

Use of Blunt Tipped Cannulas for Soft Tissue Fillers

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ABSTRACT

In the US, soft tissue fillers are currently administered using sharp, hypodermic needles. The choice in length and gauge of needle is determined by the injector's preferences, as well as the physical properties of the filler itself. While some adverse events are injector-dependent, others may be due to risks inherent to using sharp needles. The use of new, flexible cannulas with blunt tips may potentially both lower these risks and change the techniques by which fillers are administered in the future.

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INTRODUCTION

Soft tissue fillers are commonly used to help restore age-related volume losses in the face and hands. In the United States, fillers are currently administered with the use of sharp needles. The procedure is generally considered safe, however, adverse events do occur. These range from common bruises to rare reports of serious complications such as skin necrosis, blindness, or stroke.¹

Cannulas are tubes that can be used to administer products or fluids into the body. Unlike hypodermic needles, which have sharp, beveled tips, cannulas typically have blunt ends (Figure 1). Cosmetically, cannulas have been used for years in the United States for fat transfer procedures. The large size of these cannulas best suited them for subcutaneous injections, as intradermal injections require a more precise placement method.²

Recently, smaller cannulas have become available in the United States that can be used to administer intradermal tissue fillers. These types of cannulas have become commonplace in Europe and other regions of the world over the past few years as well. They provide the safety benefit of a blunt tip and a flexible body, while allowing for administration of almost all filling agents.³

DISCUSSION

Soft tissue fillers are currently administered through hypodermic needles with sharp, beveled tips. These needles allow for precise deposition of product within the dermis or subcutaneous

tissue. The gauge and length of the needle used depends on the properties of the filling agent itself, the preference of the injector, and region being treated. Less viscous fillers are commonly administered through a 30-gauge needle. Though currently formulated filler products in the United States come prepackaged with the recommended needle, many injectors have other preferences. Off-label, these injectors may employ a 32-gauge needle as well—especially to tuck into finer etched-in lines such as in the perioral area. More viscous fillers require larger needles, ranging from 27-gauge (e.g., large particle hyaluronic acid or calcium hydroxylapatite) to 25 or 26-gauge (e.g., poly-L-lactic acid).⁴ Needle length depends on the injection technique and the anatomic location being treated. Needles ranging from ½ inch to 1 ¼ inches long are commonly used.

The most common adverse event patients experience from soft tissue augmentation is the development of a bruise. Bruising develops when blood extravasates from blood vessels as a result of soft tissue trauma. Certain injection techniques have been identified as having a higher risk for bruising, and even the most seasoned injector may sometimes give patients a bruise. A fan-like injection technique, rapid injection, rapid flow rates, and higher product volumes (often associated with more needlesticks) in a given area are all associated with a higher risk for bruising.⁵

Serious complications from administration are rare but do occur. These include vascular occlusion or embolization with

FIGURE 1. Various blunt tipped, flexible cannulas are currently available for injection of soft tissue fillers.

Photo courtesy of Merz Aesthetics

resulting skin necrosis, blindness, or even stroke.³ High-risk areas reported in the literature include the glabella (from supratrochlear artery occlusion), infra-orbital region (angular artery), peri-alar and nasolabial fold (lateral nasal artery and facial artery) and perioral region (labial arteries).⁵ Moreover, nerve damage from needles can result in temporary or permanent paresthesias.⁶

Unlike needles, cannulas have blunt tips and may offer a safer method to administer dermal fillers. A blunt tip is much less likely to traumatize soft tissue or nerves. Less trauma may translate to less pain and bruising, and ultimately a happier patient. Moreover, without a sharp tip, the use of a cannula carries a lower risk of perforating a blood vessel and inadvertently embolizing filler into the blood stream (Figure 2).^{3,7}

New cannulas will likely change the techniques used for soft tissue augmentation. Cannulas with flexible bodies have been developed with as small as a 30-gauge width. At these sizes, they can be used to administer the dermal fillers currently available on the market. The properties of the new cannulas may allow injectors to retry the fan-like injection technique, and likely see very nice results filling an area without the increased

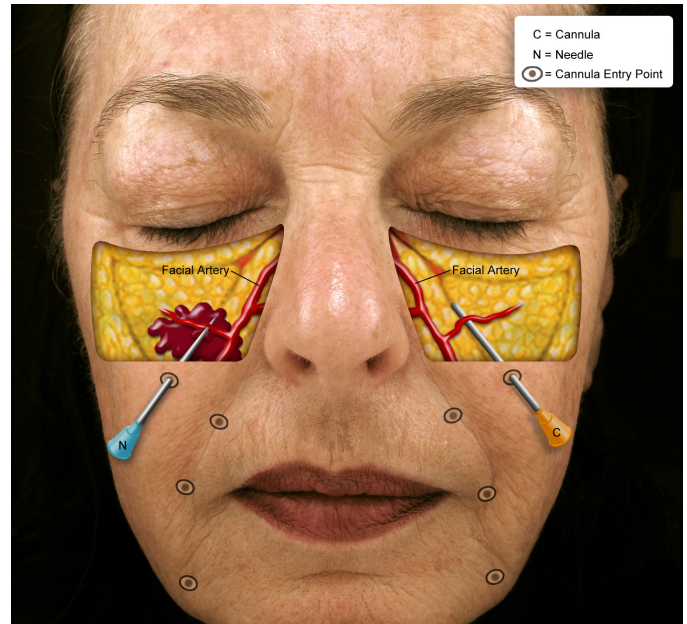
FIGURE 2. Traditional needle versus soft tipped cannula use. On the left, sharp needles can easily puncture blood vessels, causing bleeding. On the right, cannulas with blunt tips can be used with a lower risk of puncturing a blood vessel.

Image courtesy of Jake Nielson, Maria Kim and Joel L. Cohen MD.

The use of new, flexible cannulas with blunt tips may potentially both lower these risks and change the techniques by which fillers are administered in the future.

bruising risk associated with fanning and needles. Using cannulas, an entry point in the skin still needs to be made using a needle that is usually slightly larger than the cannula (i.e., a 25 gauge needle is often used to penetrate the skin before a 27 gauge cannula is inserted). The blunt-tipped, flexible cannula is then maneuvered through the newly created needle opening and into the regions that require volume replacement. These cannulas seem to decrease the amount of bruising anticipated compared with sharp needles alone. Moreover, cannulas may make injection of high-risk areas a safer procedure. Currently, only the DermaSculpt microcannula (CosmoFrance, Inc., marketed by Merz Aesthetics), is the sole blunt-tipped, flexible cannula approved by the FDA for use in the United States.

CONCLUSIONS

Small-gauge, blunt-tipped cannulas are currently available in the United States. Their use for the administration of dermal fillers may change the way we treat our patients and could improve patient outcomes.

DISCLOSURES

The authors have no relevant conflicts of interest to disclose.

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