The nose is one of the most important cosmetic units of the face. Discreet variations in the nose shape lead to marked physiognomy changes. Many patients dissatisfied with the appearance of their nose seek cosmetic improvement as early as during adolescence. Similar to other facial structures, the nose is affected by the aging process. Typically, nose tip drop is observed, along with loss of subcutaneous tissue, which highlights its undulating osteocartilaginous support. Dermatologic patients are increasingly requesting procedures with minimal downtime. In our practice, several patients coming for facial rejuvenation are interested in undergoing nasal rejuvenation procedures, but they usually do not bring up the issue spontaneously because they believe it would need extensive surgical correction.

Rhinoplasty has been successfully used to improve the appearance of the nose through changes in bone and cartilage structures, as well as through the placement of prosthetic devices.1 It remains an invasive procedure that may lead to scars, however. In addition, some patients remain dissatisfied with the results, frequently submitting themselves to multiple procedures, increasing the risk of postsurgical functional impairment.2

Discrete volumetric changes in the frontal-nasal angle, nasal dorsum, and columella–philtrum junction produce significant differences in our perception of nasal features. These areas can be injected with fillers to rejuvenate the nose or improve nasal silhouette.3 Fillers have been broadly used in dermatology for the correction of wrinkles, acne scars, and lip augmentation, as well as for age or medication-related lipoatrophy. They can be easily applied under the skin in a minimally invasive fashion. They can also be used to improve nasal deformities secondary to trauma or surgery. Dermatologists are quite familiar with the use of fillers for the above indications.4

The rationale for the traditional use of hyaluronic acid and collagen is based on their natural occurrence yet diminished and altered properties on photoaged skin.5,6 The atrophic subcutaneous tissue observed on the aging face brings the reticular dermis closer to the underlying musculature forming concave areas in the midcheeks and nasolabial folds. These areas respond quite well to soft tissue fillers.7,8 Tolerance and excellent results for the above applications have been well established, both for collagen and for hyaluronic acid.9–11 Nevertheless, there are very few reports on the use of small amounts of resorbable fillers to achieve cosmetic results comparable to surgical rhinoplasty.12–14

Filler rhinoplasty, also known as augmentation rhinoplasty, is an evolving field.12 It has been proposed to patients interested in less invasive techniques than traditional rhinoplasty. An advantage of using fillers is that surgeons may sculpt the material after
injection, offering options not available through traditional correction.\textsuperscript{15,16}

The volume of material used for filler-based rhinoplasty usually ranges from 0.1 to 0.4 mL.\textsuperscript{7} This feature makes filler-based rhinoplasty an excellent indication for patients who will be treated with fillers for improvement of the lips and nasal labial folds and are unsatisfied with their nose. We present below two cases where those treatments were combined leading to excellent cosmetic results and increased patient satisfaction.

Technique

Informed consent was obtained from patients. Blocking of the infraorbital and mentalis nerves was achieved using 2\% lidocaine with 1:100,000 epinephrine before injecting fillers with a 27-gauge needle. Blocking of the columella was not performed so as to not induce volume distortion from the anesthesia.

Images were obtained with a digital camera. Photographs were trimmed, and blue ovals over the eyes placed with computer software (Coreldraw, Ottawa, Ontario, Canada). No additional modifications were performed.

Age, sex, volume of material used, filling technique for the rhinoplasty, and approximated interval between before and after pictures were as follows:

Case 1

Case 1 was a 45-year-old female. A total of 2 mL of porcine collagen (Evolence, Colbar, Herzliya, Israel) was used for treatment of the nose, nasal labial folds, and lips. A total of 0.35 mL was required for the filler rhinoplasty and used as follows: (1) 0.05 mL to the nasolabial angle (angle formed between the base of columella and the upper lip) with a single puncture. (2) For the nose tip, 0.20 mL was applied using threading technique adjacent to the perichondrium to enhance tip bulk, followed by filling of dermis or superficial subcutaneous tissue to smooth out fine surface irregularities, using multiple injection points as needed from the infratip up to the supratip until achieving a desired effect. The latter required 0.10 mL.

Molding was done manually for the deeper planes immediately after injection and pressure kept for a couple of minutes to stop bleeding. While performing dermal injections on the nasal tip, vigorous molding was avoided to minimize filler extrusion. Hemostasis of dermal injections was performed by very light pressure using cotton tips. Pictures were taken before and two days after injection.

Case 2

Case 2 was a 52-year-old female. A total of 2.00 mL of hyaluronic acid (Voluma, Corneal, Paris, France) was used, from which 0.2 mL was used for the nose as follows: (1) 0.15 mL in the deep dermis or subcutaneous of the supratip; because of mild asymmetry of the nose more volume was used on the right side and (2) 0.05 mL was applied in the radix (frontonasal angle). Before injecting the upper nose, the area was examined by gentle touch with the intent to feel any pulsation from larger arteries. The filler was placed more medially and we avoided puncturing areas where such arteries were palpable. Before injecting, aspiration maneuver was attempted; there was no blood return. Pictures were taken before and 1 year after injection. Treatment of nasolabial folds and lips was done with standard retrograde threading or multiple-point injection techniques.\textsuperscript{7}

Results

All patients tolerated the procedure well with minimal discomfort under local anesthesia as above. Follow-up of 1 year for Patient 1 and of 4 months for Patient 2 did not reveal medium-term side effects.
The volume used in the nose was distributed according to immediate visually perceived improvement of the frontonasal or nasolabial angles, as well as of the nasal dorsum and tip. At each point the goal was to establish volumetric correction to empirically improve the overall harmony of the nose in relation to other facial cosmetic landmarks and remaining treated areas (nasolabial folds and lips).

**Case 1**

Case 1 showed marked marionette lines, asymmetrical lower lip, nasal dorsum irregularities, flat and descendent nasal tip with irregular skin surface (Figures 1A, 1C, and 1E). Collagen was used for nasolabial folds and lips, increasing symmetry and providing a younger appearance (Figure 1B). A quantity of 0.05 mL of collagen was used to open the angle between the philtrum and the columella resulting in the perception of tip elevation from profile view (Figures 1D and 1F). A quantity of 0.30 mL applied adjacent to the cartilage or subcutaneous tissue was used to reshape nasal tip and smooth it out, respectively. The latter was essential for the impressive cosmetic improvement seen in the patient’s profile. The patient was extremely satisfied during her last follow-up visit, 4 months after the procedure.

**Case 2**

Atrophic lips and marked marionette lines were observed previously to the procedure. The nose had an irregular dorsum with prominent tip. The patient considered it too long (Figures 2A and 2C). Lip augmentation and filling of nasolabial folds with hyaluronic acid equilibrated the aesthetic features of the lower face. In addition, 0.2 mL of hyaluronic acid was used to straighten the nasal dorsum providing a youthful look and resulting in the illusion of a smaller nose. Long-lasting results were seen after 1 year (Figures 2B and 2D).

All patients were extremely pleased with the results. The procedure was very well tolerated. The only side effect was minimal edema or bruising which completely disappeared by the fifth day.

**Conclusion**

Dermatologic patients are increasingly requesting procedures that are safe, require minimal downtime, and lead to objective results. These prerequisites
have made resorbable fillers the gold standard approach for the correction of marionette lines and volumetric enhancement of the lips.

Many patients seeking dermatologic treatment of marionette lines and lip augmentation are also dissatisfied with the shape of their nose. Although traditional rhinoplasty usually offers excellent results, it remains a very invasive and expensive procedure. Such patients benefit from alternative treatments used to modify the appearance of the nose.

Fillers can be injected under or inside the nasal skin leading to impressive changes on nose silhouette as demonstrated in this case report and illustrated by Figure 3. We propose using the term filler rhinoplasty instead of augmentation rhinoplasty because it expresses more realistically to our patients what we are doing: giving the illusion of a smaller nose and not of an “augmented” one.

Filler rhinoplasty is particularly indicated when there is a need to increase volume in the cartilaginous tip. Fillers can be injected directly on top of the underlying cartilage providing bulk and also in the subcutaneous tissue or dermis leading to a homogenous surface. When volume is added to the columella base the nasolabial angle opens. This can be used to create the illusion that the tip of the nose has been lifted. Case 1 illustrates the dramatic effect obtained when both the tip and the columella are treated.

Filler rhinoplasty is also a good alternative when addressing the aged nose. Senescence causes loss of subcutaneous tissue present in the dorsum of the nose. A prominent rhinion is an undesirable feature for most patients and also contributes to the perception of a long nose. Injection of fillers in the supratip area makes the rhinion less prominent and therefore leads to the impression of a smaller nose.

**Figure 2.** Patient 2: Before (A, C) and 1 year after (B, D) filling with hyaluronic acid to nasal supratip (0.15 mL) and nasofrontal angle (0.05 mL) effaced the prominent rhinion and made the nose look smaller. Marionette lines and lips were also treated.

**Figure 3.** Diagram illustrating the dramatic changes in nose profile obtained from injecting specific areas. (A) Tip lifting effect, as seen in Patient 1: filling of the columella base widens the nasolabial angle (green) enhancing the benefits from reshaping the tip (red). (B) Rejuvenation effect, as seen in Patient 2: injecting the supratip (red) and radix (green) straighten the dorsum and makes the nose look smaller.
Placing fillers in the radix or in the inferior portion of the glabella alters the frontonasal angle. This area can also be addressed when performing filler rhinoplasty as illustrated by Case 2.

Filler rhinoplasty can be performed as a single procedure. Nevertheless, patients with mild to moderate nasal deformities coming primarily for the treatment of marionette lines or lip augmentation are excellent candidates for concomitant filler rhinoplasty because usually only small amounts of material are required.

Special attention should be taken when treating the upper nose and glabellar area. Fillers should be placed more medially to avoid large branches of the dorsal nasal arteries and veins. The dorsal nasal vessels originate from the ophthalmic ones which anastomose widely with the lateral nasal vessels, branches of the angular artery, and veins. Intravascular injection of fillers can lead to embolization of such vessels with potential necrosis of the retina or skin areas irrigated by the supratrochlear artery.

A thorough understanding of the vascular anatomy of the upper nose and glabellar area is essential for decreasing the risks associated with filler rhinoplasty. Palpating the area before performing the injection may also be helpful. The pulse of the lateral nose artery and dorsal nasal artery is palpable in many patients. A blunt small bore cannula can be used to avoid vascular perforation. Other prevention points for this region are: (1) placement of fillers superficially, (2) aspiration before injection, and (3) avoiding overcorrection. In case of complications from hyaluronic acid fillers, treatment with hyaluronidase can be helpful. If there are signs of thrombosis, anticoagulation should be considered. Visual impairment shortly after treatment with dermal fillers warrants emergent ophthalmologic consultation to exclude retinal embolism.

The duration of results is variable depending on which filler is used. When working with resorbable fillers, one should avoid injecting large volumes in a single place because the filler will tend to vanish faster, whereas when permanent fillers are used, the risk of long-term complications should be taken into account.

In summary, filler rhinoplasty represents an excellent alternative for patients who do not wish to undergo surgery. It is a minimally invasive and cost-effective office procedure. It may lead to more harmonious facial features and significantly enhances patient’s satisfaction.

References

COMMENTARY

This article nicely outlines the technique of nasal augmentation with hyaluronic acid–based fillers and represents yet another example of substituting fillers for traditional surgery. Of note, this technique also works quite well with calcium hydroxyl apatite as the filling agent and is a useful for filling in small nasal defects secondary to rhinoplasty or Mohs surgery. The concept of altering proportions to make the nose appear smaller is the take-home message of this article. This can be accomplished as described here by directly addressing the nose or by increasing the cheek volume and anterior projection of the midface thereby causing a relative diminution in the proportion of the nose to the face as a whole. One word of caution: when “blending” a dorsal nasal hump, the best candidates are noses where the hump appears in the middle third of the dorsum and not high at the nasal root.

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