



Facial beautification with fillers and main differences between genders

Embelezamento facial com injetáveis e principais diferenças entre os gêneros

GLADSTONE EUSTAQUIO DE LIMA

FARIA^{1*}

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■ ABSTRACT

The beauty perception is still poorly understood, though downright remarkable. People considered beautiful notably have better self-esteem and perform better in their interpersonal relationships. Demand for cosmetic treatments is on the rise and growth among men is even higher. Perfect understanding of the differences between masculinizing and feminizing attributes on a face should be encouraged in order to achieve better aesthetic results and the prevention of treatment stigmas. This review will cover each facial region, detailing the beauty standards of each gender, guiding the details of treatment.

Keywords: Beauty; Face; Botulinum toxins type A; Dermal fillers; Surgery, Plastic; Dermatology.

■ RESUMO

A percepção da beleza é ainda algo pouco compreendida, apesar de francamente notável. Pessoas consideradas belas notadamente tem melhor autoestima e um melhor desempenho em suas relações interpessoais. A procura por tratamentos cosméticos está em franca ascensão e o crescimento entre os homens é ainda maior. A perfeita compreensão das diferenças entre os atributos masculinizantes e feminilizantes em uma face deve ser encorajado, a fim de obter melhores resultados estéticos e a prevenção de estigmas de tratamento. Nesta revisão, será abordada cada região facial, pormenorizando os padrões de beleza de cada gênero, norteados os detalhes do tratamento.

Descritores: Beleza; Face; Toxinas botulínicas tipo A; Preenchedores dérmicos; Cirurgia plástica; Dermatologia.

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INTRODUCTION

The study of the perception of facial beauty is as old as it is poorly understood. Attractiveness is believed to go far beyond individual or cultural parameters.

Studies show that babies have innate predilections for specific facial patterns, in a kind of imprinting, corroborating the hypothesis that attractiveness is not a cultural and particular individuality of the viewer¹⁻³. Physical appearance, especially of the face, is the most accessible and ready information for interpersonal relationships and studies show a correlation between beauty and the impression of kindness, intelligence, and reliability⁴.

For many centuries it was believed that structures that respected the golden ratio or divine proportion were considered more beautiful in human eyes. This fact was evident in several areas of knowledge such as the arts, architecture, and sociology, causing several works to respect a proportion close to the number 1.618⁵⁻⁷. Interestingly, this proportion, also referred to as Phi about the Greek sculptor Phidias, is also found in various human body structures such as segments of the face, teeth, and phalanges^{8,9}. Although several studies have tried to prove this hypothesis, it is impossible to relate the use of the golden ratio as an absolute justification to explain what human beings automatically consider beautiful on a face, especially when observing ethnic and gender variations. However, it is known that certain facial features allow faces to be more or less attractive, including the outermost layers such as the skin, the distribution of the fatty pads of the face, the bone structure, and the facial frame.

Treating and caring for the individual's facial aesthetics not only translates into an improvement in his self-esteem but, broadly, improves his self-acceptance, interpersonal relationships, and perception of life in the global context. Therefore, it is not surprising the significant increase in the search for non-surgical aesthetic procedures, notably fillers and botulinum toxin, since they offer good results, safely and without departing from daily activities¹⁰. This growth is even more significant among men, with an estimated increase of more than 273%, between 2007 and 2014¹¹. The difference between genders is not restricted to the evident physical characteristics. Men habitually seek medical offices discreetly and demand less impactful results per session. In the treatment schedule, the complete mastery of the attractions of each gender is fundamental because, more unpleasant than not meeting the patient's expectations, is to promote stigmatization, such as over-corrected lips, poorly

positioned eyebrows, and, mainly, sexual dysmorphia (men with feminized and women with masculine faces).

Despite all current computer technology and the relentless search for pre-established proportions for the treatment of the face, an adequate physical assessment of the patient is, even today, the best way to achieve good results.

This article's objective is to provide a critical sense for an adequate facial evaluation with emphasis on the difference between the sexes and, in this way, to guide the treatment with botulinum toxin and fillers.

METHODS

An exhaustive literature review was carried out, using the PubMed and Cochrane Library database, using the following keywords: "fillers" AND "botulinum toxin" AND "gender" AND "male" AND "female." From this textual search, the articles were selected respecting the following criteria:

- Criteria for assessing anatomical differences between female and male faces;
- Technical differences in the use of injectable treatments, focusing on botulinum toxin and hyaluronic acid-based fillers, in the beautification of female and male faces;
- Parameterization of results and adverse effects, with sexual dysmorphia as the primary focus.

RESULTS AND DISCUSSION

Facial symmetry, thirds of the face, and main sexual characteristics

Despite all the importance of facial symmetry, recent studies show that small regional asymmetries in no way alter the perception of beauty. On the contrary, experiments with digital mirroring of a hemiface to the contralateral side, intending to produce perfectly symmetrical faces, ended up building artificial and unattractive^{12,13}. Thus, greater facial harmony is credited to the proper balance between their anatomical subunits and respect for the thirds of the face, which must have similar proportions¹⁴. The upper third of the face extends from the capillary line (trichion) to the glabella, the middle third from the glabella to the subnasal region, and the lower third from the subnasal region to the chin. One of the significant challenges of the face's cosmiatric treatment is to minimize the importance of asymmetries and restore the balance between the thirds.

Another point of great importance that should always be considered when planning facial treatments

is sex differences. The lack of specialized care and disrespect for individualities have produced results far below the desired level, culminating in dysmorphic and stereotyped faces. In the beautification of the male face, the characters related to virility should be valued, aiming at more square faces, with horizontal zygomatic arch, greater bigonial distance¹⁵, and striking chin. In women, the goal is more triangulated and smoother faces, more oblique zygomatic arches, delicate noses, more voluminous and well-shaped lips, as well as a tapered and poorly designed chin.

Frontal and temporal region

The frontal region in men tends to have a more oblique presentation, the glabella and frontonasal suture are more pronounced; the upper orbital ridge is usually more projected, featuring a more acute transition with the forehead, the bitemporal distance tends to be larger and usually aligned to the bigonial distance¹⁵. Women have a more rectified frontal region, the transition with the glabella and the upper orbital margin tends to be more delicate, and the bitemporal distance tends to be less than in men¹⁶.

The use of botulinum toxin on the male forehead aims to modulate the action of the occipitofrontal muscle and prevent and slow down hyperkinetic wrinkles. Every care must be taken not to “freeze” the region and avoid raising the tail of the eyebrow, feminizing the look. Concerning the temporal region, in some situations, the toxin can be used to produce relaxation and atrophy of the temporal muscle, which is excessively functioning and hypertrophic. In women, the tendency is to use smaller doses for frontal treatment, distributed over a greater number of points, thus providing greater relaxation to the region. The rise of the eyebrow tail is usually desired. The temporal region treatment can be performed with the same indications as in men. However, its use is less frequent.

To produce “beautification,”¹⁷ fillers are indicated for the attenuation of horizontal frontal cracks when present; in the smoothing of the fronto-orbital transition, when very pronounced, in the definition of the upper orbital rim, to bring virility to the follow-up and the treatment of the glabellar region. The temporal region can be treated to extend the bitemporal distance and the correction of regional lipoatrophy, secondary to natural deficiencies or after weight loss. In women, the main objective is to provide delicacy and femininity to the follow-up. Irregularities, furrows, and excessively angled foreheads can be corrected with the use of fillers. The fronto-orbital transition can be treated in order to alleviate possible dystopias. The temporal region can be filled to soften

the frontotemporal transition, which should be smoother and more delicate in women.

Facial fillers with hyaluronic acid are the method of choice for the treatment of the facial frame since high G ‘prime products are capable of volumizing, defining contours, in addition to providing a lifting effect. The most relevant points for the facial frame are anterior temporal, zygomatic arch, and mandibular angle. Careful analysis and the balance of bitemporal, bitygomatic, and bimandibular distances will be decisive in the result of any filling (Figure 1).

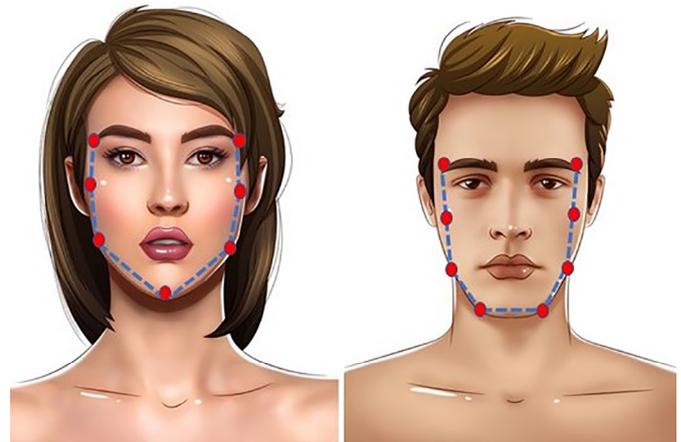


Figure 1. The appropriate balance of bitemporal, bitygomatic, and bimandibular distances, associated with mental width, collaborate with the female triangular or male quadrangular facial frame.

Eyebrow position

Eyebrows in men tend to be thicker and more marked, thanks to more intense hair growth. Concerning their presentation, the male eyebrow is usually lower, resting on the upper orbital rim, and they are usually rectified. In women, eyebrows tend to be thinner and have less hair; they are positioned slightly above the orbital rim and have an arcuate appearance, thanks to the higher lateral third^{18,19}.

The inconvenient stigmatization in the eyebrows' position and shape after cosmetologic treatment is relatively frequent, then, adequate planning is essential. It should be remembered that the position of the eyebrows is nothing more than a balance of forces, between the only musculature that ascends it (occipitofrontal) and those that depress it (orbicular, corrugator and procerus). Botulinum toxin treatment is the eyebrows' position the treatment of the eyebrow position. Much more than treating rhythms related to the muscles involved, it plays a vital role in programming muscle forces and reorganizing traction vectors. The distribution of application points and doses of toxin in the muscles involved must be planned appropriately. In men, the frontal application is generally straight so as

not to alter the eyebrows' position, while in women it may be possible to program a more significant release of more significant frontal muscle, in its lateral portion, with the purpose of arching and raising the eyebrow. Studies show that the strength of the male face's muscles demands higher doses of toxin and that the potential for complications, such as bruising, is greater among men due to greater hairiness and consequent skin vascularization²⁰.

In some instances of intense eyebrow ptosis, the toxin alone does not achieve the goals of suspension. When this occurs, another etiology other than the muscle should be sought. The resorption of the frontolateral and superficial temporal fat pads, as well as tissue deflation, may have a direct role in this phenomenon. In this case, the botulinum toxin must be supplemented with the filling of hyaluronic acid. Due to the vascular richness, the volumization of the frontolateral is usually performed with microcannulas in the supraperiosteal plane, with a product of high or medium G 'prime. In addition to promoting skin distension and consequent traction of the eyebrow, hyaluronic acid modifies the muscle's anchorage point, potentiating its activity by a mechanism called myomodulation²¹. Other points that also impact the positioning of the eyebrow tail are the anterior temporal and the direct filling to support the eyebrow tail. The first is performed with a needle, in a single bolus, supraperiosteal, and with a high G 'prime product, while the second can be performed with a needle or cannula, also supraperiosteal, with a medium or high G' prime product (Figure 2).

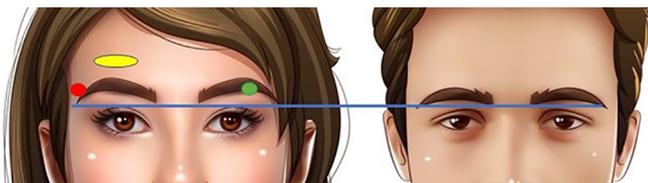


Figure 2. The position and shape of the eyebrows are important determinants of sexual characteristics (see blue line). The filling points, adjuvant to the botulinum toxin, for repositioning the eyebrow are shown (yellow - frontal; red - anterior temporal; green - tail of the eyebrow).

Zygomatic-malar region and middle third

The woman is characterized by presenting a more defined and angled zygomatic arch, a more evident zygomatic prominence, and a more rounded and graceful malar region. On the other hand, men are characterized by having a more horizontal zygomatic arch, less zygomatic prominence, more flattened malar region, and the middle third, as a whole, broader.

The use of botulinum toxin in the middle third treatment to produce "beautification" is rarely indicated. However, hyaluronic acid-based fillers are widely used in this segment.

In a juxtaperiosteal plane, bolus points, combined with linear retrojections on the zygomatic arch, are usually indicated on female faces to produce lift and the redefinition and angulation of the zygomatic region. Such filling techniques collaborate for facial triangulation and for enhancing femininity¹⁰. The volumization of the malar region and designing and providing gracefulness to the segment also aim to mitigate the eyelid transition, helping to beautify the look. Patients with large weight losses or lipoatrophy, secondary to intense physical activity, may still need filling in the pre-parotid regions, in the buccal fat pad's projection, and close to the deep compartments of the cheek. According to recent studies, the medial padding tends to be more volumizing and the lateral padding more suspending, under the direct influence of the retaining ligament line of the face²² (Figure 3).



Figure 3. The middle third should be the prominent third on the female face. Filling hyaluronic acid in supraperiosteal structural points (red - zygomatic arch; blue - zygomatic eminence; green - malar) or subcutaneous filling with a cannula for greater prominence (yellow).

On male faces, bolus points, in a juxperiosteal plane and with high G 'prime hyaluronic acid, are often used to produce the lift of the middle third. Linear retroinjections on the zygomatic arch and the

enhancement of zygomatic prominence are rarely indicated. The volumizing of the malar region, when indicated, must be performed sparingly to avoid the feminization of the follow-up. Like the female faces, in large weight losses, one can fill the pre-parotid region, the projection of the buccal fat pad, as well as the deep compartments of the middle third of the cheek. Female and male patients, if necessary, can have the nasolabial fold filled. For this purpose, high G 'prime hyaluronic acids can be used, in a juxperperiosteal plane, in bolus, next to the canine fossa, and medium G' prime hyaluronic acids, in a justadermal plane, by back-injections and cannula, or in plane intradermal with a needle.

Eye region and tear trough

The beauty of the look is related to the size and position of the eyes, varying degrees of dermatocalazole, relationship of the eyes to the eyebrow, presence of eyelid bags, deformity of the tear trough and changes in the orbital bone frame, more or less evident²³. Anin-planetric measurements demonstrate that the narrower the orbital frame is, the more aesthetically acceptable it will be. With aging and consequent bone remodeling and fat absorption, there is inferolateral widening of the orbit and skeletonization thereof²⁴. Naturally, female skeletons have a proportionally larger orbital diameter. Larger, protruding eyes are graceful on female faces, while narrow eyelid slits are more pleasant on male faces²⁵.

The deep lacrimal canal is a frequent complaint in offices, denoting an air of fatigue, what we call a tear trough deformity. There are several studies related to this region, most of them looking for an adequate classification and treatment proposal. In general, milder cases are restricted to the medial region, becoming more severe as the groove advances laterally in the orbit²⁶. When programming a facial beautification, it is extremely important to treat this deformity with the use of fillers. As it is considered an area of vascular risk, it must be performed by experienced professionals, with products with low G 'prime, use of microcannulas, and submuscular/justaperiosteal application. Neglecting the need for treatment or fearing the application essentially negatively impact the results.

Lips

The lip shape and volume, regardless of individual and ethnic characteristics, undergo important changes with the aging process, related to the absorption of the superficial and deep fatty

cushions, the atrophy of the orbicularis muscle, changes in the dentition, and bone absorption.

A lip considered ideal must have the distance between the commissures coinciding with the distance between the eyes' medial corners. It must present a good definition of cutaneomucosal line, well-designed filter ridges, and cupid's bow, have a good relationship between the upper and lower lips, in addition to maintaining a proportional relationship with the face as a whole (the lip must occupy about 40% of the lower third of the face)²⁷. It is believed that the ratio between upper and lower lip, in the previous view, is one of the few attributes that obey the golden ratio, being a ratio of 1.6 considered ideal. Another study showed that the least attractive lip is the one that has its proportions inverted (2: 1), that is, a more remarkable exuberance of the upper lip^{28,29}. Anthropometric studies suggest that wider, voluminous lips are more attractive to female faces²⁸. Popenko et al., In 2017²⁹, proved that the most accepted lip volumization in their study was that which increased the lip by 53% of the original. In the lateral view, drawing a line between the subnasal region and the chin, the upper lip is more projected than the lower one. In this line, called Ricketti, the upper lip protrudes approximately 3.5mm and the lower 2.2mm⁵.

The difference in thickness between the upper and lower lip is one of the most important characteristics in differentiating between genders. In women, this contrast tends to be more evident and the lips more convex, whereas in men, the contrast is less, and the lips tend to be thinner and straighter³⁰. In women, the lip's anatomical subunits, such as filter, contour, and cupid's bow, when well defined, are more attractive, being favored by cosmiatric treatment with fillers. In men, in addition to not requiring such a definition of subunits, their volumization is still considered taboo, and the characteristics of aging in the perioral region are less striking, impacting less demand for male treatments for this region (Figure 4).

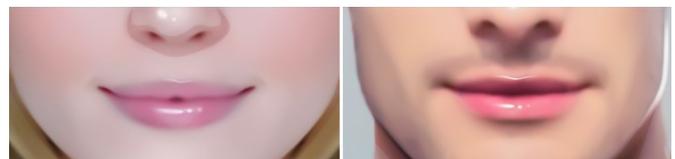


Figure 4. The lips are structures that usually obey the golden ratio (1: 1.6). Sexual dimorphism is evident. Female lips tend to be more voluminous and have well-defined subunits.

Lip filling in women looking for beautification should be encouraged when necessary, avoiding overcorrections and inversions of proportions. As it is a dynamic structure with exuberant vascularity, it

deserves special training to avoid undesirable results and vascular complications.

Usually, the lip contour is made with low G 'prime hyaluronic acid, using needles or microcannulas. The needle allows more refinement, but is more painful, results in more bruising, and is less safe from a vascular point of view. Lip volumizing is done with an intermediate G 'prime product and can be performed in three planes: in the superficial fat compartment of the lip, intramuscular plane, or deep fat compartment. From a vascular point of view, the safest plane is the superficial fat compartment since, in only 2% of cases, the labial artery is in this plane^{31,32}. The plane with the most significant potential for vascular complications is the deep lip fat compartment, where the labial arteries are usually found³¹.

The repositioning of the corner of the mouth also contributes to the beautification of the perioral region. The treatment of the commissures and the lip-mandibular groove in the subcutaneous plane, with medium G 'prime, fill, can promote the commissures' rise, reducing the aspect of sadness and bravery. Botulinum toxin is more rarely indicated in the perioral region's treatment to produce "beautification".

The treatment of the oral angle depressor muscle (OAD) with 2 to 3 units of toxin (50U/mL), at the point of greatest muscle power, contributes to the rise of the commissures, enhancing the results of the fillers. The treatment of the orbicularis muscle in "beautification" patients is usually not indicated.

Mandibular contour and chin

While in women, the attractiveness is concentrated in the middle third of the face, in men, the lower third is the one that stands out the most due to its square characteristics and well-defined mandibular contours. The male chin is usually wider and more protruding, in contrast to the thinner, more rectified lips.

The treatment of mandibular contour and chin has been the main reason for the male visit to doctors' offices regarding facial beautification. Hyaluronic acid-based fillers are applied to widen the distance between the jaw angles, matching the bitemporal and bimalar distances and the redefinition of the body branch of the jaw. Male angles are more acute, redefined using high G 'prime hyaluronic acids, applied with cannulas or needles, in the subcutaneous or supraperiosteal plane. The treatment of the body and the branch of the mandible is usually performed with cannulas, with products of high G 'prime, by retroinjection and in a superficial subcutaneous plane. There is a tendency to

fill the mandible body close to its lateral edge to widen the lower third.

The delicacy of the lower third of the female face should be encouraged. Although well-defined angles are acceptable in women, the mandible should not be enlarged and should not protrude from the middle facial third. When filling the mandible branch and body, when indicated, it must be performed delicately, tending the lower margin of the mandibular body in order to lengthen and not to widen the lower third.

The use of botulinum toxin can be carried out in treating hypertrophy of the masseter muscle, both in women and in men, with care in the latter not to over-tune the lower third. In more selected situations, female faces can be submitted to platysma treatment, helping to define the mandibular contour, treating platysma bands, and so-called "necklaces" lines (horizontal lines that form in the neck secondary to platysma hyperkinesia).

The mentum is a structure still little valued in cosmetic treatments; however, it has an essential role in the beautification process. The filling of the lip-mandibular groove promotes rejuvenation and elongation of the lower third of the face, which can also be associated with filling the chin's apex, giving it greater projection and triangulation.

The female mental filling should be done with a single central point or two points very close to the midline, with a high G 'prime product, with a cannula or needle, in the subcutaneous or juxtaperiosteal plane. The objective is to provide delicacy to the chin and collaborate for facial triangulation. In women, the width of the chin should match the width of the nasal base.

For the male chin treatment, the points of application must be more distant from each other to promote its enlargement. It is also possible to treat the lateral subcutaneous tissue to gain even more horizontal dimension, providing more virility to the segment. The male chin's width should coincide with the distance between the medial margins of the iris limbs (Figure 5).

In both men and women, the presence of pronounced mental grooves can be minimized with the linear filling, with a cannula, in the subcutaneous plane, with products of high G 'prime. More marked mental grooves are more accepted in men, being a sign of virility. Botulinum toxin can be used in the chin to minimize hyperkinesia and mental muscle tone, both in men and women.

CONCLUSION

Cosmiatry is a rapidly expanding area of medical practice, especially about the use of botulinum toxin

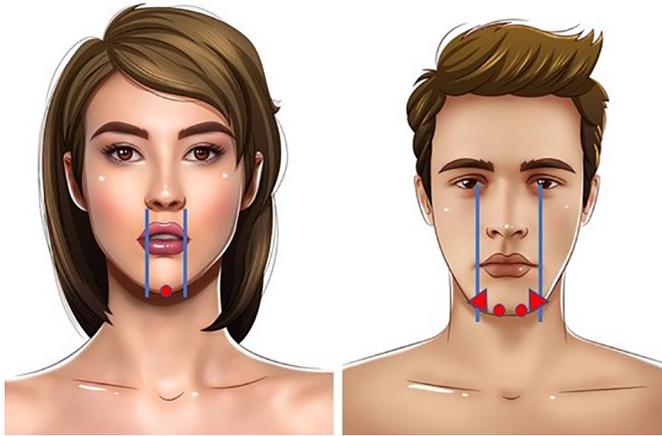


Figure 5. The female chin's width should not exceed the interim distance, while the male chin has the distance between the iris's internal limbs (blue lines). For mental enlargement with fillers, spaced mental projection points (circles) and lateral subcutaneous filling (triangle) can be made.

and fillers based on hyaluronic acid. These procedures can be used to prevent and restore the signs of aging and promote facial beautification. Anatomical knowledge applied, refined technique, and full control over the main sexual characteristics, are fundamental to produce facial beautification with all the excellence expected from great specialists, such as plastic surgeons and dermatologists.

COLLABORATIONS

GELF	Writing - Review & Editing
AMB	Data Curation
DBS	Data Curation
AT	Data Curation
RFB	Final manuscript approval

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