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ETHICS IN MEDICAL AESTHETICS
WHAT YOU NEED TO CONSIDER

NECK WRINKLES
ASSESSMENT AND TREATMENT

CELLULITE
AN INJECTABLE SOLUTION

TREATING THE UNDER-EYE
CHALLENGES AND INNOVATIONS

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COVER STORY

INJECTABLE TREATMENTS FOR THE UNDER-EYE AREA
CHALLENGES AND INNOVATIONS

Oksana Pashkovska, MD, explores the latest techniques in under-eye injectables, addressing key challenges like volume loss, oedema, and the Tyndall effect to enhance patient safety and aesthetic outcomes

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ABSTRACT
This article reviews the methodologies in injectable correction of the infraorbital area, detailing key anatomical considerations and potential risks. The findings underscore the importance of a comprehensive understanding of facial anatomy, proper filler selection, and tailored injection techniques to optimise outcomes in periocular rejuvenation.

THE PERIORBITAL REGION PLAYS A crucial role in facial aesthetics and expression[1]. This area is central to interpersonal communication, as the eyes are often referred to as the 'window to the soul'[2]. Changes in this region can significantly impact the overall appearance and aesthetic perception of the face.

With age, the periorbital area undergoes a series of anatomical and clinical transformations that profoundly affect facial aesthetics. One of the primary changes is subcutaneous fat atrophy, leading to volume loss and the formation of hollows under the eyes. This phenomenon results from the reduction and downward displacement of fat compartments due to gravitational forces[3].

Furthermore, weakening of the ligamentous apparatus and periorbital muscles contributes to wrinkle formation, skin sagging, and the appearance of under-eye bags. Specifically, stretching and thinning of the orbital septum allows fat pads to protrude, creating visible swelling and puffiness[4].

Another important factor is skin thinning in this area. As the skin loses elasticity and becomes more transparent, underlying structures such as blood vessels and muscles become more visible, contributing to the appearance of dark circles[5].

Additionally, changes in the facial bony structures, particularly orbital rim resorption, lead to an increase in the orbital aperture and deeper-set eyes. This exacerbates the aesthetic deterioration of the periorbital area as soft tissues lose support and descend[6].

The combination of these changes is influenced by both intrinsic ageing factors and external factors, such as ultraviolet radiation, smoking, and environmental pollution, which accelerate structural degradation and impact the overall aesthetic quality of the periorbital region.

Excess volume and the risk of ptosis

Filler injections into the periorbital area can lead to excessive volume, which, in turn, contributes to the development of ptosis. This phenomenon, known as facial overfilled syndrome, is characterised by the distortion of natural facial contours due to excessive or improperly placed fillers[7].

Over time, under the influence of gravity and age-related changes, these excess volumes may further exacerbate tissue ptosis, particularly in the delicate periorbital region[8].

A study by Mobin Master demonstrated that hyaluronic acid fillers can persist in tissues much longer than previously expected. Magnetic resonance imaging (MRI) revealed that fillers may remain at the injection site for several years, increasing the risk of volume accumulation and ptosis development[9].

Tyndall effect

The Tyndall effect occurs when light scatters on filler particles that have been injected too superficially, resulting in a bluish or cyanotic discolouration of the skin. This phenomenon is particularly noticeable in the periorbital region due to the thinness of the skin[10].

Incorrect injection technique or the use of an inappropriate filler can contribute to the development ▷

"With age, the periorbital area undergoes a series of anatomical and clinical transformations that profoundly affect facial aesthetics."

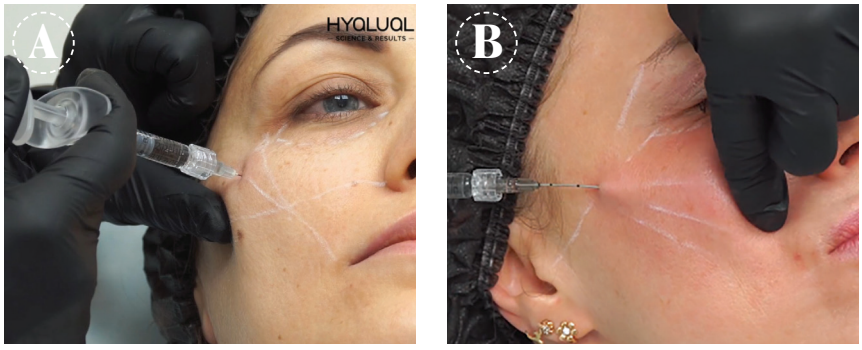
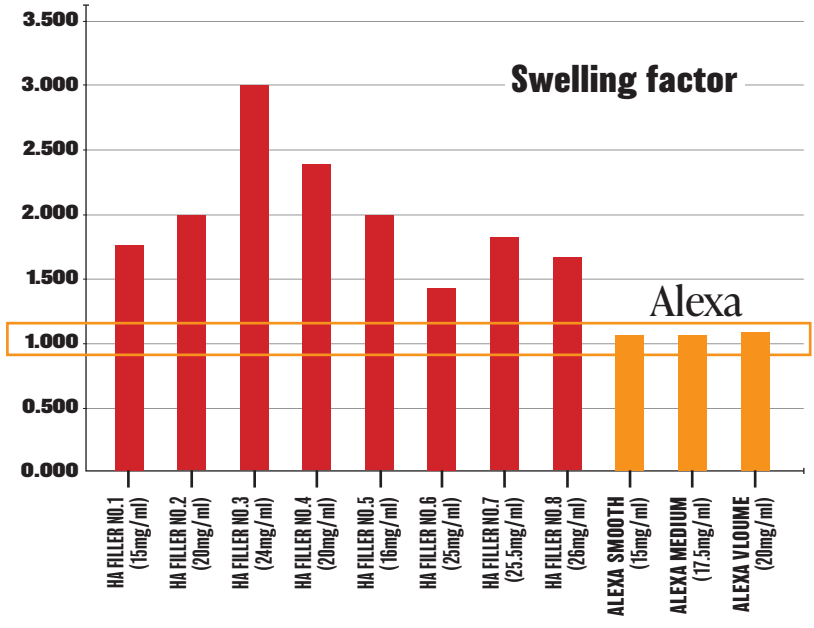


Figure 1A After marking the injection site, 0.4 ml of Alexa Volume filler is injected via bolus supraperiosteally into the G-point using a 27G x 0.5 inch (0.4 x 12 mm) needle per side. **Figure 1B** Linear retrograde technique with Alexa Volume filler along the zygomatic arch and into the projection of deep fat compartments

Figure 2 First, the lower eyelid skin is cooled using a cryogen and treated with antiseptic. The patient is positioned semi-seated, looking upward. A 30G x 0.5 inch (0.3 × 13 mm) needle, bent at a 45-degree angle, is used. The needle is inserted superficially in the subdermal layer, and the filler is injected linearly and retrograde, with slow pressure on the syringe plunger (Figure 2A). The average volume per injection is 0.025–0.05 ml. Subsequent injections (Figures 2B, 2C) are performed without gaps between the filler deposits to ensure continuous distribution. The injection depth remains consistent, and care is taken to avoid contour irregularities. Approximately 1 mm before the needle is removed from the skin, pressure on the plunger ceases to prevent filler deposition in the dermis. The total amount of filler per eyelid is 0.1–0.2 ml, with a slight under-correction of approximately 20%. After injection, a gentle sculpting massage is performed along the filler distribution line.

Figure 3 Alexa Fillers demonstrate a ratio of absorbed fluid to the amount of gel used as 1:1, resulting in a predictable correction volume (Internal Hyalual company research, 2018).



▷ of this undesirable effect, which may persist for an extended period, making correction challenging[11].

Oedema

Hyaluronic acid fillers have the ability to attract water, which can lead to oedema at the injection site. In the periorbital region, where the tissues are particularly sensitive, this can become a significant issue[12].

Incorrect filler selection, excessive injection volume, or inappropriate injection technique can increase the risk of oedema. Additionally, the depth and area of filler placement play a crucial role in minimising this complication[13].

Techniques

With age, a decrease in the maxillary angle is likely the cause for the expansion of the inferior orbital rim and, thus, of an anterior positioning of the orbital septum. Therefore, a pseudoprolapse of the intraorbital quarter retroseptal fat pads, fat compartments located behind the orbital septum in the lower eyelid, can lead to the palpebral bags becoming more apparent. Also, the orbicularis retaining ligament might lose its horizontal position toward a more inferior inclined alignment, causing a loss of stability to the adjacent orbicularis oculi muscle, which forms the anterior wall of the underlying fat compartments below the aperture, that is, the suborbicularis oculi fat (SOOF)[14].

The injection technique described in the works of Casabona and Bernardini considers the ligamentous structure of the face to optimise lifting and volume restoration. This method involves injecting filler into a specific anatomical point, known as the G-point, located in the lateral portion of the SOOF. Filler placement in this area enhances midface elevation and improves the contour of the periorbital region. Studies have demonstrated that this technique achieves significant aesthetic improvement with minimal filler volume[15].

Therefore, as the first step in infraorbital correction for most patients, I perform filler injection into the dermal location termed the G-point[16] (*Figure 1*). This point is determined by the intersection of three reference lines:

- A line connecting the inferior aspect of the nasal ala and the tragus
- A line connecting the lateral canthus and the corner of the mouth
- A connecting line between the intersection of the two lines and a perpendicular line connecting to the lateral canthus.

If there are indications for midface volume restoration, filler can also be injected using a cannula under the SMAS layer in a fan-shaped, linear retrograde technique along the zygomatic arch and into the projection of deep fat compartments. Alternatively, a bolus injection with a needle can be performed directly into the deep fat compartments and along the zygomatic bone (*Figure 1B*).

For the first step in infraorbital correction, I use Alexa Volume filler (Hyalual, Switzerland). The second stage of infraorbital correction involves working directly with the lower eyelid to reduce the transition between the eyelid and the cheek. While a cannula is generally considered

Figure 4 Case 1. In this patient, 0.4 cc of Alexa Volume was injected as a bolus supraperiosteally into the G-point, and 0.2 cc of Alexa Medium was injected subcutaneously using a linear retrograde technique along the hollow between the eyelid and the cheek on each side

Figure 5 Case 2. In this patient, 0.5 cc of Alexa Volume was injected using a cannula under the SMAS layer in a fan-shaped, linear retrograde technique into the projection of deep fat compartments, Lateral Suborbicularis Oculi Fat (SOOF), and Deep Medial Cheek Fat, as well as supraperiosteally along the zygomatic arch on each side. Additionally, 0.2 cc of Alexa Medium was injected subcutaneously using a linear retrograde technique along the hollow between the eyelid and the cheek on each side

Figure 6 Case 3. In this patient, 0.4 cc of Alexa Volume was injected as a bolus supraperiosteally into the G-point, and 0.2 cc of Alexa Medium was injected subcutaneously using a linear retrograde technique along the hollow between the eyelid and the cheek on each side. Additionally, 0.3 ml of Alexa Volume was injected using a cannula in a linear retrograde technique into the projection of the Deep Medial Cheek Fat on each side.

safer, its use in the periorbital area may cause trauma to the orbital septum, damage to retaining ligaments, and injury to lymphatic capillaries, which can lead to complications.

Considering these factors, in some cases, the use of a needle for superficial subdermal filler injection along the orbital ligament is a more predictable and controlled approach (*Figure 2*).

The disadvantages of this technique include the potential for filler contouring and the Tyndall effect. Therefore, it is crucial to prioritise a filler that distributes evenly, is easy to mold, and has a low tendency for swelling.

In my practice, for this area, I use Alexa Medium filler (Hyalual, Switzerland), which meets these requirements. Due to its phosphate-buffered saline composition and rheological properties, Alexa has a volumisation factor of 1:1 (*Figure 3*).

The periorbital region is critically important for the aesthetic perception of the face, and its correction requires a deep understanding of the anatomical and physiological characteristics of this area. Further research and the development of new treatment methods will contribute to improving the effectiveness and safety of procedures aimed at enhancing the appearance of this delicate region.

Key points

- **Successful infraorbital rejuvenation relies on a thorough understanding of facial anatomy, particularly the ligamentous structures and fat compartments, to achieve natural results while avoiding complications such as ptosis and the Tyndall effect.**
- **Common risks include excessive volume leading to tissue sagging, filler-induced oedema due to water retention, and visible discoloration when fillers are placed too superficially, highlighting the need for careful filler selection and precise injection methods.**
- **The G-point technique, which involves filler placement at the intersection of key facial landmarks, offers enhanced midface support and aesthetic improvement with minimal product, while the choice of filler with appropriate rheological properties is essential for optimal results and safety**

▶ ***Declaration of interest*** *The author, Oksana Pashkovska, is a Key Opinion Leader (KOL) for Hyalual, but the views expressed are solely her own. Every effort has been made to provide an objective analysis of the product.*

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