Nonsurgical Filling of the Periorbital Hollows

Soft tissue fillers such as hyaluronic acid gel (Restylane) provide significant improvement of volume loss in the periorbital region when used correctly. The temporary nature of these fillers is often an advantage. They appeal to surgeons because of their relative ease of use and minimal complications, and patients appreciate the benefits of a noninvasive treatment with virtually no downtime. (Aesthetic Surg J 2006;26:69-71.)

The anatomy of the periorbital region presents difficulties for soft tissue filling. First, the skin overlying bone is very thin. As a result, irregularities of contour, such as lumps, are difficult to conceal. Similarly, because the filler is close to the surface, any color irregularity or low-grade inflammation will be more visible. Finally, the periorbital area is characterized by delicate functional relationships and complex 3-dimensional contours that represent a focal point for facial aesthetics. Therefore, many practitioners who have no hesitation about injecting fillers into the thicker, more forgiving areas of the face, such as the perioral area or cheek, are reluctant to fill the periorbital area.

The arrival of a new generation of synthetic fillers that are acceptably safe and predictable has finally provided the technical underpinning for a minimally invasive approach to volume loss in the face. In early 2004, I began using hyaluronic acid gel (Restylane, Medicis Aesthetics Inc., Scottsdale, AZ) for periorbital filling. Periorbital aging is more about deflation than excess skin or fat. Although there is a role for conservatively removing tissue in some patients, almost all patients can benefit from some filling, and many patients can accomplish their goal with filling only. Although my technique continues to evolve, I can now achieve consistent smooth improvement in periorbital contours so that the majority of patients are satisfied with the improvement.

Patient Selection and Planning

The periorbital hollows are associated with the orbital rim, septal confluence, and zygomatic areas (Figure 1). Evaluate each of these hollows individually for severity. In a minimally hollow young patient, 0.3 cc of Restylane per side may accomplish the goal, but in an older patient with substantial soft-tissue and bony volume loss, as much as 1 cc per side may be needed.

Consider the quality of the skin. Patients with very thin or light-colored skin are at greater risk for color show. Patients with a tendency toward eyelid or malar fluid may not be good candidates because the hyaluronic acid gel tends to attract fluid and can worsen the fluid accumulation. However, for relatively “dry” malar mounds, treating the adjacent orbital rim and zygomatic hollows (which define and unveil the mound) can lead to improvement in this contour.

Patients should be informed of the rare risks and side effects of injected fillers, which include not only the more common bruising, contour irregularities, color change, or fluid, but also remote severe risks, including loss of vision. Patients on blood thinners may have increased bruising.

Injection Technique

Anesthesia is topical. With good topical anesthetics applied 45 to 60 minutes before the procedure, almost all patients can comfortably tolerate the injections. The endpoints of filling are subtle, so I prefer not to have the tissue distortion caused by infiltrative blocks.

Clean the skin with alcohol. Using the 30-gauge needle supplied with the medication, often replaced midway through the procedure, the hyaluronic acid gel is applied in the orbital rim, zygomatic, and septal confluence hollows, in the tissue plane deep to the orbicularis oculi muscle. I use multiple passes of the needle to create a haystack configuration of multiple fine threads, layered and feathered to create the desired 3-dimensional contour (Figure 1). On average, 25 to 50 passes of the needle are used to fill the hollow contours in each periorbital area.
Bruising occurs when the needle passes through the orbicularis layer. To minimize bruising, avoid withdrawing the needle all the way out through the skin. Once the needle has passed through the orbicularis, I take advantage of the suborbicularis plane by creating a fan-shaped pattern of passes without withdrawing the needle back through the orbicularis. If a bruise begins to form, quickly withdraw the needle and apply gentle pressure to the local area with a cotton-tip applicator (always held in the nondominant hand).

If the hyaluronic acid gel is placed too superficially, visible lumps or wheals of the gel will form. In the thin periorbital area, the proper plane is deep to the orbicularis, just superficial to the bone. Even in the deep suborbicularis plane, the unforgiving thin skin of the periorbital area will reveal irregular deposition of the filler material. It is important, therefore, to avoid depositing large volumes of the filler in one location. I suspect that large lakes of gel might also be more likely to move around over time, and material distributed smoothly through the tissue may better keep its shape.

Apply gentle continuous pressure to the syringe plunger as the needle slowly fans through the tissues, creating multiple, fine thread-like depositions of the gel spaced out not only horizontally, but to some extent, vertically stacked as well, to create smooth, feathered 3-dimensional contours. In the thicker cheek and eyebrow fat pads, increase the pressure on the syringe so that as much as 0.1 cc is injected in one fan region. In the thin eyelid areas such as the septal confluence hollow, pressure on the needle is light so that only .01 to .03 cc are injected with each pass.

The upper orbital hollow is particularly challenging. The thin eyelid skin provides no cover for the hyaluronic acid gel, so that injections directly into the superior sulcus result in visible, bluish, poorly mobile mounds of filling material. However, the adjacent eyebrow fat pad does provide adequate soft tissue cover, and reinflating the eyebrow fat pad not only camouflages the deep superior sulcus, but also pulls some of the eyelid skin up out of the orbit. The net effect can be very helpful in rejuvenating the superior orbital rim hollow (Figure 2).

At the conclusion of the procedure, determined by the end points of successful artistic filling of the hollow contours, the patient is discharged. Instruct patients postoperatively to avoid any vigorous rubbing or massage of the treated areas; otherwise, there are no restrictions on physical activity. Gentle application of ice can decrease early swelling.

Management of Complications

A poor result, indicated by color show, contour irregularity, or poor 3-dimensional shape is not a permanent problem. The injection can be adjusted at any time by adding another “layer” of filler, or by reducing the effect by injecting hyaluronidase.5-7

A bluish color change in the injected area is not uncommon, especially in light-skinned patients. Most often, this is subtle and is not objectionable or even noticed by the patient. A deeper plane of injection may

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**Figure 1.** A, Preoperative view of a 48-year-old woman with periorbital hollows. B, Preoperative view with areas of filling highlighted. Orbital rim hollow (blue), 0.2 cc of Restylane; zygomatic hollow (violet), 0.2 cc; and septal confluence hollow (green), 0.1 cc. C, Postoperative view 1 month after injection; note improved contours. D, Postoperative view 6 months after injection; note some residual effect. E, Postoperative view 13 months later, 5 months after second 1-cc layer of filling.
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decrease this effect, but does not eliminate it. Lumps or contour irregularities are almost uniformly present; the thin eyelid tissues reveal every contour of the filler. However, most patients find the effect acceptably smooth. When contour irregularities are noted, they can be treated with hyaluronidase injections to reduce high points, additional hyaluronic acid gel injections to feather and conceal the edges at low points, or a combination of the two. I normally see patients 2 to 4 weeks after the injection and make adjustments at that time if needed (approximately 1 out of 10 patients may need some type of adjustment).

Redness or increased vascularity over the sites of the injection is rare. Hyaluronic acid gel injections will not improve pigmented dark lower eyelid circles and may even worsen the condition.

Occasionally, a diffused and noninflammatory edema in the lower eyelid will follow hyaluronic acid gel injections, acting more like a quiet lymphedema than an inflammatory reaction. I have noted that it may persist for many weeks after the injection and respond only incompletely to attempts to decrease the residual hyaluronic acid using hyaluronidase injections. Based on these experiences, I am reluctant to inject hyaluronic acid gel in patients who have strong tendencies toward periorbital fluid retention.

Conclusion

In my practice, hyaluronic acid gel has proven to be an effective and predictable filler in the periorbital area. The anatomy is tricky, but with patience and practiced finesse in laying down the layers of gel, smooth contours can be created. Patients like the idea of noninvasive treatments that can be maintained over time, and for the physician, this generates patient flow in the practice and allows for relationship building.

References

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Figure 2. A, Preoperative view of a 54-year-old woman with deflation of the eyebrow fat pads, creating appearance of dermatochalasis. B, Immediate postoperative view of the superior orbital hollow treated with 0.5 cc of Restylane per side, carefully feathered. C, Postoperative view immediately following treatment of the superior orbital rim hollow, showing improvement in superior orbital contours.