

Fillers around the nose

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Abstract. – OBJECTIVE: The aim of this paper is to investigate the efficacy of filler applications which were evaluated in terms of nasal deformity and quality of life of the patients, and to review the fillers around the nose.

PATIENTS AND METHODS: Forty patients who underwent filler application were included into the study and were divided into Group 1 (Deep Radix), Group 2 (Minor irregularities due to rhinoplasty), Group 3 (Shallow dorsum) and Group 4 (Dorsal irregularity). There were 10 patients in each of the groups. In all groups, nasal deformity score was evaluated with a 1 to 5 scale as following: 1- No deformity, 2- Hardly visible deformity, 3- Visible deformity, 4- Moderate deformity, 5- Apparent deformity. Quality of life was evaluated by a 1 to 10 scale, 1 showing very low and 10 showing very high.

RESULTS: Our results showed that there were statistically significant improvements (decreased) in nasal deformity evaluation scores after the procedure compared to the before the procedure scores in Group 1 (Deep Radix), Group 3 (Shallow dorsum) and Group 4 (Dorsal irregularity) ($p < 0.05$) However in Group 2 (Minor irregularities due to rhinoplasty), there were no significant differences between the nasal deformity evaluation scores after and before the procedure ($p > 0.05$). For nasal deformity evaluation after the procedure, Group 1 (Deep Radix), Group 3 (Shallow dorsum) and Group 4 (Dorsal irregularity) scores were significantly lower (better) than Group 2 (Minor irregularities due to rhinoplasty) scores ($p_{\text{adjusted}} < 0.0125$). In all four groups (Deep Radix, Minor irregularities due to rhinoplasty, Shallow dorsum, Dorsal irregularity), quality of life scores were significantly improved (increased) after the procedure compared to before the procedure ($p < 0.05$). For Quality of life (VAS) before the procedure, Group 3 (Shallow dorsum) scores were significantly higher (improved, increased) than Group 1 (Deep Radix) and Group 4 (Dorsal irregularity) ($p_{\text{adjusted}} < 0.0125$).

CONCLUSIONS: Filler applications improved (decreased) nasal deformity evaluation scores

and improved (increased) quality of life scores. Fillers can be applied for deep radix, minor irregularities due to rhinoplasty, shallow dorsum and dorsal irregularity. It is essential to choose carefully appropriate materials and procedures for patients to obtain optimum results.

Key Words:

Filler, Materials, Nasal contour, Remodeling, Advantages.

Introduction

Other than in the area of the glabella, it is usually not a risky procedure to inject fillers into the skin's outermost layers. Despite this fact, it is modern practice to inject fillers below the skin in the hypodermis or possibly in supraperiosteal regions¹.

Characteristics of an ideal dermal filling material would be low cost, high safety, not causing pain during filling, provoking few sensitivity reactions and being durable. The material should allow reproducible results that are in line with the expectation and produce a natural texture, be quick to use, be operation-ready, not cause the patient to need to convalesce and rarely cause complications².

Dermal fillers may accidentally be injected into the facial vasculature, causing complications³, such as visual impairment, loss of sight, cerebrovascular accident and injury or necrosis of skin and its related structures in the face. The filler needs positioning with great caution and the patient needs to be aware of possible complications and be able to suspect when a graver problem is looming^{2,3}.

The face comprises 21 separate areas when considered from the point of view of filler use: "frontal¹, temporal², glabellar³, eyebrow⁴, upper

eyelid⁵, lower eyelid⁶, nasociliary⁷, nasojugal sulcus⁸, eyelid lateral sulcus⁹, nasal¹⁰, malar¹¹, zygomatic¹², canine fossa¹³, nasolabial sulcus¹⁴, upper lip¹⁵ (Figure 1A-B), lower lip¹⁶, cheek¹⁷, preauricular¹⁸, labiomental sulcus¹⁹, mentonian²⁰, posterior mandibular region²¹ (anterior border of the masseter as far as the angle of the jaw) and the anterior mandibular region (between the melolabial fold and the anterior border of the masseter)^{1,5-10}.

Glabellar and Eyebrow Regions

The glabella is defined anatomically as that region bound inferiorly by the upper portion of the dorsum of the nose and the medial end of the eyebrow, and superiorly by a vertical line that transects the mid-pupillary lines bilaterally at a distance of 1.5 cm superior to the pupil. The eyebrow region refers to the hair-covered area underlying the eyebrow as far as its most lateral extension. The cutaneous filling may occur here. It is important to bear in mind the position of the supraorbital and supratrochlear arteries. Both the temples and the glabella are supplied by arteries that may anastomose with end arteries, e.g., the ophthalmic or retinal arteries¹. Filler usage in the glabellar region is shown in Figure 2A-B.

Upper Eyelid

Defining this area is of key importance since fillers have been used across the entire region lying beneath the eyebrow (the upper portion) in an attempt to prevent patients looking too “skeletal” in general, or, more particularly, to prevent the “deep-set eyes” that result from a loss of fatty or supportive tissue in this region. The vascular supply here is *via* the upper eyelid and angular arteries. Most of the space is occupied by skin and the orbicularis oculi muscle, with fat pads and the lacrimal gland lying deeper, such that supportive tissues are few. There is also the risk of arterial embolization¹.

Lower Eyelid, Nasojugal Sulcus (Lacrimal Groove) and Nasociliary Region

If fat pad removal from the blepharon leads to an unacceptable cosmetic outcome in earlier surgery or the supportive tissue for the whole of the orbital rim of the lower blepharon is lost, or the palpebromalar sulci (medial, lower or lateral) are naturally prominent (as happens in some families), this area may warrant remedial interventions. The area of the lower palpebrum and the lacrimal groove (the medial section which



Figure 1. Filler usage in the upper lip. **A,** Pre-filler. **B,** Post-filler.

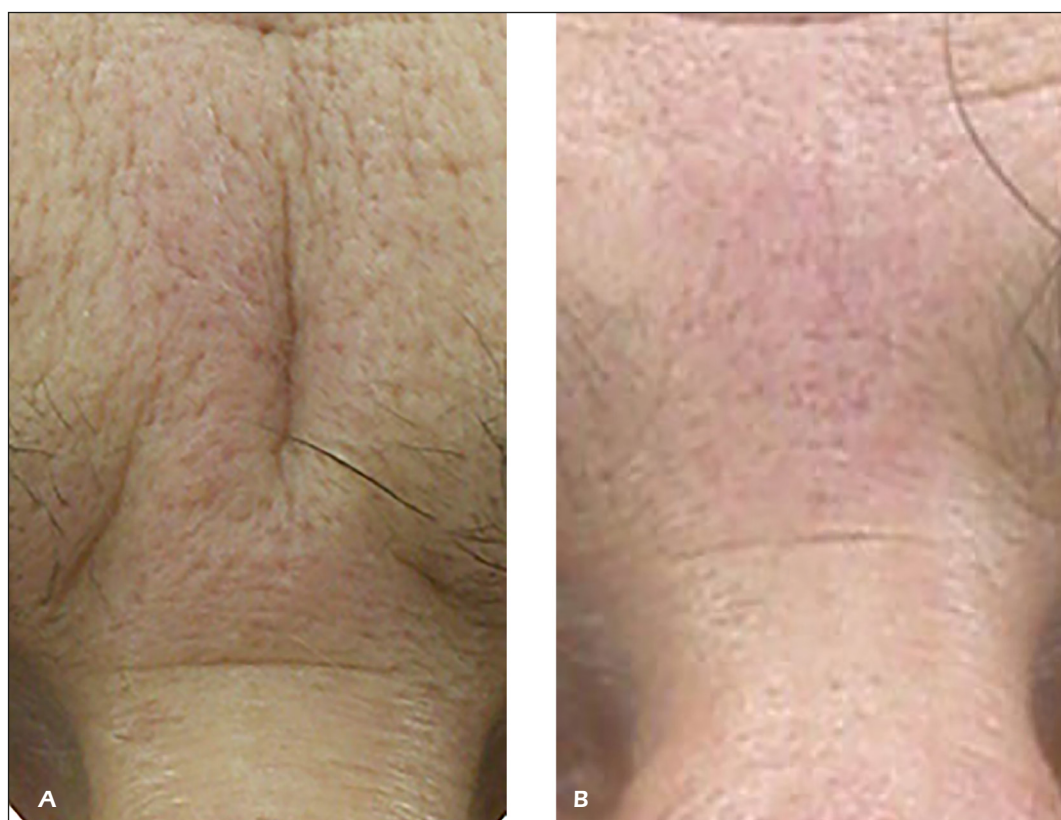


Figure 2. Filler usage in the glabellar region. **A**, Pre-filler. **B**, Post-filler.

follows the lower orbital rim inferiorly) and the nasociliary region are closely connected anatomically and thus they should not be considered in isolation from each other¹.

Lateral Palpebral Sulcus

The lateral palpebral sulcus is found on the lateral section of the inferior eyelid, overlying the lateral orbital rim inferiorly. The temporo-maxillary vein needs to be identified to avoid producing bruising or hematoma formation. If the skin is translucent, it may be readily seen. In its course, it crosses almost at right angles the infraorbital rim at the junction of the medial and lateral thirds¹.

Nasal Region

The dorsal nasal artery passes between the skin and the underlying dorsal nasal muscle. Its branches may have an anastomosis with the infraorbital or angular artery. In cases where rhinoplasty occurs in conjunction with septal operations, the vascular supply may be reduced. Cosmetic or reconstructive operations have the

potential to change the arterial supply to the tip of the nose, the nares, columella or canine fossa. Embolization into the angular artery is a risk. The columellar and lateral nasal arteries arise from the dorsal nasal artery and supply the alar, dorsal and apical regions of the nose. The lateral nasal veins begin 2-3 mm from the alar fold. The use of filler in this part of the face, such as is needed to alter the nares to be more sharply defined, needs to be injected both laterally and deeply¹. Filler usage on the nose is shown in Figure 3A-C, 4A-C and 5A-C.

Cheek

The cheek is a relatively mobile anatomical region with a boundary found as near as 1 cm lateral to the corner of the mouth. Its superior, lateral, inferior and medial anatomical relations are the zygomatic, preauricular, pre-mandibular and malar regions, respectively. The vascular supply comes from the branches of the facial artery, which supplies the lips, nose, and a portion of the parotid duct. The cheek is frequently the only region in need of filling¹.

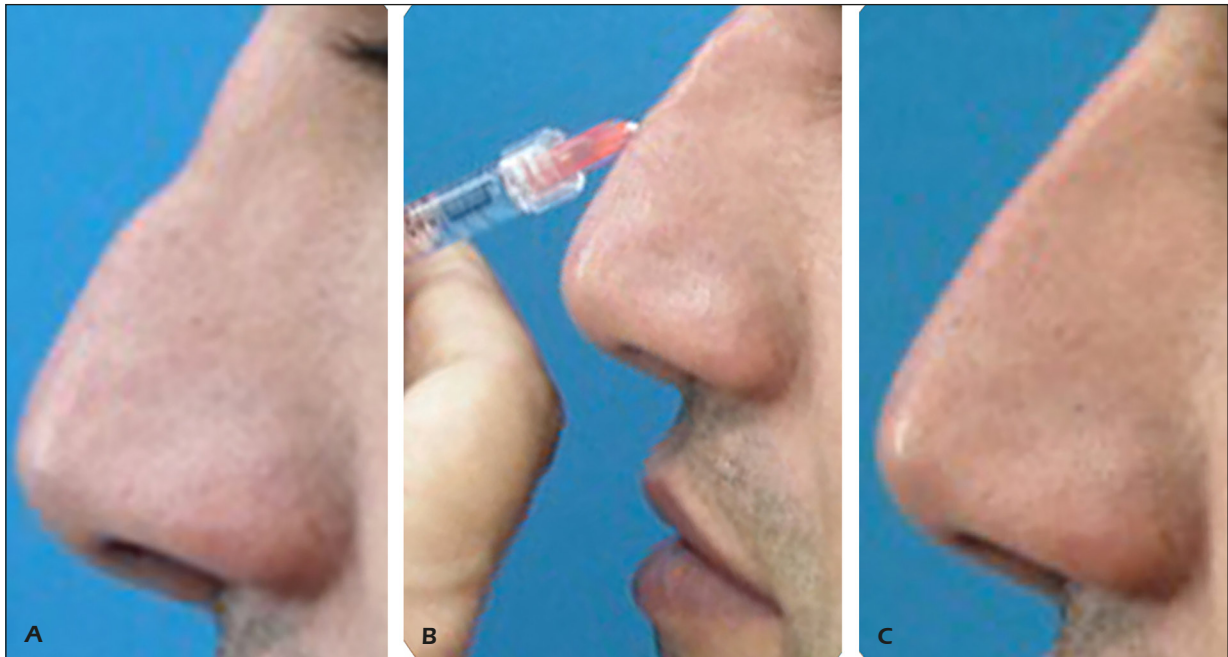


Figure 3. Filler usage on the nasal dorsum. A, Pre-filler. B, Filler application. C, Post-filler.

Wrinkles in facial skin appear as a result of the repetitive contractions of the facial musculature in making expressions. If the muscle contracts but the skin does not, wrinkles start to appear¹¹. There

are three classes of skin alteration: folds, wrinkles and lines. Folds have the full dermal thickness and extend to the subcutaneous tissues. Wrinkles are transepidermal but not deeper than the dermis.

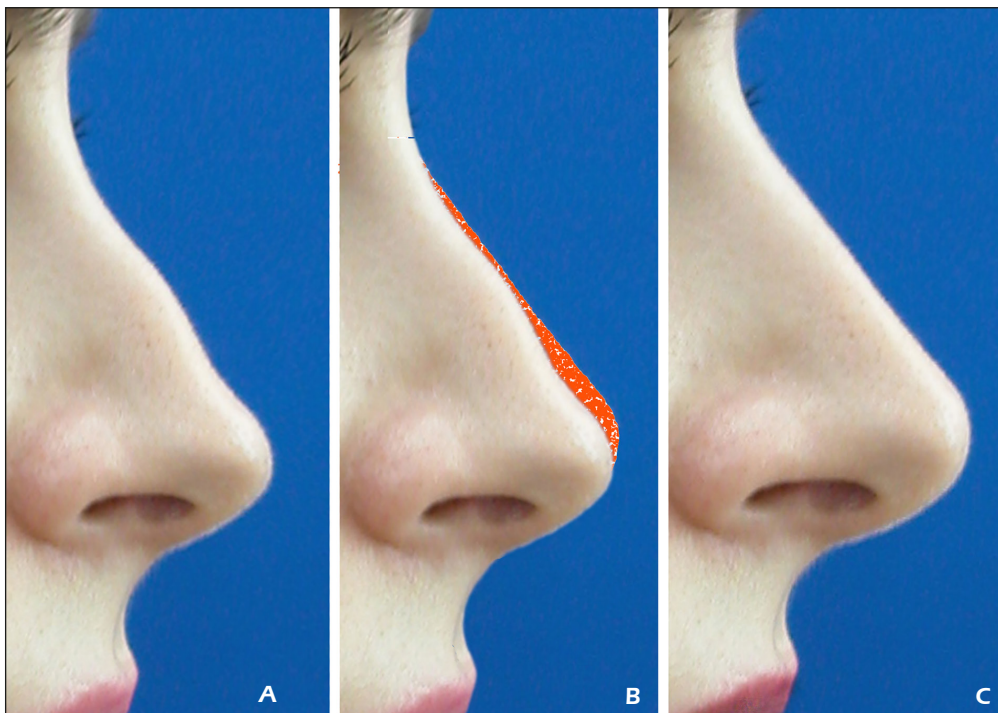


Figure 4. Filler usage on the nasal dorsum. A, Pre-filler. B, Drawing the filler application area. C, Post-filler.

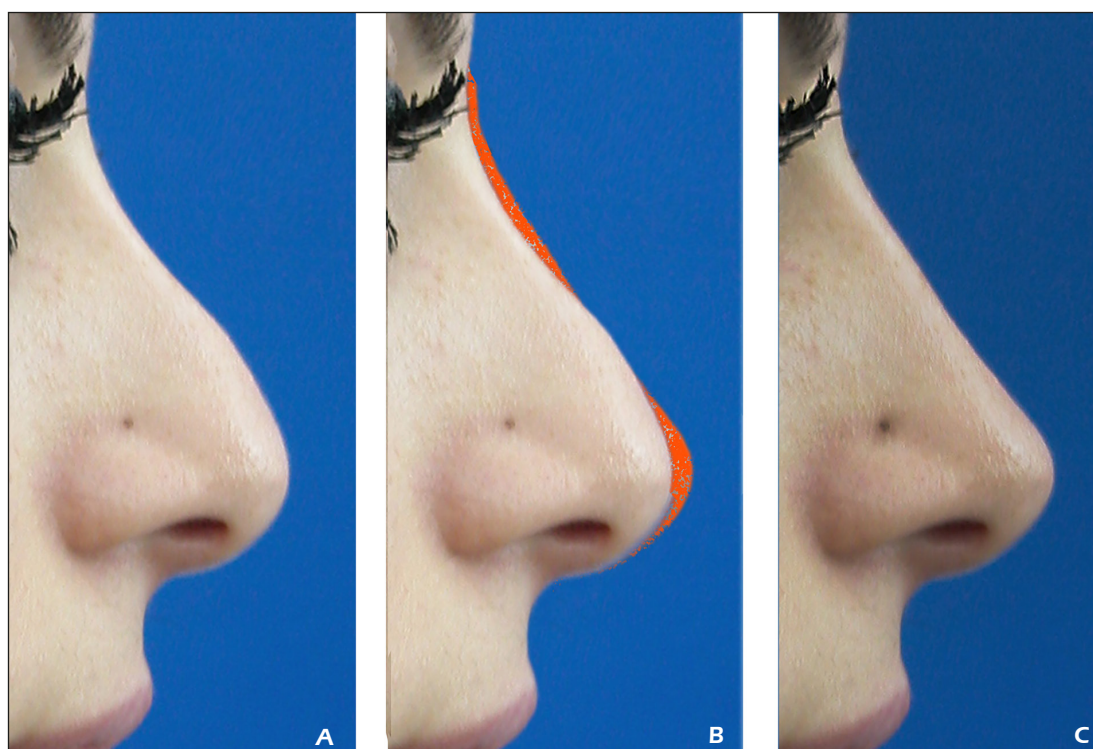


Figure 5. Filler usage on the nasal dorsum. **A**, Pre-filler. **B**, Drawing the filler application area. **C**, Post-filler.

Lines are confined within the epidermal layer. There are a number of factors that influence how deep a wrinkle becomes. These include a degree of subcutaneous adipose, hydration of the skin, how collagen and elastin are distributed and in what proportions, and biochemical alterations within the interstitium and connective tissue^{12,13}.

Facial wrinkles are commonly due to aging. The tissues tend to become laxer as we age, notably in the region of the nasolabial fold (Figure 6A-B). Agents that damage the skin can also produce wrinkles, such as excessive exposure to ultraviolet light, whether from naturally occurring sun exposure, the majority of fluorescent lights or solarium¹⁴.



Figure 6. Filler usage on the naso-labial sulcus. **A**, Pre-filler. **B**, Post-filler.

In this study, efficacy of filler applications was evaluated in terms of nasal deformity and quality of lives of the patients.

Patients and Methods

This study was conducted in the Department of Otolaryngology of Eskişehir Osmangazi University, Faculty of Medicine according to the rules outlined in the Declaration of Helsinki. Ethics Committee approval was obtained from the Ethics Committee of Bilecik Şeyh Edebali University, Non-Invasive Clinical Researches Ethics Committee (Date: 07.02.2023, Number: 6). There is no need to take informed consent, because the data were evaluated retrospectively.

Subjects

In this retrospective study, forty patients who underwent filler application in the Department of Otolaryngology of Eskişehir Osmangazi University, Faculty of Medicine were included into the study:

Group 1: Filler was applied due to Deep Radix (n=10) (2 males, 8 females). Mean age was 36.10 ± 7.15 years.

Group 2: Filler was applied due to minor irregularities due to rhinoplasty (n=10) (2 males, 8 females). Mean age was 27.30 ± 6.39 years.

Group 3: Filler was applied due to Shallow dorsum (n=10) (2 males, 8 females). Mean age was 21.40 ± 2.45 years.

Group 4: Filler was applied due to Shallow dorsum due to dorsal irregularity (n=10) (4 males, 6 females). Mean age was 26.30 ± 4.92 years.

Filler Type

As a filler material, Aqufill Medium (Alfamedical, Seoul, Korea) was used. Aqufill Medium is a hyaluronic acid filler of 20 mg/ml, which is advised to be used for cheek, chin, forehead, nose, eye wrinkles, nasolabial lines, lip contouring, and brow lines. It has a high viscosity, so when injected, it forms a pseudo-capsule and is robust against natural hyaluronidase in the body (long-term action mechanism). It uses 3-stage crosslinking technology to create a higher crosslinking rate and more stable molecular structure, increasing the filler's viscosity and ensuring the product's longevity²².

Methods

Nasal deformity score was evaluated with a 1 to 5 scale as following: 1- No deformity, 2-

Hardly visible deformity, 3- Visible deformity, 4- Moderate deformity, 5- Apparent deformity.

Quality of life was evaluated by a 1 to 10 scale, 1 showing very low and 10 showing very high.

Statistical Analysis

The data obtained in the study were analyzed using SPSS 16.0 for Windows software (SPSS Inc., Chicago, IL, USA). The Wilcoxon signed-ranks test and Kruskal-Wallis Variance Analysis was used.

For pairwise comparisons, the Mann-Whitney U test with Bonferroni correction was employed. $p < 0.05$ was considered statistically significant. $p_{\text{adjusted}} < 0.0125$ (for 4 groups pairwise comparisons) was considered statistically significant.

Results

Our results showed that, there were statistically significant improvements (decreased) in nasal deformity evaluation scores after the procedure compared to before the procedure scores in Group 1 (Deep Radix), Group 3 (Shallow dorsum) and Group 4 (Dorsal irregularity) ($p < 0.05$) (Table I). In Group 1 (Deep Radix), median nasal deformity evaluation scores were 3.00 ± 0.14 before the procedure and 2.00 ± 0.15 after the procedure. In Group 3 (Shallow dorsum), median nasal deformity evaluation scores were 4.00 ± 0.15 before the procedure and 2.00 ± 0.27 after the procedure. In Group 4 (Dorsal irregularity), median nasal deformity evaluation scores were 3.00 ± 0.23 before the procedure and 1.50 ± 0.26 after the procedure.

However, in Group 2 (Minor irregularities due to rhinoplasty), there were no significant differences between the nasal deformity evaluation scores after and before the procedure ($p > 0.05$). In Group 2 (Minor irregularities due to rhinoplasty), median nasal deformity evaluation scores were 3.00 ± 0.15 before the procedure and 3.00 ± 0.15 after the procedure.

For nasal deformity evaluation before the procedure, the difference between group 1,2,3, and 4 was analyzed by Wallis Variance Analysis ($p < 0.05$) (Table I). To find the values which caused the difference, pairwise comparisons were performed by Mann-Whitney U test with Bonferroni correction. No significant difference were detected ($p_{\text{adjusted}} > 0.0125$) (Table I).

Table I. Evaluation scores and quality of life (QoL) scores of the groups before and after the procedure.

	Nasal deformity evaluation before the procedure		Nasal deformity evaluation after the procedure		<i>p</i> *
	Median	Std.Error	Median	Std.Error	
Group 1 (Deep Radix) (n=10)	3.00	0.14	2.00	0.15	0.004
Group 2 (Minor irregularities due to rhinoplasty) (n=10)	3.00	0.15	3.00	0.15	1.000
Group 3 (Shallow dorsum) (n=10)	4.00	0.15	2.00	0.27	0.010
Group 4 (Dorsal irregularity) (n=10)	3.00	0.23	1.50	0.26	0.006
<i>p</i> **	0.041		0.000		
Pairwise comparisons <i>p</i> _{adjusted} ***	1-2 > 0.0125 1-3 > 0.0125 1-4 > 0.0125 2-3 > 0.0125 2-4 > 0.0125 3-4 > 0.0125		1-2 < 0.0125 1-3 > 0.0125 1-4 > 0.0125 2-3 < 0.0125 2-4 < 0.0125 3-4 > 0.0125		
	Quality of life (VAS) before the procedure		Quality of life (VAS) before the procedure		
	Median	Std. Error	Median	Std. Error	
Group 1 (Deep Radix) (n=10)	4.00	0.21	9.00	0.25	0.003
Group 2 (Minor irregularities due to rhinoplasty) (n=10)	5.00	0.30	9.50	0.26	0.000
Group 3 (Shallow dorsum) (n=10)	6.00	0.16	9.00	0.24	0.005
Group 4 (Dorsal irregularity) (n=10)	4.00	0.21	9.00	0.92	0.020
<i>p</i> **	0.001		0.391		
Pairwise comparisons <i>p</i> _{adjusted} ***	1-2 > 0.0125 1-3 < 0.0125 1-4 > 0.0125 2-3 > 0.0125 2-4 > 0.0125 3-4 < 0.0125				

p*-value shows the results of Wilcoxon signed ranks test. *p*-value shows the results of Kruskal-Wallis Variance Analysis. ****p*_{adjusted}-value applies to the results of the Mann-Whitney U test with Bonferroni correction. *p*_{adjusted} < 0.0125 was considered to indicate statistical significance.

For nasal deformity evaluation after the procedure, the difference between group 1,2,3, and 4 was analyzed by Wallis Variance Analysis (*p*<0.05) (Table I). To find the values which caused the difference, pairwise comparisons were performed by Mann Whitney U test with Bonferoni correction. Group 1 (Deep Radix), Group 3

(Shallow dorsum) and Group 4 (Dorsal irregularity) scores were significantly lower (better) than Group 2 (Minor irregularities due to rhinoplasty) scores (*p*_{adjusted}<0.0125) (Table I).

In all four groups (Deep Radix, Minor irregularities due to rhinoplasty, Shallow dorsum, Dorsal irregularity), quality of life (VAS) scores

were significantly improved (increased) after the procedure compared to before the procedure ($p < 0.05$) (Table I). In Group 1 (Deep Radix), quality of life (VAS) scores was 4.00 ± 0.21 before the procedure and 9.00 ± 0.25 after the procedure. In Group 2 (Minor irregularities due to rhinoplasty), quality of life (VAS) scores was 5.00 ± 0.30 before the procedure and 9.50 ± 0.26 after the procedure. In Group 3 (Shallow dorsum), quality of life (VAS) scores was 6.00 ± 0.16 before the procedure and 9.00 ± 0.24 after the procedure. In Group 4 (Dorsal irregularity), quality of life (VAS) scores was 4.00 ± 0.21 before the procedure and 9.00 ± 0.92 after the procedure.

For Quality of life (VAS) before the procedure, the difference between group 1,2,3, and 4 was analyzed by Wallis Variance Analysis ($p < 0.05$) (Table I). To find the values that caused the difference, pairwise comparisons were performed by Mann-Whitney U test with Bonferroni correction. Group 3 (Shallow dorsum) scores were significantly higher than Group 1 (Deep Radix) and Group 4 (Dorsal irregularity) ($p_{\text{adjusted}} < 0.0125$) (Table I).

Discussion

For the facial deformities, filler materials can be used. In the present study, our results showed that after filler applications, nasal deformity evaluation scores improved (decreased) in Group 1 (Deep Radix), Group 3 (Shallow dorsum) and Group 4 (Dorsal irregularity). However, in Group 2 (Minor irregularities due to rhinoplasty), there were no significant differences between the nasal deformity evaluation scores after and before the procedure. For nasal deformity evaluation after the procedure, pairwise comparison results showed that Group 1 (Deep Radix), Group 3 (Shallow dorsum) and Group 4 (Dorsal irregularity) scores were significantly lower (better) than Group 2 (Minor irregularities due to rhinoplasty) scores.

Moreover, quality of life scores significantly improved (increased) after the procedure compared to before the procedure in all four groups (Deep Radix, Minor irregularities due to rhinoplasty, Shallow dorsum, Dorsal irregularity). For Quality of life (VAS) before the procedure, Group 3 (Shallow dorsum) scores were significantly higher (improved, increased) than Group 1 (Deep Radix) and Group 4 (Dorsal irregularity).

There are different filler materials as the following:

Collagen

Given the leading role collagen plays in structuring the skin, supplying collagen to the dermis has an intuitive appeal. The first collagen material to be licensed was bovine². Collagen implants that include lidocaine produce less pain and often dispense with the need for infiltration with local anesthetics or nerve blockade¹⁵. Currently only “bovine collagen (Zyderm I, Zyderm II, and Z-plast)” and “the bioengineered human collagen dermal fillers (CosmoDerm I, CosmoDerm II, and CosmoPlast)” are both FDA-approved and have this feature. Lidocaine has the extra benefit that it lessens edema and ecchymosis through the inhibition of eosinophil activity, producing fewer bruises. Collagenase is the enzyme responsible for the degradation of collagen, both human and bovine. The refrigeration of collagen fillers is essential².

Hyaluronic Acid

The key glycosaminoglycan within the skin is hyaluronic acid. This molecule has an avid affinity for water, such that when injected in skin, it becomes softer, increases in volume and is better hydrated. Hyaluronic acid features in cell growth, membranous signaling and how cells adhere to each other².

Stabilization of structures within the cell is promoted by hyaluronic acid. Collagen binds to elastin to generate a viscoelastic framework through the action of hyaluronic acid. Photo aging leads to a breakdown of such a framework, leaving collagen and elastin clumped at random. Due to its multiplicity of roles, hyaluronic acid has highly desirable properties as a skin filler^{19,20}.

Restylane[®] consists of cross-linked hyaluronic acid, not obtained from animals. It soon became apparent that this skin filler produces quite enduring benefit, very few side effects, was straightforward in application, did not require reconstitution, could be kept at room temperature, was cost-effective and could be used without pre-treatment cutaneous hypersensitivity tests².

Polymethylmethacrylate with Bovine Collagen

This type of skin filler contains microspheres (30-50 microns across) made of polymethylmethacrylate, as a suspension in a gelatinous carrier consisting of “3.5% bovine collagen, 92.6% buffered isotonic water, 0.3% lidocaine, 2.7% phosphate buffer, and 0.9% sodium chloride^{16,21}”. The presence of lidocaine within the products

allows for a more comfortable injection experience. Whilst the indication is for the remediation of nasolabial fold defects, its uses also extend to scars from acne and frontal furrow marks²³.

Poly-L-Lactic Acid

This compound is synthetic, biodegradable, biocompatible and does not excite an immune response. It is a polypeptide that remains inert but is thought to drive fibroblasts to secrete greater amounts of collagen, which shows up as greater facial fullness. The sole FDA approval indication is for HIV-associated lipoatrophy. Nonetheless, clinicians regularly use it beyond its marketing authorization in the remediation of skin (especially nasolabial) folds²³.

Whilst in the vast majority of cases, injection of poly-L-lactic is into the area below the dermis, the agent is not properly speaking a skin filler since it merely stimulates the dermis to produce collagen. It should be termed as a dermal stimulating agent²⁴.

Calcium Hydroxylapatite

Calcium hydroxylapatite is a key element within osseous tissues and is widely employed for reconstructive and dental operations. It has entered into use to fill soft-tissue defects as an injectable compound known as “Radiesse (Bioform Inc, San Mateo, Calif)”, which consists of a suspension of calcium hydroxylapatite microspheres of size 24 to 45 μm in a hydrated gel. The compound can be stored at room temperature and hypersensitivity pre-testing is unnecessary. Since it possesses a high degree of viscosity, it is advisable to inject it below the dermis or intramuscularly, to avoid nodules being formed. Nodules may form when it is used for lip augmentation in as many as 20% of individuals^{11,25}.

Calcium hydroxylapatite (CaHA) occurs naturally in the mineralized portion of bone and has been in use medically for more than ten years. Just like hyaluronic acid, it is endogenous to the body and does not provoke immune responses. When put in suspension in a gelatinous medium composed of glycerin, carboxymethylcellulose, and water, it can be injected *via* a 27-gauge needle²⁶. The key benefit of choosing this agent is that its effects persist for a lengthy period, although it suffers from being felt through the skin, particularly when applied at insufficient depth. To avoid this disadvantage, the injection should always be into the layer beneath the skin^{27,28}.

The product consists of “30% calcium hydroxylapatite and 70% carrier gel²⁹”. Overall, the clinical benefits may persist for up to or beyond one year, albeit the gel has a maximum duration of 6 months, which frequently occasions a mild loss of remediation effect at the point when the gel disappears².

Expanded Polytetrafluoroethylene

Expanded polytetrafluoroethylene (ePTFE) is an artificial skin filler that has received FDA approval for its use in remediation of deep tissue deficits, e.g., nasolabial folds or to give fuller lips. The product consists of a tubular structure with a space in the center, into which fibroblasts can penetrate and thus keep the tubing from moving. The amount of fibroblastic penetration depends on the diameter of the pores in the tube. If the tube is more porous, it will tend to become more fixed by capsule formation, but fibroblastic penetration will be reduced, with a loss of the stability that provides for mobile areas. Because ePTFE is both chemically unreactive and possesses great strength and flexibility, it has been able to be utilized many millions of times by vascular surgeons without undue safety issues^{11,28}.

Around the Nose, Reshaping with Fillers

Nasal contour remodeling using fillers has several advantages: there is a brief recovery period, a general anesthetic is not needed, and ecchymosis does not occur. However, whilst the results obtainable are at an equal level to those found with surgery, the effects do not persist if the filling material is biodegradable. It is a key principle to bear in mind the nasolabial and nasofrontal angles whilst remodeling with fillers. The nasolabial angle needs to be between 90 and 100 degrees in males, 100 and 110 degrees in females. The nasofrontal angle is formed by the forehead and the dorsal portion of the nose³⁰.

Nasal profile analysis needs consider various elements: the nasofrontal and nasolabial angles, and whether a supratip break exists. The nasofrontal angle should not be too sharp and there should be a gentle inward curvature. This point connects the lower forehead and dorsum of the nose³⁰.

Technique

Due to the sensitivity of the nasal region, local anesthetic infiltration may prove insufficient and a nerve block of the ophthalmic and maxillary divisions of the trigeminal nerve is therefore advisable.

It is more straightforward to fill the area over the bony dorsum than the area over the lower nasal third. There are several blood vessels to be avoided that traverse the area within the subcutaneous tissues³⁰.

The nasofrontal angle

The ideal patient for this kind of treatment is one in whom the nasofrontal angle is too sharp. If the dorsum is too large, filler in the nasofrontal area may make the dorsal profile straighter and give the appearance of a shorter nose. However, an excessive filler can lead to a nasofrontal angle that is overly flattened and thus unacceptable. The filler injected into the front portion of the spine of the nose opens up the nasolabial angle. Filler that goes deeper towards the nasal spine causes expansion of the lower portion of the membranous septum. The basal columellar area may also be filled, particularly where there is a wish for the medial crura to be wider³⁰.

The tip and the columella

Defects in columellar height: where the nares are too flat, the medial crura can be filled to produce the ideal teardrop shape. Columellar retraction may also be remediated *via* filler injection, however, this may need to be done in stages, as the degree of retraction dictates. The membranous septum is the area where filler should be placed.

Injections for supratip deformity: it is essential to avoid the supratip break disappearing altogether, in which case the supratip will be deformed and the tip of the nose will fall. To make the supratip break more apparent, the domes and the septal angle need to be of different heights. Even a very small amount of filler placed at the dome tip allows this to be achieved³⁰.

Projection of the tip: to check if the filler injected into the tip was of the correct volume, check that the amount the tip projects equals the measurement of the alar base. Cases, where the nasolabial angle is too small, respond to having the tip rotated. The tip may be made to project further by placing filler in the domes. Treatment of tip deformity must evaluate if it is the domes or the middle crura or both that need remedying. If the domes are the sole problem, the only place where filler should be placed is the upper part of the tip. To treat the tip in its entirety, filler needs to be placed in both the upper and lower portions³⁰.

Dorsum

The filling is a very appropriate technique to employ in cases where the tip has no deformity

but the dorsum lacks height and the nasofrontal angle is wrong. The volume of the filler required can be gauged from how high the tip is. Initially, the area to fill is the nasofrontal angle. It needs to be rendered less sharp and should be as high as the tip. Filling the dorsum needs to proceed to the level where it virtually touches an imaginary line joining the tip and nasofrontal angle. The injection needs to be done in a retrograde fashion. If the filling is irregular, the material can be redistributed with gentle rubbing³⁰.

Complications

There are reports³¹⁻³³ of a range of problems arising from the use of fillers, both nasally and at other sites. It has been established that hyaluronic acid (HA) may embolise arterially and the glabella is also prone to necrosis.

The most unnerving problem that occurs with remodeling the nose is necrosis, although thankfully this seldom occurs and almost always with products that cannot be biodegraded. It is extremely unusual for biodegradable materials to impair vascular supply. Should injection into a vessel occur by accident, the area needs to be rubbed quickly to encourage the dissolution of the polymers. If the area overlying the dorsal cartilage is over injected, supratip deformities and irregular outlines may occur. If the filler is placed appropriately in the nasofrontal and nasolabial angle regions, there will seldom be any deformation. On the other hand, beware of inadvertently broadening the nose at the two angles. A boxy tip may result from the excessively zealous filling of the nasal tip. Fillers can also cause more general problems, e.g., edema, erythema, pain and bruising^{30,34}. To prevent inadvertent intravascular injection, the use of a blunt cannula instead of a sharp injection needle is recommended^{35,36}.

Conclusions

Filler applications decreased nasal deformity evaluation scores in patients with Deep Radix, Shallow dorsum and Dorsal irregularity. Moreover, quality of life scores were significantly improved after the procedure compared to before the procedure in all four groups (Deep Radix, Minor irregularities due to rhinoplasty, Shallow dorsum, Dorsal irregularity). Nasal contour remodeling using fillers has several advantages: there is a brief recovery period, a general anesthetic is not needed and ecchymosis does not

occur. There are a lot of filler materials, such as collagen, hyaluronic acid, Polymethylmethacrylate with Bovine Collagen, Poly-L-Lactic Acid, calcium hydroxyl apatite and expanded polytetrafluoroethylene (ePTFE). It is essential to choose carefully appropriate materials and procedures for patients to obtain optimum results.

Conflict of Interest

The Authors declare that they have no conflict of interests.

Ethics Approval

Ethics committee approval was taken from Bilecik Şeyh Edebali University, Non-Invasive Clinical Researches Ethics Committee (Date: 07.02.2023, Number: 6).

Informed Consent

There was no need to take informed consent, because the data were evaluated retrospectively.

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Authors' Contribution

Erkan Esen: Planning, designing, literature survey, data collecting, active intellectual support. Nuray Bayar Muluk: Planning, designing, literature survey, statistical analysis, interpretation of the results, writing, active intellectual support, submission. Tarik Yagci: Planning, designing, literature survey, active intellectual support. Cemal Cingi: Planning, designing, data collecting, active intellectual support, English editing.

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