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Non-Surgical Rhinoplasty: The Ascending Technique and a 14-Year Retrospective Study of 2130 Cases

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Abstract

Introduction Non-surgical rhinoplasty or liquid/filler rhinoplasty is one of the fastest-growing cosmetic procedures worldwide. While several papers have been published on this topic, there has been no standardization of the technique. Most techniques advise injection in a top-down manner, similar to a traditional rhinoplasty. We present our ascending technique performed in 2130 cases. This constitutes one of the largest series published on this subject.

Methods Patient records were retrospectively analysed from 2006 to 2019. All patients were injected with hyaluronic acid fillers. We employed an ascending approach which consisted of four sites: nasal tip, columellar base, dorsum (including supratip) and radix. The tip was first set at the appropriate projection and rotation and then the dorsum adjusted to meet it.

Results Since 2006, 2130 patients underwent non-surgical rhinoplasty; 2023 patients were female (95%), and 107 were male (5%). The proportions by site injected were tip 95%, columella 58%, dorsum 83%, radix 62%. Sixty-two percent (1321) repeated the procedure after 1 year. Two percent of patients had persistent tip redness which recovered. There was no skin necrosis or ocular complications.

Conclusions In non-surgical rhinoplasty, all modifications are being done by pure addition, unlike surgical rhinoplasty. In this scenario, the risk of over-projecting the tip is higher. Hence, we believe it is important to set the tip at the desired projection and size and then raise the dorsum accordingly to match. Our high satisfaction rate over 2130 patients validates the efficacy of this ascending technique.

Level of Evidence IV This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors -www.springer.com/00266.

Keywords Filler rhinoplasty · Non-surgical rhinoplasty · Liquid rhinoplasty

Introduction

Non-surgical rhinoplasty (NSR) or liquid/filler rhinoplasty is one of the fastest-growing cosmetic procedures worldwide. [1] While surgical rhinoplasty is the gold standard for nasal correction, many patients are hesitant to undergo the same due to higher cost, longer downtime, delayed result and a fear of surgery. [2] In contrast, NSR offers immediate results with no downtime at a much lower procedure cost. Also, NSR is more easily performed by a wider range of practitioners and has a more gradual learning curve. Add to this, the influence of social media, and the ability to show your results, or even the entire procedure, and it is easy to understand the increasing popularity of NSR.

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However, NSR is not an easy technique to master, and when done in the wrong hands can have unsatisfactory results or serious complications. [3, 4] While several papers have been published on this topic, there is no consensus on the injection technique. Most techniques describe injection in a top-down manner, similar to a surgical rhinoplasty. [5, 6] We prefer to inject in the opposite direction, by setting the tip first and then adjusting the dorsum, and believe this yields the best results.

Also lacking in prior publications is data on how many patients chose to repeat the procedure once the filler result diminished. We also had a group of patients who underwent NSR as a 'test drive' for their surgical rhinoplasty, and we wanted to highlight the percentage of conversion to a surgical rhinoplasty.

Materials and Methods

Patient records were retrospectively analysed from 2006 to 2019. The patients were analysed for

1. Age, sex
2. Choice of filler, volume used
3. Satisfaction rate measured by self-assessment on a scale ranging from unsatisfied, somewhat satisfied, moderately satisfied and highly satisfied.
4. Complications
5. Filler repetition rate
6. Conversion to surgical rhinoplasty

Inclusion criteria included any patient older than 18 who wanted to improve the appearance of his/her nose.

Exclusion criteria were:

- Pregnancy
- Autoimmune conditions
- Severe uncontrolled comorbidity, diabetes mellitus, hypertension, etc.
- Patients with unrealistic expectations and body dysmorphia

General considerations

- The skin was always disinfected with chlorhexidine
- All injections were performed by the senior author
- Needles were preferred for injection (26-28G)
- Aspiration was always done prior to injection
- To avoid intraarterial injection
    - Injections were limited to the midline as far as possible
    - Injections were mainly done on the bone/ cartilage, avoiding superficial planes
    - While injecting on the dorsum and radix, pressure was maintained with the non-dominant hand on the supraorbital and supratrochlear vessels. We believe occlusion of these vessels reduces the chance of retrograde flow of filler material into the internal carotid system.
- The patient was observed at the end of the procedure for thirty minutes before being allowed to leave. Warning signs observed for included pain, blanching, redness, cyanosis, visual disturbances.
- Emergency kit on standby included hyaluronidase, mannitol, nitroglycerine paste, timolol, acetazolamide, aspirin

Filler Material

All patients were injected with hyaluronic acid (HA) fillers. These were preferred to other alternatives for their reversibility if needed. Fillers with higher g' and n' were preferred for their ability to hold shape and their longevity. For this reason, Restylane (Galderma) was the filler of choice.

Technique

We employed an ascending approach which consisted of four sites: nasal tip, columellar base, dorsum (including supratip) and radix. The tip was first set at the appropriate projection and rotation and then the dorsum adjusted to meet it.

1. Nasal tip
   This injection is done with a bolus in the subdermal plane between the two domes while pinching the domes together with the non-dominant hand. The bolus here acts as a cap graft and serves to sharpen the tip. In some cases, two adjacent boluses are injected. The tip skin is then pulled out to set the projection. This point is needed in nearly all cases to sharpen the tip and achieve projection. This point is done first to set the tip at our desired projection. Average volume is 0.1–0.2cc.

2. Columellar base
   This injection is done between the medial crural footplates to set our tip rotation. A small bolus is injected in the subdermal plane while pinching the footplates together with the non-dominant hand. This bolus acts as a pedestal for the medial crura and rotates the tip superiorly and makes the nasolabial angle more obtuse. In tips which are already over-rotated, this point is omitted. Average volume is 0.1–0.2cc.

3. Dorsum (including supratip)
   Once the tip is set, the dorsum is then assessed. If it appears in balance with the tip, it can be omitted. However, in most cases, it either has to be narrowed and raised or a hump needs to be camouflaged. Injection is done from inferior to superior. Firstly, supratip injection is done deep on the perichondrium in the midline to adjust the supratip break while pinching the skin together. Then, the bony dorsum is addressed by injecting on the periosteum. The dorsum is raised incrementally till the required height is achieved. If a hump is present, injection is done above and below the hump to achieve a straight dorsum on profile. If deviation needs to be improved, the filler is massaged to the concave side after injection. Average volume is 0.1–0.4cc.

4. Radix
   Radix augmentation is done last if needed by injecting on the bone, in the midline. While injecting the radix, pressure is maintained on the supraorbital and supratrochlear vessels to achieve manual compression and reduce the chance of retrograde migration in the event of intravascular cannulation. Average volume is 0.1–0.2cc.

After all four points are done, the nose is reassessed and any point reinjected if required.

The most important concept to remember is that non-surgical rhinoplasty is a technique of proportions. It is possible to make a large nose appear smaller, even though we are adding volume to the nose and not subtracting. At every point, one must step back and re-evaluate before proceeding further. The technique is demonstrated in the supplementary video.

Results

Since 2006, 2130 patients underwent non-surgical rhinoplasty. There was a rising trend year on year as follows (Table 1):

10% (214) were lost on follow up

A total of 2023 patients were female (95%), and 107 were male (5%)

Table 1 Yearly distribution of cases

Year	No. of cases
2006	35
2007	45
2008	59
2009	66
2010	75
2011	81
2012	90
2013	99
2014	159
2015	210
2016	255
2017	288
2018	326
2019	342
Total	2130

Indications

Each of the regions was injected in the following percentage of patients

Tip 95%

Columella 58%

Dorsum 83%

Radix 62%

Results are shown in Figs 1, 2, 3, 4, 5, 6, 7, 8 and 9

Touch-Up

A total of 108 patients (5%) underwent a touch-up procedure within 2 weeks of the first procedure. This was done for minor modification or volume addition, particularly in the radix.

Patient Satisfaction

All patients expressed high satisfaction with the result, as measured by a self-assessment scale.

Sixty-two percent (1321) repeated the procedure after 1 year.

Thirty-three percent (710) of patients went on to have full surgical rhinoplasty by the senior author.

Complications

Two percent of patients had persistent tip redness which was observed suspecting possible necrosis. However, this recovered spontaneously, suggesting external vascular compression in the tip rather than intraarterial occlusion. The duration of redness lasted from 5 to 60 min.

There was no skin necrosis or ocular complications. Hyaluronidase was not necessary in any case.

Fig. 1 Improved dorsal aesthetic lines. Improved tip aesthetics, projection, creation of supratip break. Correction of drooping tip.

Fig. 2 Dorsal augmentation, improved dorsal aesthetic lines. Elongation of short nose. Improved tip projection.

Fig. 3 Raising of dorsum and correction of bulbous tip, in previously operated over-resected nose

Discussion

Non-surgical rhinoplasty is a relatively recent technique whose popularity is growing quickly. The first case series for non-surgical rhinoplasty was described in 2010 with 18 cases. [7] Since then, there have been several series [4, 8–12] with the largest one comprising 5000 cases published in 2020. [11] We believe this is in part influenced by the rise of social media, in particular Instagram. NSR is tailor-made to be demonstrated, as is done by many practitioners. When prospective patients see others attain instant results online, they feel encouraged to undergo this procedure themselves.

Our series with 2130 cases represents one of the largest series on non-surgical rhinoplasty published thus far over the longest duration (14 years). We document a year on year increase in the number of procedures, mirroring the growing popularity of this technique seen in other studies.

Fig. 4 Correction of dorsal hump, drooping tip. Improved dorsal aesthetic lines

Fig. 5 Improved tip aesthetics. Improved projection and narrowing on basal view. Improved dorsal aesthetic lines, creation of supratip break.

Fig. 6 Correction of reverse C-shaped dorsal deviation. Correction of minor dorsal hump

Anatomy

As with any dermal filler injection, a thorough understanding of anatomy is essential to avoid complications in NSR. The nose has traditionally been described as a danger zone for injectable fillers for two main reasons. [12, 13] Firstly, in the region of the tip, the prevalence of end arteries increases the risk of skin necrosis. Secondly, the presence of internal and external carotid anastomoses near the radix increases the risk of ocular complications.

The soft tissue layers of the nose include (from superficial to deep): skin, superficial fatty layer, fibromuscular layer, deep fatty layer and perichondrium/periosteum. The main vessels of the nose are in the fibromuscular and deep fatty layers in the inferior dorsum, and in the superficial fatty layer near the glabella. The periosteum or perichondrium is a relatively avascular plane [14].

The ophthalmic artery supplies the upper part of the nose via the external nasal branch of the anterior ethmoidal artery and the dorsal nasal artery. The facial artery supplies the lower part of the nose via the angular and superior labial arteries (the latter of which gives rise to the columellar branch). There are extensive anastomoses between the superior and inferior vessels, but these are usually less frequent across the midline.

Hence, injecting in the midline and on the periosteum or perichondrium offers the greatest degree of safety in the nose. However, it should be noted that this safety is not absolute as variations are possible. Figure 9 shows a large

Fig. 7 Correction of dorsal hump, improved dorsal aesthetic lines, creation of supratip break, improved tip projection, narrowing of nose, correction of nostril asymmetry

Fig. 8 Correction of dorsal hump and drooping tip. Creation of supratip break.

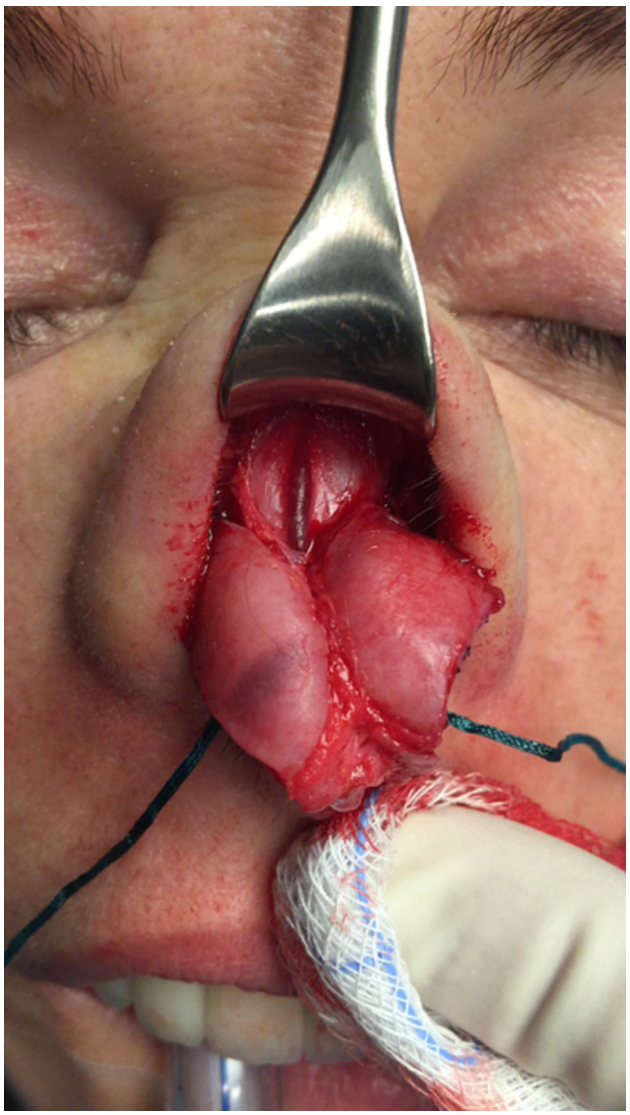

Fig. 9 Midline dorsal vessel seen in open rhinoplasty

midline vessel seen in an open rhinoplasty by the senior author.

Filler Material

Most of the series described thus far used hyaluronic acid fillers, with a minority using calcium hydroxyapatite. [15, 16] The chief advantages of HA fillers include their ease of use, wide product range and reversibility. This reversibility is particularly useful in the nose, because of its higher risk anatomically, as discussed above. To accurately modify the nose proportions, we require a filler that can hold its shape, in other words a filler with a high G prime. For this reason, Restylane (Galderma) was our filler of choice.

Technique

Achieving good results in NSR requires a proper technique. In general, the techniques described thus far advise placing filler superiorly on the dorsum first and then proceed inferiorly to the tip. Moon et al. described injecting in the following sequence: radix, rhinion, tip and supratip. [5] Kurkjian et al. also favoured injecting dorsum first [6] as did Brewster et al. [11] and Segreto et al. [17]. However, Bertossi et al. described using an inferior first technique using a nasal grid in 150 patients. [18]

Injecting dorsum first was favoured by many authors as it mirrors the sequence used in surgical rhinoplasty. Traditional rhinoplasty teaching advises to raise or lower the dorsum as needed and then set the tip, to avoid tip distortion while working on the dorsum. However, non-surgical rhinoplasty does not have this limitation, and the tip can be addressed first.

Moreover, in surgical rhinoplasty, the dorsum can be raised or lowered as needed, and the tip projection then increased or decreased to suit the dorsum. In other words, either an addition or a subtraction change is possible. In non-surgical rhinoplasty, however, all modifications are being done by pure addition of filler, and no anatomical structure can actually be reduced. In this scenario, the risk of over-projecting the tip is higher. Hence, we believe it is important to set the tip at the desired projection and then raise the dorsum accordingly to match. Figure 10 shows the location of filler in the tip in a patient who underwent surgical rhinoplasty after NSR. This technique also ensures that the minimum required volume of product is used, which can reduce complications.

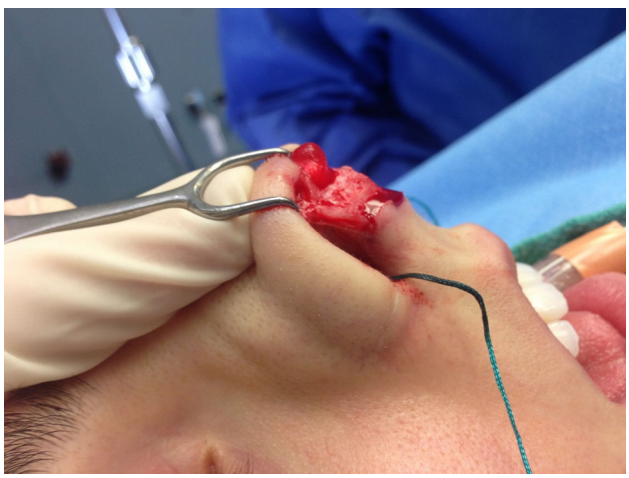

Fig. 10 Location of filler in nasal tip in patient who underwent open rhinoplasty after NSR

The Ascending Technique

With this thought process, we designed our ascending technique to target four injection sites in sequence: tip, base, dorsum and radix. Any point was eliminated if deemed unnecessary. The tip was first injected akin to a cap graft to set the desired projection and narrow the tip appropriately. The base was then injected with a bolus that acts as a pedestal for the medial crura, thereby increasing rotation to the desired level. Next, the dorsum was addressed in an ascending manner. First, the supratip break was addressed, and then, the dorsum raised appropriately. In a low dorsum, this was relatively straightforward. In the presence of a dorsal hump, injection was done above and below the hump to achieve a straight profile. Finally, the radix was augmented as needed, while maintaining safety. The most common regions injected were the tip (95%) and dorsum (83%).

The most important aspect of the injection process was the interplay of ratios and aesthetics. Even though we are adding filler material and increasing the volume of the nose, oftentimes this led to the nose appearing to decrease in size. This was especially true when raising the dorsum to the level of a naturally over-projected tip, or when addressing a dorsal hump. Any one aspect of the nose being imbalanced gives the appearance of a prominent, unaesthetic nose, whereas if all the components of the nose are in proportion to each other, the nose appears less prominent and more aesthetic. Our high satisfaction rate over 2130 patients validates the efficacy of this technique.

Needles vs Cannulas

In the literature we reviewed, there is no consensus on the use of needles vs cannulas. Bravo et al. described inserting a cannula from the nasal tip and moving it superiorly till the rhinion for injection. [12] However, Jung et al. in their cadaveric study showed that it was preferable to use a needle for direct injection rather than a cannula from a distant point. They found that a direct needle was more likely to reach the desired plane for injection. A cannula inserted from a distant site such as the tip had a propensity to inject more superficially than desired. [15] Bertossi et al. also preferred needles over cannulas in their study [18].

For these reasons, we also prefer the use of needles over cannulas. Cannulas were particularly challenging when trying to inject on the dorsum, after being introduced from the tip. The cannula can be a little difficult to manoeuvre and has a tendency to tent superficially over a dorsal hump. This increases the risk of injecting more superficially than desired. Figure 11 shows a case of skin necrosis seen after filler injection by cannula seen by the senior author.

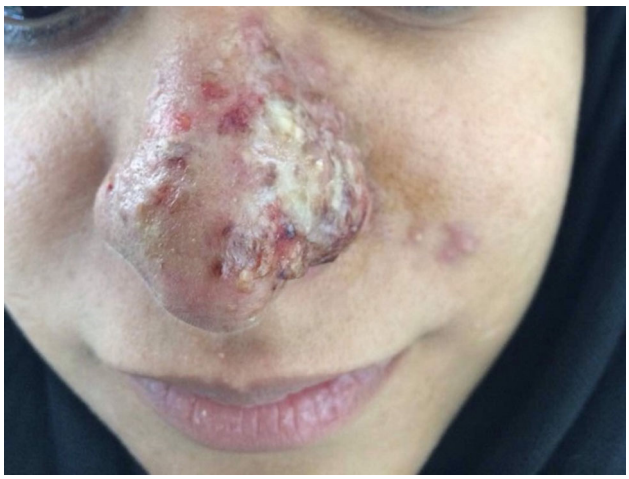

Fig. 11 Nasal skin necrosis with cannula filler injection

Injection Safety

Several techniques have been described to improve injection safety in NSR. Based on the anatomy described above, to inject safely in the nose, one must minimize the risk of intraarterial injection and minimize the risk of retrograde flow. Segreto et al. [17] described the 'pinch-push-pull' manoeuvre, which consists of compressing the soft tissue and vessels locally at the site of injection.

To minimize the chance of intraarterial injection, we inject in the midline and on the periosteum/perichondrium, thereby staying the least vascular plane. We also maintain pressure over the supraorbital and supratrochlear vessels with the non-dominant hand during high dorsum/radix injection. This pressure we believe helps prevent retrograde flow of filler material into the internal carotid system in the event of inadvertent intraarterial cannulation.

Complications

There have been four case reports of unilateral blindness (with or without oculomotor palsy) associated with filler rhinoplasty. Three case reports have described skin necrosis. [19–22] All of these were with HA fillers with the exception of one case of blindness which was with calcium hydroxyapatite. Our series was devoid of any serious complications. Three patients had redness over the tip post-injection which resolved spontaneously without any intervention. [23–25] We believe this may have been caused by external compression of small vessels in the restricted area of the tip, rather than intravascular occlusion.

Precautions

However, these reports highlight the fact that this is not a procedure to be taken lightly. Precautions include

- Always withdrawing before injecting
- Injecting without pressure
- Injecting small boluses
- Staying in the midline and staying deep
- Keeping emergency protocol on standby

It is advisable for novice injectors to avoid this procedure until they have gained more experience in less risky areas.

Other Findings

We found that all of our patients expressed high satisfaction with the results and 62 percent repeated the procedure after a year. We also found that 30 percent of our patients went on to have a surgical rhinoplasty by the senior author. We divide these patients into two groups. The first group of patients were initially against a surgical procedure, but opted for surgery as a permanent alternative after liking the result of NSR. The second group of patients were considering surgery and underwent a temporary filler rhinoplasty to decide whether they would like the result, prior to committing to surgery.

Limitations

This study is limited by being performed by a single practitioner. However, the large cohort of patients and long duration of the study validate the efficacy of this technique.

Conclusions

Non-surgical rhinoplasty is a highly gratifying procedure with growing popularity. It gives immediate results, with minimal to no downtime, with a high degree of precision. We describe one of the largest published case series of filler rhinoplasty over the longest duration of 14 years. Our ascending technique describes injecting the tip first and then injecting the dorsum. We believe this technique is ideal to deliver a precise result with minimal product and errors. It is at the same time essential to recognize that this procedure has potential for complications when done by the wrong hands. It is best done by experienced practitioners with due diligence in every case.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest to disclose.

Human or Animal Rights This article does not contain any studies with human participants or animals performed by any of the authors.

References

1. Singh P, Vijayan R, Nikkhah D (2018) Filler rhinoplasty: evidence, outcomes, and complications. Aesthet Surg J 38(11):NP165–NP167
2. East C, Kwame I, Hannan SA (2016) Revision rhinoplasty: what can we learn from error patterns? An analysis of revision surgery. Facial Plast Surg 32(4):409–415
3. Robati RM, Moeineddin F, Almasi-Nasrabadi M (2018) The risk of skin necrosis following hyaluronic acid filler injection in patients with a history of cosmetic rhinoplasty. Aesthet Surg J 38(8):883–888
4. Rauso R, Colella G, Zerbinati N, Salti G (2017) Safety and early satisfaction assessment of patients seeking nonsurgical rhinoplasty with filler. J Cutan Aesthet Surg 10(4):207–214
5. Moon HJ (2018) Injection rhinoplasty using filler. Facial Plast Surg Clin North Am 26(3):323–330
6. Kurkjian TJ, Ahmad J, Rohrich RJ (2014) Soft tissue fillers in rhinoplasty. Plast Reconstr Surg 133(2):121–126
7. Bray D, Hopkins C, Roberts DN (2010) Injection rhinoplasty: non-surgical nasal augmentation and correction of post-rhinoplasty contour asymmetries with hyaluronic acid: how we do it. Clin Otolaryngol 35(3):227–230
8. Rivkin A (2014) A prospective study of non-surgical primary rhinoplasty using a polymethylmethacrylate injectable implant. Dermatol Surg 40(3):305–313
9. Schuster B (2015) Injection rhinoplasty with hyaluronic acid and calcium hydroxyapatite: a retrospective survey investigating outcome and complication rates. Facial Plast Surg. 31(3):301–307
10. Liew S, Scamp T, de Maio M, Halstead M, Johnston N, Silberberg M, Rogers JD (2016) Efficacy and safety of a hyaluronic acid filler to correct aesthetically detracting or deficient features of the asian nose: a prospective, open-label long-term study. Aesthet Surg J 36(7):760–772
11. Harb A, Brewster CT (2020) The nonsurgical rhinoplasty: a retrospective review of 5000 treatments. Plast Reconstr Surg 145(3):661–667
12. Bravo BSF, Bravo LG, Mariano Da Rocha C, De Souza SB, Lopes FL, Totti J (2018) Evaluation and proportion in nasal filling with hyaluronic acid. J Clin Aesthet Dermatol 11(4):36–40
13. Jung GS, Chu SG, Lee JW, Chung HY, Yang JD, Cho BC, Oh JW, Choi KY (2019) A safer non-surgical filler augmentation rhinoplasty based on the anatomy of the nose. Aesthet Plast Surg 43(2):447–452
14. Tansatit T, Moon HJ, Rungsawang C, Jitaree B, Uruwan S, Apinuntrum P, Phetudom T (2016) Safe planes for injection rhinoplasty: a histological analysis of midline longitudinal sections of the asian nose. Aesthet Plast Surg 40(2):236–244
15. Sundaram H, Voigts B, Beer K, Meland M (2010) Comparison of the rheological properties of viscosity and elasticity in two categories of soft tissue fillers: calcium hydroxylapatite and hyaluronic acid. Dermatol Surg 36(Suppl 3):1859–1865
16. Thomas WW, Bucky L, Friedman O (2016) Injectables in the nose: facts and controversies. Facial Plast Surg Clin North Am 24(3):379–389
17. Segreto F, Marangi GF, Cerbone V, Alessandri-Bonetti M, Caldaria E, Persichetti P (2019) Nonsurgical rhinoplasty: a graft-based technique. Plast Reconstr Surg Glob Open 7(6):e2241

18. Bertossi D, Lanaro L, Dorelan S, Johanssen K, Nocini P (2019) Nonsurgical rhinoplasty: nasal grid analysis and nasal injecting protocol. Plast Reconstr Surg 143(2):428–439
19. Cohen E, Yatziv Y, Leibovitch I, Kesler A, Cnaan RB, Klein A, Goldenberg D, Habot-Wilner Z (2016) A case report of ophthalmic artery emboli secondary to Calcium Hydroxylapatite filler injection for nose augmentation- long-term outcome. BMC Ophthalmol 8(16):98
20. Kim EG, Eom TK, Kang SJ (2014) Severe visual loss and cerebral infarction after injection of hyaluronic acid gel. J Craniofac Surg 25(2):684–686
21. Schelke LW, Fick M, van Rijn LJ, Decates T, Velthuis PJ, Niessen F (2017) Unilateral blindness following a non-surgical rhinoplasty with filler. Ned Tijdschr Geneeskd 161:D1246
22. Sung MS, Kim HG, Woo KI, Kim YD (2010) Ocular ischemia and ischemic oculomotor nerve palsy after vascular embolization of injectable calcium hydroxylapatite filler. Ophthalmic Plast Reconstr Surg 26(4):289–291
23. Chen Q, Liu Y, Fan D (2016) Serious vascular complications after nonsurgical rhinoplasty: a case report. Plast Reconstr Surg Glob Open 4(4):e683
24. Fan X, Yin Y, Wang S, Li T, Xue P, Yang Q, Ma Q (2016) Clinical assessment of the safety and effectiveness of nonablative fractional laser combined with transdermal delivery of botulinum toxin a in treating periocular wrinkles. Plast Reconstr Surg Glob Open 4(8):e1004
25. Lee JI, Kang SJ, Sun H (2017) Skin necrosis with oculomotor nerve palsy due to a hyaluronic acid filler injection. Arch Plast Surg 44(4):340–343