Acta Scientific MEDICAL SCIENCES (ISSN: 2582-0931)

Volume 7 Issue 9 September 2023

Research Article

Understanding the Anatomy of the Lips and its Relationship with Needle and Cannula Filling Procedures

Adma Silva de Lima*

Dermatologist, Private Clinic - Brusque, Santa Catarina, Brazil

***Corresponding Author:** Adma Silva de Lima, Dermatologist, Private Clinic - Brusque, Santa Catarina, Brazil.

DOI: 10.31080/ASMS.2023.07.1655

Received: July 25, 2023

Published: August 09, 2023

Abstract

Introduction: Lip filling is one of the main procedures looked after on an medical injector's office, with a steadily increase over the years. Social media has had an impact on it, with patients seeking to look better in photographs and in online and offline in general. Patients often reach our clinics with ideas about how they would like their lips to be; either more volume, better shape, better contoured. We must then understand where we must treat the lips in order to achieve these results of better shape, volume and/or projection. In spite of that, studies about the deposition of the filler in different planes during injection, either with cannula or needle and its effects on the tissues are scarce.

Materials and Methods: A male cadaver was injected in 4 parts of its lips with different instruments as it follows: left superior with a 30 G needle; right superior with a 25G cannula entering on the vermillion border on the cupid's bow; left inferior with a 27G needle and right inferior with a 22 G cannula coming from the corner of the mouth. All the injections were directed towards the superficial subcutaneous layer (SSL), which is a thin layer between the submucosa and the orbicular oculi muscle and is the safest layer to inject since the labial arteries are usually located either in the deep subcutaneous layer or the intramuscular layer.

Results: On the left superior vermillion, with a superficial injection with a 30 G needle, using a small amount of product in each injection, we were able to achieve the correct layer and the product was all displaced there (Figure 1 - A). With a 25 G cannula, the product deposits remained between the superficial fat compartment and the superior part of orbicular oris muscle (Figure 1 - B). With the 27 G needle, which is a thicker needle, the product behave just as with cannula (Figure 1 - C). With a 22 G cannula coming from the corner of the mouth, injections were both located only superficially or in the superficial and intramuscular layers; nevertheless in the superficial injections the deposition of product produced a linear streak on the vermillion and did not integrated right away and the layer was more difficult to achieve (Figure 1 - D).

Discussion and Conclusion: Both needle and cannula might be used for filling lips. Nevertheless, the superficial subcutaneous layer is easier to achieve and maintain using a 30 G needle. With a cannula, as well as with larger needles, the correct plane might be harder to be found and there is a tendency to the product to be deposited both on the subcutaneous tissue and on the superficial fibers of the orbicular oris muscle at the same time.

Keywords: Needle; Lip Filling; Anatomy

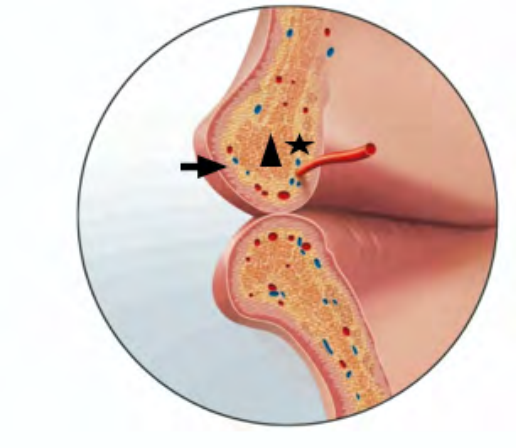

Figure 1: Lips anatomy. Thin arrow: superficial subcutaneous compartment between the dermis and the orbicularis iris muscle. Triangle: orbicularis oris muscle. Star: Deep subcutaneous compartment, located between the orbicularis oris muscle and the mucosa. The labial artery is most frequently found at the deep subcutaneous compartment, as shown in the figure.

Introduction

According to the Annual Plastic Surgery Statistical Reports, from the American Society of Plastic surgeons, 15,6 million cosmetic procedures were performed in the USA in 2020 and most of them - approximately 85% - were minimally-invasive cosmetic procedures. After botulinum toxin, soft fillers were the second most performed cosmetic procedures, accounting for 3,4 million procedures in 2020 [1].

Lip filling is one of the most sought-after treatments in aesthetic medicine. It is also one of the treatments with the higher probability of leading to disastrous results: besides arterial occlusion, the lips have specific anatomical features that must be respected in order to achieve the most beautiful results.

During the last few years the use of cannulas to increase safety in aesthetic procedures has been stabilished [2]. Although needles may bring results that are more precise, cannulas seem to be safer in some areas. But are there other differences? How does needle X cannula treatments behave on the lips? Are there differences in product spreading, plane, results? These are some of the questions this article aims to bring light to.

Material and Methods

A male cadaver with latex infusion was dissected in an anatomy laboratory located in the city of Balneário Camboriú - SC - Brazil. Superior and inferior lips were injected with a dyed blue gel with needles and cannula in order to verify product spreading, localization of the product, optimal plane of injection and its relationship with labial artery. The injections were performed in 4 parts of its lips with different instruments as following: left superior with a 30 G needle; right superior with a 25G cannula entering on the vermillion border on the cupid's bow; left inferior with a 27G needle and right inferior with a 22 G cannula coming from the corner of the mouth. All the injections were directed towards the superficial subcutaneous layer (SSL), which is a thin layer between the submucosa and the orbicular oculi muscle and is the safest layer to inject since the labial arteries are usually located either in the deep subcutaneous layer or the intramuscular layer.

Results

On the left superior vermillion, with a superficial injection with a 30 G needle, using a small amount of product in each injection, we were able to achieve the correct layer and the product was all displaced there (Figure 1 - A). With a 25 G cannula, the product deposits remained between the superficial fat compartment and the superior part of orbicular oris muscle (Figure 1 - B). With the 27 G needle, which is a thicker needle, the product behave just as with cannula (Figure 1 - C). With a 22 G cannula coming from the corner of the mouth, injections were both located only superficially or in the superficial and intramuscular layers; nevertheless in the superficial injections the deposition of product produced a linear streak on the vermillion and did not integrated right away and the layer was more difficult to achieve (Figure 1 - D).

Discussion

Proper placement and depth of injection determines the aesthetic and functional outcome in lip filling [3]. Nevertheless, very few articles address the issue whether we are using the demanded instruments and placing the products in the right plane in order to achieve the best results and very few practitioners are trained on this issue.

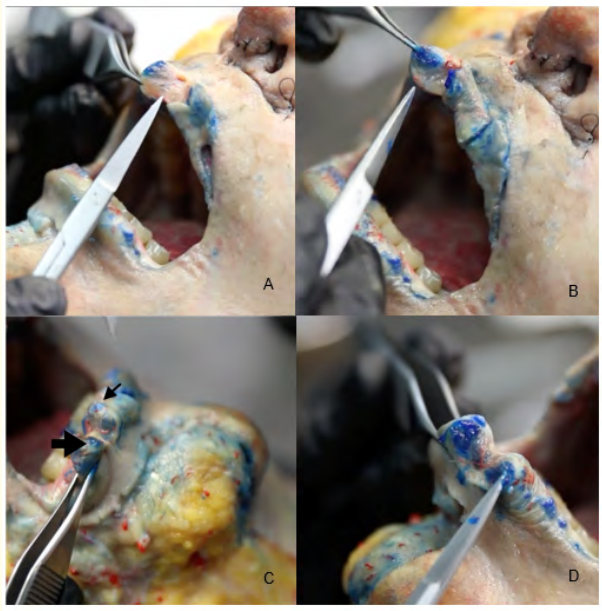

Figure 2: The differences between needle and cannula deposition of product on the lips in a cadaver aiming to place it very superficially. A: 30 G needle. Deposition of the product on the superficial subcutaneous layer. B: 25 G cannula entering the lips on the cupid's bow. Product deposition both on the superior fat compartment and on the muscle orbicularis oris muscle. C: 22 G cannula entering the lips on the mouth's corner. Deposition on the superficial subcutaneous layer (thin arrow) and both the superficial subcutaneous layer and the orbicularis iris muscle (thick arrow). D: 27 G needle: deposition of the product in both the intramuscular layer and superficial subcutaneous layer.

In the author's experience (ASL), placing the filler on the superficial subcutaneous fat primarily will improve the shape of the lips, creating more definition, specially in the peripheral borders [4]. Placing the filler in the intramuscular compartment primarily creates volume on the lips by expanding the muscle and the filler on the profound subcutaneous layer - where the labial artery usually resides - usually gives external projection to the lips (eversion of the lips) and some volume.

A study by Blandford., *et al*. [3] performed microcannula (27 G) and needle (30 G) injections on the vermillion border of the lips found that, by performing injection 1-2 mm deep on the cadaver's lips resulted in most of the product being deposit on the intramuscular compartment, specially on the microcannula group, with different degrees of intramuscular and superficial subcutaneous deposits in the 30 G needle group. Vent., *et al*. [5] studied the location of hyaluronic acid after performing the filling procedures with cannula mostly in the intramuscular compartment, both superficially and profound within the muscle. Ghanan., *et al*. [6] studied 12 different techniques with both needle and cannula in cadavers and noted that 58.3% using both needle and cannula were related to a potential intra-arterial injection because the product was injected deep inside the body of the lips. Procedures aiming for contouring were considered safer, as the product was positioned in the superficial subcutaneous plane.

The present study was performed in order to verify which instruments best deliver the filler in the correct plane so that pre visible results could be achieved with each technique. In the present study, a 30 G needle was more effective in delivering the product at the superficial fat compartment and it remained there. On this cadaver specimen, the superior labial artery was located on the profound subcutaneous layer and the product was displaced on a safe plane. With the 25 G cannula the product was displaced both in the superficial fat compartment and the superior part of the orbicular oris muscle. The superficial fat compartment of the lips is usually thin in thickness and it is postulated that the passage of the cannula itself may open a space that allows the filler to be delivered at these two regions. With a 22 G cannula entering on the side of the mouth, we could reach both the superficial and intramuscular plane; nevertheless the plane was harder to mantain. The 27 G needle, which is a thicker needle, deposited the product both in the intramuscular and superficial subcutaneous plane.

No product was detected on the profound fat compartment, as it was not the aim of the treatment. As the artery was located in this compartment, the procedures were considered safe for arterial compromise. Nevertheless, there are variations and the superior and inferior labial artery may be located at the superficial fat compartment, usually in the transition between the dry and wet mucosa. The autor advises to inspect this area on the search for pulsations and palpate the artery before doing filler procedures on the lips.

Conclusion

Both needle and cannula might be used for filling lips. Nevertheless, the superficial subcutaneous layer is easier to achieve and mantain using a 30 G needle. With a cannula, as well as with larger needles, the correct plane might be harder to be found and there is a tendency to the product to be deposited both on the superficial subcutaneous tissue and on the superficial fibers of the orbicular oris muscle at the same time, even when aiming to achieve the superficial subcutaneous compartment alone.

Bibliography

1. PLASTIC SURGERY STATISTICS REPORT. ASPS National Clearinghouse of Plastic Surgery Procedural Statistics.

2. van Loghem JAJ., *et al*. "Cannula Versus Sharp Needle for Placement of Soft Tissue Fillers: An Observational Cadaver Study". *Aesthetic Surgery Journal* 38.1 (2017): 73-88.

3. Blandford AD., *et al*. "Microanatomical Location of Hyaluronic Acid Gel Following Injection of the Upper Lip Vermillion Border: Comparison of Needle and Microcannula Injection Technique". *Ophthalmic Plastic and Reconstructive Surgery* 34.3 (2018): 296-299.

4. de Lima AS and Gubert M. "The Lips Shapes: A New Approach to Sculpt Beautiful Lips". *Journal of Clinical and Experimental Dermatology Research* 14 (2023): 639.

5. Vent J., *et al*. "Do you know where your fillers go? An ultrastructural investigation of the lips". *Clinical, Cosmetic and Investigational Dermatology* 7 (2014): 191-199.

6. Ghannam S., *et al*. "Treating the Lips and Its Anatomical Correlate in Respect to Vascular Compromise". *Facial Plastic Surgery* 35.2 (2019): 193-203.