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Secondary rhinoplasty fixations with hyaluronic acid

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Summary

The management of nasal deformities especially after rhinoplasty is a challenge. Postsurgical edema may last 6–8 months, causing aesthetic irregularities and nose deformities. The aim of this study is to present the correction of minor nose deformities secondary to rhinoplasty using hyaluronic acid subdermal injections. Eleven patients were treated between 2009 and 2011 with subdermal injections of hyaluronic acid (24 mg/mL) with 0.3% lidocaine (*Juvederm, Allergan, Pringy-France*) at the 1-month follow-up visit. The volume of hyaluronic acid injected varied from 0.4 to 1 mL according to the deformity. Injections were aimed to correct minor surface irregularities and to provide aesthetic symmetry. These patients were followed for at least 12 months postoperatively. Irregularities were aesthetically corrected immediately after hyaluronic acid injections. No complications were reported with the exception of minor swelling that resolved within 1 week. Esthetic correction was achieved in all patients as determined by the surgeon as well as by overall patient's satisfaction. Our 1-year follow-up data suggest that hyaluronic acid absorption is slow enough to provide the necessary time for postsurgical edema resorption. Rhinoplasty is among the most commonly used procedures for aesthetic improvement in men and women. However, achievement of the final outcome may take several months due to the induced postsurgical edema. Subdermal hyaluronic acid injections can provide temporary correction of these nose irregularities. Our data suggest that subdermal hyaluronic acid injections may provide immediate and long-lasting correction of these minor deformities. As a result, the aesthetic outcome is achieved and maintained throughout the postsurgical course of edema decompression.

Keywords: rhinoplasty, nose irregularities, hyaluronic acid, swelling

Introduction

The management of nasal deformities especially after rhinoplasty is a challenge due to postsurgical edema. The edema may last up to 6–8 months. Minor asymmetries, depressions, and contour irregularities may last even longer. Approximately 20% of the rhinoplasties require a secondary surgical intervention for the achievement of the desired aesthetic outcome. Common postoperative deformities include supratip, saddle nose or inverted V deformities, alar contractions, deviations, and nasal valve disruptions.[1] Despite these complications, rhinoplasty is one of the most popular

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aesthetic procedures according to the 2010 statistics of the American Society of Plastic Surgeons (ASPS) and the most popular among men.

Postsurgical management of nasal deformities can be achieved by various methods. Dermal filler injections have been traditionally used for the correction of facial rhytids. Injections of fillers such as hyaluronic acid can be used in an office-based setting to provide immediate and long-lasting aesthetic results.[2,3]

In this study, we present the successful implementation of subdermal hyaluronic acid injections for the management of postsurgical rhinoplasty complications. The aim of this study is to demonstrate the efficacy and safety of these injections.

Methods

This was a prospective nonrandomized clinical study performed at the OpsisClinical, Plastic and Reconstructive Surgery, Heraklion-Crete, Greece, between 2009 and 2011. All patients who have undergone rhinoplasty were evaluated for postoperative edema at 1 month by their primary surgeons (IL and NV). Eleven patients with moderate postoperative edema who were unsatisfied by their cosmetic appearance at the 1-month follow-up visit were assessed and included in the study. Subdermal injections of hyaluronic acid were performed by the primary surgeon (IL and NV). Asymmetry was corrected by subdermal hyaluronic acid injections at the contralateral side of the deformity. In addition, injections were administered at the site of the edema for the correction of the associated skin micro-indentations. Informed consent was obtained from all patients prior to treatment. Standardized pre- and post-treatment photographs were taken. The skin was assessed prior to treatment for any active bacterial or viral infections and prepped with alcohol swabs. All injections performed in the usual clean technique. Hyaluronic acid (24 mg/mL) with 0.3% lidocaine (*Juvederm, Allergan, Pringy-France*) was injected using a 30-G needle in the subcutaneous plane superficial to the perichondrium or periosteum. Linear threading in retrograde fashion, serial puncture, and fan technique were used to treat the affected area. The amount of the hyaluronic acid used varied from 0.6 to 1 mL according to the deformity.

Immediately after injection, digital pressure was applied and the hyaluronic acid molded into position. Ice was applied to minimize postinjection bruising and edema.[4]

Results

Eleven patients were treated with hyaluronic acid between 2009 and 2011. Nose irregularities were corrected immediately after the hyaluronic acid injections (Figs 1–6). No complications were reported with the

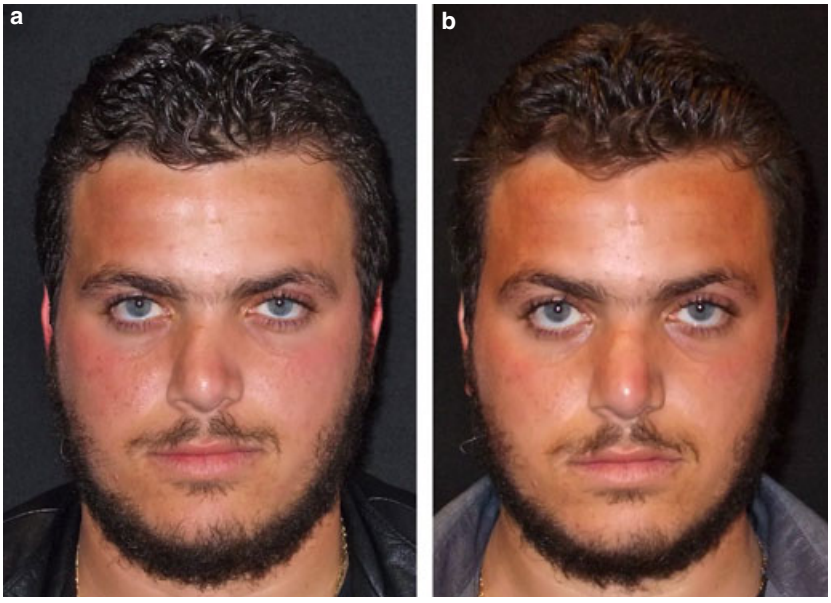

Figure 1 (a) Patient 3 months after rhinoplasty with swelling at the right part of the nose and (b) patient after correction with 0.6 cc of hyaluronic acid.

Figure 2 (a) Patient 15 months after rhinoplasty, (b) skin marking at the site of injections, and (c) patient after correction with 0.5 cc of hyaluronic acid.

Figure 3 (a) Patient 12 months after rhinoplasty with deficit at the right upper cartilage and (b) patient after correction with 0.3 cc of hyaluronic acid.

exception of mild tissue edema that resolved within a week. All patients were followed on a weekly basis after the injection. Seven patients required a second injection within the first 15 days for correction enhancement. Long-lasting aesthetic correction was achieved in all patients, while the hyaluronic acid remained in the tissue during the time required for postoperative edema resorption.

Discussion

Various fillers are commonly used in plastic surgery including autologous fat, collagen, liquid silicone, Dermicol-P35, poly-l-lactic acid (PLLA), hyaluronic acid, and calcium hydroxylapatite. Hyaluronic acid and hydroxylapatite are ideal for nose injections due to their safety, minimal side effects, predictability, and

Figure 4 (a–b) Patient 12 months after rhinoplasty with a concavity at the radix of the nose and lack of tip projection and (c–d) same patient after correction with 0.6 cc of hyaluronic acid.

biocompatibility. Moreover, they offer an excellent balance between cosmetic effect and duration of action, having the unique advantage of reversibility.[3,4]

Hyaluronic acid was approved by the FDA in 2003 for filling soft tissue defects. It is a natural glycosaminoglycan polysaccharide composed of D-glucuronic acid and N-acetyl-D-glucosamine found in mammalian dermis. When injected into tissues, it binds water to form hydrated polymers with effects typically lasting for 6 months. It is eventually absorbed and metabolized by the liver. However, studies have showed that hyaluronic acid may remain in the tissue longer when injected into immobilized areas of the face such as the temporal region, the lower eyelids, or the nose.[5] Incorporating the acid with autologous fibroblasts to permanently stimulate the production of collagen has also been used for the stabilization of granulation tissue matrix. However, fibroblast culturing requires 3 weeks of preparation prior to injection, making it impractical for office-based postsurgical implementation.[6]

Studies have showed that secondary rhinoplasties using subdermal fillers can be successfully used to treat deformities such as saddle nose or lateral deviation.[7,8] Functional internal valve collapse may be addressed with an endonasal "spreader" injection of hyaluronic acid into the apex of the valve. An underprojected tip may be built up by supratip injection followed by molding to the desired aesthetic result. A deep radix can be softened, and the injection may disguise a prominent nose and dorsal cartilaginous hump. A short, broad nose can be narrowed and lengthened with medial injection.[9–12]

Potential complications of hyaluronic acid injection include infection, ischemic necrosis due to arterial embolism, wound dehiscence due to over-injection, and osteophyte formation after periosteal injection.[1,13,14] These risks may be reduced with meticulous injection technique and a good knowledge of the nasal anatomy. Other potential complication, such as blindness, is unlikely to occur in our series, as the hyal-

uronic acid is not injected near the eye and there is minimal risk of embolizing the ophthalmic artery via the nasal vasculature. A rare delayed hypersensitivity reaction to hyaluronic acid has been reported as well in the form of local cutaneous granulomatous reaction. In most published cases, these lesions resolved with topical steroid therapy.[15,16] Patients were informed of this possible reaction prior to the injection. If more than 1 mL of hyaluronic acid is required for the full aesthetic correction, it is preferable to split the treatment into two separate injections 1 week apart. This will ensure the predictability of the desired aesthetic outcome. Upper nasal third injections should be medially placed in order to avoid the lateral nasal arteries.

Hyaluronidase is an injectable enzyme solution that speeds the natural breakdown of hyaluronic acid. It can be used to counteract the effects of hyaluronic acid-based fillers in the tissue in cases of overcorrection.

This prospective office-based report demonstrates the successful implementation of subdermal hyaluronic acid for the correction of minor nose deformities in the postoperative period after rhinoplasty. The surgeries and the postoperative assessment and injections were performed by the same experienced plastic surgeons (IL and NV) in a high-volume private center. The strengths of this study also include the long-term follow-up of all patients and the use on an FDA-approved commonly used office-based dermal filler. Possible limitations of the study were the small sample size of eleven patients and the nonrandomized double-masked design. Also, patient selection and success evaluation were based on the discretion of the treating surgeons. A larger follow-up with masked evaluation could provide more objective evidence on the efficacy of this treatment. Nonetheless, our pilot study clearly demonstrates the benefit of this technique, whereas the reversibility of the procedure makes it ideal for minor temporary aesthetic correction. Our preliminary results were encouraging for further implementation of this technique.

Conclusion

Rhinoplasty is among the most common plastic surgeries performed. It is a successful and effective technique; however, the final desired aesthetic result may occasionally be compromised due to prolonged edema or minor nose defects. This report demonstrates the successful use of subdermal injections of hyaluronic acid in the postoperative period for the correction of minor nose deformities. Our 11 case series demonstrate the safety and effectiveness of these injections with acceptable aesthetic result.

Disclosure

None of the authors have any proprietary or financial interest on this study. This study was never published or presented in a meeting.

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