

Two Cases of Adverse Reactions of Hyaluronic Acid-based Filler Injections

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Abstract: Hyaluronic acid (HA) is one of the natural components of the human body with high biocompatibility, biodegradability, and nonimmunogenicity, which makes it the ideal biomedical filling agent currently available. However, for many medical practitioners, HA filler injections remain a relatively new item to carry out. Learning while practicing, it is inevitable to encounter some difficulties and adverse reactions in its application. Here we report two cases of adverse reactions to HA-based filler injections, including anaphylactic reaction on the face and vascular thrombosis after augmentation rhinoplasty with HA filler. In this report, we highlight the management and prevention of the adverse reactions, especially in case 2, because vascular thrombosis is one of the severe complications and injectors should know how to avoid it and how to deal with it, thereby increasing the safety of HA-based procedures. (*Plast Reconstr Surg Glob Open* 2016;4:e1112; doi: 10.1097/GOX.0000000000001112; Published online 7 December 2016.)

Skin tissue reacts to filler injection differently and shows signs of erythema, local edema, or bruising, which normally subside within days and do not require specific treatments. In a few cases, other adverse reactions may develop, which tend to get more severe over time and last much longer, requiring treatments.

CASE 1. ANAPHYLACTIC REACTION AFTER HYALURONIC ACID FILLER INJECTIONS ON THE FACE

Hyaluronic acid (HA) exists in the human body naturally with high biocompatibility; therefore, anaphylactic reactions are rare. Very occasionally, rashes and edema of different severity at injection sites occur. Most lesions tend to be local and not severe, some accompanied by pruritus. Local lesions can be treated with topical steroids or immunosuppressants, but in severe cases, systematic treatment is needed. Local corticosteroid injection can be administered in case of unsatisfactory treatment.

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Received for publication June 21, 2016; accepted September 12, 2016.

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DOI: 10.1097/GOX.0000000000001112

A 28-year-old female patient received HA filler injections in the temporal region, lacrimal sulcus, submalar triangle, pars nasalis, and mentum in our clinic. Three days later, she had bilateral edema on upper eyelids and itchy milia pimples around center of the face, and confessed to excessive intake of hot, spicy food the same day after the injection (Fig. 1). She was prediagnosed with acute anaphylactic reaction and was given 10 mg loratadine tablets to take orally once a day and topical tacrolimus ointment (0.03%) for the lesions on the face for 5 days. The edema started to subside 2 days after the treatment with no pimples sighted. Seven days after the injection, edema subsided with no other adverse reactions (Fig. 2). This patient received another injection with HA-based filler products (same brand and batch) on upper eyelids, cheeks, and areas around nasolabial folds 1 month later. The patient abstained from hot, spicy food for 5 days, and no more anaphylactic reactions occurred.

Although it rarely happens, anaphylactic reactions require top attention and prompt response because a small number of patients may develop life-threatening anaphylactic shock. First aid kits including routine adrenaline shots, steroids, and a tracheotomy kit are vital and should always be accessible.

CASE 2. VASCULAR THROMBOSIS AFTER AUGMENTATION RHINOPLASTY WITH HA FILLER

Vascular thrombosis is one of the severe complications of HA-based filler injections. It most commonly occurs in facial arteries such as supratrochlear arteries and angular arteries, which may lead to skin necrosis of the area between

Disclosure: The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge was paid for by the authors.



Fig. 1. Redness around both eyes and the center of the face, nasal edema, narrowed palpebral fissures, protruding pimples without subcutaneous nodules or tenderness, FBC (negative).

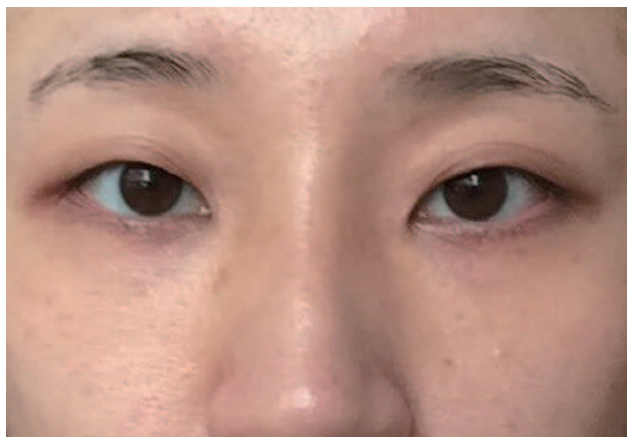


Fig. 2. Edema subsided with no pimples sighted.

the eyebrows and ala nasi.¹⁻³ Ocular arteries and intracranial arteries may also be affected, leading to tissue deactivation, blindness, paralysis, or even life-threatening situations.⁴ If thrombosis occurs in superficial arteries, patients will experience sharp pain and geographic pale skin, or delayed onset of dull pain with cyanotic skin, which later evolves into redness, pus, scabs, and eventually scar tissue.

A 24-year-old female patient sought medical attention in our clinic with redness, swelling, and pustules on the face 2 days after “HA filler” injections at an uncertified clinic. Visible pronounced redness, ulcer, and pustules were noted on large areas between the eyebrows and the center of forehead (Fig. 3). Blood routine (FBC) showed elevated leukocytes, and she was diagnosed with secondary infection from poor blood supply after vascular thrombosis. We cleared the pus with physiological saline cotton swabs and disinfected the wound with iodophor. Then she was given 20-mg dexamethasone intravenously once and hyperbaric oxygen therapy once a day for 6 sessions. As for the medications, amoxicillin capsules 0.5g 3 times a day



Fig. 3. Redness, ulcer, and pustules on large areas between eyebrows and the center of forehead.



Fig. 4. Complete healing of the wound with localized superficial scar.

and aescufen forte tablets 300mg twice a day were taken orally for 5 days, with topical recombinant human epider-

mal growth factor gel on the lesions for 10 days. Ten days after treatments, the pustules subsided with scabs. Twenty days after treatments, the scabs fell off, the wound healed normally, and FBC returned to normal (Fig. 4). Complete healing of the wound with localized superficial scar was seen 1 month later and we planned for laser scar removal.

Prevention is essential in thrombosis. Practitioners are to be equipped with sufficient anatomy knowledge, especially mapping face vessel distributions. It is recommended to avoid too much strength when pushing the plunger or excessive volume at the same sites and repetitive punctures with sharp needles and to choose blunt needles to avoid puncturing the blood vessels, especially around high-risk sites. Each patient who receives HA filler therapy should be closely observed for 30 minutes, and a few days of posttreatment follow-up is recommended.⁵ Some practitioners add paramethasone into the local anesthetics to achieve vessel contraction, therefore lowering the risk of vessel punctures. We do not recommend this because local blood vessel contraction may cause pale skin, which makes it hard to differentiate with thrombosis, and any delay or misdiagnosis of vascular thrombosis is too high of a risk to take.

Whenever noticing vascular thrombosis, we suggest implementing the following instructions step by step:

- Stop the injection immediately, extract some filler materials if possible
- Local hyaluronidase injection (every 150 U hyaluronidase on average can dissolve 1 ml HA)
- Administer hot packs to affected sites and massage
- Give the patient aspirin tablets 300 mg chewing and 20 mg dexamethasone intravenously
- Apply vasodilators such as nitroglycerin products (local or systemic treatment)
- Add anticoagulants like low-molecular weight heparin if necessary
- In the event of visual disturbance or nervous system dysfunctions, apply immediate oxygen

therapy while referring the patient to ophthalmology or neurological clinic.

SUMMARY

Although most of the adverse reactions after HA-based filler injections are reversible, practitioners need more professional skills, knowledge, and updated and refined injection techniques. They also need to be familiar with the management of various adverse reactions and provide prompt treatments to reverse deterioration and avoid sequelae.⁶ Effective communication with the patients before the injection for understanding and awareness of the process will improve patients' compliance and cooperation. Medical history should be enquired for overall assessment to exclude high-risk group not suited for the injections.

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PATIENT CONSENT

The patients provided written consent for the use of their images.

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