

A brief overview of lip augmentation with hyaluronic acid-based dermal fillers

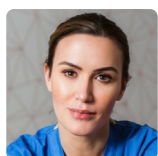
Alexandra Mills and Professor Syed Haq provide an overview of lip augmentation procedures using hyaluronic acid-based dermal filler, injection technique and the role of the ageing process

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Figure 1. Asymmetric correction and hydration. Lip tubercle augmentation adjacent to the vermillion border (upper and lower lip). Full correction of the asymmetry was achieved with balance, pout and hydration

Medical aesthetic treatments, in particular, when using a hyaluronic acid-based dermal filler, focus around delivering a comprehensive outcome when addressing the face, especially



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for more advanced treatments. In this regard, paying attention to the mouth and lip area is critical. Profiling of the jaw, chin, cheeks, pre-auricular area and orbital troughs, together with the temporal zones, falls foul when not achieving a balanced, natural and symmetrical lip augmentation (Figure 1) (Mandy, 2007).

Defining and assessing perioral ageing should be carried out as part of any general aesthetic clinical assessment. Perioral ageing is a highly individual process that takes place over a period of time and affects multiple structures. It can be influenced by lifestyle choices, genetics, ultraviolet B (UVB) light exposure and anatomy. At the time of writing, there is no consistent consensus as to how to best to approach this complex area in a manner that is both reproducible and natural in regard to rejuvenation and augmentation.

One of the most important skills of any clinician is to be able to reliably and consistently identify the key landmarks of the ongoing process of perioral ageing. It is not acceptable to focus merely on the lip's shape and volume. The injector has to take into consideration the lip surface and degree of hydration to achieve an optimal outcome.

A systematic treatment approach

A simple method that would aid clinicians in being able to address the lip area more effectively is to use a more systematic treatment approach: focusing on the lip shape with consideration of the profile view (anterior-posterior projection and lateral); proportionality with regard to the rest of the face; the length of the lip in relation to the frontal incisors; and the degree of the vermillion inversion. The lip should be analysed in accordance with the presence and degree of radial wrinkles (smoker's lines) above and below the lips. The visibility of the structural elements, such as the Cupid's bow, philtrum and the vermillion border, should always be considered with the lip volume and, in turn, the ratio between the upper and lower lip volume, which should, ideally, be a ratio of 1:1.6 (Sarnoff and Gotkin, 2012).

Before beginning a lip enhancement treatment, the clinician needs to define lip projection, which is assessed by measuring the distance (mm) from a reference plane to the most protruding point of the upper and lower lip vermillion border. The reference plane may be Burstone's



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line. Additional analysis should include the use of Ricketts' line as a reference point to assess upper lip projection.

The surface area can be visually assessed for both lips, using the vermillion borders as boundaries correlating with the change in lip volume. Lip distance (height) is measured as the distance (mm) from the stomion to the upper and lower lips or the Cupid's bow. The mouth width is measured as the x-axis distance (mm) between the left and right oral commissures. Philtrum height is considered the y-axis distance (mm) between the philtral crest and the subnasal area. The width of the philtrum and how raised the edges of the philtrum should be must be considered when assessing an area of relative complexity (Clymer, 2007; Mandy, 2007) (Figure 2).

Dynamic movements

During a patient assessment, the use of dynamic movements is important. Asking the patient to smile or using more dynamic strain (for example, asking them to 'blow a kiss') for the subject's expression can be clinically effective with or without using 3D image analysis, provided that the clinician is able to capture the difference well using standard photography. Specifically, looking at the positive strain is an indication of surface stretch. In this respect, the areas of interest would be to look closely at the upper and lower lips, as well as the upper and lower perioral area.

The ageing process

As part of the ageing process, the ageing lip becomes elongated and is a product of photodamage, with loss of natural glycosaminoglycans, hyaluronic acid and collagen, which leads to thinning of the dermal support structure. In



Figure 2. Long philtrum correction with lip volumisation. The patient wanted to avoid a surgical option. The correction allowed for a greater balance through shortening the philtrum and enhancing the body of the lip

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comparison, younger patients will have an upper lip that is usually well-defined and full (Mandy, 2007).

Irrespective of age group, a popular procedure is lip hydration and projection. Although most patients prefer a natural improvement, some will persist in requesting a more visible and poorly proportioned change. The latter must be avoided at all costs. It is the clinician's responsibility to explain to the patient that overcorrection and over-volumising is not advisable or desirable in the immediate and long term, and it invariably leads to issues.

Injection technique

The lips are a highly vascular area, with a blood supply from branches of the facial artery in the form of the superior and inferior labial arteries. The injection technique that is commonly used to treat the lips can be in the form of using a 30-gauge needle or a 27- or 25-gauge cannula. The

technique used may involve the deposition of serial deposits, linear threads, pyramid stacking, fanning with avoidance of bolus administration etc. The placement of the product will depend on the skill of the clinician post-assessment, on the correction required, and the viscosity/viscoelasticity of the hyaluronic acid dermal filler being used. Semi-permanent or permanent fillers should be avoided (Carruthers et al, 2008).

In medical aesthetics, lip augmentation is a high-risk procedure due to the heightened risk of extra- or intra-arterial events, either through external compression of the labial arteries or occlusion stemming from a small intra-arterial embolus. The anatomy of the superior and inferior labial arteries may cause further issues for the clinician, as it is not always predictable. The arteries may lie in the submucosal (>75%), intramuscular (orbicularis oris: 17.5%) or subcutaneous (2.1%) planes. Following the course of the artery often sees a deviation from one tissue plane to another, notably in the middle third of the lip. Therefore, care should be taken when injecting the middle third of the lip (Clymer, 2005).

Once the patient has been assessed for a lip contouring treatment with attention to the vermillion, it is important to decide which hyaluronic acid to continue to use. This will depend on the patient's lip proportions, ethnicity and overall requirements. Approaching the treatment zone from the lateral oral commissure and moving more medially is a standard technique used. One may use a needle or cannula, which depends on the injector's preference and experience. Using a retrograde technique with a low injection extrusion force and slow application reduces complication rates.

Moving on to address the projection of the lip with greater restructuring through targeting the sides of the upper or lower lip would be the next step in the lip augmentation treatment sequence. During this time, one would be using a larger volume when compared to treating the vermillion border (Beer, 2007).

Lip proportions

Lip proportions are believed to influence an aesthetically youthful appearance, and lip augmentation is one of the most commonly requested aesthetic procedures. Three categories of patients seeking lip improvement often attend medical aesthetic clinics: those with a pleasing lip shape who want more fullness; those with genetically thin lips and/or poor



Figure 3. Enhancement of the upper and lower lip with eversion and projection. Serial visits by the patient allowed for a difficult augmentation with hyaluronic acid-based dermal filler combined with subcision that allowed for greater space to correctly place the filler. Lip eversion and enhancement was achieved

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definition of the vermilion border; and those with atrophic lips and poor definition of the vermilion border because of advancing age. Ageing can result in upper lip atrophy due to the loss of fat and dermal tissue, which can be associated with a widening of the Cupid's bow and loss of the natural lip 'pout'. Hence, as part of any assessment, the clinician should ask a patient to carry out a series of dynamic movements of the lip, as previously described (Figure 3).

Conclusion

In this overview of lip augmentation, the authors briefly mentioned the need to take into consideration the patient's ethnicity as part of the clinician's assessment prior to performing a perioral/lip augmentation. The reason is that, unsurprisingly, there is conflicting data regarding lip measurements in Asian patients, and very little data has been published on lip measurements in the Hispanic population (Wong et al, 2010). This highlights the need for more research in both of these areas and for clinicians to be cautious when treating such patients without adequate experience. Lip measurements do appear to differ between Asian, Hispanic and Caucasian patients, indicating that using Caucasian anthropometric measurements when attempting to determine what is 'ideal' for other ethnicities when

injecting filler is not ideal (Farkas, 1994). Lip preferences are also influenced by ethnic background, so generalisations in preferences should also be avoided. Ultimately, it is important to take into account the goals, anatomy and ethnic background of each individual patient before performing a lip augmentation treatment. The authors are sure that, in time and as more research is published, better outcomes for different ethnic groups will be achievable.

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