Lip Augmentation

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KEYWORDS

• Lipofilling • Hyaluronic Acid fillers • Facial esthetic • Aging • Fat transfer • Fascia

KEY POINTS

- Smile reconstruction can be revolutionized by filler material for volume augmentation of lips.

INTRODUCTION

The procedure of facial rejuvenation, particularly lip augmentation, has become increasingly popular. To obtain optimal patient outcomes, a thorough understanding of perioral anatomy as well as the structural features that define the aging face is required.

Despite the fact that techniques and technology are constantly evolving, hyaluronic acid (HA) dermal fillers remain to be the most popular esthetic treatment. In some cases, a combination therapy involving neurotoxic and volume restoration produces better results. The best perioral and lip rejuvenation approach has the longest efficacy duration, the lowest complication rate, and the greatest esthetic results.[1]

Angular, radial, and vertical lines of the perioral lines are caused by genetics, intrinsic aging, sun exposure, and repetitive muscle twitching of the orbicularis oris. As a result, patients' needs in the treatment of this anatomic area can range from relatively simple lip enhancement to a holistic treatment with sequential correction of perioral wrinkles. For the regeneration of this area, a variety of materials have been described. Dermal fillers are currently the most popular and widely used lip enhancers, although there is still no consensus on the optimum material for filling soft tissue of the face, particularly the perioral region.[1–3]

Throughout history, several methods have been used to change one's look for spiritual reasons, as well as to comply to esthetic standards. The lips, as a distinguishing feature of the face, offer a one of great opportunity for facial esthetic enhancement. In medicine, there has been a paradigm toward preventative health and a desire to delay or even reverse the aging process. This study highlights perioral anatomy, describes aging of the lower face, and reviews procedures for perioral rejuvenation through volume restoration and muscle control while acknowledging that product technology, skill sets, and cultural ideals are constantly evolving.

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Lip Histology

When we observe and magnify the lip laterally by microscope, we have 3 portions histologically. The external portion is the skin lip. The medial portion is the vermilion border of lip (transitional zone), and the inner layer is labial mucosa. The skin area is covered by a thin, stratified squamous keratinized epithelium, the skin extends to the red margin, which forms the red zone of the lips, called transitional zone. As we acknowledged, the epithelium is thinner and covered by a keratinized squamous epithelium but less cornified than the epidermis that lacks hair follicles. The vermilion zone is lined by a thick keratinized, stratified squamous epithelium and hair follicles are lacking. The numerous, densely packed dermal papillae of the lamina propria allow blood vessels close access to the surface, imparting a red color to this zone. The inner surface of the lip is lined by the mucosal epithelium, a thick, moist stratified squamous epithelium; a stratum granulosum is absent. Minor salivary glands (labial glands) are located in the submucosa beneath the lamina propria. The minor salivary glands produce both serous and mucous secretions. Mucosal epithelium also lines the cheeks, floor of the mouth, and the ventral surface of the tongue. The minor salivary glands of the lip, also called labial glands, produce both serous and mucous secretions; their ducts empty into the vestibule of the oral cavity. The epithelium and surface of the inner lip lie above this image. These glands are located in the submucosa near the fibers forming the orbicularis oris muscle (**Fig. 1**).[4]

Perioral Anatomy

The epidermis, subcutaneous tissue, orbicularis oris muscle fibers, and mucosa are the layers of the lips. From the base of the nose to the mucosa inferiorly and to the nasolabial folds laterally, the upper lip extends. The lower lip is curvilinear, extending from the mucosa inferiorly to the mandible and laterally to the oral commissures.

The white roll, a raised patch of pale skin circumferential at the vermilion–cutaneous junction, highlights the vermilion border and considered as an essential landmark during lip augmentation. This elevation of the vermilion connects at a V-shaped dip in the center of the top lip to form the Cupid's bow.[1–4]

The philtral columns, which are generated from decussating fibers of the orbicularis oris muscle, are 2 elevated vertical pillars on the cutaneous upper lip. The philtrum is the ensuing midline depression. During augmentation treatments, these distinguishing features of the top lip should be preserved. The upper and lower lips are supplied by the superior and inferior labial arteries, which are branches of the facial artery. Deep

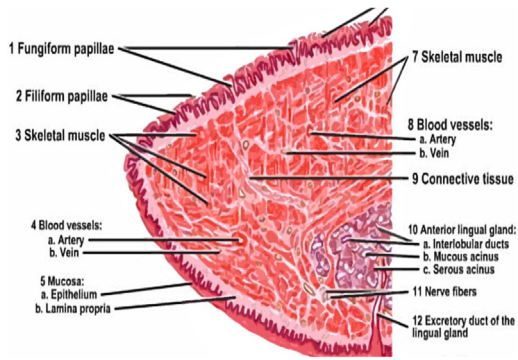

Fig. 1. Lip histology.

injection of the upper lip between the muscle layer and the mucosa can cause harm to the anastomotic arch of the superior labial artery; consequently, caution should be used in this location. Injections into the vermilion and lower lip can be done safely and without fear of vascular damage. The translucency of capillaries in the superficial papillae gives vermilion its red color. The dense sensory nerve network and capillary plexus at the papillae make the lip a highly vascular and sensitive tissue.

The Metric System

Using a specific caliper and the golden ratio as a reference, we devised our technique. As a compliment to Phidias, the sculptor and builder of the Parthenon and many other classical era Greek monuments, the golden ratio, or phi number, is symbolized by the Greek letter. The Phi number is an irrational number of the order 1.618033988 that is obtained when a line a + b is sectioned so that (a + b)/a = 1.618. It was first defined as the golden ratio by the Greek mathematician Euclid in the tenth of his 13 books of *Elements*. Evidence of its occurrence across a wide range of mathematical, biological, and natural systems has been recorded for millennia, based on the belief that it reflects great beauty.[5] It has also occurred in many artistic masterpieces and architectural wonders throughout history, such as Da Vinci's paintings and the Parthenon, and it is, briefly, an attempt to geometrically and mathematically express the enthralling mystery of beauty. We used this number in our method, despite its subjective nature, to identify the right injection spots.[1,5]

Lip Esthetics

A pronounced Cupid's bow, a well-defined vermillion border, upturned corners of the mouth, fullness in the center that fades out toward the mouth, symmetry between the left and right sides, philtrum length of 12 to 15 mm, a thinner upper lip protrusion compared with the larger lower lip, and a balanced upper and lower lip are the basic principles of ideal lips. The golden ratio, which is 1:1.6, is used to calculate the ideal upper lip to lower lip ratio in frontal view. However, lip esthetics alter over time, eras, and races; however, voluptuous lips with enhanced volume are also lovely and appealing.[6] In particular, the current ideal female-lip ratio in White women has just been discovered to be 1:1. To better understand what patients think to be the optimal lip ratio, we performed a survey in 2008 to compare their preferences to expert perspectives and use the results as a guiding tool during the patient–doctor consultation process.

Lip Enhancement and Contour

Definition

- It is essential to avoid product accumulation in any filler injection; hence, a retrograde linear threading approach is always preferred over a big bolus. It is usually done from the medial to the lateral side (5 mm laterally to the commissure), with each hemi-lips being checked for symmetry. We divide the upper lip into thirds and treat the central portion with injections along the philtrum lines through Cupid's bow, according to the no-touch technique.[7,8]

In fact, a simple lip enhancement can be properly treated with blunt cannulas, allowing for less invasiveness and damage when treating a big area. When a finer treatment is required, however, the use of a needle is almost required because it allows for a more uniform injection and helps with refinements and minor asymmetries. HA is a naturally occurring highly hydrophilic glycosaminoglycan polymer that was first isolated more than 70 years ago. Rooster combs, umbilical cord, vitreous fluid, tendons,

skin, and bacterial cultures are also common sources for HA purification. An average-sized human is made up of about 15 g of HA, which is largely present in the extracellular matrix of connective tissues and acts as the foundation for the dermis, fascia, and other tissues.

Every day, about a third of the HA in the human body is replaced. The enzyme hyaluronidase easily breaks down the naturally occurring molecule. As a result, chemical modification of these molecules through cross-linking is required to produce an effective filler. Cross-linking increases surface area and thus reduces the surface area available for degradation.[5]

The hydrophilic property of HA is critical to its clinical utility; 1 g of HA can bind 6 L of water. This property enables it to maintain the hydration of the intracellular matrix in which cells are structured, preserving tissue volume and supporting surrounding tissues. HA is also unique in that it has no antigenic specificity because it is not species-specific or tissue-specific. As a result, in clinical use, it has a very low risk of allergic reaction. The purification source and, more crucially, the size of the molecules in the HA products now available varies.[9,10]

This property, in particular, is responsible for each product's distinct characteristics. The "'cement" that holds the collagen "bricks" together has been described as HA products.[7,8]

Methods and Techniques

- Not just for assessing treatment benefits and potential adverse effects but also for medicolegal purposes, well-focused pretreatment images should be taken. Anteroposterior and lateral projections should be used, as well as static and dynamic (smiling and whistling) features, and any asymmetries should be appropriately assessed and addressed. Cleaning with an antibacterial solution is usually recommended.

Lipofilling by Fat Transfer

Alternative to artificial fillers and implants is using your own tissue for lip augmentation. Using your own tissue for lip augmentation is called autologous lip augmentation. Fat transfer is one type of autologous lip augmentation and is another great option for lip augmentation. Similar to lip fillers, fat transfer to the lips is an in-office procedure. Fat transfer to the lips is performed under local anesthesia.

During fat transfer to the lips, fat is harvested from abdomen (around the belly button), purified, and transferred into lips. Fat transfer to the lips takes about 60 to 90 minutes to perform. The patient can go home the day of the procedure. Lips augmented with fat stay plump for 5 years or longer. The complications of lipofilling of fat transfer are minimal and include bruising, swelling, pain, infection, necrosis, and calcification.[11,12]

Tissue Grafting (Fascia Grafting)

There is another type of autologous lip augmentation. In addition to using fat for lip augmentation, a piece of your own skin or dermis can be used for lip augmentation. During this type of autologous lip augmentation, skin is removed from the lower stomach area. Sometimes, a C-section scar can be resected and used for lip augmentation. Sometimes, the skin removed during a facelift can be used for lip augmentation [13].

After the skin is resected, the top layer of the skin (epidermis) is removed. The remaining piece of skin is a strip of dermis and is rolled into a cigar-like shape. This piece of dermis is then inserted into your lips. This type of autologous lip augmentation

is also an in-office procedure and can be performed under local anesthesia. The duration of the dermal transfer to lips procedure ranges from 60 to 90 minutes. The patient can go home the day of the procedure. Your lips should retain their shape and volume for 5 years or more.

Limitations

In general, most defects can be repaired, but smaller defects have a better chance of retaining function and form. If the defects are less than 2 to 3 cm, there is a better chance of having enough tissue in the surrounding area to reconstruct. Even when the defects are larger, the surgeon can still use the flaps to do reconstruction. If the defects become very large, the function and form that is acceptable in those situations is different than a smaller defect.

Adverse Effect or Side Effects

Because perfusion of the vessels and blood flow is crucial to the viability of any flap, people who are diabetic or smokers are at a higher risk for complications. Smokers can have a higher risk of complications such as flap necrosis. Fortunately, flaps and surgeries in the facial region are very rich in blood supply; hence, many of these flaps will still be successful. Patients who need any kind of reconstruction should stop smoking. They should also have their blood sugar under control if they are diabetic to lower the chance of getting an infection. Nutrition is important so patients should have adequate nutrition and adequate protein in order to heal their wounds.[11,12]

Injection Technique

- HA is the most often used dermal filler because it is regarded both safe and effective. We used HA with the following qualities in our patients: 3/6 cross-linking, 25 mg/g concentration.[13,14]
- The injection is made into the vermillion through the vermillion border when the goal is to restore volume. To avoid lip vessels, insert a 30-gauge needle at an oblique angle (30°) and no more than 2.5 mm deep at each specified point of the vermillion border. Bend the needle at 2.5 mm to keep the appropriate needle depth measure. Slowly move forward. Small boluses of 0.05 to 0.1 mL of HA are slowly injected at each needle's site, totaling 1 to 1.5 mL in both lips per session. The HA injection is done in a retrograde linear threading technique.
- The injection is done into the vermillion border in order to restore the shape. It is vital to avoid injecting into the white roll at this stage because the hydrophilic HA causes a blunted lip margin, which could be attributable to the area's distinct histologic properties. At a parallel angle, insert a 30-gauge needle at each specified position of the vermillion border. Because this delicate area of the lip is more prone to false outcomes, we strongly advise using only 0.02 to 0.4 mL of HA. Slowly injecting HA in a retrograde linear threading technique is done.
- Depending on the individual's anatomy, assess the lips for any asymmetry and inject 0.05 to 0.1 mL in the desired location if necessary.[9,10]

Normal-volume lips

- Although there is lovely volume (vermillion) and definition (vermillion border), patients are asking for a more projected vision. Injections into the vermillion are used to increase volume and correct any asymmetries. After 15 days, a reassessment is arranged, and if necessary, more volume is added. Each session should only contain 1 to 1.5 mL of HA (**Figs. 2** and **3**).

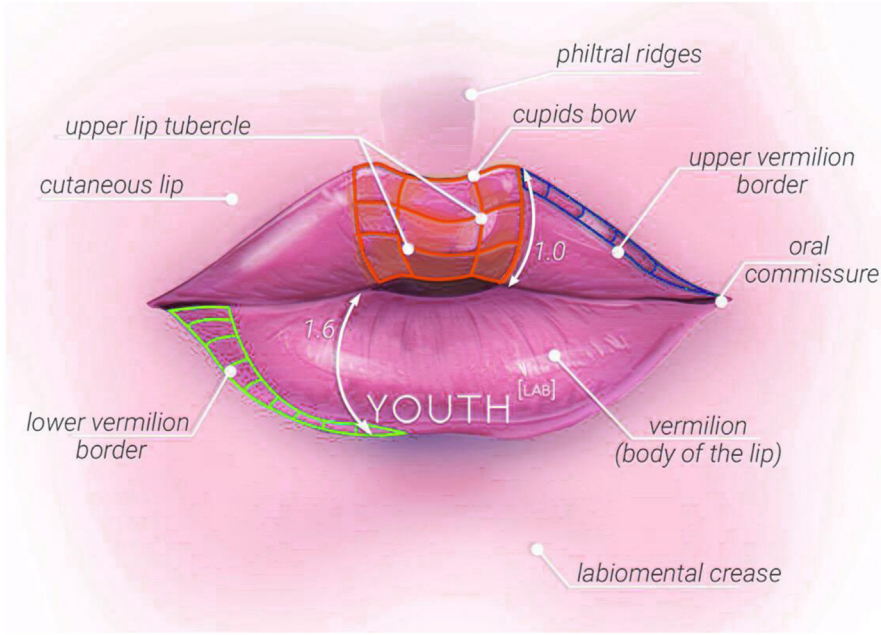

Fig. 2. Lip Anatomy: 8 zones of lip injection by the anatomy.

Thin lips

Patients with genetically acquired atrophic lips choose to have a gorgeous pout instead. The upper lip is commonly deficient in volume, with both lips and the lower lip being less common. The goal is to get the desired result while considering the expansion qualities of soft tissue. To do so, inject 0.5 to 1 mL of HA into the vermillion of the thinner lip in the first session to address the ratio. Inject 0.5 to 1 mL of HA into

Fig. 3. Lip filler (before and after of 1 syringe, normal volume lips).

both lips as soon as the desired ratio is achieved, usually in the second or even third session.

The sessions are spaced 30 days apart to allow the tissues to adapt to the HA placement and to continue until the desired volume is reached. If there are any asymmetries, we inject additional HA on the proper side of the lip to rectify them. The next stage is to define and shape the lips using the same step-by-step approach, injecting a moderate amount (0.02–0.4 mL) of HA into the vermillion border. After 15 days, reassess and, if necessary, add additional HA to achieve a better definition (**Figs. 4** and **5**).

Aged thin lips

Some aging indications include the absence of the vermillion border, soft tissue volume loss, upper lip lengthening, and vertical lines. These people want to seem younger. We like to correct the volume first by injecting HA into the vermillion, and then the shape by injecting HA into the vermillion border, similar to how we correct the volume in thin lips. Because lips have limited expansion qualities, the usage of 0.5 to 1 mL in each session, every 30 days, is critical. Aged lips, in contrast to thin lips, require less HA (up to 0.5 mL) per session, requiring more sessions to attain the required natural results. HA can also be injected into the upper lip's vertical lines as early as the first session. In terms of the longevity of the outcomes, we have found that after using 3 1 mL syringes, the intended results can endure for a long time, with the average period for a patient to return to our office to maintain the initial result being 12 to 18 months (**Figs. 6** and **7**).

Fig. 4. Normal lip volume and reshape the vermillion zone.

Fig. 5. Thin lip augmentation and make the vermillion border more prominent.

Modern Technique (Latest Technique of 2020)

What is the Russian lip filler technique?

Russian lip fillers are inspired by Russian nesting dolls and their perfectly coiffed lips. The Russians are regarded as one of the most attractive people on the planet. You have probably observed how Russian women present supermodel-like lips without the dreaded "duck pout."

By injecting additional volume and lift into the middle of the lips, the Russian procedure enhances the Cupid's bow to resemble a heart-shape, whereas the sides of the lips stay reasonably in line with the face. The end product is doll-like, yet with a natural fullness and plumpness. Instead of a wider volume, this design emphasizes the center of the lips, giving you the coveted baby-doll aspect. Unlike standard lip fillers, the

Fig. 6. Conventional lip filler injection in aged thin lip.

Fig. 7. Lipofilling for aged thin lip.

product is injected vertically, starting at the base of the lip and working outward toward the lips' border. Most standard lip filler procedures focus on restoring volume. The method is more complex with Russian lips.

The therapy is applied vertically, starting at the root of the lip and working outward to the lip border. This necessitates a high level of expertise, experience, and understanding of the underlying anatomy.

Furthermore, if you want to try out a pair of Russian lips, it is crucial to keep in mind that it is best to start with a clean slate; this means that any prior lip fillers will need to be dissolved 2 weeks ahead of time. This guarantees that the volume injected is concentrated solely in the middle of the lips. (Note: if you already have Russian lip fillers and are touching up and/or adding to them, dissolving does not apply.) (**Figs. 8–10**).

Fig. 8. Russian technique for lipofilling.

Fig. 9. Combination of Russian lip filler and conventional lip filler.

What is the difference between standard technique and Russian lip filler technique? So, what is the difference between traditional lip filling technique and Russian lip filling technique? Standard lip fillers are typically injected horizontally into the lip, resulting in a uniform distribution of volume and fullness. To do the Russian filler procedure, however, your provider will use a smaller syringe and inject little amounts of filler vertically, concentrating on the middle of the lips. Another significant distinction is that the Russian lip filler procedure seeks to heighten the lip by focusing on the center, rather than adding overall plumpness to the lips, resulting in a heart-shaped appearance.

Additionally, due to the precision required to fill only a specific section of the lips, your Russian treatment may take longer than a conventional lip filler appointment. The surgery can take anywhere from 30 minutes to an hour, and there may be some bruising and swelling afterward, which is perfectly normal and transitory. Your supplier will be able to give you an exact schedule for how long your Russian lips will stay; but in general, they will last as long as conventional lip fillers, which is anywhere from 6 to 12 months. Accurate evaluation of the white and red rolls, Cupid's

Fig. 10. (*A*) Russian lipofilling (frontal view). (*B*) Russian lipofilling (sagittal view).

bow arc, philtrum, and gingival show can help the injector determine the appropriate augmentation for each patient. In this regularly performed cosmetic surgery, tailoring therapy to lip contour, projection, and/or augmentation can produce predictable and repeatable results.

What are some side effects of Russian lips?

Although lip fillers may seem to be an easy "lunchtime treatment," it is crucial to note that they are a process with hazards. If the correct procedure is not performed correctly, major problems can arise, resulting in long-term (even permanent) damage. An increase in the number of untrained injectors offering treatments has occurred. Asymmetry, infections, and even tissue death can occur if filler is administered incorrectly. Bulging and torn lip skin, uneven and lumpy lips, and allergic responses are some of the other negative effects. Patients should also be aware that not all fillers are created equal. In truth, there are numerous distinctions across the market.

PRACTICE POINTS

HA fillers are approved by the US Food and Drug Administration for lip augmentation and/or treatment of perioral rhytides in adults 21 years and older.

Most of the complications associated with HA lip aumentation are mild and transient and can be include:

1. Injection site reaction such as pain ,erythema,and edema and vascular occlusion.
2. Combination treatment with dermal fillers and neurotoxins may demonstrate effects that last longer than either modality alone without additional adverse events.[10,14]

SUMMARY

Smile is a crucial and defining element of the face in facial proportion, and it has an enormous impact utmost the importance in the perception of feelings. Lip is perfectly perceived smile by the innovative technique will enhance the approach of the smile improvement.

CLINICS CARE POINTS

- Side effects of lip augmentation are temporary and mild, They may include: Bleeding from injection site.
- Swelling and bruising (Arnica cream or gel and ice pack are highly recommended).
- Redness and tenderness (NSAID can be prescribed to palliative the pain).
- Activation of coldsore or fever blister.
- Lip assymetry (it needs touch up after 10 days or enzyme for disolving).
- Lumps and irregularities.
- The more serious is vascular occlusion ,that needs immidiate regimen (Aspiration and microcannula blunt tip ,temporary and biodegradable product ,massage with any topical 2% nitroglycerin paste can be beneficial and stimulate quick vasodilation and should be applied each 2 hours in injection site).

AUTHORSHIP

All authors meet the International Committee of Medical Journal Editors (ICMJE) authorship criteria and are responsible for the completeness of the study. They ensure that this document is not published elsewhere in the same format in other languages, including English or electronic.

DECLARATION OF COMPETING INTEREST

We hereby declare that there are no conflicts of interest concerning this article.

CONSENT FOR PUBLICATION

All authors, give their consent for the publication of identifiable details, which can include photograph(s) and/or videos and/or case history and/or details within the text ("Material") to be published in the above Journal and Article.

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