

# Rhinoplasties by injection

Frédéric Braccini MD and David M. Dohan Ehrenfest MD discuss how fillers and botulinum toxins can create an aesthetically pleasing result without patients having to undergo surgery

**T**he traditional treatments of deformities of the nose are surgical. But with the advent of fillers and botulinum toxins, non-invasive alternatives have been devised that are particularly appropriate for patients with small imperfections, where a surgical intervention can be avoided.

Medical rhinoplasty rests on controlling muscular activity using botulinum toxin and smoothing imperfections with a filler. It can renovate a growing, old nose and can provide a provisional correction before surgical installation of a cartilaginous graft, or a lipostucture.

Medical rhinoplasty is subtle but still requires replanning of the face for a good end result. It is necessary to consider the nose in its environment—that is, its relationship with the face, lips, chin and neck. Any intervention must respect ratios of proportion: it is not recommended to modify a nose without an overall evaluation of the profile.

## Fillers

The first phase of medical rhinoplasty is the injection of fillers. Large noses constitute the most frequent cases. Post-traumatic defects are definitely more delicate to manage because they are very diverse, but the osseous depressions without nasal

obstruction can be corrected with a filler. The defects related to ageing occur in the hardening of the features. The cutaneous fabrics of the nasal edge are refined, which raises “the aspect in arc paring” of the nasal edge.

The distension of the cartilaginous supports of the point associated with a resorption with the bone upper maxilla gives the impression of a closing of the nasolabial angle and a depression of the point of the nose. The handing-over in tension of subcutaneous fabric, associated with a replanning of the lobule and the possible treatment of the lip, have an effect of unquestionable renovation.

## Botulinum toxin

The control of facial wrinkles using botulinum toxin is a classic therapeutic approach, but its use on the muscles of the nose is more recent. Botulinum toxin in the muscles complements fillers.

The nasal musculature is a true strap that recovers the osteocartilaginous structures. It contributes directly to the dynamics of the point. The contraction of the muscles that recover the nose generates “useless wrinkles”—such as those arising from expressions of anger.

The nose is directed by a set of muscular balances. The pronunciation of certain



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words, a smile, or astonishment can cause the aspect of the nose to change—the bump or upper lip can be raised or the nose can widen.

Several groups of muscles play a role. Elevator muscles (procerus muscle, alaeque levator labii nasi muscle, or common elevator of the upper lip and the wing of the nose); muscle depressors (posterior dilating muscle of the nostrils, former dilating muscle, depressor muscle of the nasal septum); and compressing muscles (myrtiliform, transverse and minor compressing muscle). All these muscles are under the control of the facial nerve and are associated with the nasal surface system musculo-aponeurotic (SMAS).

Apart from the elevator muscles, the

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other elements of the nasal musculature are organised around the mobile nose to constitute the nasal valve.

By comparison, the “nasal dynamics of rest”, the tonicity of the dilating muscles, is more important than that of the constrictors. If one observes the action of these groups of muscles in the genesis of the wrinkles and the defects of the nose, several muscular complexes play a determining role.

By their coordinated contraction, the procerus muscle and the transverse muscle are responsible for the formation of “bunny lines” (contraction of the naso-frontal angle and transverse wrinkles of the osseous nose).

The elevator of the upper lip (levator labii superioris), which is integral to the smile, exerts a dilating action on the external nasal valve and the wing narinaire, and at the same time, a vertical rise of the side-part of the upper lip.

Similarly, the contraction of the depressor of the nasal septum, or depressor septi nasi, tends to shorten the upper lip and attract the point of the nose towards the upper lip. This action is particularly visible during the smile, where it closes the nasolabial angle and raises osteocartilaginous kyphosis. It is necessary to add to these muscles the activity of the corrugators, which by their contraction, will modify the definition of the naso-frontal angle and will vary the length of the nose

**Method**

In our study, carried out between January 2006 and January 2008, 85 patients undertook non-surgical rhinoplasty to correct aesthetic problems of the nasal

pyramid. The patients comprised 62 women and 23 men of whom 32 had primary rhinoplasties and 53 had secondary or final improvements. Treatment by fillers was administered in 58 cases, botulinum toxin type A was administered in 12 cases, and both procedures were combined in 15 cases. The fillers used were hyaluronic acid in 65 cases, hydroxyapatite of calcium in 11 cases, calcium phosphates in two cases, poly lactic acid L in five cases and polyacrylamide gel in two cases.

Asymmetries and depressions can be filled using fillers, enabling the nose to be



The corrugators, by their contraction, will modify the definition of the frontal angle naso and will vary the length of the nose

“carved” for harmony and volume. Many fillers are available. The choice of the product will depend on the patient and the practitioner’s personal preferences.

The subcutaneous injection of temporary fillers is done in a rather easy way. They mainly consist of the gel of strongly reticulated hyaluronic acid (Teosyal, Isogel, Hydrafil, Surgiderm, Perlane) of acid poly lactic (New Fill, Sculptra), or of gel containing hydroxyapatite of calcium (Radiesse) or calcium phosphates (Atlean).

We generally used hyaluronic acid. The

tolerance was excellent; no granuloma was noted. The results remained stable from 12 to 14 months, with a second injection in 53 cases. We observed a serious complication in one case, where an infection at the point of the nose sullied the immediate result. It was on a nose that had received a few operations, which was treated by multiple injections of Radiesse. After local care and an antibiotherapy, there no were cosmetic consequences in the long run.

Anaesthetic cream (Emla, for example) is not a necessity, but it brings a certain amount of comfort to the patient. The quantities injected are tiny. The technique of the injection rests on a simple and controlled gesture.

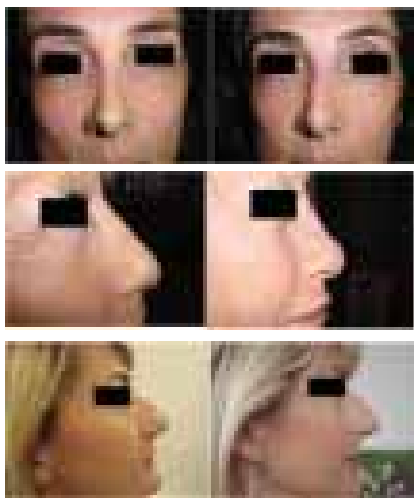
The injection is done in a linear way, throughout the exit of the needle. The implant must be injected slowly. On the edge, the injection is sometimes specific, but generally linear and median, with a needle in skew and gripping the skin to penetrate perpendicularly and more easily.

A light cutaneous massage after the injection allows a better diffusion of the product and a harmonisation of the implant. The result is visible immediately. When great quantities are injected (in one case, 1.3cc was injected), an anti-treatment inflammatory and antibiotic can be prescribed.

**Botulinum toxin**

This treatment should be implemented only after a precise dynamic study of the face, including smiling and breathing. It is essential to realise the muscles at work in the deformaties and to appreciate the muscular balance. There is not a single, specific quantity of the toxin for these injections, unlike other treatments. No particular prepara-

Non-surgical rhinoplasty can provide natural results compared with more aggressive approaches. It can also show patients the benefits of filling asymmetry



Before and after results of the nose using a combination of fillers and botulinum toxin

tion is necessary, but the usual counter-indications of botulinum toxin should be borne in mind.

We treated 27 patients, all of whom profited from the same treatment protocol. The botulinum toxin we used was Vistabel, and the total amount injected was 15U.

The injection is carried out using a sterile 32-gauge needle. Injection is into each of the three following sites: two injections of 2.5U in each elevator muscle common tangentially to the wing narinaire; 5U on the level of the nasion; 5 U on the level of the nasal spine divided into two planes, subcutaneous and deep, with the osseous contact.

This protocol of treatment makes it possible to erase the wrinkles of the dorsum and to slacken the naso-frontal angle, to decrease the print of the naso-genial furrow, to decrease the width of the line narinaire, to slacken (effect of lengthening) the upper lip, and to push up the point.

### Results

The results of an aesthetic intervention of medicine are always difficult to evaluate

in the absolute, because their perception remains very subjective. These results are all the more difficult to evaluate because the photographs cannot show the benefit of the dynamics.

Nevertheless, in this series of 85 cases, the index of satisfaction is higher than that obtained in the treatment of the other wrinkles and depressions of the face, apart from the effects of botulinum toxin.

The rate of complication is much reduced. We observed only one reversible complication with an infection on the point of a nose that had been operated on a number of times.

The duration of the results depends on the product used: four months for botulinum toxin, 12 to 14 months for the fillers, after two injections separated by three weeks to one month.

It was not possible to distinguish between basic differences in the results obtained with the types of fillers used, apart from their well-known intrinsic characteristics, for example duration of resorption and indication.

### Discussion

The medical approach of rhinoplasty relates to only the lightest anomalies of the nose, but such clinical situations are, in fact, the most common complaints of patients. This solution of aesthetic medicine can provide particularly natural results compared with more aggressive approaches. It can also serve to show patients the benefit of filling an asymmetry, which may lead them to undertake surgery for a permanent result.

The blocking of the muscle depressors of the point and the rise of the point that results from it correspond with the result obtained surgically.

The need for a regular maintenance of the treatment is the principal disadvantage of these techniques. Even if a permanent filler is possible, regular botulinum toxin injections may still be required for optimum results.

Yet, the main advantage is that a non-invasive rhinoplasty can be reversed. Moreover, it is possible with additional treatments to offer further corrections.

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