

## PRACTICAL APPLICATION

# Temporary hair loss after injection of hyaluronic acid filler

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## Abstract

**Background:** Compromised blood flow after filler injection is generally thought to result from intra-arterial obstruction.

**Aims:** To test this hypothesis.

**Patient:** A case presented with the clinical picture of reduced arterial blood flow after hyaluronic acid filler injection in the temporal region and subsequent hair loss.

**Method:** Clinical and ultrasound (US) assessments as well as ultrasound guided hyaluronidase injection were performed.

**Result:** Blood flow was restored and hair loss proved to be temporary.

**Conclusion:** There are many arguments to conclude that the problem did not result from intra-arterial occlusion, but rather from outside compression of the artery.

## KEYWORDS

arterial compression, filler, hair loss, hyaluronic acid

## 1 | INTRODUCTION

Day 0. A healthy 54-year-old woman had previous hyaluronic acid (HA) filler injections on an annual basis for nine years without any adverse events. She received a total of 0.75-ml Restylane Defyne<sup>R</sup> injected on the right lateral cheekbone about 2–3 cm medial from the tragus by a very experienced injector (HvdE). After aspiration, the filler was injected slowly and with minimal pressure using a 27G sharp needle directly supraperiosteal. Several hours after injection the patient complained of a dull pain in the right temporal area. The patient was instructed to use warm compresses and take aspirin. She refused to return to the clinic.

Day 1. Patient reported that the complaints had been resolved by taking ibuprofen.

Day 12. Patient reported discoloration, itching, and mild crusting of the skin surrounding the injection site and on the forehead. She sends a photograph (Figure 1, insert). An urgent request to visit the clinic was denied again.

Day 18. Patient reported loss of hair in the area of injection and a dull sensation. Finally grasping the seriousness of the

situation she was referred to a local clinic on her holiday location for hyaluronidase treatment.

Day 21. Patient returned to our clinic. Although pain and crusting were gone, the patient still experienced a dull sensation in her right temporal area. A shiny bald spot of 10 × 8 cm was visible in the parietal zone (Figure 1). Duplex-ultrasound (US) imaging showed a wide superior temporal artery one centimeter cranial to the bifurcation with the transverse facial artery. A well-defined hypoechoic pocket was seen on the cranial edge of the zygomatic bone, suspect for hyaluronic acid filler. A total of 60 units of hyaluronidase was injected under US guidance into the filler pocket. This immediately led to a restored blood flow in US. Two days later, the dull sensations in the temporal area had vanished. The skin tone had changed from shiny to normal. No residual scarring or subcutaneous atrophy was noted. Nine months later hair growth was completely restored (Figure 2).

On duplex ultrasound examination an HA filler is depicted as an anechoic pocket.<sup>1</sup> Because, arterial vessel walls in the face cannot be visualized with ultrasound, the exact location of the HA cannot be assessed, being either inside and blocking the vessel or outside and compressing it. Hair loss, in this case, can only be explained by

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**FIGURE 1** Right temporoparietal area 3 weeks post-filler treatment showing patchy hair loss. Insert: same area 11 days post-treatment



**FIGURE 2** Right side 9 months post-filler treatment, normal hair growth had recurred

temporary diminished oxygenation of the skin in the area. For this diminished oxygenation, there are only two explanations possible, either an obstruction intravascular or a compression extravascular. Since there was neither hematoma, nor residual skin scarring or permanence of hair loss, we conclude that compression is the most

probable explanation. The slow emergence of symptoms and the recurrence of hair growth are other arguments against intravascular obstruction.

Many believe that compression of arteries is only possible on the nose tip because of the confined space in that location. The periosteum on the cranial side of the zygomatic bone is attached to the superficial temporal fascia, which by itself is viewed as an extension of the SMAS. The superficial temporal artery runs inside the loose areolar tissue between this superficial fascia and the deep temporal fascia. In a cadaver study, Kang et al.<sup>2</sup> however, observed that the SMAS is bilayered and in the temple, vascular structures are found between these layers. The authors also describe a transition of the tissue from loose to slightly tough in the temple from lateral to medial. We think that as a result of the injection force some filler substance has spread from the cranial rim of the zygoma into the tight space between two fascia blades. Together with edema following filler injection, this may have compressed the superficial temporal artery (or branches of it) rather than obstructed the lumen.

To our knowledge, this is the first report of hair loss as a result of a vascular adverse event after filler treatment.

#### ETHICAL APPROVAL STATEMENT

Authors declare human ethics approval was not needed for this study.

#### CONFLICT OF INTEREST

None of the authors has any conflict of interest.

#### AUTHOR'S CONTRIBUTIONS

Dr. van den Elzen was the initial injector and has written the paper. Dr. Schelke performed ultrasound imaging and treated the complication. Dr. Velthuis is head of the department and revised the text of the paper.

#### DATA AVAILABILITY STATEMENT

No additional data apart from those given in the paper have been used.

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