

Treatment of vascular complications after use of lower lip filler with adjunctive 830-nm wavelength photobiomodulation therapy in Republic of Korea: a case report

Young Gue Koh¹, Joon Seok¹, Sun Young Choi², Beom Joon Kim¹

¹Department of Dermatology, Chung-Ang University Hospital, Chung-Ang University College of Medicine, Seoul, Republic of Korea

²Department of Dermatology, Chung-Ang University Gwangmyeong Hospital, Chung-Ang University College of Medicine, Gwangmyeong, Republic of Korea

Lips are a crucial aspect of lower-face aesthetics. The wider and fuller the lips are compared to the width of the face, the more attractive a female appears. However, lip volume decreases with age, increasing the demand for lip augmentation procedures. Hyaluronic acid (HA) fillers have become the most popular choice for lip augmentation due to their effectiveness, biocompatibility, and safety. Vascular complications from HA filler injections are rare. However, vascular occlusion caused by filler injections can lead to serious adverse events such as tissue necrosis. The 830-nm wavelength laser has been used for photobiomodulation (PBM) therapy in dermatology due to the advantage of adequate tissue penetration. It has also been found to be effective in pain control and wound healing. This case study describes the management of a vascular complication due to a lower lip HA filler injection with adjunctive 830-nm wavelength PBM therapy.

Key words: Dermal fillers; Lip; Necrosis; Photobiomodulation

INTRODUCTION

The lips are one of the most important elements of the lower face aesthetic, making up the lower third of the face and acting as a focal point. The wider and fuller the lips compared to the width of the face, the more attractive a female is, but lip volume decreases with age [1,2]. To improve this, lip augmentation procedures are being performed, and the demand is increasing among young people to improve lip volume and lines.

Lip augmentation procedures range from surgery to non-surgical procedures such as autologous fat and collagen filler injections. In recent years, hyaluronic acid (HA) filler has become the most popular choice due to

its effectiveness, biocompatibility, and safety profile [3,4]. Common complications of HA filler injection include injection site reaction (discomfort, pain, redness, swelling, etc), nodule formation, and skin discoloration. Vascular complication is rare, but the most severe complication of HA filler, which invades or compresses blood vessels, and can cause tissue necrosis [5].

In this report, we present the case of a patient with a lower lip HA filler vascular complication managed with adjunctive 830-nm wavelength photobiomodulation (PBM) therapy.

The patient in this case report provided written informed consent for the publication of her case details and clinical pictures.

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Correspondence

Beom Joon Kim
E-mail: beomjoon74@gmail.com
ORCID: <https://orcid.org/0000-0003-2320-7621>

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CASE REPORT

A 27-year-old Asian female presented with painful violaceous swelling of the left lower lip and hyperpigmentation with pustules on the labiomenthal crease (Fig. 1A, B). She had HA filler injections in both lip vermillions two days ago at other clinic and pain occurred immediately after the injection. She was immediately injected with hyaluronidase in the lower lip, but the painful nodule and discoloration persisted.

Ultrasound examination (Acuson P300; Siemens Healthineers) was performed to explore the HA filler deposition and blood flow. Vascularity was almost normal, but hypoechoic filler material was observed on the left lower lip (Fig. 2A).

Under the diagnosis of HA filler vascular complications, additional hyaluronidase (Hirax inj.; BMI KOREA) 750 U was injected and she administered sublingual nitroglycerin 0.6 mg with low-dose aspirin (100 mg daily) for 14 days. Hyperbaric oxygen therapy, saline soaking,

gentle pustule extraction, and 830-nm wavelength PBM (40 J/cm², intensity 4, 9 minutes 20 seconds) (Healite II Combo; LUTRONIC) were performed twice daily concurrently with oral agents, for one week. Massage was not performed due to pain. After one week, symptoms and skin lesions dramatically improved (Fig. 1C, D), and the HA deposits disappeared on ultrasound (Fig. 2B).

DISCUSSION

The lower lip is known to have fewer filler vascular complication than the upper lip because the blood vessels in the upper lip are smaller and more superficial than in the lower lip [6]. However, as in this case, there are some cases where vascular complications can occur in the lower lip as well, so physicians must be careful.

Filler vascular complication is a rare but most serious side effect of HA filler injection and vary in appearance depending on the vessel involved. Arterial involvement results in immediate pain, pale skin color, and subse-



Fig. 1. Clinical photographs of patient's lower lip. (A, B) At the first visit, there were violaceous swelling on the left lower lip and hyperpigmentation with pustules on the labiomenthal crease. (C, D) Marked improvement was observed after 1 week.

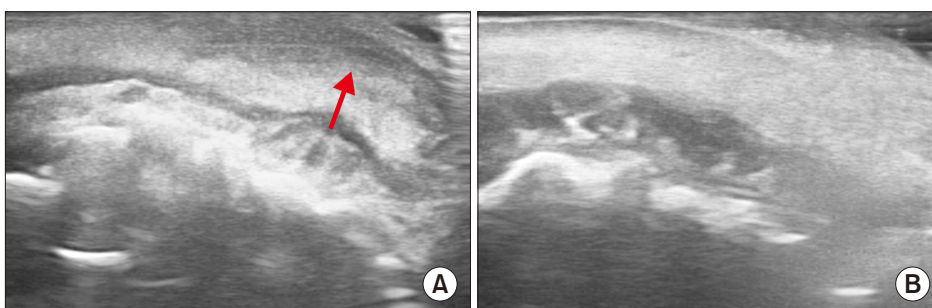


Fig. 2. Ultrasound findings of the left lower lip. (A) Amorphous-shaped hypoechoic nodule (red arrow) is observed. (B) Hypoechoic nodule disappears after additional hyaluronidase injection.

quent reticular discoloration, while vein involvement results in bluish color and relatively mild pain [5]. Identification of hypoechoic HA deposits and a decreased vascular component on Doppler ultrasound examination is helpful for diagnosis [7]. To prevent progression to tissue necrosis, the biggest problem with filler vascular complication, immediate hyaluronidase injection is required to dissolve the HA deposit which blocks blood flow, and nitroglycerin and aspirin are used to further increase blood flow and prevent thrombus formation [8].

830-nm wavelength can sufficiently penetrate soft tissue and be absorbed by the tissue, activating the intracellular mitochondria, resulting in cell photoactivation through a secondary photochemical cascade. It has been reported to be effective in pain control and wound healing as it can repair damaged cells and activate cellular functions, which is beneficial for post-aesthetic care [9]. das Neves et al. [10] reported that 830-nm wavelength light increases vascular endothelial growth factor, neovascularization, and flap survival in a mouse flap model. Based on these backgrounds, 830-nm wavelength PBM was performed as an adjunctive therapy for enhancing vascularity with symptomatic care, and has helped the patient recover without any adverse events.

In conclusion, physicians should be aware of probability of lower lip filler vascular complication and proper management to prevent further irreversible complications, and adjunctive 830-nm wavelength PBM therapy may be safely used.

ORCID

Young Gue Koh, <https://orcid.org/0000-0002-6376-0328>

Joon Seok, <https://orcid.org/0000-0002-8016-8385>

Sun Young Choi, <https://orcid.org/0000-0003-0248-7708>

Beom Joon Kim, <https://orcid.org/0000-0003-2320-7621>

AUTHOR CONTRIBUTIONS

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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