

# How to Make Calcium Hydroxylapatite Injections Safer

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## Introduction

Injections of volumizing fillers are inherently blind procedures. Thus knowledge of anatomical structures is imperative, in addition to the use of a proper injection technique. A useful technique to employ to prevent vascular compromise is aspiration of the needle after placement, to ensure the injector is not in a vascular structure. A current limitation with the use of calcium hydroxylapatite is the inability to fully aspirate with the provided syringe and needle due to the increased particle size. The particle size of calcium hydroxylapatite ranges from 25-45 microns. Therefore, we will examine the effectiveness of aspiration when using a different size syringe and different gauge needles.

## Materials

Materials used were as follows: 27-gauge needle (Exel International Los Angeles, CA); 28-gauge needle (Exel International Los Angeles, CA); manufacturer-provided 1.5cc syringe (Merz Aesthetics, Franksville, WI); 1.0cc BD syringe (Franklin Lakes, NJ). The medium used was freshly obtained blood.

## Method

First, we utilized the manufacturer-provided syringe and 28-gauge needle with calcium hydroxylapatite that has not been reconstituted. We attempted aspiration of the blood and were unable to aspirate any blood product into the syringe. We then exchanged the manufacturer-provided syringe for a 1.0cc BD syringe and utilized a 27-gauge needle. We were able to aspirate a noticeable amount of blood both in the hub and throughout the syringe. Next, we conducted the aspiration with reconstituted calcium hydroxylapatite mixed with 0.3cc of 2% lidocaine. We noticed a minimal amount of blood was aspirated using the manufacturer-provided 1.5cc syringe and 28-gauge needle. We then exchanged the manufacturer-provided syringe to a 1.0cc BD syringe and 27-gauge needle with reconstituted calcium hydroxylapatite with 0.3cc 1% lidocaine and attempted aspiration of blood. We noted blood in the hub, as well as blood in the syringe. The manufacturer-provided syringe and needle was then exchanged for a 1.0cc BD syringe and a 27-gauge needle, allowing for more effective aspiration while using calcium hydroxylapatite. Also, reconstituting the calcium hydroxyl-

apatite with 0.3cc of 1% lidocaine demonstrated an increased ability to aspirate. The utility of this simple technique may reduce the adverse events such as vascular compromise.

## Conclusion

This simple experiment demonstrates a new method to make calcium hydroxylapatite injections safer. The particle size of calcium hydroxylapatite has limited the provider's ability to aspirate to ensure the needle is not in a vascular structure. As vascular compromise and cutaneous necrosis is a feared complication of volumizing filler injections, we have demonstrated a simplistic method to increase the ability to aspirate when the provider is injecting near or at a danger zone of the face.

An additional technique to complement this new method to increase the safety of calcium hydroxylapatite injection is to ensure that the provider leaves enough space in the syringe to provide an adequate vacuum effect. In order to achieve this vacuum effect, you must obtain 0.1-0.2cc of extra space in the syringe. Otherwise, the injector will have a false sense of security that they have not infiltrated a vascular structure.

To achieve this with calcium hydroxylapatite, which comes in manufacturer-provided 0.8cc and 1.5cc syringes, the material is mixed with 0.3cc of 1% lidocaine. This is accomplished by attaching the manufacturer-provided filler to one end of the Luer Lock- to-Luer Lock connector to a 3ml BD syringe containing the 0.3cc of 1% lidocaine on the other end. The contents are then mixed ten times and then transferred to the syringe containing 0.3cc of lidocaine. For example, utilizing a 1.5cc of filler would yield a total of 2.0cc of mixed filler and anesthetic. Then 1.0cc of calcium hydroxylapatite is transferred to the original manufacturer-provided syringe. The manufacturer-provided needle is 28- gauge size, but we recommend a 27-gauge needle size to effectively accomplish the vacuum effect.

The most recent advance with injection techniques is the utilization of cannulas. The use of cannulas provides an increased level of safety during injections. However, for high volume injectors and providers who have become experts at injecting with needles, cannulas may not be as practical. There is a learning curve when utilizing cannulas and this may be time consuming to adapt into a busy practice. Thus, for the providers who are hesitant to fully convert to using cannulas, they may consider our new simplistic technique to increase the safety of calcium hydroxylapatite injections near or at a danger zone of the face.

## Disclosures

Dr. Aguilera is a trainer for Merz Aesthetics. The other authors have not disclosed any relevant conflicts.

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