

NASAL VOLUMETRIC REMODELLING WITH THE AID OF A NEW, STABILISED HYALURONIC ACID DERMAL FILLER

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ABSTRACT

Dermal fillers around the nose have become particularly popular among patients due to the minimally invasive aspect of these corrections. Nevertheless, the area of interest is particularly vascularised and prone to potentially devastating ischaemic complications. Therefore, technical details are crucial for achieving good aesthetic outcomes in safety. The author presents his experience with the use of a new, stabilised hyaluronic acid dermal filler (Decoria Essence, Bohus BioTech AB, Strömstad, Sweden), as well as the highlights and tips of his technique.

Keywords: Nasal augmentation, rhinofiller, medical rhinoplasty, hyaluronic acid, cannula, technique.

INTRODUCTION

Medical rhinoplasty was first described by Braccini and Dohan Ehrenfest in 2008.¹ The concept, although highly polemic and refused by rhinoplasty surgeons at its onset, developed exponentially among aesthetic patients due to its minimally invasive characteristics, with minimal or no downtime and pleasing aesthetic improvements. The term ‘medical rhinoplasty’ or ‘rhinofiller’ is defined as the application of dermal fillers in the external or internal nasal area to modify or improve aesthetics or functionality. It is especially suitable for patients with minor aesthetic or functional concerns that are refractory to surgery.

The procedure is currently a frequent request in aesthetic practice, and many physicians perform it systematically. Nevertheless, it should be considered that it is an advanced technique and should only be attempted by expert practitioners due to the potential for devastating vascular complications. Local anatomical knowledge and advanced technical skills are required to achieve successful and safe corrections.

MATERIALS AND METHODS

Private aesthetic patients requesting medical rhinoplasty were recruited on a first-come basis between September 2014 and July 2015. Exclusion criteria included severe nasal airway impairment, permanent filler in the area, history of ischaemic/thrombotic events or known hypercoagulability, local infection, or recent trauma. Nasal analysis was performed clinically and photographically. Areas of potential correction included aesthetic dorsal lines, dorsum, minor hump camouflage, radix enhancement, tip rotation and projection, and base augmentation (Figure 1).

In each case, a morphing simulation was created using a computer program (Crisalix Virtual Aesthetics, 3D software, Swiss Federal Institute of Technology, Lausanne, Switzerland) before treatment in order to give the patients an indication of the post-treatment outcomes, explain the procedure, and establish common goals. In addition, specific, informed consent was properly discussed and obtained.

A new, stabilised hyaluronic acid (HA) filler (Decoria Essence, Bohus BioTech AB, Strömstad, Sweden)

was used for corrections. This new Decoria Proprietary Spherification technology dermal filler enhances performance by combining spherically shaped particles with low levels of crosslinking, in contrast to other HA fillers which are normally composed of rhombus-shaped particles with a high level of crosslinking. The spheres result in a smooth product with high biocompatibility compared with traditional products composed of rhombus-shaped particles. All other parameters are equal, which makes Decoria easy to inject and provides an even result with low levels of immediate reactions and long-term adverse events (AEs), and no oedema which is particularly important in the nasal region. Due to the controlled and narrow size distribution of the particles, Decoria is also a more cohesive product that stays in place compared with so-called 'monophasic' products. The particles are tissue-customised, which means that a specific Decoria product is available for a specific skin depth and indication type.

Treatments were performed under local anaesthetic (lidocaine intradermal vesicles applied using a 0.3 mL syringe with a 32 G needle) with the aid of a 25 G (0.5 mm) × 4 cm blunt-tip, disposable cannula, Tulip GEMS™ SuperLuerLok Injector (Tulip Medical, CA, USA). The cannulae were manually bent, maintaining sterility at all times, in order to obtain a better compliance of shapes and silhouette

within the nasal area. The distribution of material was performed as required to follow the treatment plan. Refinements were carried out sporadically in the tip through needle infiltration and with extreme care. The specific pattern of anaesthetic peripheral blocks and filler infiltration is shown in **Figure 2**.

A satisfaction questionnaire with a 5-point scale was applied at follow-up visits in order to objectivise the outcome and grade it as either: Unsatisfactory, Poor, Average, Satisfactory, or Outstanding.

RESULTS

A total of 58 patients (38 females and 20 males) were treated between September 2014 and July 2015 in a private-practice setting on a first-come basis. The mean age of patients undergoing correction was 35 years (range: 25–53). A previous rhinoplasty had been performed in 30% of the patients, with the remaining 70% undergoing a primary correction. The aesthetic concerns of the patients undergoing a primary correction were: minor hump and base hypoposition (65%), asymmetrical dorsal aesthetic lines (15%), nasal anti-ageing (10%), tip correction (5%), and 'other' (5%). The aesthetic concerns of the patients who had a previous rhinoplasty were: dorsum unevenness (40%), dorsum asymmetry (30%), tip defects (20%), and 'other' (10%). The mean product volume used was 0.8 mL (range: 0.6–2.0 mL). A maximum of 1 mL was established per session.

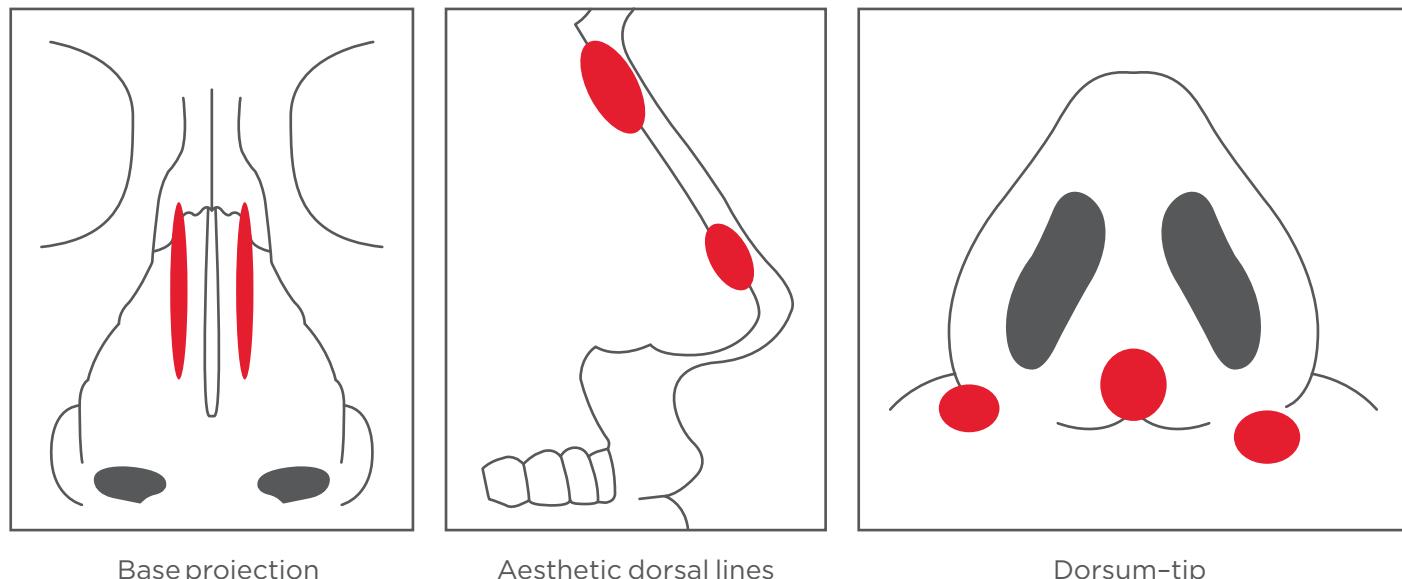


Figure 1: Nasal areas for potential correction with fillers.

Modified from Rohrich RJ et al. (eds.), *Dallas Rhinoplasty: Nasal Surgery by the Masters* (2014) 3rd edition, Boca Raton: CRC press.

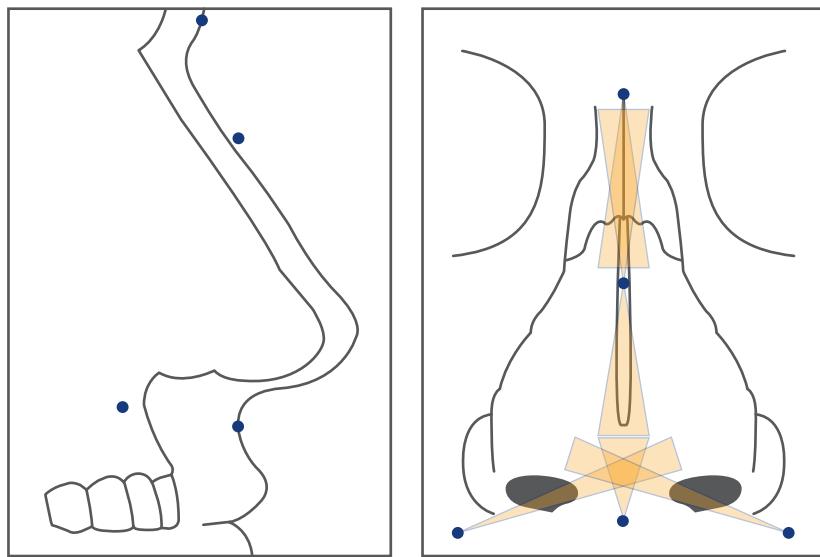


Figure 2: Anaesthetic peri-spherical vesicles (blue dots) and infiltration patterns (orange triangles).

If the expected correction was not achieved after one session, further retouches were delayed until a follow-up visit after 15 days.

Objective reduction in dorsal hump, increase in tip projection, and columella labial angle (CLA) was improved in >85% of cases. The mean increase in CLA was 10° (range: 5–15). Follow-up was carried out up to 11 months (range: 3–11). Fewer than 5% of cases required successive corrections in order to maintain aesthetic improvements during the study period. An example of the aesthetic improvement is shown in [Figure 3](#).

The complication rate was low and included haematoma (2%), under-correction (15%), and minor swelling and bruising (10%). The dermal filler showed excellent biocompatibility, with scarce recruitment of fluid after treatments. This fact may be of fundamental importance to avoid indirect vascular compromise and mechanical obstruction. No vascular complications were observed. According to the follow-up evaluation forms, 97% of the patients found the result of their treatment to be either ‘Satisfactory’ or ‘Outstanding’.

DISCUSSION AND CONCLUSIONS

Rhinofiller is an infiltration of a dermal filler to modify external or internal nasal structures for aesthetic or functional purposes. Since its appearance in 2008,¹ many different temporary^{2–5} or permanent⁶ substances have been used to achieve the desired corrections. Successful

application presupposes an adequate anatomical knowledge of the related structures. The nasal area is comprised of different, interacting tissues, such as the skin, subcutaneous tissues, muscle, bone, cartilage, and mucosa, which come together to form a normal, functional, and aesthetically pleasing nose. To make things more complicated, there is also a vascular anatomy formed by two main circuits: the supratrochlear and dorsal arteries and the facial circuit that includes the superior labial and angular artery, all of which must be anastomosed in the tip. This has been the subject of recent interest and study because it is believed that a proper technique and anatomical knowledge is of prime importance in order to avoid vascular complications.^{7–9}

Facial vascular complications were first described in 1991 after collagen injections in the glabellar area.¹⁰ The reported incidence of ‘Nicolau syndrome’ or embolia cutis medicamentosa (ECM) following glabellar treatments is 9/10,000 procedures (0.09%). The known risk factors associated with this catastrophic event are: a high syringe-piston pressure, a highly vascularised territory, and previously traumatised tissue. The first of these factors can be mitigated using fluid materials with low viscosity. Unfortunately, the entire facial region, and especially the nasal area, is considered highly vascularised and many reports of paranasal vascular complications have been published, which vary from mild symptoms of pain and skin-colour changes to necrosis and even bilateral blindness.^{11–19} The pathophysiology of

ECM is an intravascular injection that advances in a retrograde mode to a distant area and, through changes in blood pressure, arrives at a distant vessel and causes a vascular complication. The resulting symptoms vary according to the physiology of the vessel that is compromised: affliction of arteries leads to pallor whereas occlusion of veins manifests as livedo reticularis.

According to the author's experience, there is a second mechanism of vascular compromise in the nose known as 'compartmental syndrome'. Due to the low elasticity of the nasal skin (especially after surgical rhinoplasty), there is a chance of producing indirect vascular compromise due to mechanical obstruction when large amounts of filler are positioned, even in the absence of intravascular injection. The former, together with the altered anatomy and possible iatrogenic vascular damage, make these corrections particularly tricky in this patient setting.

Vascular complications can range from mild to severe and therefore prompt recognition and treatment are crucial. Oral aspirin, nitrate creams 2%, heat, massages, and intralesional hyaluronidase have all been proven to be beneficial.²⁰ The author has also used intralesional heparin mesotherapy with good results (unpublished observations). In severe, unresponsive cases, prostaglandin E1 (alprostadil) treatment can sometimes limit the

extent of the damage.²¹ For remaining scar tissue, occasionally complex reconstruction procedures are necessary,^{22,23} although the recent use of stem cells has shown promising results.²⁴

All of the above have determined nasal augmentation with dermal fillers to be particularly challenging, and mastery of the correct technique is of the utmost importance in order to achieve good results and reduce the incidence of adverse reactions. Important factors to consider include:

- Patient selection: proper patient selection is vital in order to achieve a good outcome. Rule out individuals with unrealistic expectations and treat post-rhinoplasty patients with extreme care.
- Material: a good technique begins with selection of the correct material. Only temporary or autologous materials (fat) should be used in the nose. Among temporary materials, HA is the best option because it causes no fibrotic changes in the subcutaneous tissue, such as those which can occur with calcium hydroxyapatite. Moderate-viscosity HA is preferred due to a lower piston pressure in the syringe. In the present study, Decoria Essence proved to be a good product for nasal augmentation in terms of aesthetic improvement, patient compliance, biocompatibility, and durability.

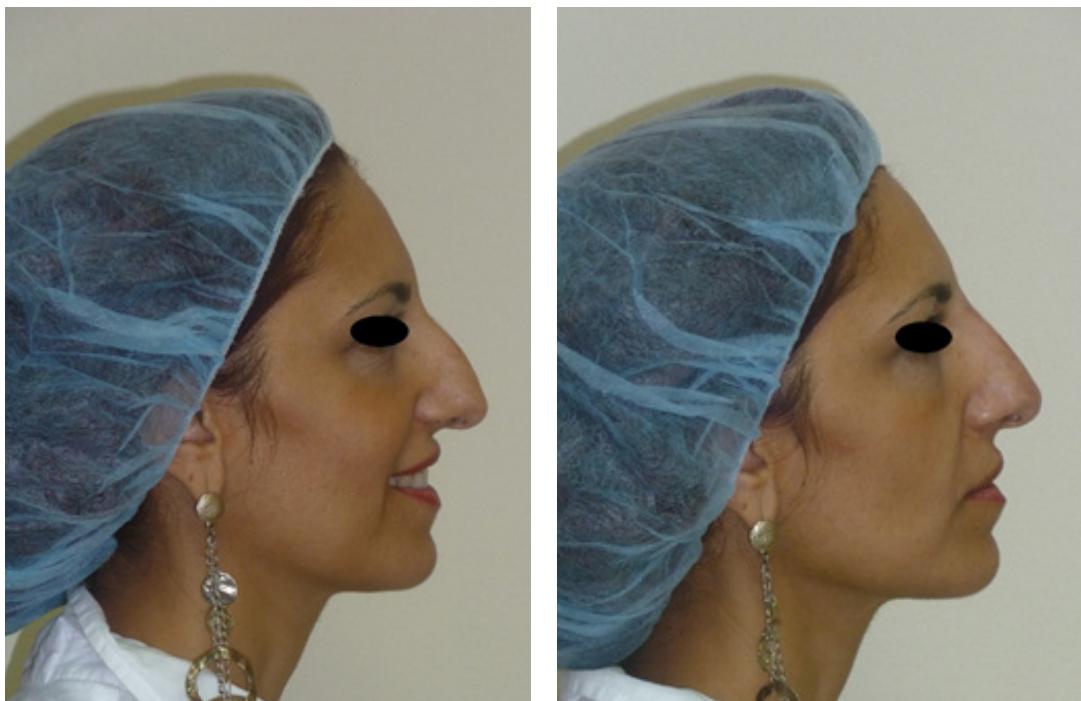


Figure 3: Lateral view before and after treatment.

- Correct amount of material: never exceed the correct quantity of filler used in the nose. It is always better to under-correct and then repeat as needed. A good safety measure is to stay within 1 mL of filler per session. Remember that the pressure of the material can induce vascular problems even without being intravascular. Place the fingers to position and maintain the product in the target area to avoid migration. Small amounts of material should be placed using low infiltrative pressure and few passes in a retrograde infiltration mode.
- Cryotherapy: it is always wise to favour vasoconstriction in order to limit bruising and oedema and reduce intravascular compromise.
- Cannulae, manually curved. The use ofatraumatic cannulae permits gentle dissection of the tissues, reduces the trauma and risks of intravascular injection, and delivers the material through a laminar flux that guarantees evenness. The manually curved feature allows for perfect shape compatibility with the nose dorsum. The use of local anaesthetic vesicles and needle skin penetration prior to cannula entry limits pain, trauma, and vascular compromise.
- Needles: extreme caution should be used when injecting with needles around the nose; their use should be limited to retouches or refinements and only by very experienced physicians. Perform tunnels (visible entry and exit points created with the needle being used) and allow material exit if needed. The most risky areas are the tip, glabella, canine fossa, and columellar base. Avoid bolus techniques in these regions and inject only when 'coming out'. It is preferable to use medium-sized needles and inject into the deep or intermediate plane. Prior aspiration is not useful.
- Improve, do not cancel or attempt a perfect outcome: this technique should be considered part of the armamentarium of every aesthetic surgeon, but not used as a single instrument. Whenever we want to completely correct a surgical deformity with fillers we get into excess and possible complications.
- Planning and discussion of potential complications is essential (proper informed consent): very frequently, patients are ill-informed about this procedure and have often read that it is extremely easy and free of risks. Establish a good relationship based on truth and trust with your patient. Morphing software can be of great help in this phase to help communicate with patients and establish common goals. Under-promise and over-deliver.
- Analyse CLA: analysis of this feature allows objectivisation of the outcome and even the most critical patients will potentially be able to appreciate the improvement.
- Available kit for potential ECM: If you intend to treat the nose with dermal fillers, you should be prepared to handle the complications as well.

The use of dermal fillers around the nose, although an advanced technique with potentially severe AEs, is a powerful tool that can be used with a great deal of satisfaction and safety for the benefit of patients who wish to achieve aesthetic or functional improvements without a surgical procedure. The risks and benefits should always be considered and discussed, and complications should be prevented and promptly treated if necessary.

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