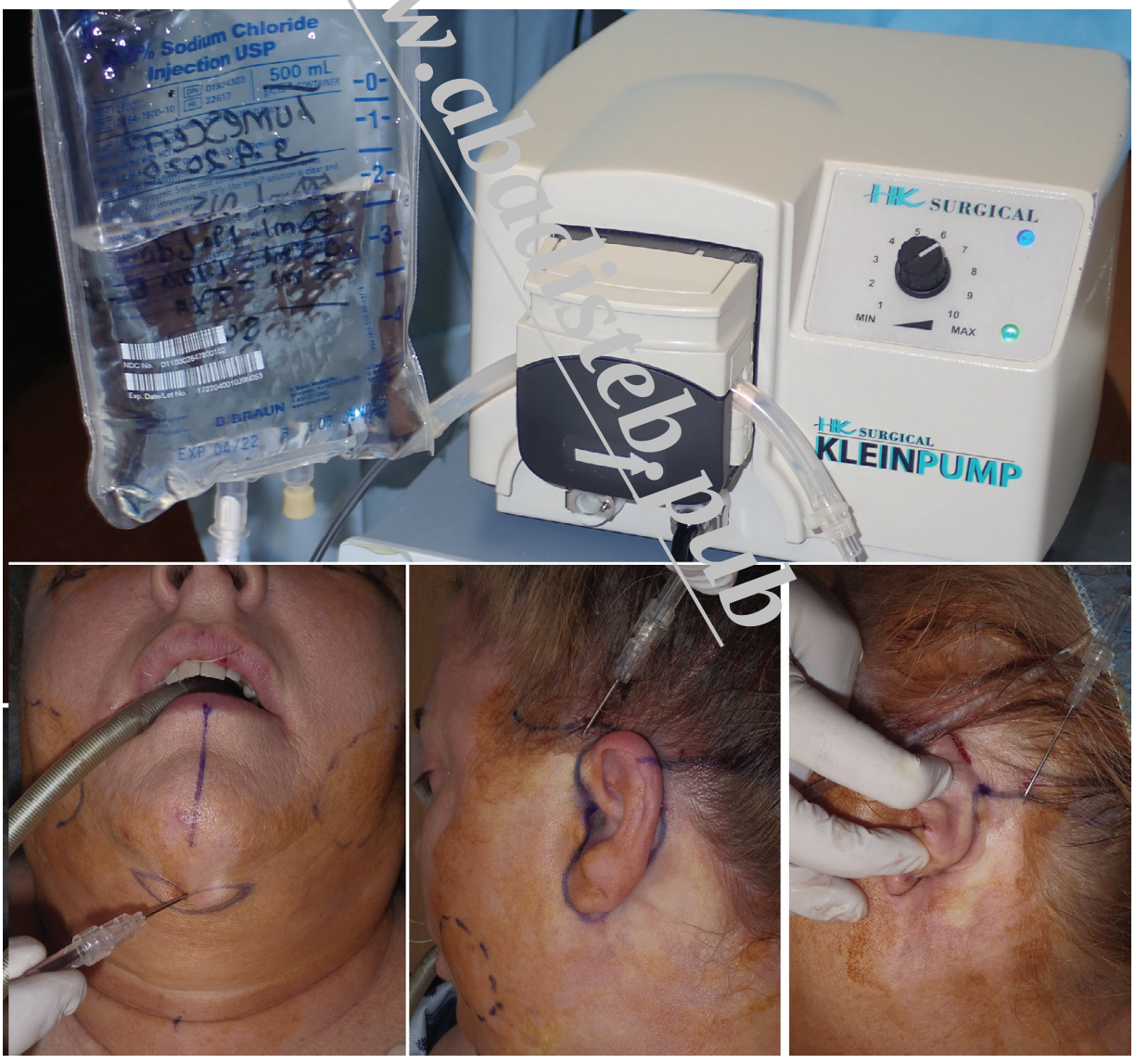


Fig. 3.74 A Klein pump is used for facilitating rapid infiltration *(top)*. Various infiltration sites using an 18-gauge spinal needle are shown *(bottom)*.

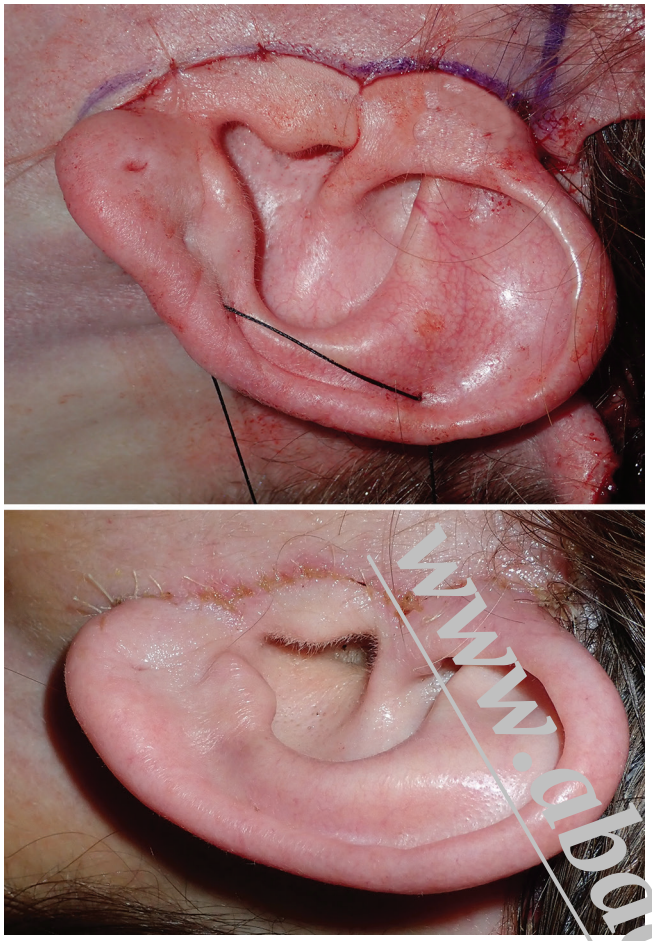


Fig. 3.173 Utilizing the natural curve of the Pagett facelift scissors can craft very accurate skin margins that heal exceptionally.

The 5-0 gut sutures stabilize the otherwise mobile tragal skin to allow more precise contouring. I am personally more accurate using a radiofrequency fine wire microneedle (www.cynosure.com/ellman) then I am using scissors or a scalpel when performing this step (Figs. 3.176 and 3.177).

Some surgeons also prefer to undermine the tragal skin for more passive closure with the pretragal approach (Fig. 3.178). When using the retrotragal approach, the tragus is sometimes "defatted" to thin the otherwise cheek skin for a more homogenous result (Fig. 3.180). Care must be taken to not damage the delicate flap.

After closing the posterior and anterior auricular incisions, I proceed to the temporal tuft. As with all hair-bearing incisions, the excess skin is removed in the same angle, bevel, and contour as the original incision (Fig. 3.179). It is imperative that whatever method is used to trim this tissue that the temporal tuft is not elevated to an unnatural position. In some cases, especially larger ones, several millimeters of sideburn elevation may occur and still be acceptable and natural looking. Significant elevation in this area stands out like a sore thumb and again screams poor surgery, poor surgeon. As a side bar, hairdressers see many scars, and when you start getting referrals from salons, you know you are on the right track.

The next step involves trimming the extra skin at the base of the earlobe. As stated earlier, this is one of the most important facets of natural-appearing facelift surgery. It has been illustrated and discussed numerous times how lengthening the earlobe can grossly distort the anatomy and make a very unhappy patient. We must remember that we may take a patient's face apart and put it back together and do a lot of work on the inside, but the only thing the patient and the people around them see is the incision, so it is so important to have all of the areas of incision appear natural.

Fig. 3.174 Some surgeons prefer to cut smaller areas of tissue while following natural tissue contours.

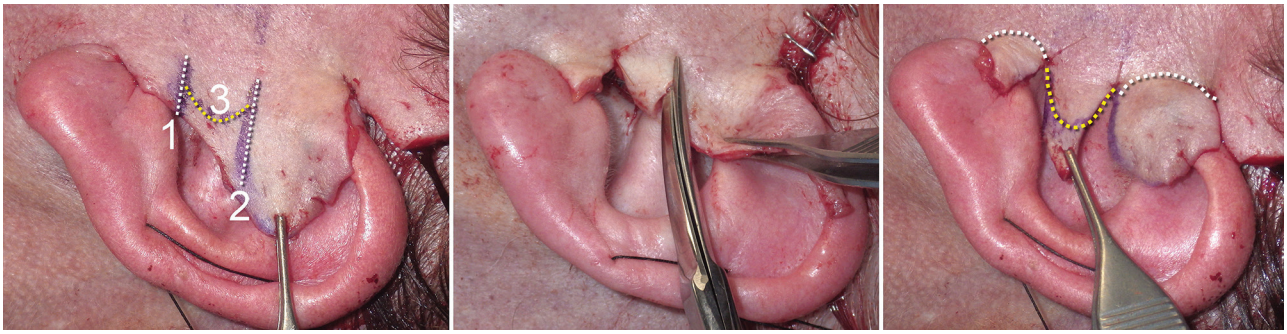


Fig. 3.175 The cutback incisions (1 and 2) and the planned tragal skin excision (3) are shown *(left)*. The cutbacks are fabricated *(center)*. The required tragal contour *(yellow dotted line)* and the excision pattern of the remainder of pre-auricular skin excess *(white dotted lines)* are shown *(right)*.

Fig. 4.47 A scalpel handle is used to show the extent of the dissection inferior to the brow. Brow release is an integral part of all brow and forehead procedures.

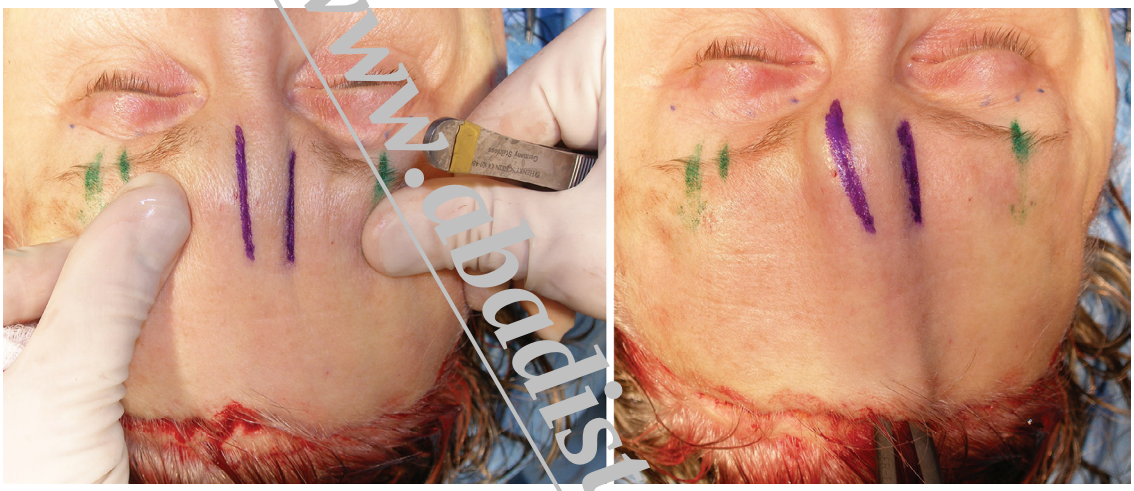


Fig. 4.48 A patient with deep vertical glabellar rhytids *(left)* is shown. The patient's skin is released from the underlying depressor musculature *(right)*.

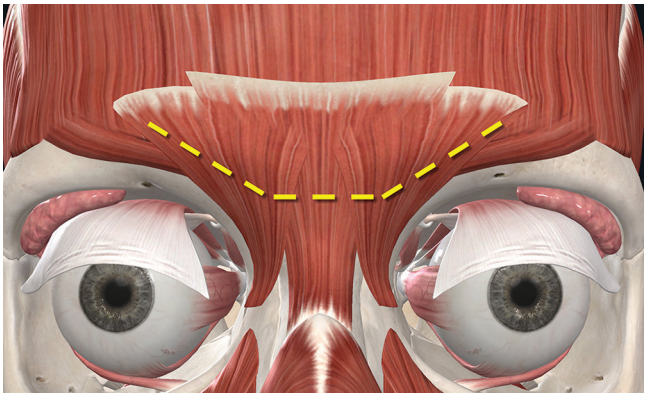


Fig. 4.49 The brow depressors may be addressed through the open flap. A central transection with lateral oblique extensions on each side *(yellow dashed lines)* can address most of the depressor activity.

On the coagulation mode, the procerus bellies are transected horizontally, and the corrugators supercili muscle bellies are transected at an angle (see Fig. 4.49; Fig. 4.50).

It is also important to remember that the supratrochlear nerves traverse the corrugator supercili muscle, which is another good

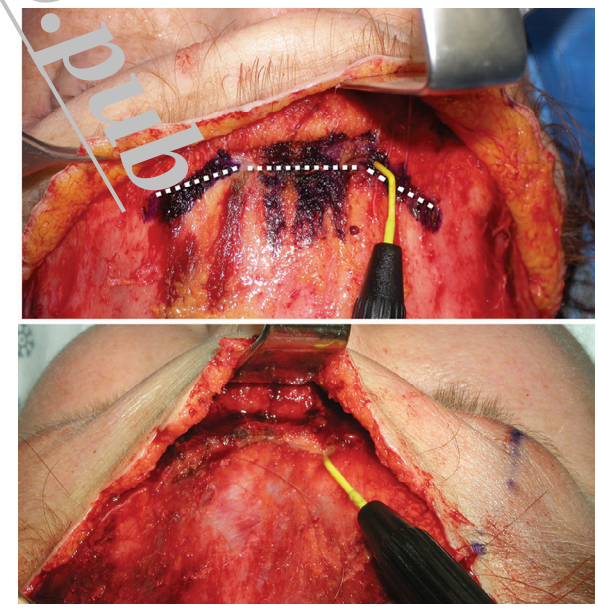


Fig. 4.50 The geometry of the depressor transection *(top)* and intraoperative depressor transection with a radiofrequency microneedle *(bottom)* are shown.

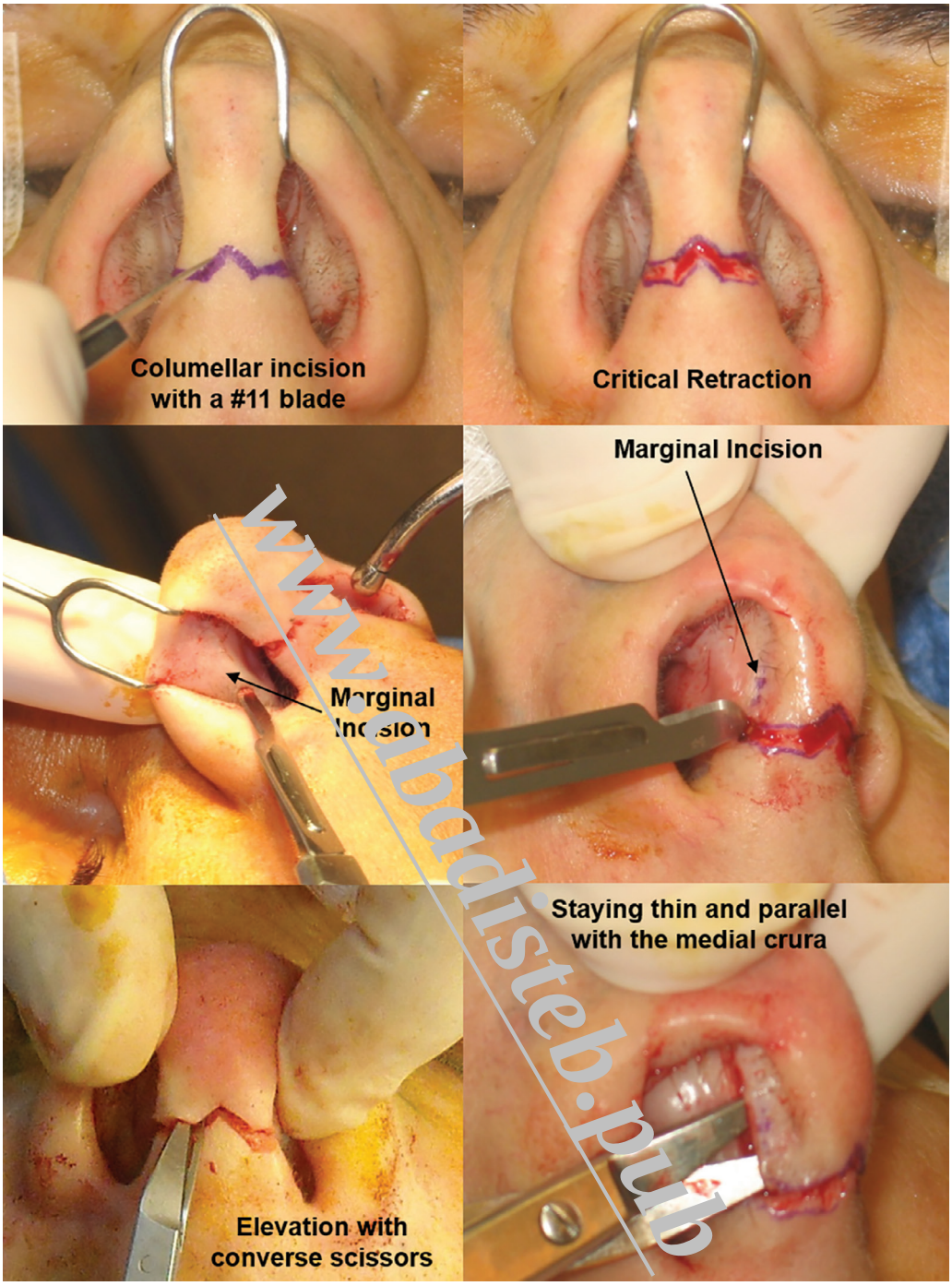


Fig. 6.33 The initial steps for open rhinoplasty are shown. The *top* photos show the transcolumellar incision placement and superior retraction. Next, the two portions of the intranasal marginal incisions are demonstrated in the *center* photos. The initial flap elevation must be made carefully over the delicate medial crural cartilages to avoid accidently nicking the cartilage. This is shown using converse scissors in the *bottom* photos. The cartilages are often only micromillimeters below the skin. Proper but gentle counterretraction is essential for efficient flap elevation.

Open Rhinoplasty Technique

Incisions

After injection of local anesthesia, the open rhinoplasty typically starts with a No. 11 blade scalpel to make one of four classic-type incisions across the columella in a very precise manner to allow for the most aesthetic closure and appearance of this single external incision (Fig. 6.33).

To achieve the best aesthetic result and have proper access of the lower lateral cartilages, care must be taken to ensure that the incision is at the curvature of the medial foot pad of the lower lateral cartilages. Next, a No. 15 blade scalpel is used to make the marginal incisions, which blend into the transcolumellar incision. The marginal incisions are classically made with a No. 15 blade scalpel or buffalo knife and must be made to hug the caudal margin of the lower lateral cartilages. They can be challenging to the novice rhinoplasty

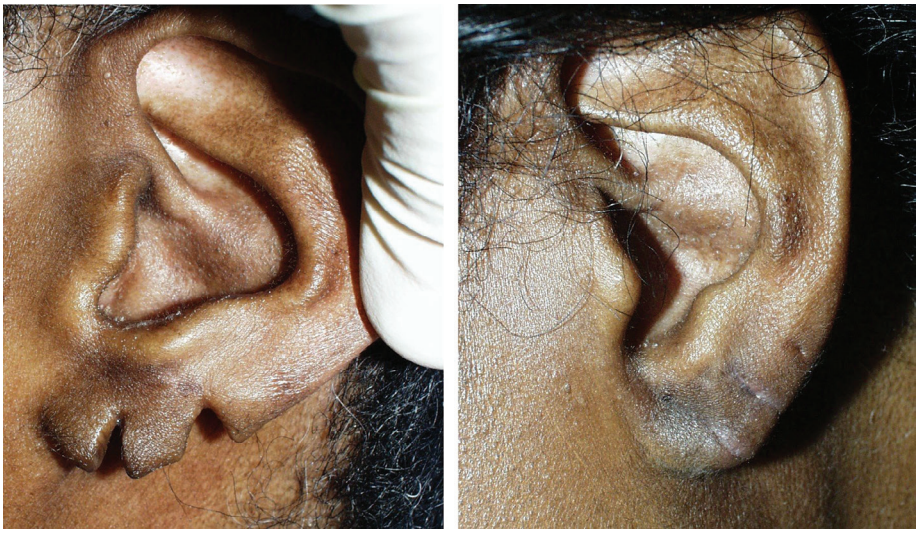


Fig. 8.123 This patient with multiple tears is shown before and after repair.

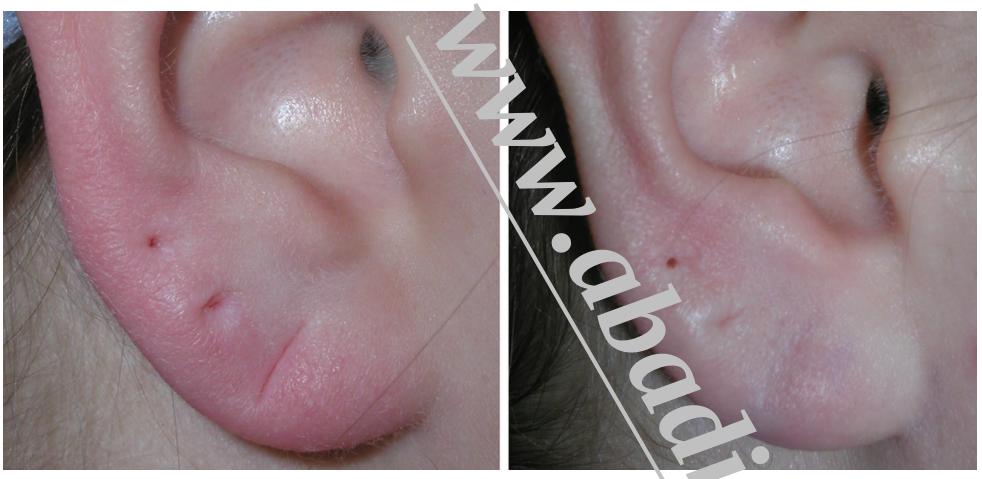
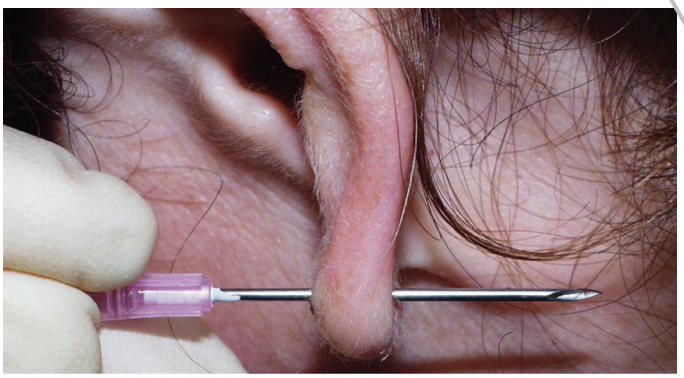


Fig. 8.124 This partial tear was repaired without violating the inferior border of the lobe.



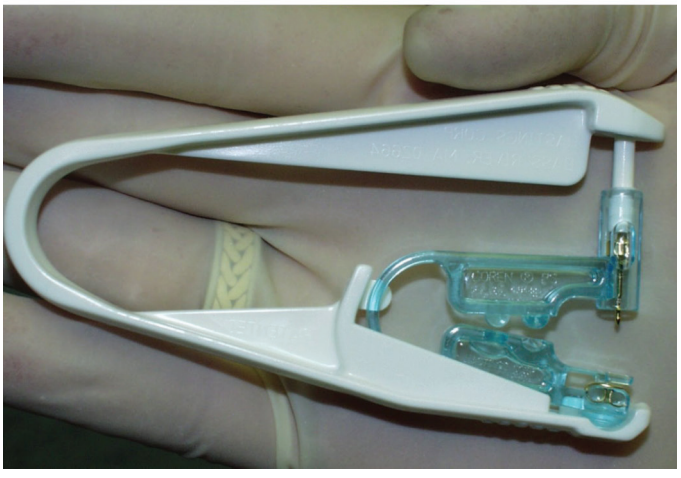


Fig. 8.125 Administration of local anesthesia and placement of an 18-gauge needle at true horizontal are used for repiercing. The device used to pierce the ear must enter and exit the lobe perpendicular to the skin, or the earring will sit in a tilted position *(top)*. Simple, inexpensive, and expedient automated piercing devices are available (Delasco Inc, Council Bluffs, Iowa) *(bottom)*.

It has been found that patients taking large doses of aspirin, cortisone, estrogen, and antihistamines may have tissue that is more resistant to the spreading effect of hyaluronidase. It has also been reported by the manufacturer of Hylenex that repeated injections of large amounts could result in the formation of neutralizing antibodies that would render hyaluronidase less effective.

Hyaluronidase Dosage for Dissolving Filler

As dissolving filler is an off-label use, there are no manufacturer guidelines on how much to use for dissolving HA fillers. The required amount depends on the filler characteristics, volume, and distribution. One study showed that Belotero Balance was rapid to dissolve, and Juvéderm Voluma and Restylane Lyft were slow to dissolve.

The USP unit describes the biologic effect of a drug per weight. A laboratory test called a *functional assay* is performed to determined the strength of hyaluronidase in terms of units to establish consistency in dosing. For the administration of subcutaneous fluid, the manufacturer of Hylenex recommends an initial dosage of 150 units in adults to which another 50–300 units may be added for enhanced dispersion and absorption of injected drug.

The medical literature has a range of recommendations for dosage of hyaluronidase in aesthetic practices. The minimal effective dose may depend on how much contact there is with the gel. One suggestion in the literature was to use 30 units of enzyme strength for 0.1 mL of filler. Another study showed no difference in efficacy between 20 and 40 units for 0.2 mL of HA gel. It has also been suggested that 5 units is required for 0.1 mL of filler breakdown. Some providers prefer to repeat the injection between 2 days and 1 week if the desired effect is not achieved.

Massage after injection can aid in enzyme distribution and contact with filler. This may or may not be recommended depending on the clinical situation and how much spread is wanted.

In the setting of vascular occlusion, high-dose hyaluronidase has been suggested (400–1500 units) to fully infiltrate the area and along the course of the suspected vessel. Treatment is repeated at intervals along with massage. Noting return of capillary refill may help to further reverse this complication along with other consensus treatments. Intra-arterial hyaluronidase has been described but can be technically challenging to perform, even under ultrasound guidance, and one study showed improved outcomes in animal models with subcutaneous injections as compared with intra-arterial treatment.

The dosage required for reperfusion of a compromised area of tissue will depend on several factors. These include the amount of filler material present and the properties of the filler, the amount of time passed since the initial event, and the area and tissue type affected by the disruption of blood flow. Other theoretic factors are the degree of swelling in the target tissue that could dilute the enzyme effect and the distance (if any) between the injected enzyme and the gel product, and if manual massage is performed in order to enhance the enzyme/gel interaction.

If treating visual loss after HA filler, some proposed treatment strategies include retrobulbar or peribulbar hyaluronidase (1500–3000 units) and perhaps repeating at intervals, but there are no large-scale studies to evaluate this opinion. The inferotemporal area has been suggested as an injection point for retro/peribulbar hyaluronidase, and a depth of 3.0–3.5 cm has been discussed based on the entry point of the central retinal artery into the optic nerve. It should be noted that cadaver studies have demonstrated that hyaluronidase does not have the ability to cross the dural sheath of the optic nerve. Intravenous hyaluronidase has also been described in animal models with modest success. Ultimately if this dreaded complication does occur, the treatment is often a combination of hyaluronidase with other therapies, and outcomes are guarded.

Skin Patch Testing and Allergic Reactions

Skin patch testing can be performed to rule out allergies to hyaluronidase. The manufacturer of Hylenex suggests administering an intradermal injection of 3 units and then observing for a wheal, with redness and itching appearing within 5 minutes indicating an immediate, IgE-mediated sensitivity, but it does not suggest that skin testing is mandatory. It is not clear how well T-cell–mediated reactions are identified with skin testing, and the time needed to observe signs of this form of allergic response is typically longer than with IgE reactions. In the setting of presumed intravascular cosmetic filler injection, skin testing would be bypassed as to not delay the off-label injection of hyaluronidase.

Of note, hyaluronidases are found in snake and insect venom to function as a spreading factor for toxin to travel more widely and rapidly. Patients who are allergic to snake or insect bites may have an allergy to hyaluronidase.

Hyaluronidase Safety

Adverse reactions to hyaluronidase are rare. The insert for Hylenex reports an allergic reaction to occur less than 0.1% of the time, and anaphylaxis seems to occur even less frequently. Reactions at the injection site are the most common and include pain, redness, and bruising. Swelling can occur, especially if the enzyme is administered with additional fluid, as in certain dilution practices.

Hyaluronidase does likely degrade native hyaluronic found in skin and subcutaneous tissue, but long-term efficiency has not been described in the literature, and the continual production of HA should lead to a restoration of stores within days.

Several online forums abound with anecdotal descriptions of presumed hyaluronidase-related ill effects but without significant corresponding evidence in the medical literature. One in-vitro study suggested that hyaluronidases do not affect fibroblast proliferation or skin viability. The only case studies describing hyaluronidase complications are related to hypersensitivity reactions, but an extensive pubmed.ncbi.nlm.nih.gov review did not uncover any reports of iatrogenic skin or soft tissue injury attributed to hyaluronidase. One explanation is that skin injury after hyaluronidase is actually the result of compromised perfusion from a dermal filler that was targeted for reversal with enzyme. Another possibility is that localized hyaluronidase in a field of filler will cause a relative concavity that can be mischaracterized as a loss of skin, fat, soft tissue, or collagen. Overall, the current literature suggests that hyaluronidase for HA filler reversal is generally safe, and the rare events that do occur are related to uncommon instances of allergenicity.