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Is hyaluronidase injection effective in treating tear trough hyaluronic acid filler deformity?

Göz altı (tear trough) hyaluronik asit dolgu komplikasyonunda hyaluronidaz enjeksiyonu etkili bir tedavi midir?

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Tear trough deformity is the foremost problem in periorbital rejuvenation and hyaluronic acid (HA) filling procedures are being frequently used today for its treatment. Selection of suitable patients for this procedure is very important and the injection should be performed using the correct technique due to the sensitivity of this anatomic region. The tear trough filling contraindications and general recommendations for this practice are summarized in Tables 1 and 2[1-3]. Following the procedure, complications that may require urgent/repeated intervention including nodule, asymmetry and retinal artery occlusion can occur. Possible complications are summarized in Table 3[1-3].

Hyaluronidase is an HA-depolymerizing endoglucosidase. It can be produced from human, leech and microbial sources and is used in medicine for various purposes[4-7]. It is used in combination with some substances that are applied subcutaneously such as vaccines as it facilitates the diffusion of the other substance when applied together. Local hyaluronidase injection is used successfully in the complications of HA fillings such as nodule, asymmetry and tyndall effect (skin color change in the form of a bluish shade due to filling) arising from HA degradation. Its use in combination with oral antibiotics has also been reported to be useful in treating biofilms. Administration of hyaluronidase within the first 4 hours is recommended in accidental intra-arterial injection of HA fillers and in cutaneous ischemia arising from HA fillers. In the literature, there are reports of patients who experienced visual loss after an HA filling and recovered following a retrobulbar hyaluronidase injection very shortly after the procedure[5-11].

Hyaluronidase is usually available as 1500 IU of dry powder in bottles and is stored between 2 and 8 °C; the powder is completely dissolved in 10 mL of physiological saline before administration. So, diluted, there is 1.5 IU of hyaluronidase in 0.01 mL of solution. There are also readily diluted commercial products and they contain 150 IU/mL. It is stated in the literature that the doses recommended for HA fillers vary depending on the amount of filler to be dissolved, which ranges between 3 and 75 IU[6]. It is also reported that the dose of hyaluronidase to be used depends on the concentration of the filler to be dissolved and whether or not it is cross-linked, and in case a satisfactory result has not been obtained, it can be renewed after 1-3 weeks[5-10]. Allergy and anaphylaxis may occur due to hyaluronidase; therefore, it is recommended to carry out an intradermal test with 4-8 IU of hyaluronidase before its administration and the patient should be monitored for allergic reaction for 20-30 minutes. If a hyaluronidase procedure is due to a suspicion of vessel occlusion associated with the HA filler, it is recommended to

Table 1. Contraindications for tear trough filling procedures[1,2]

Unrealistic expectations
Infection at the injection site
Known allergy to the filler or lidocaine
Serious septal fat herniation in the region
Extensive loss of elasticity in the region

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administer it as soon as possible and not later than 4 hours after the filling procedure. If it is to be administered due to asymmetry, tyndall effect or nodule, there is no such requirement; the procedure can be performed anytime but only after conducting a prior intradermal allergy test. Since hyaluronidase may have an antagonist effect, its use concurrently with anti-inflammatory drugs such as aspirin and ibuprofen, antihistamines, mast cell stabilizer, vitamin C, flavonoids and antioxidants is not recommended[5-11].

Case 1

A 46-year-old female patient presented to our clinic complaining about the deformity caused by the tear trough filling made in another site. We found out that the patient was administered 1 mL of HA filler in her tear trough a week ago (Figure 1). Her examination revealed that the HA injected caused a bump in her right malar region with no problem on the left side. The patient was informed about the procedure for dissolving her filling that caused asymmetry and her consent was obtained; then 1500 IU of hyaluronic acid was diluted with 10 mL of physiological saline. Intradermal 0.04 mL (6 IU) of hyaluronidase was injected into her forearm and she was monitored for 30 minutes. Since no reaction was seen, 0.3 mL of hyaluronidase (45 IU) was injected into the region of the tear trough bump. The patient was asked to come for a check a week later and additional doses totaling 0.2 mL (30 IU) were injected into a few sites. Her asymmetry disappeared completely after the procedure (Figure 1 bottom).

Table 2. General recommendations for tear trough procedures[1,2]

Written consent should be obtained from the patient
Cessation of blood thinners such as NSAIDs, vitamin E and gingko biloba a week before the procedure
Patient photos before and after the procedure
Effective anesthesia and cold application should be performed before the procedure
The antisepsis rules should be observed during the procedure
The HA filler to be used should have low viscosity
The patient should be kept in correct position during the procedure
A needle or cannula can be used in the procedure/use of a cannula (usually Gauge 25) is preferred
Care should be taken at the infraorbital foramen region
"Excessive rejuvenation" to eliminate the complaint completely should be avoided
Even if more is needed, a maximum of 1 mL should be injected slowly into each site per session
Excessive and rough massaging should be avoided after the procedure

NSAID: Non-steroid anti-inflammatory drug, HA: hyaluronic acid

Table 3. Complications that may develop after a tear trough filling procedure[1,2]

Pain
Erythema
Swelling and bruising
Asymmetry
Post-inflammatory hyperpigmentation
Orange-brown coloring due to accumulation of bleeding-related hemosiderin
Tyndall effect (bluish color change under the skin)
Nodules
Blindness (Antegrade/retrograde retinal artery occlusion)

Case 2

A 30-year-old female patient presented to our clinic complaining about the deformity caused by the tear trough filling made in another site. We found out that the patient was administered 1 mL of HA filler in

Figure 1. Shows the patient before, immediately and one week after hyaluronidase treatment

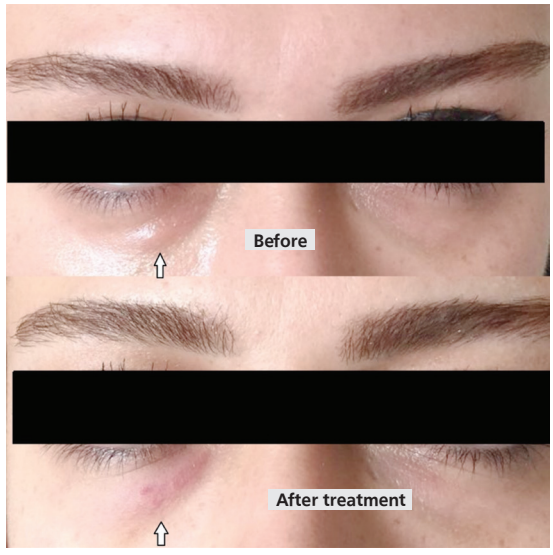

Figure 2a. Shows the patient before and immediately after hyaluronidase treatment

Figure 2b. Shows the patient with mild edema 1 day after hyaluronidase treatment and disappearance of edema 1 week later

Figure 2c. Filler application to the patient without complication 3 months after

her tear trough 20 days ago (Figure 2a). In her examination, a nodule 0.5 cm in diameter was seen in her right tear trough region; there was no problem on the left side. The patient was informed about the procedure for dissolving the nodule and her consent was obtained; then, 1500 IU of hyaluronic acid was diluted with 10 ml of physiological saline. For allergy testing, 0.04 ml of hyaluronidase was injected into her forearm and she was monitored for 30 minutes. Since no reaction was seen, 0.1 mL of hyaluronidase (15 IU) was injected into the region of the tear trough bump. After the procedure, the patient's complaint was observed to disappear (Figure 2a). However, during her check the next day, a slight edema was found in her tear trough, she was given antihistamine tablets and in her check a week later, the edema was seen to have been healed (Figure 2b). The patient presented to our clinic again for tear trough filling 3 months later and 0.2 mL of HA filler was administered to each side without any complications (Figure 2c).

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