

ORIGINAL ARTICLE

"Bi-Bi" technique for lip augmentation: A retrospective study on 30 cases

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Email: contact@drsmarrito.com**Abstract**

Introduction: Lip augmentation is achieved mainly by using hyaluronic acid (HA) fillers. The injection procedures are performed either superficially or deeply with a needle or a cannula, and only one type of hyaluronic acid is used. The authors' objective was to evaluate the feasibility, safety, and satisfaction level of a procedure combining two anatomical injection plans, two injection modes (i.e., cannula and needle), and two types of hyaluronic acid fillers.

Method: The retrospective study included 30 patients who underwent the following procedure: Intramuscular retro-trace injections of Stylage M (Vivacy® Laboratories) were conducted through a 27-gauge cannula at the level of the upper and lower hemi-lip. Then, intradermal injections of Stylage Lips (Vivacy® Laboratories) using a 33-gauge needle were carried out on the entire lip border as well as the cupid's bow. During a post-injection follow-up, subjects were asked to evaluate satisfaction level and the effect of fillers over time. Elastic (G') and viscosity (G'') moduli of HA fillers were measured with a rheometer (AR2000, TA Instruments) prior to and after extrusion through a 33-gauge needle.

Results: Rheological assessment showed that passage through a 33-gauge needle did not alter the viscoelastic properties of HA fillers. After the clinical procedure, no side effects were observed except for standard post-treatment bruises and edema. No vascular incident occurred. Moreover, overall patient satisfaction was high (2.6/3) and there was a long-lasting perception of the effect of the filler.

Conclusion: The current study demonstrated that dissociating the anatomical zones of the lip during the injection procedure by means of different hyaluronic acids in the muscular and dermal planes would efficiently and safely provide both lip projection and fullness for a natural and lasting effect.

KEYWORDS

cannula, hyaluronic acid, lips, needle, Stylage

1 | INTRODUCTION

Lip augmentation is a procedure in increasingly popular demand whose market size has been estimated at USD 2.5 billion in

2021.¹ The cosmetic procedure consists of enhancing lip volume and shape using fillers such as autologous fat, implants, or hyaluronic acids.²⁻⁵ For this specific medical application, safe hyaluronic acid-based fillers have been successfully developed by

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manufacturers of injectables.⁶⁻⁹ In addition to the importance of filler quality and safety, lip enhancement procedures require a broad knowledge of overall lip anatomy to prevent any vascular incidents.⁹⁻¹³

Several injection techniques for hyaluronic acid fillers have been recently proposed. A six-step procedure has been described by Sarnoff et al., while Sahan et al. have reported on a four-point injection technique using a 27-gauge cannula as a safe and efficient protocol for lip embellishment.^{14,15} A “No-Touch” technique in which the mucosa is never violated during infiltration has been described by Surek et al.¹⁶ Moreover, Keramidis et al. have recently developed a stepwise Phi technique providing natural results. The procedure applies the golden ratio of 1.618 to identify the proper points for injection.¹⁷ Finally, Trevidic et al. have conducted an anatomical study of the “French kiss technique” that could possibly produce a marked natural lip-plumping effect with a low cohesivity hyaluronic acid filler.¹⁸

Lip enhancement can involve creating a more marked lip border and increasing the overall volume. Although achieving both lip projection and fullness requires treatment of distinct anatomical areas of the lips for different purposes, the cosmetic procedure has traditionally been performed using only one type of hyaluronic acid filler.

The authors propose to address lip enhancement by focusing on the lip anatomy in order to provide safe, 3D-customized, and lasting results. For this purpose, we developed the “Bi-Bi” Lips procedure, a bi-plan approach, which involves both intramuscular and dermal injections as well as bi-devices (cannula and needle) using two hyaluronic acid fillers. We report here on a retrospective study including 30 patients who underwent the “Bi-Bi” Lips procedure. The objectives were to validate the technical feasibility of such a procedure as well as assess its safety and efficacy.

2 | MATERIALS AND METHODS

2.1 | Rheological assessment

Injections were simulated by placing a 1 ml syringe on a traction bench (MultiTest 1-i, Mecmesin, Aimagues, France). Stylage M Lidocaine and Stylage Special Lips Lidocaine (Vivacy® Laboratories, Archamps, France) were connected to a 33-gauge x ½ needle (TSK Steriject, Noord-Brabant, Netherlands), and ejection forces were successively assessed at 13 mm/min, 50 mm/min, and 100 mm/min speeds. Extruded gels were then collected and analyzed with

a rheometer (AR2000, TA Instruments). G' and G'' curve profiles were recorded by means of a frequency scanning protocol at 1 Hz. Triplicates were carried out.

2.2 | Clinical assessment

The retrospective study included 30 patients (women) aged 20–73 years who came to our medical center between December 2018 and June 2021 for lip augmentation. Prior to treatment, a 30-min medical consultation was carried out in order to review medical history and explain the procedure. A consent form was signed by patients. A topical anesthetic (Emla, AstraZeneca) was applied at the junction of the upper and lower lips, as well as on the white lip.

2.3 | Step 1: injection of Stylage M with 27-gauge cannula

A pre-hole was initially made with a 30-gauge needle (TSK Steriject, Noord-Brabant, Netherlands) after which a 27-gauge cannula (TSK Steriject, Noord-Brabant, Netherlands) was introduced. The cannula was positioned at the philtral crest. An intramuscular retro-trace injection was thus performed with 0.5 ml Stylage M Lidocaine (Vivacy® Laboratories, Archamps, France). A similar procedure was performed on the lower lip with the cannula positioned at the middle of the lip, followed by intramuscular retro-trace injection of 0.5 ml Stylage M Lidocaine (Vivacy® Laboratories, Archamps, France). There was a 10-minute break prior to step 2 to allow the Lidocaine to act.

2.4 | Step 2: injection of Stylage lips with 33-gauge needle

Intradermal injections of Stylage Lips (0.5 ml, Vivacy® Laboratories) using a 33-gauge needle (TSK Steriject, Noord-Brabant, Netherlands) were carried out on the entire lip border as well as the cupid's bow. The injected areas were then slightly massaged to ensure an even distribution of the hyaluronic acid filler. Patients were asked to apply a refrigerated pack on the treated area at home. Follow-up was carried out at the medical clinic by the surgeon between 15–30 days after the injection procedure.

Additionally, we asked patients to answer the following questionnaire: (1) Generally speaking, are you not satisfied/satisfied/very satisfied with the lip injection?, (2) Did you experience any side

Filler	Rheological properties before extrusion		Rheological properties after extrusion	
	Mean G' (SD)	Mean G'' (SD)	Mean G' (SD)	Mean G'' (SD)
Stylage M lidocaine	199.00 (0.3)	38.23 (0.20)	189 (2.94)	37.66 (0.47)
Stylage special lips lidocaine	170.77 (2.74)	37.83 (0.38)	168.33 (1.69)	37 (0)

TABLE 1 G' and G'' modulus values obtained at 1 Hz. (n = 3, SD means standard deviation)

effects after the procedure?, (3) How would you rate the effect of fillers over time (poor/good/very good)?, (4) How long has the effect of the “Bi-Bi” Lips procedure lasted?, (5) Do you plan to repeat the “Bi-Bi” Lips procedure?

3 | RESULTS

3.1 | Rheological assessment

G' and G'' modulus values are presented in Table 1. The elastic modulus (G') refers to the ability of a gel to resist deformation: an HA filler with a large elastic modulus would be firm and strong. The viscosity modulus (G'') refers to its resistance to flow. As Table 1 shows, Stylage M and Stylage Lips exhibited similar G'' values but different elastic G' values. High mechanical shear stress applied to both fillers during the extrusion process with the 33-gauge needle did not impact their respective G' and G'' moduli. The rheology can be considered equivalent before and after injections. Hence, both filler products were structurally in compliance with the manufacturer specifications.

3.2 | Retrospective study

Twenty-eight patients out of 30 came to the follow-up consultation. No vascular accident was reported. The surgeon evaluated the aesthetic result (i.e., volume and shape) as “very good” for 21 patients, “good” for 5 patients, and “insufficient” for 2 patients. Besides, twenty-two patients out of 30 who received the “Bi-Bi” Lips procedure consented to answer the questionnaire. All the collected data can be found in the Appendix S1. In the days following the procedure, no side effects were observed except for post-injection edema and localized bruises (from 24 to 48h). Moreover, overall satisfaction was high with an average score of 2.6/3. Thirteen of the 22 patients planned to repeat the “Bi-Bi” Lips procedure in the future, while 3 patients were not sure (reasons

not known). Patients mainly assessed the effect of hyaluronic acid fillers over time as very good (10/22) or good (9/22) with a duration of 2 to 12 months. Results of “Bi-Bi” Lips procedure are shown in Figures 1–4.

4 | DISCUSSION

Lip augmentation can be technically achieved by using two hyaluronic acids with different rheological properties in one procedure. A 33-gauge needle was successfully employed for the first time to treat the lip border and cupid's bow while maintaining the viscoelastic properties of the filler. Our outcomes were in line with a previous study that demonstrated how the injection of monophasic HA fillers through small needles did not change their rheological properties as compared to biphasic HA fillers.¹⁹ In the current study, the 33-gauge needles were from TSK Steriject. As was already pointed out by Frank et al., who analyzed extrusion forces of various fillers in 27-gauge and 30-gauge needles, the physical characteristics of similar needles (i.e., same diameter) may differ significantly depending on the manufacturer. This suggests that not all 33-gauge needles might be suitable for the “Bi-Bi” Lips procedure, and that preliminary practical tests could be performed if a different brand is considered.²⁰

The injection of hyaluronic acid through a bi-plan approach (intramuscular followed by intradermal) made it possible to provide volume without compromising the fine work of the lip border.

Our initial intramuscular retro-injection made it possible to increase volume while preventing an excessive effect on the edge of the lip. Cadaveric dissections that have carried out as preliminary proof of concept (data not shown), revealed the fatty area at the level of the lip was hardly present which in accordance with Blandford et al. that reported HA gel filler augmentation of the vermillion border may result in filler location within the muscle and this injection plane seems safe regarding the location of the superior labial artery.²¹ In a recent study performed on 41 healthy volunteers, Cotofana et al. pointed out the most frequent location of labial arteries was the submucosal followed by intramuscular



FIGURE 1 First example: before (A) and after (B) photographs of “Bi-Bi” Lips procedure. Three quarters (A), front (B), and side (C) views



FIGURE 2 Second example: before (A) and after (B) photographs of “Bi-Bi” Lips procedure. Three quarters (A), front (B), and sides (C) views



FIGURE 3 Third example: before (A) and after (B) photographs of “Bi-Bi” Lips procedure. Three quarters (A), front (B), and sides (C) views

planes (58.5% and 36.2%, respectively).¹³ Since Stylage M has a high elastic modulus (G'), it is suitable for deep implantation and a volumizing effect. Moreover, starting the procedure with intramuscular injection of an HA filler that contains lidocaine made it possible to continue work on the superficial areas with reduced pain and increased patient comfort.²² Following this, the second intradermal injection of a softer hyaluronic acid produced a fine shape for the lip border and cupid's bow. The “Bi-Bi” Lips procedure provided a natural effect while avoiding “sausage” or “duck” lips resulting from overcorrection.

Cannulas are generally the preferred option compared with hypodermic needles, as they reduce pain and post-injection side effects (bleeding, bruising).²³ Moreover, cannulas are considered safer as they reduce the risk of perforated blood vessels and intra-arterial injection during the procedure.^{24,25} Although 25-gauge or larger cannulas were first recommended, since then the use of 27- and 30-gauge needles and cannulas has been shown to be efficient and safe for lip enhancement.^{16,17,26} In our “Bi-Bi” Lips procedure, a 27-gauge cannula was used for the deep intramuscular plane; however, a 25-gauge cannula can be a safer alternative for less experienced

practitioners. While a 33-gauge needle was employed for superficial injections in order to facilitate precise HA placement into the safer cutaneous planes of the lips. No adverse effects were observed after treatment except for standard secondary effects (e.g., bruises and swelling), indicating that the bi-plan approach with 2 HA fillers is a safe procedure.

Patients were mostly “satisfied” or “very satisfied” with the injection experience, final aspect, and lastingness. The Stylage Lips filler used to treat the lip border and cupid's bow is believed to resorb more rapidly than the Stylage M filler, which is more reticulated. However, the subjects experienced a prolonged effect of the “Bi-Bi” Lips procedure of up to 8–12 months. Thus, the combination of HA fillers might provide safe and long-lasting lip enhancement which is 3D-customized.

5 | CONCLUSION

The study showed that “Bi-Bi” Lips technique was safe and effective. The combination of two hyaluronic acid fillers with different



FIGURE 4 Fourth example: before (A) and after (B) after photographs of “Bi-Bi” Lips procedure. Three quarters (A), front (B), and side (C) views

degrees of reticulation, applied through bi-plan injections would enhance both the volume and shape of the lips with a high level of patient satisfaction with respect to the injection experience, aspect, and lastingness.

CONFLICT OF INTEREST

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICAL APPROVAL

The authors assure that for this manuscript, the following is fulfilled: This material is the authors' own original work, which has not been previously published elsewhere. The paper reflects the authors' own research and analysis in a truthful and complete manner. All authors have been personally and actively involved in substantial work leading to the paper and will take public responsibility for its content. The patients' consent has been obtained (patients' information and images).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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