Facial injections with cosmetic fillers can lead to local artery occlusion. Zhang et al.\(^1\) recently reported that intraarterial thrombolysis with hyaluronidase (preferably with urokinase) is an effective treatment for hyaluronic acid-induced ophthalmic artery occlusion. However, they also mentioned that this therapy can result in secondary embolization due to the rapid revascularization after lytic
therapy, which moves the small undissolved hyaluronan embolus to the distal artery. Zhang et al.\textsuperscript{1} empirically recommend close observation in all thrombolysis cases and perhaps second thrombolytic therapy within 2 days of lytic treatment.

We recently experienced a similar case. The bilateral nasolabial folds of a 39-year-old woman were injected with hyaluronic acid at another hospital. After the right-hand injection, the patient immediately felt pain that ran from the right nasolabial fold to the nasal alar. The injecting doctor suspected embolism due to intravascular mis-injection and immediately injected hyaluronidase and vasodilator subcutaneously and intravenously, respectively. Five days later, the patient presented at our hospital with extensive endovascular embolization-related signs: along with some oral mucosa, the skin of the right nasolabial fold, right nasal alar, and right mouth corner exhibited necrosis [Figure 1]. We briefly speculated that the filler injection had reactivated herpes simplex but rejected the notion due to the wide-spread and linearity of the rash. Given the course of the lesion along the right facial artery, we then speculated that the prior hyaluronidase treatment had been misaligned and that a large embolus was still located in the center of the right facial artery. To identify the embolus site, a fine-contrast CT of the blood flow in the facial artery was conducted. Notably, analysis of the diameters of the left and right facial arteries in five slices showed that the right facial artery was 1.29-times thicker on average. However, the blood flow in the right facial artery was not markedly disrupted. We therefore diagnosed secondary peripheral embolus: we speculated that despite the previous (accurately directed) lysis therapy, the hyaluronic acid fragments had re-embolized in the periphery, causing proximal blood vessel angulation. Therefore, we used the treatment recommended by De Lorenzi,\textsuperscript{2} namely, subcutaneously flooding/immersing the embolization site in the peripheral blood vessels with 2000 units of hyaluronidase. Although this second lytic treatment occurred 5 days after the first, skin blood flow resumed immediately. Six months later, the patient still had a scar from the wounds that had reached the dermis. Nonetheless, a generally good texture was regained [Figure 2].

![Figure 1. At the first visit to our hospital.](image-url)
Figure 2. Six months after our treatment.

Our experience suggests that lytic therapy-triggered secondary peripheral embolism should be routinely suspected. While the second lytic therapy should ideally occur within 2 days of the first, our case indicates that good results can still be obtained when it is administered 5 days later. Notably, while we obtained good results with hyaluronidase alone, we agree with Zhang et al.’s recommendation to combine hyaluronidase with thrombolytic therapy: this is because secondary embolisms are likely to involve completed microthrombus as well as small pieces of hyaluronic acid. This notion is supported by a rat model of inferior epigastric-artery embolization: thrombosis arose 15 min after intravascular hyaluronic acid administration. Thus, by the time that signs of intravascular hyaluronan embolization are observed, thrombus formation is almost certainly completed.
Declaration of Competing Interest

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Ethical approval

N/a.

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