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Case Report

Orbital post-septal hyaluronic acid: An iatrogenic etiology compounding lower eyelid steatoblepharon ☆

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ABSTRACT

The stark rise in the incidence of dermal filler-related adverse sequelae has given rise to a variety of cosmetic distortions related to improper filler placement that include dynamic and static contour deformities of the face. In this article, we describe two instances of post-septal hyaluronic acid filler aggravating existing steatoblepharon and outline potential causative mechanisms responsible for this condition.

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Introduction

The rapid growth in the number of cosmetic applications of dermal fillers in esthetic medicine has given rise to a variety of new or once-rare complications presenting to plastic surgery offices.^{1,2} These negative sequelae range from tissue-destructive injuries such as blindness and skin necrosis to purely cosmetic paradoxical exacerbations of existing facial deformities.^{3,4} In this article, we describe two

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incidental occurrences of post-septal hyaluronic acid (HA) filler complicating pre-existing lower eyelid steatoblepharon and outline potential causative mechanisms and preventative steps to minimize this problem.

Case reports

Case 1

A 75-year-old female presented for evaluation and management of chronic lower eyelid fullness and periorbital aging. The patient denied any prior surgical interventions for this issue but reported having undergone periorbital filler placement 18 months prior to presentation. She described a needle-based periorbital injection of temporary filler by an urgent care physician who was a family acquaintance. Evaluation revealed bilateral severe steatoblepharon with prominent nasoju-gal/palpebromalar folds and asymmetric soft fullness of the central left lower eyelid (Fig. 1). Complete periorbital and ophthalmological evaluations revealed adequate lower lid strength and globe function as well as changes consistent with a history of chronic dry eye and cataract surgery.

The patient was given a recommendation for a transconjunctival lower blepharoplasty with fat excision and simultaneous fractional carbon dioxide laser skin resurfacing of the lower eyelid skin. She received appropriate clearance from her ophthalmology and internal medicine teams and chose to proceed with the surgical intervention as outlined. Intra-operatively, upon incision of the left orbital septum and dissection of the central fat pad, a ~7 mm bluish mass was identified adjacent to the central portion of the inferior orbital rim (Fig. 2). The mass was cleanly dissected free and removed, followed by saline irrigation of the surgical site. Close inspection of the mass revealed a cystic structure containing a soft bluish gel suggestive of HA filler. Histopathological evaluation revealed a cyst with surrounding granulomatous inflammation containing an Alcian blue-staining foreign body material, consistent with HA. The patient recovered well, with the 1-month follow-up revealing symmetrically improved lower eyelids.

Case 2

A healthy 56-year-old female presented for periorbital rejuvenation. She had previously undergone a trans-cutaneous lower blepharoplasty without complications approximately a decade prior. Evaluation revealed bilateral post-surgical lower eyelid irregularities with a soft tissue prominence along the left central lower lid with noted bilateral blunting of the lateral canthi and aging of the brows and upper eyelids. The patient reported having previously undergone HA filler injections (Restylane-L,



Fig. 1. Patient's pre-operative appearance, showing bilateral lower lid steatoblepharon with moderate asymmetrical prominence of the left central lower eyelid (arrow).

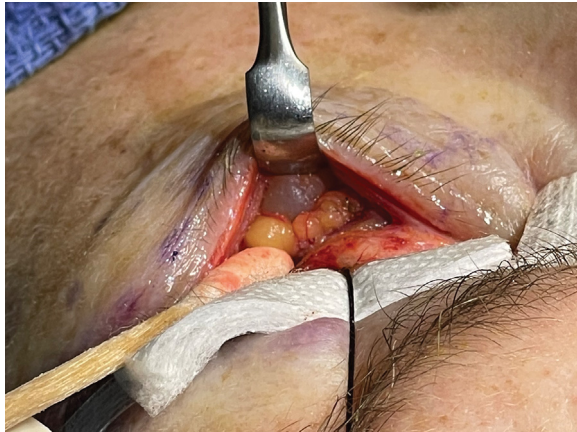


Fig. 2. Intraoperative photograph of patient in case one, showing the surgical dissection during the left transconjunctival lower blepharoplasty; a bluish cystic structure is visible, distinct from the adjacent orbital fat.

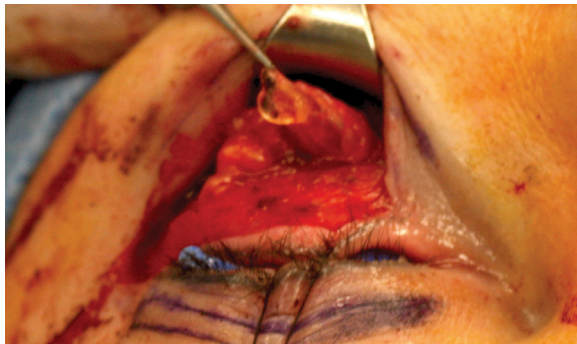


Fig. 3. Intraoperative photograph displaying the fragile cystic structure filled with partially extruded hyaluronic acid gel.

Galderma Laboratories, Fort Worth, TX) to the nasojugal folds in the preceding 2 years. She was given a recommendation for a secondary transcutaneous lower blepharoplasty with orbital fat repositioning and lateral canthopexy along with an upper blepharoplasty and an endoscopic brow lift. Intraoperatively, following elevation of the left skin-muscle flap and upon incision of the orbital septum, a clear cyst filled with a thin gel consistent with HA was encountered (Fig. 3). The contents were swabbed for culture and the surgical site subsequently irrigated with saline. The procedure was completed successfully without any further unusual findings. The patient recovered well from the surgery but was subsequently lost to follow-up.

Discussion

The advent of injectable biocompatible fillers has markedly altered the landscape of cosmetic plastic surgery and expanded the nonsurgical repertoire available to plastic surgeons and subspecialists. However, given the widespread use by, and accessibility of these agents to, non-specialized providers, an explosive growth in the incidence of filler-related complications has also introduced a variety of novel cosmetic sequelae. Although injuries resulting from inadvertent vascular occlusion – potentially leading to tissue necrosis, blindness, stroke, and even death – have dominated the published literature, an assortment of esthetic deformities have also now become commonplace.⁵ Static and dynamic distortions of the face, such as the well-described *overfilled* and *alienization* syndromes resulting from

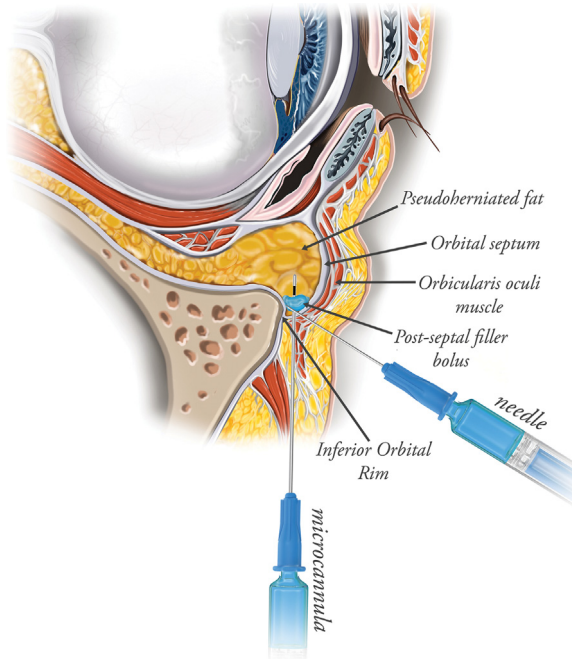


Fig. 4. Lower eyelid anatomy and potential needle- and cannula-based technical approaches that could predispose to the inadvertent post-septal placement of dermal fillers during non-surgical correction of nasojugal and palpebromalar folds.

excessive and improper facial volumization have led to the formation of a new therapeutic niche of “reversal aesthetics” centered on chemical dissolution of improperly-placed filler.⁶

In this two-case series, we report the iatrogenic exacerbation of lower lid steatoblepharon and contour irregularities occurring due to the improper post-septal placement of HA filler into the orbit. Although biocompatible and non-immunogenic in nature, HA fillers are heavily crosslinked compared to native HA and have shown the ability to persist for as long as 7–12 years within the periorbital soft tissues.^{7,8} Accidental injection of dermal fillers into the post-septal, intra-orbital fat results in the paradoxical worsening of the lower lid and may be extremely difficult to reverse due to hesitation by unsuspecting practitioners toward performing intraorbital hyaluronidase injections.⁹ Soft tissue imaging modalities, such as MRI and ultrasound (US), may facilitate the identification and targeted delivery of hyaluronidase into these deposits, assisting with the proper reversal of these unwanted filler boluses.^{10,11}

The mechanistic process through which dermal filler can accidentally be injected into the post-septal compartment is likely enhanced by the senile ptotic and osteoerrosive changes occurring in aging patients. Specifically, the age-related pseudo-herniation of orbital fat, receding of the orbital rim projection, and the thinning and weakening of the orbital septum are likely factors predisposing to this iatrogenic issue. Although the direct trans-septal injection of filler by an unskilled practitioner is possible, additional needle- and cannula-based technical approaches may also risk post-septal placement by skilled practitioners, as shown in Fig. 4. Conventional needle-based, pre-periosteal bolus injections along the orbital rim may inadvertently deliver filler post-septally due to the pseudo-herniation of orbital fat over the inferior rim, placing the septum in the path of injection. Practitioners are advised to consider cannula-based approaches in patients with moderate ptosis of the midface and pseudo-herniation of lower lid fat.

However, the possibility of post-septal placement of filler with cannula-based techniques also exists and warrants a cautious approach by injectors. Specifically, cannula techniques employing a cranially-aimed approach can pin the cannula tip directly against the septum, especially in patients

with moderate to severe steatoblepharon or a negative vector. In such instances, due to age-related weakening and thinning of the septum, inadvertent post-septal delivery of filler is possible. Injecting providers are advised to maintain a lateral approach in order to protect a favorable pre-septal coursing plane during the correction of nasojugal and palpebromalar folds. In cases of suspected orbital HA filler presenting with lower eyelid contour deformities, practitioners should consider MRI or US imaging to screen for post-septal gel deposits that may be amenable to chemical reversal prior to the contemplation of any surgical intervention.

Conclusions

The rising incidence of dermal filler-related iatrogenic complications now includes an array of static and dynamic contour deformities that practitioners must keep in mind. Surgeons must remain vigilant to the possibility of post-septal filler contributing to lower lid bags, especially in cases of paradoxical worsening of the nasojugal and palpebromalar folds following filler injections. Treating providers are advised to consider screening for post-septal filler through soft tissue imaging with MRI or US and pursue targeted reversal therapy when deemed appropriate.

Patient photo consent

All patient photographs in this study have been approved for publication by the individual whose pictures are shown.

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Ethical approval

Not required.

Declaration of Competing Interest

Dr. Soares is a speaker for Revance Therapeutics, Inc.

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