Prevention of facial overfilled syndrome

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Summary

The rising preference for hyaluronic acid fillers in aesthetic rejuvenation stems from their dual advantage of delivering immediate anti-aging effects and exerting beneficial biological actions with minimal invasiveness. Although the medical advantages of fillers for enhancing appearance and combating the effects of facial aging are widely acknowledged, there have been numerous instances of fillers being used improperly in rejuvenation procedures. The presence of these events can result in enduring consequences that are frequently disregarded during the identification of "Facial overfilled syndrome (FOS)". Early recognition of FOS is crucial, with key symptoms including a heavy mid-to-lower face, "setting sun" eyes, a broadened nose, a round and over-protruding forehead, and a pointy chin.

The review is to describe the anatomy of facial aging, analyze the reasons and symptoms of facial overfilled syndrome, and recommend possible treatment choices. Utilizing small-dose point injection techniques or Canula injection techniques guarantees accurate classification and suitable dosage, while also providing early education to clients regarding this issue.

It is essential to enhance the safety and aesthetics of patients, avoid the development of facial overfilled syndrome, and establish a suitable method for patient rejuvenation. It is crucial to highlight the demand for education in comprehending and mastering filler-based cosmetic operations for physicians

Key words: *facial overfilled syndrome, hyaluronic acid, and fillers.*

1. INTRODUCTION

There is a growing demand for cosmetic rejuvenation with hyaluronic acid (HA) filler since HA is highly successful in providing immediate and visually appealing filling results with minimal invasiveness. Despite the numerous advantages they offer, the over utilization of fillers in rejuvenation operations remains prevalent. This overuse can result in repercussions that are frequently disregarded during diagnosis, commonly known as "facial overfilled syndrome (FOS)". The duration of effective maintenance for HA varies between 6 and 18 months, contingent upon their hardness and elasticity. Hyaluronic acid (HA) is frequently administered through numerous injections, resulting in the accumulation of HA over an extended period. FOS diminishes the inherent shape of the face and restricts the range of facial expressions. Furthermore, FOS also expedites the facial aging process and amplifies the intensity of facial emotional reactions as time progresses. This review aims to assess the structural characteristics of facial aging and the application of fillers for the purpose of rejuvenation. Simultaneously, it clarifies the factors that contribute to the FOS condition and outlines the symptoms that are typically linked with it. Additionally, it offers suggestions for both therapy and prevention.

2. ANATOMICAL CHARACTERISTICS OF FACIAL AGING AND THE USE OF FILLERS FOR REJUVENATION

Facial aging is the result of a complex interaction of changes between related components: the craniofacial skeleton, attachment ligaments, facial muscles, adipose tissue and skin. Each individual component within the five separate layers of the facial anatomy has a different function in determining the overall appearance of the face [1, 2, 3]. The outermost layer of skin exhibits marked differences in pigmentation, thickness, and presence of skin adnexal structures across different areas of the face with aging. The subcutaneous fat layer on the face has different thickness and distribution, and tends to hypertrophy and herniate with aging [2] [3]. It is separated from the deep fat compartments by the fascia and facial muscles, which have a distinct structure. The aging process affects the superficial and deep fat compartments differently, and these compartments are frequently targeted in the use of fillers for anti-aging purposes [4]. During the aging process, superficial adipose tissue exhibits symptoms of hypertrophy and drooping. It also possesses distinct morphological features in comparison to deep fat compartments, which often exhibit deficiencies [5]. Several publications acknowledge the impact of the sliding mechanism of muscle layers,

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which is controlled by the two fat layers above them. In recent years, there has been significant focus on the superficial facial fascia layer, particularly because to its role as the primary foundation for facelift surgeries and facelift injections [6]. The facial attachment ligaments include the zygomatic ligament, which is one of the strongest ligaments both mechanically and biologically, followed by the orbitofrontal ligament and the mandibular ligament [6, 7]. Moreover, with advancing age, the ligamentous support for the fat compartments, whether they are superficial or deep, tends to weaken and become more pliable. This leads to the sagging and bending of the corresponding fat compartment [4, 8]. Hence, the mid-face region is commonly regarded as a pivotal location for carrying out face-lift procedures, targeting age-related manifestations by focusing on the trajectory of ligaments, particularly the zygomatic and periorbital ligaments, as well as the mandibular ligament [9]. Studies on the anatomical aspects behind the FOS have found a midface structure termed the transverse facial septum. This structure is connected to the underside of the zygomaticus major muscle and supports the deep fat compartments in the inner and outer cheeks [10]. Muscle contraction of the zygomaticus major during smiling and other similar facial expressions can stretch the septum and change its shape [10]. The facial bones provide structural support for the adjacent soft tissues and serve as the basis for facial rejuvenation procedures. It is crucial to recognize that the facial skeleton undergoes ongoing changes as a person ages, such as the loss of bone tissue and the enlargement of natural cavities. These changes can impact a person's facial appearance and emotional expression [10, 11].

Understanding the aging process at each layer of the face has facilitated the development of cosmetic rejuvenation techniques with HA fillers. HA fillers have the ability to counteract the effects of aging and enhance the overall quality of the skin. Comprehending the age-related alterations in the anatomical layers of the face, such as their onset and the manner in which changes manifest in various tissue layers, might assist doctors in delivering therapies using HA fillers that exhibit more subtlety and precision [12]. Notable areas of inadequacy sometimes include: hollow temples, forehead wrinkles, tear troughs, sunken cheeks, and drooping areas that worsen deep grooves and wrinkles such as nasolabial folds, marionette lines, and jaw lines [9]. The objective of using HA fillers is to revitalize fat compartments by redistributing both superficial and deep fat compartments. This process enhances support and flexibility, hence improving the tension of subcutaneous anchoring ligaments. HA fillers injected at a deeper level, beneath the muscle, can enhance muscle volume and serve as a pivot point to generate a mechanical benefit, hence strengthening grip. On the other hand, HA filler injections at a more superficial level are not as effective in achieving these outcomes. Injecting into the muscle can inhibit muscular contraction by impeding muscle mobility [13].

3. WHAT IS FACIAL OVERFILLED SYNDROME?

In 2018, Dr. Ting Song Lim discussed a condition known as facial overfilled syndrome (FOS). This condition arises as a typical complication resulting from excessive usage of cumulative injections of HA fillers or non-HA fillers on the face. However, it is frequently overlooked and caused by the person administering the injections. Patients commonly experience excessive volume or weight in the midface, forehead, chin, and nose [14]. Previously, this syndrome was underdiagnosed and many doctors were not aware of such conditions. In fact, studies have shown that there is a visual adaptation that occurs when a person is regularly exposed to facial volume, such that the person perceives facial filling as normal [15]. FOS patients lose their original facial structure and may or may not be aware of their condition. In fact, facial deformities due to FOS often become more obvious with age, exacerbated by tissue sagging. In the early stages, FOS can be detected by emotional expressions and facial movements [14]. FOS can manifest in individuals of any gender and age, although it is most frequently observed in elderly individuals who have undergone several injections over a period of time [14].

Studies on the anatomical aspects behind the FOS have found a midface structure termed the transverse facial septum [10]. The contraction of facial muscle groups combined with displacement of the transverse facial septum can lead to a shift in midface fat compartments, thereby enhancing the overall anterior projection and volume of the midface [10]. Administering autologous fat fillers or HA fillers into the fat compartments of the midface might augment the overall volume of the midface and result in alterations in facial expression. The condition of having an excessively filled or augmented face is referred to as over-filled face syndrome [10]. In addition, because the facial skeleton structure of Asian people is small, they are more likely to be overloaded with a smaller amount

of filler than Caucasians [14].

The primary indications of FOS are atypical facial patterns characterized by pronounced plumpness of the lips, cheeks, and under-eye area [14]. Facial signs become evident when the facial muscles are in motion, resulting in distinct expressions in the central region of the face and an artificial smile [15]. The visage exhibits irregularities and asymmetry, with certain regions displaying disproportionate enlargement in relation to the corresponding portions on the opposite side. In severe casesfacial characteristics undergo a significant alteration, resulting in an atypical appearance, fragmented contours, protrusions, deformities, and pose considerable challenges for correction [14]. A definitive diagnosis is achieved through a clinical examination, in conjunction with an ultrasound or MRI scan, to assess the distribution and placement of the filler beneath the skin and establish an appropriate course of treatment [14, 15].

4. CAUSES OF FACIAL OVER- FILLED SYNDROME

FOS does not happen overnight, but is a consequence of the accumulation of filler volume on the face after multiple high-dose filler injections [13]. There are several factors that can cause excessive tightening of the face:

- Excessive and prolonged use of fillers as a sole treatment, where a client receives multiple injections of significant amounts of filler over a long period of time without combining other procedures, may lead to what is known as FOS condition [14], [15].

- Patients received "bolus" injections of many fillers, in the wrong location, and were not adjusted over time due to incorrect judgment, assessment, and technique of the injector [14], [15].

- The selection of inappropriate fillers for rejuvenation is also a key contributing element. The filler exhibits inadequate viscosity, flexibility, and tissue compatibility [14], [15].

- This phenomenon can also be caused by the doctor performing the treatment and the patient displaying excessive enthusiasm. The excessive injection of filler into each location to obtain the intended outcome is also a contributing factor to FOS [14], [15].

5. DIAGNOSIS AND MANAGEMENT OF FACIAL OVER-FILLED SYNDROME

It is imperative to determine if the bulk in the affected face area is caused by the presence of endogenous adipose tissue or by the administration of injectable dermal fillers. Apply a gentle pressure to the finger and examine the area suspected to contain the mass [14]. Observation of a slightly translucent skin area, with a discrete, firm, and mobile mass of filler underneath, is a key sign of overfilling or malposition. Ultrasound and MRI imaging diagnostics can be combined to determine the location of fillers under the skin before performing hyaluronidase injections [14, 15].

Diagnostic criteria [14] [15]:

Patients with FOS follow these criteria:

1. Patients have received many dermal filler injections.

2. Patients have undergone "bolus" injections where dermal fillers are only concentrated on certain spots (point injections)

3. Patients exhibiting signs of FOS often present with one or more characteristic features that reflect altered facial proportions and disrupted anatomical harmony [14], [15]. These may include a loss of natural facial topography, resulting in a smooth, overly convex appearance that lacks normal contours [14]. Clinically, a heavy mid-to-lower face, often accompanied by "setting sun" eyes (a downward-pushed orbital appearance), is frequently observed [14],. Additional features include a broadened nasal base, a round and excessively protruding forehead, and a pointed chin, all of which contribute to a disproportionate and unnatural facial profile [14]. Furthermore, sausagelike lips may result from overfilling of the vermilion border, further exaggerating facial disharmony [14, 15].

Management of FOS

The management of FOS is customized based on the individual patient's level of severity and desired outcomes. In moderate circumstances, the filler may gradually dissolve over time. Patients should restrict the number of further filler injections and contemplate other techniques for skin tightening [15]. In critical circumstances, healthcare practitioners are required to assess and detect blockages that occur during the process of filling, and subsequently deliver hyaluronidase through injection. Often, hyaluronidase proves challenging to dissolve, necessitating doctors to administer several injections in the surrounding area and repeat the process several times to address the HA fillers [14, 15]. When dealing with non-HA filled chemicals, it is necessary to provide special assistance when necessary. To address areas or membranes that were overly filled, a solution consisting of 1500 IU of hyaluronidase, 5 cc of saline 0.9%, and a 30 G lidocaine needle was injected. The successful penetration of the fillers and needles through the

membrane or capsule that encloses the filling is of utmost importance. Long-term accumulations required numerous injections, but a single treatment does not require a complete injection [14, 15].

6. METHODS TO AVOID FACIAL OVER-FILLED SYNDROME

To effectively avoid facial fullness syndrome, clinicians must have a comprehensive understanding of face anatomy and the multiple factors that contribute to facial aging, as well as improve their practical abilities. Prescribing fillers requires a thorough knowledge of the product, as well as the ability to select the correct layer and position on the patient's face [14, 15]. It is necessary to improve sensitivity in observation, aesthetic evaluation and early recognition of early signs of overfilled face syndrome for customers. To minimize the risk of FOS, practitioners should administer conservative volumes at each injection point, ideally not exceeding 0.5 cc using the point injection technique [14]. The total filler volume per treatment session should be limited to 3–4 cc for the entire face. Regular follow-up assessments every 6 to 8 months are essential to monitor results and guide maintenance treatments appropriately [14, 15]. Provide specific guidance and instruction to clients regarding the aforementioned complexities [14, 15].

Educating patients is essential in preventing FOS. Emphasis should be placed on the benefits of conservative, staged filler treatments rather than high-volume corrections in a single session [15]. Patients should be advised to adhere to individualized treatment plans, incorporating regular evaluations every 6–8 months, to maintain aesthetic harmony and minimize the risk of overcorrection[14], [15]. To optimize aesthetic outcomes and prevent FOS, treatment should not rely solely on dermal fillers but instead be combined with complementary modalities such as botulinum toxin, skin resurfacing, energy-based devices, or tissue tightening techniques, tailored to the patient's individual needs.

7. CONCLUSION

Inappropriate use of dermal fillers may lead to varying degrees of facial overfilling, ranging from subtle volume excess to severe manifestations consistent with FOS. Gaining knowledge about the over-filled face condition is a valuable resource for cosmetic practitioners to avoid the development of deformed, unnatural, and unaesthetic facial appearances. Medical practitioners must prioritize patient assessment procedures, possess comprehensive understanding of facial anatomy, and possess the expertise to provide HA injections using the correct technique, appropriate class, and suitable HA product. The use of small-dose point injection techniques allows for precise product placement and appropriate dosing, while the administration of hyaluronidase serves as an effective intervention for correcting facial contour irregularities. Concurrently, early patient education remains essential in preventing and managing Facial Overfilling Syndrome.

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