

# Successful management of extreme pain from delayed embolization after hyaluronic acid filler injection



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## INTRODUCTION

Filler injections to facial areas carry an inherent risk of vascular compromise and occlusion.<sup>1-3</sup> The highest risk injection areas causing vascular occlusion are identified as the centropalpebral region, such as the glabella; nasal region; mid forehead; and nasolabial folds.<sup>4</sup> The growth in popularity of filler injections for cosmetic augmentation inherently has led to increased number of reported vascular occlusions.<sup>4,5</sup> Several case reports of vascular occlusion explored varying management strategies, with none that are consistently beneficial. In this case report, we explore options for optimal pain management in treatment of a patient with vascular occlusion resulting in tender areas of incipient skin necrosis.

## CASE REPORT

A healthy 49-year-old woman experienced significant pain immediately after injection of 0.1 mL of a 24 mg/mL hyaluronic acid gel into her left glabellar crease. Her physician responded by injecting 0.2 mL hyaluronidase of a 150 units/mL formulation. The patient's pain improved slightly, and she was asked to apply warm compresses at home. However, her pain persisted into the next day, and she was referred to our clinic for further management.

At presentation, the patient was visibly distraught, reporting a pain level of 10 out of 10 in her glabellar region and left medial forehead. Physical examination found a reticulated light-reddish patch on her upper left forehead, corresponding to the supra-trochlear artery. Early brownish epidermal slough (microvesiculation) near the left medial eyebrow was evident (Fig 1). She could not tolerate gentle palpation of the affected area.

### Abbreviation used:

ASA: acetylsalicylic acid

Injection of hyaluronidase was attempted into the left medial glabellar region but was not tolerated by the patient because of severe pain. Thus, a field block using 1% plain lidocaine buffered with sodium bicarbonate was performed to the supra-trochlear and supra-orbital nerves. Concurrently, the patient also received 2 tabs of 325 mg of acetylsalicylic acid (ASA), topical nitroglycerin paste, and warm compresses. A total of 4 L/min of oxygen was also administered via a nasal cannula. Because of continued discomfort causing intolerance of hyaluronidase injection, a longer-acting anesthetic with a 4.2-hour half-life, 0.2% ropivacaine, was used to provide additional bilateral supra-orbital and supra-trochlear nerve blocks.<sup>6,7</sup> Once her pain subsided, 300 units of hyaluronidase was injected. The patient comfortably fell asleep and was observed for 5 hours while receiving oxygen. Upon discharge, she was instructed to take 325 mg of ASA every 4 hours for 3 days. For pain, she was instructed to take acetaminophen, 500 mg, and ibuprofen, 800 mg, every 4 to 6 hours. Before leaving the clinic, she was given 500 mg of intramuscular ceftriaxone and 20 mg of intramuscular triamcinolone to help reduce inflammation and the risk of infection, both well-known variables associated with deeper scars after a skin injury.

The patient returned the next morning appearing more comfortable, with pain scores of 3 out of 10. However, her skin color had darkened, and she was

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**Fig 1.** Patient presented with signs of supratrochlear embolization.



**Fig 2.** One day after initiating embolization protocol.

experiencing more edema. Also, a large cluster of micropustules had developed overlying the left glabella and spreading into the eyelid (Fig 2). These symptoms are all signs of epidermal sloughing. Ropivacaine blocks were performed, along with administration of 2 L of oxygen for 1 hour. This allowed for pain relief while her micropustules and vesicles were debrided with a chalazion curette. A paste of bismuth powder and mupirocin was applied to prevent infection.

The patient returned the next day with pain scores of 0 out of 10, less edema, improved skin coloration, and no micropustules. She returned 2 days later with normal skin coloration and superficial flakes where the pustules had been (Fig 3).

## DISCUSSION

Vascular occlusion is a rare, albeit serious, complication of filler injections. Prior reviews explored locations of injections most commonly associated with this complication.<sup>4,5</sup> Although the management of this complication still varies widely, hyaluronidase injections are essential to dissolving hyaluronic acid–based fillers. However, administration of large amounts of hyaluronidase may be limited because of pain in the area caused by skin necrosis and vascular occlusion.

This case validates the existing protocol asking for hyaluronidase, nitroglycerin paste, ASA, and warm compresses. Further, this case highlights that additional resources may be useful to add to the protocol (Table I).<sup>8,9</sup> It is possible that the patient could have experienced less pain and a quicker resolution if these treatments were administered immediately after the injection by the physician who performed the filler procedure instead of 24 hours later when she presented to our clinic.

First, effective pain control needs to be achieved using the many options at our disposal. Severe pain



**Fig 3.** Dried superficial crust, 4 days after initiating embolization protocol.

is a sign of impending tissue death from vascular compromise; this pain will be accentuated by delayed treatment. Previous publications have not explored the need for local anesthetic to allow for tolerability of hyaluronidase injection.<sup>8</sup> In our patient, a long-acting anesthetic, ropivacaine, was required for adequate pain control. Second, consider initiating the administration of oxygen via nasal cannula, which is easily accessible and does not require hyperbaric chambers. Oxygen may help if patients are hyperventilating because of pain or discomfort. Third, consider wound control measures such as anti-inflammatory systemic agents, systemic and topical antibiotics, and debridement of early necrotic tissue sooner rather than later. Gentle debridement is performed by gently unroofing vesicles with a small chalazion curette. Early debridement helps reduce inflammatory response and limits the development of necrotizing tissue.<sup>1</sup> Finally, consider maintaining ASA at home every 4 to 6 hours for 3 days. This case report highlights the importance of pain control as an additional management

**Table I.** Recommendations for treating embolization and impending necrosis<sup>8,9</sup>

First response to vascular compromise	(1) Administer 650 mg of ASA orally. (2) Provide effective pain relief (eg, local anesthesia, intravenous line, nerve blocks as needed). (3) Inject hyaluronidase (200-300 units depending on the size of the area). (4) Apply nitroglycerin paste and warm compresses. (5) Consider administering oxygen via nasal cannula.
Daily follow-up	(1) Administer pain relief as needed. (2) Perform early debridement of vesicles and pustules to preempt deeper necrosis. (3) Consider administering oxygen via nasal cannula. (4) Consider using intramuscular/oral antibiotics and anti-inflammatories. (5) Maintain ASA use for 3 days.
Patient aftercare	(1) Continue general wound care and debriding of necrotic skin. (2) Evaluate continued need for intramuscular/oral antibiotics and anti-inflammatories.

consideration when treating filler-induced vascular occlusions.

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