

## INTRODUCTION

Facial asymmetry refers to a noticeable difference in symmetry between the left and right sides of the face. These asymmetries vary in degree and manifest in a variety of ways, such as uneven size or shape of the eyes, nose, jaw, or lips.

The cause of facial asymmetry can be attributed to several factors, including:

1. **Asymmetric development:** During the development of the fetus and child, several factors may contribute to the asymmetrical growth of facial structures. This may be due to variation in blood pressure on the fetus in utero, position of the fetus during pregnancy or delivery, or variation in bone and muscle growth.
2. **Injuries or trauma:** Injuries to the face, such as bone fractures or soft tissue injuries, can result in facial asymmetry. These traumas can occur due to accidents, falls, fights or previous surgeries.
3. **Medical conditions:** Certain medical conditions such as facial paralysis, Möbius syndrome or Parry-Romberg syndrome can lead to facial asymmetry. These conditions can affect the emotional nerves or muscles, resulting in imbalances in symmetry.
4. **Dental or jaw abnormalities:** Dental problems such as misaligned bites or jaw disproportion can cause facial asymmetry. Incorrect positioning of the teeth or jaw can affect the appearance and symmetry of the face.
5. **Aging:** With aging, it is common to experience loss of volume and sagging of elastic tissues. This can lead to changes in facial symmetry as the muscles and skin change over time. It is important to highlight that facial asymmetry is relatively common and, in most cases, does not cause experienced functional or health problems.

It is important to highlight that facial asymmetry is relatively common and, in most cases, does not cause experienced functional or health problems. However, if the asymmetry is a cosmetic concern or is associated with worrisome symptoms, it is recommended that you seek an evaluation from a healthcare professional, such as a plastic surgeon, dentist or dermatologist. They will be able to provide a more detailed analysis and recommendations for suitable treatment options if necessary.

A 42-year-old Caucasian female patient complaining of significant gingival recession on one side, with significant facial asymmetry on clinical examination, reports having this disharmony since childhood. Facial asymmetry was diagnosed and we identified that intense muscle activity produces not only unaesthetic effects but also produces different periodontal behavior on both sides.

Muscle myomodulation with botulinum toxin is a cosmetic procedure that involves an injection of botulinum toxin into certain muscles to reduce their activity. Botulinum toxin is a neurotoxin produced by the bacterium *Clostridium botulinum*, and is known for its ability to block nerve signals that control muscle contraction.

Appropriate doses of botulinum toxin can be applied to the most hyperkinetic muscles in order to decrease the intensity of contraction of the lower lip depressor muscle. All of the patient's lower muscles were in hypercontraction, favoring traction of the periodontal bridges.

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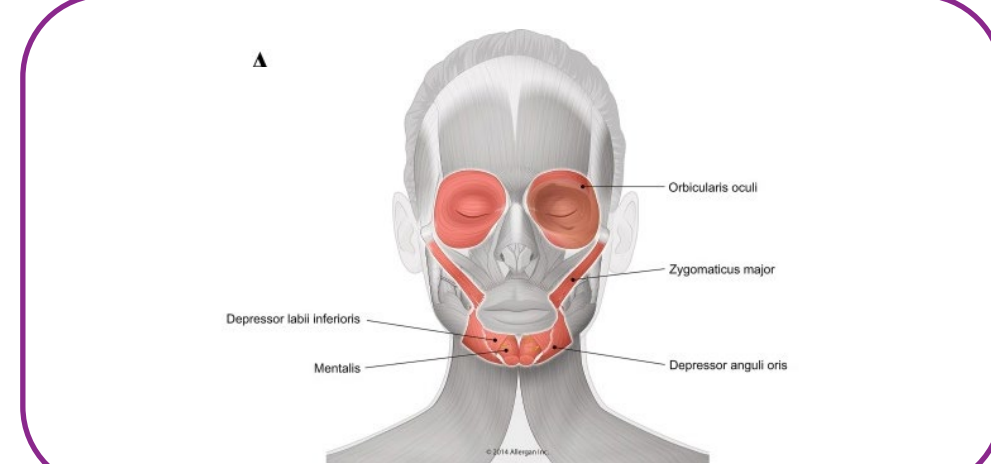
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## DIAGNOSIS



(figure1) resting facial expression, smiling and orbicularis contraction



(Figure2) Anatomy Guide

- An asymmetrical smile is observed due to hyperactivity of the right lower lip depressor and mentonian muscles and we also observed ptosis of the zygomatic retaining ligament (point of insertion of the main muscles for elevating the angle of the mouth — zygomaticus major and minor) and deflation of the suborbicular lateral fat (SOOF), which functions as a pulley for elevation, resulting in poor ascending activity of the midface right musculature.
- Intense contraction of the mentalis muscle to ensure lip sealing is also observed.

## TREATMENT PLAN



(Figure3) - Treatments Areas



( figure 4 ) Technique planning

1. Application of botulinum toxin type A to the depressor muscle of the right lower lip and mentonius
2. Reduction of asymmetric contraction activity in smile by means of the deposition of HA on the right lower lip abductor and mentonian muscles

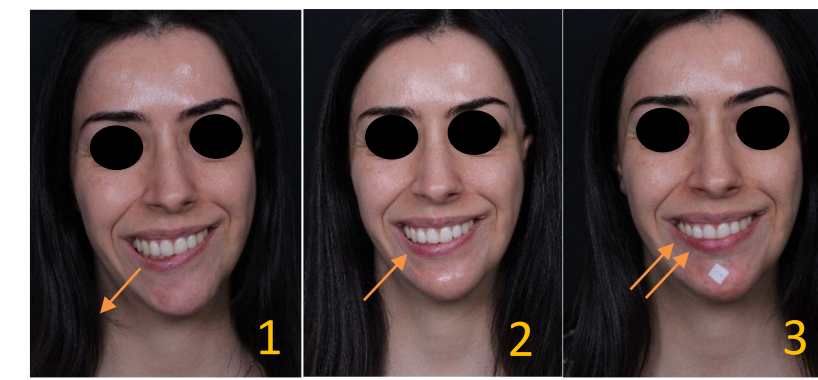
## TREATMENT STEPS

1. Application of 5 units of botulinum toxin type A in the right lower lip depressor muscle (A) and 5 units of the same toxin in the mentonian muscle (B). The reconstitution used was 2ml of saline for 100Ui and the toxin chosen was incobotulinum toxin.
2. Anesthetic button with lidocaine 2% with vasoconstrictor in the mentonian region and subsequent puncture with a 21G needle to introduce the cannula (C).
3. Application of filler, through the hole created, with a rigid 22G cannula and supramuscular deposition of 3 boluses of 0.1 ml of high-G-prime HA (D).
4. Complementation with HA retro-injection through the same entry hole, using the 'fan technique', totaling 0.5ml of high-G-prime HA (E).



(Figure 4) Treatment Areas; A/B toxin plan; E/D Filler plan

## RESULTS



(Figure 5)- Toxin application results (2); Filler application results plus toxin treatment

- 21 days after toxin injections a better muscle coordination were observed (2)
- Immediately after the filler injections, better symmetry and muscle coordination were observed (3).



A better local functionality and an important aesthetic gain was observed

## DISCUSSION

The treatment of facial asymmetries and muscle paralysis with injectables is extremely rewarding, as it provides the patient with social reintegration and self-acceptance.

The patient satisfaction rate is high in contrast to the low rates of adverse effects.

Excessive muscle contraction can be treated with neurotoxins (chemical myomodulation), together with hyaluronic acid-based fillers to modulate the action of facial muscles to improve facial asymmetry. Filler treatment can alter the biomechanics of muscle movement, modifying the appearance both in motion and at rest.

Neuromodulators (such as incobotulinumtoxinA) are used to reduce muscle movement in overacting muscles, for example, to diminish hyperdynamic lines or correct position or asymmetry by reducing muscle activity. However, long-term observations of patients with certain structural deficiencies treated only with injectable fillers suggest that fillers can also be used to alter muscle movement (myomodulation) in facial esthetic treatments and may provide another tool, in addition to neurotoxins, in the armamentarium of facial muscle modulation.

	Decreased muscle movement	Increased muscle power
Underlying mechanism	Increased distance between origin and insertion stretches muscle fibers and decreases muscle movement	Shortened distance between origin and insertion increases movement in contraction
Possible causes	Loss of convexity due to lack of fat or bone support	Deficit in underlying bony structure or shortened bone structure
Treatment	Inject under the muscle to increase convexity, restoring the optimal distance between the origin and insertion by enhancing the fulcrum effect; increases mechanical advantage and facilitates the action of the muscle	Inject superficial to the muscle to create a mechanical obstacle to the muscle action
Treatment effects	Increase levator muscle movement, lifting sagging structures	Reduce muscle movement Provide an obstacle to muscle excursion that causes skin deformation

Botulinum toxin type A has proven to be an important alternative in the treatment of facial asymmetries. It leads to an improvement in self-image and expressive ability, generating a positive social impact and better quality of life for patients undergoing treatment.

However, asymmetric muscle hyperkinesis may be important and more intense therapy should be considered. Chemical myomodulation associated with mechanical myomodulation, performed by the strategic application of facial filler (HA), helps in the durability of the result and also in the efficiency of muscle control.

When muscle kinesis is exacerbated, it is important to combine therapies for best results.

## CONCLUSION

The combined use of TBA and HA implies a marked improvement in facial symmetry and functionality associated with the mime muscles. Muscle myomodulation helps in the functional performance, in the aesthetic performance, and in the patient's quality of life.

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