Bilateral Asynchronous Infraorbital Masses in a Patient Denying Dermal Filler Injection

Ceyhun Arıcı[1], Batuhan Aksoy[1], Mehmet Serhat Mangan[2]

[1]İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Ophthalmology, İstanbul, Türkiye
[2]University of Health Sciences Türkiye, Haydarpaşa Numune Training and Researc Hospital, Sadık Eratik Eye Clinic, İstanbul, Türkiye

Dear Editor,

Filler injections for facial volume restoration, especially with hyaluronic acid (HA) fillers, have surged in the past decade. The infraorbital area is a frequent target to correct volume loss and improve under-eye hollows. Although generally safe, dermal fillers can lead to complications long after treatment, including atypical infections, inflammation, migration, scarring, and foreign body granulomas.[1,2]

Very late-stage orbital mass formation following lower lid injection of HA filler has been reported in only one study.[2] As far as we know, there has been no study reporting very late-stage orbital mass formation bilaterally and asynchronously secondary to HA filler injection into the inferior eyelid. We hereby present a case of a palpable mass in the right infraorbital region 10 years after filler injection in a patient who underwent orbitotomy due to concern about a potential orbital tumor. This diagnosis was confirmed histopathologically. Forty months after the operation, the same clinical situation occurred in the left medial infraorbital area. This time, the lesion regressed with corticosteroid treatment. This case is reported in accordance with the tenets of the Declaration of Helsinki and the Health Insurance Portability and Accountability Act and with the patient's written consent.

A 43-year-old otherwise healthy woman presented with a 5-week history of a gradually enlarging palpable mass in the right inferior medial orbit (Figure 1A). She had no history of allergies, pain, lacrimation, nasal obstruction, hemorrhage, or prior trauma or surgery. The anterior segment and fundus of both eyes appeared normal, and intraocular pressure was 14 and 15 mmHg in the right and left eyes, respectively, as measured by non-contact tonometer. Periocular examination revealed a firm, non-tender, mobile mass located in the tear trough area of the right orbit. There were no complaints related to the left orbit, and examination was normal. Complete blood count, biochemistry, erythrocyte sedimentation rate, and thyroid hormone values were all normal.

Magnetic resonance imaging (MRI) of the orbit showed a soft tissue mass isointense to muscle on T1-weighted sequences and with a poorly-defined border on T2-weighted sequences, with diffuse enhancement after injection of contrast material (Figure 1B).

A subciliary incision was made 2 mm below the lower eyelid margin. Dissection was carried out deep into the orbicularis oculi and superficial to the orbital septum to expose the infraorbital rim. The periosteum was incised and elevated to access the anterior orbit. Orbital fat was gently retracted to identify the mass, which was carefully dissected from the surrounding structures using blunt and sharp techniques, preserving the infraorbital nerve and extraocular muscles. The mass was excised en bloc and submitted for histopathological analysis.

According to the histopathology report, microscopic examination of hematoxylin and eosin stained sections revealed a granulomatous inflammatory reaction characterized predominantly by the presence of foreign body-type multinucleated giant cells. These giant cells were observed surrounding amorphous, mucoid, basophilic foreign material dispersed within the tissue. The surrounding stroma

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Address for Correspondence: Ceyhun Arıcı, İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Ophthalmology, İstanbul, Türkiye
E-mail: ceyhundr@gmail.com **ORCID-ID:** orcid.org/0000-0002-7962-8911
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demonstrated a mild lymphocytic infiltrate indicative of a chronic inflammatory response. Additionally, there was evidence of vascular hyperemia, reflecting increased blood flow and local tissue reaction (Figure 1C).

Despite repeated inquiries, the patient did not disclose any history of prior filler injections during the initial ophthalmic examination. Following surgical excision of the mass and the results of pathologic examination, she admitted that she had once received an injection of HA filler bilaterally in the lower eyelids 10 years earlier but had not wanted to disclose this information because she underwent the procedure despite her family's disapproval. At postoperative 2 years, ocular and periocular examination findings were normal and the patient had no complaints (Figure 1D).

Over 3 years after her initial presentation (approximately 13.5 years after HA filler), the patient presented again with the same clinical picture in the left medial lower infraorbital area (Figure 2A). An MRI scan with contrast showed left inferior medial orbital rim soft tissue thickening with enhancement in coronal T2-weighted sequences (Figure 2B). This time, the lesion regressed with cortisone treatment (oral prednisolone tablet [Mustafa Nevzat, İstanbul, Türkiye] started at 32 mg, tapered to discontinuation in 6 weeks) (Figure 2C).

The periorbital area is the first to show signs of aging due to genetic and physiological changes, such as thinning skin, loss of collagen and elastic fibers, and soft tissue and bone reduction. Because of its delicate anatomy, rejuvenation procedures are challenging and may cause side effects.[3]

HA filler injections are popular for treating periorbital defects. The outcomes are generally uncomplicated, although in rare cases, complications such as a granulomatous infection causing mass effect can occur. Mosleh et al.[4] presented a case report of a 63-year-old woman with a mass in the orbit due to migration of dermal filler. This can make it hard to link the mass to the filler. Histopathological confirmation is often necessary to avoid overlooking new pathologies. Qiu and Xiang[5] presented a case report of a 51-year-old woman with persistent swelling after HA dermal filler. A biopsy showed a granulomatous reaction. The patient was treated with intravenous and oral corticosteroids and antihistamines.

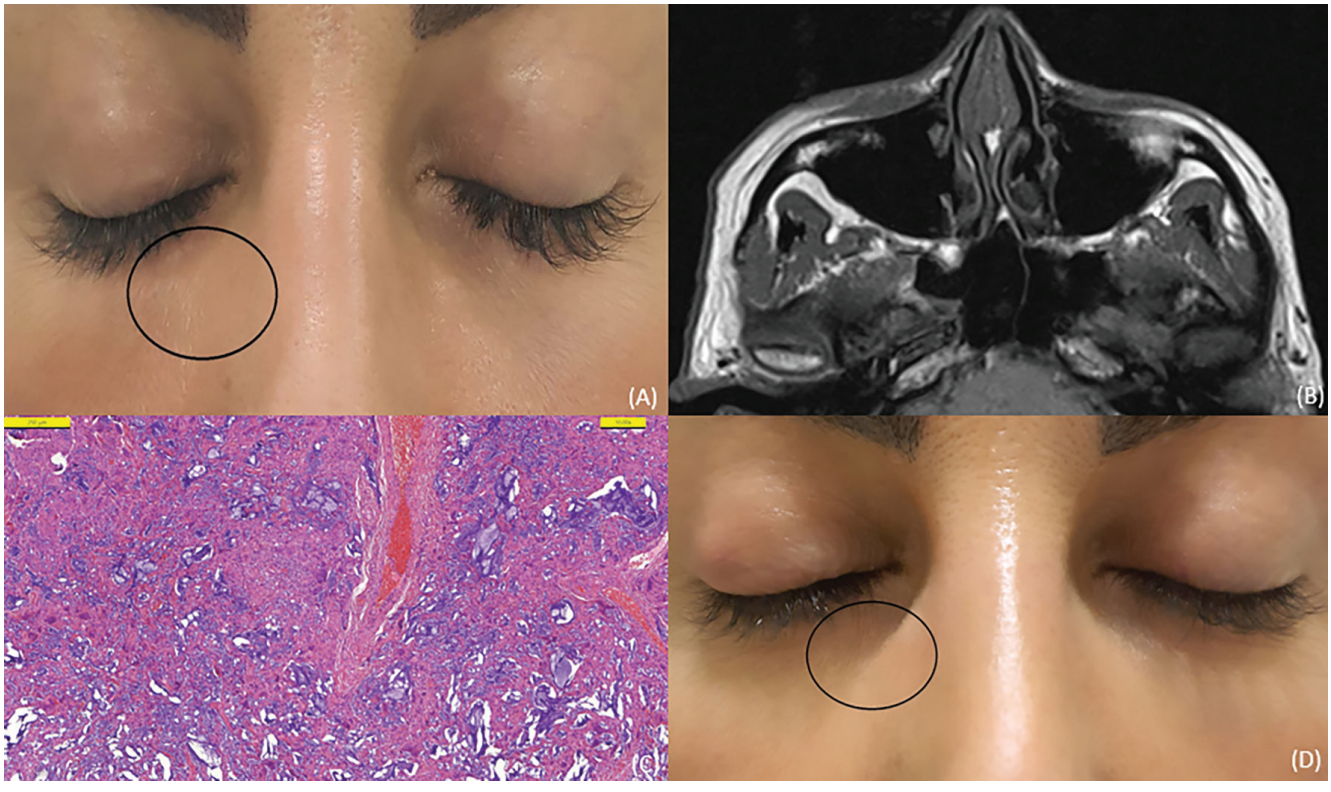

Figure 1. A) Right inferomedial orbital rim mass (circle). B) Pre-contrast axial T1-weighted magnetic resonance image showing soft tissue mass effect in the right infraorbital rim. C) Foreign-body giant cell reaction surrounding amorphous, mucoid basophilic foreign material, mild lymphocytic infiltration, and hyperemia (hematoxylin and eosin, ×100). D) 24 months after surgical removal of right inferior orbital rim mass

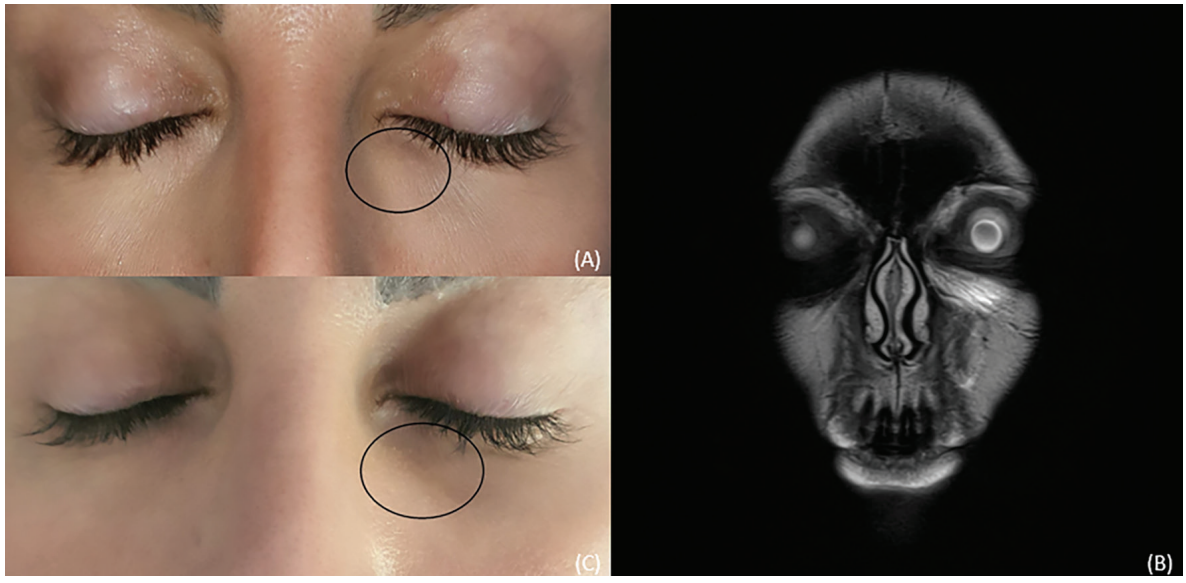

Figure 2. A) Left inferomedial orbital rim soft tissue involvement (circle). B) Post-contrast coronal T2-weighted magnetic resonance image demonstrating inferomedial diffuse contrast enhancement. C) Regression of soft tissue involvement 6 weeks after cortisone treatment

The complications of dermal fillers may have early, late, or delayed onset. Bruising, ischemic changes, and dermal necrosis are acute. Severe vaso-occlusions and wound infections are rare early complications. Later complications include early resorption, persistence, atypical infection, inflammation, and delayed granuloma formation.[1] The specific cause of these reactions is unknown, but one of several theories involves the formation of biofilms around the filler. Biofilms are bacterial communities that have become integrated into a matrix of extracellular polymeric substances, thus enabling the compound to adhere to the tissue surrounding it and evade antibiotics and culture tests.[6] Another theory is that with the persistence of the HA material, delayed inflammation may occur due to degradation products of the cross-linking procedure or product contaminants.[7]

Nathoo et al.[8] reported three cases of periocular mass lesions in which none of the patients recalled or reported undergoing dermal filler treatment in the periorbital area. Physicians should always ask patients about dermal fillers.

In the present case, a mass was found in the right infraorbital region of the patient and a biopsy showed granulomatous inflammation caused by dermal filler. As far as we know, this is the longest time between HA filler injection and the formation of bilateral asynchronous granuloma. Progression of left infraorbital swelling 40 months after surgery was treated with anti-inflammatory therapy without the need for surgery.

In conclusion, clinicians should consider HA dermal fillers in the differential diagnosis of patients presenting with solid periorbital masses. The delayed onset of these masses highlights the significance of prolonged follow-up and patient education regarding potential complications. As in our case, patients may deny having had HA dermal fillers despite persistent questioning because of personal reasons. To avoid unnecessary diagnostic procedures, a history of dermal fillers should be highlighted in the patient history.

Ethics

Informed Consent: Written informed consent was obtained from the patient.

Declarations

Authorship Contributions

Surgical and Medical Practices: C.A., Concept: C.A., B.A., M.S.M., Design: C.A., Data Collection or Processing: C.A., B.A., Analysis or Interpretation: C.A., B.A., Literature Search: C.A., B.A., M.S.M., Writing: C.A., B.A., M.S.M.

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