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Blunt Tip Cannulas with Hyaluronic Acid Injections in the Face and Lip: Applying Theory in Practice

Announcer:
This is CME on ReachMD! The following activity *Blunt Tip Cannulas with Hyaluronic Acid Injections in the Face and Lip: Applying Theory in Practice* is provided in partnership with Omnia Education and supported by an independent educational grant from Galderma Laboratories.
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Your faculty for this activity Dr. Jason Bloom, Adjunct Assistant Professor at the University of Pennsylvania, School of Medicine; Clinical Assistant Professor at Temple University, School of Medicine; and Director of Facial Plastic & Reconstructive Surgery at Mainline Center for Laser Surgery.
To see the full video demonstration or to access the slide presentation and additional resources, please visit ReachMD.com/AestheticInjections.
Here's Dr. Bloom.

Dr. Bloom:
Hello, today we are discussing the use of blunt microcannulas for dermal filler injections. This is more of an advanced training or experience into why and the how of using these blunt tip microcannulas. So, what's the rationale really for using a blunt microcannula when doing these injections? So, we're going to discuss the reason and the efficacy behind using these blunt microcannulas in practice.
In my practice, the use of blunt cannulas really started back in 2011. Prior to this, I was injecting with a needle. I did find out quickly that while this was really nice at producing less bruising, it wasn't the perfect situation for doing all of my injections. Now in 2018, I'm able to use needles where I want and blunt microcannulas where I want in order to get the best outcomes for my patients.
So, what are the potential advantages in using cannulas for injections? Well, a single point of entry allows you to inject multiple different areas from one entry point on the face. Additionally, there is some mechanical action in some studies that shows the shearing of the cannula through the tissue stimulates these fibroblasts to produce collagen. There's less pain, virtually no bruising when you're using cannulas, and minimal downtime, but also very importantly, the chance of intravascular injection is much lower when using a cannula. While it is still very possible to get intraarterial with a cannula, they do reduce the risk of vascular occlusion or necrosis of the tissues, embolization of the product, or even blindness in some cases.

So, what is the risk of intraarterial injection when using a sharp needle? So, there is some data out there that shows that even when you're on the bone or on the periosteum, the tip of the sharp needle can actually compress the artery or one of the lumen down to the bone, and then the open tip of the needle can actually place the filler intraarterially.
There could be some imprecision to using a needle when doing these injections, and according to an interesting study by Jani van Loghem and some of his colleagues out of Amsterdam, what they showed is that the path of the least resistance can produce some backflow of the filler, and that isn't always seen with a blunt microcannula.
So, first of all, they looked at the temple hollow injections, and what they did is they used a 25 gauge needle, and they went straight down onto the periosteum. They placed these injections deep onto the bone and superperiosteally. Then they did cadaver dissections and showed that with the use of the needle there was both periosteal or superperiosteal injection of this yellow dye that they had placed

as well as the dye showed up in all tissue layers, including intramuscularly and subcutaneously. What they showed is that when they placed the product in a superperiosteal level, the product stayed there. There wasn't any intramuscular injection, and there wasn't any subcutaneous tissue injection. It was all placed precisely at the level they had wanted.

One of the areas where the most advanced injectors even have issues in terms of layering the product or the layers that we place it at is the tear trough. This is an extremely sensitive area in terms of type of product as well as the level of injection. Here, the level certainly does make a big difference in the outcomes for the patient.

They used that same 25 gauge needle down to the periosteum and placed small aliquots, 0.2 mL of this yellow dye, onto the bone. What they showed after they did dissections after using the sharp needle was there was product placed at the superperiosteal level, product placed intramuscularly, as well as even superficial product right underneath the skin. That can be a significant problem because the tear trough is so thin, the skin there, that superficial product can really show up after these injections, but when they looked at the 25 gauge microcannula in doing these injections, when they placed the porthole away from the area of injection and then tracked the filler underneath the tear trough, what they showed was that there was no superficial or intramuscular injection and that all of the filler actually resided on the periosteum or at the superperiosteal level. That's really important because you want to, especially in the tear trough area, place the product deep underneath the orbicularis muscle in order to act as a padding so you don't see it more superficially.

So, the proposed mechanism of the product actually extravasating or getting to areas that you don't want with the needle is based on this slide here. What they showed is that a direct injection of a needle provides a path of least resistance where the actual product or filler can backflow through the entrance point of a needle. When you come at it with a microcannula at more of a sloped angle, it creates more of a difficult path for the filler to follow to extravasate and get to areas that you might not want it.

So, there is further data out there that shows that blunt tip microcannula actually produce less bruising or hematoma and also less pain with a faster recovery versus sharp needles. Now, this was a study of 95 patients that was performed in Europe. They used a variety of different fillers as based on the different hyaluronic acid concentrations that you can see here. The interesting thing was that the overall Global Aesthetic Improvement Scale showed no difference between using a needle or a cannula. but what was interesting was there was less pain on the visual analogue scale, and what they showed is that it was a 3 for a microcannula and a 6 overall for using a needle. Additionally, they found less bruising or ecchymosis after the filler injections with a microcannula.

So, interestingly, one of the injectables companies actually sought out an FDA indication for one of their products, a small particle hyaluronic acid with lidocaine, for lip injections with a cannula, and what they showed in this multicenter trial was that the Global Aesthetic Improvement Scale for both lips was above 84% rated by the subjects and 98% for the investigators, and on the Medicis Lip Fullness Scale, what they showed was that 96.1% actually had improvement in their lips. Using the microcannulas was effective in producing full lips after injections.

There was no severe treatment emergent adverse events in the entire study, and most of the things like swelling, bruising, and pain were very limited, with swelling being the most, 13.3%, as we would expect for any type of product being injected into the lips. So, what they showed was not only was this clinically effective in producing lip fullness, but the use of the microcannula actually had very low treatment emergent adverse events in the study, so it was safe as well.

So, let's go into a little bit about the optimal techniques for precision cannula injections. So, we need to think about the injection principles, choosing the right cannula for the particular area and product that we're going to be injecting, and minimizing the adverse events.

To obtain the best results with optimal safety, it's really important to know the anatomy prior to doing any of these injections with microcannulas. Additionally, that we treat each area of injection at the appropriate depth or level of the skin or soft tissue. You don't want to be, for example, too superficial in a very tricky area, such as the tear trough, or else you will see the product. It's also important to understand that these products have different characteristics or personalities. Some of them swell more, some of them lift more, and some of them flow through the needle or cannula differently. Through experience, it's important to see which products are best in which areas based on these characteristics and also how they react to the tissue based on the injections with the cannulas.

Furthermore, it's important to select the right size cannula for each of the products in the specific areas to be injected. So, more delicate tissues, such as the lips and the tear troughs, require a smaller cannula. I tend to use a 27 gauge cannula in those cases, but more robust tissues, such as the midface, melolabial folds, nasolabial folds, and hands, require maybe a larger gauge cannula in order to accommodate some of the stronger products and to work its way through some of the thicker tissues. Additionally, whenever we are making the port or pilot hole for the microcannulas, it's important to make that hole with a needle that is one size bigger than the cannula gauge. For example, if we're working with a 25 gauge cannula, it's important to make that port opening or pilot hole with a 23 gauge sharp needle.

Now, when we're talking about some of the more robust tissue areas, such as the melolabial fold, nasolabial folds, midface, and hands, I tend to use a larger microcannula. For the midface, melolabial folds, nasolabial folds, I tend to use a 25 gauge inch and a half long cannula. For products like Sculptra, which I use a cannula for in most cases, I tend to use a 25 gauge two inch. That gives me a little bit longer reach in order to inject and spread the product out. I don't recommend using Sculptra in anything smaller than a 25 gauge

cannula. Additionally, hands to very well with products with a 25 gauge two inch cannula, and it allows you to spread the products in that loose areolar plane underneath the skin and soft tissue.
So, let's talk a little bit about minimizing the risks and adverse events when using these blunt tip microcannulas. Well, before you're doing any type of filler injections, it's really important that you understand the anatomy, and not just the skin, soft tissue anatomy, and bony anatomy, but really the vascular anatomy because, truly, these adverse events can happen. It's important to use things like blunt tip microcannulas in order to prevent adverse events, to do things like aspirating, using small, precise aliquots to inject slowly and really slow yourself down, and that will also not only help you, but it'll help the patients feel less pain during the injections as well as get better outcomes. Importantly, if you are injecting and you meet any resistance and the patient is experiencing pain, it's important to stop and reposition the cannula or needle prior to injecting more. Lastly, it's always important to monitor the patients pre and post injection. You need to look at the tissue, make sure that it's not blanching and things that could be warning signs that an adverse event could be happening.

Some key tips for using blunt tip microcannulas are: These are great tools in order to help reduce some of the adverse events that are seen when using sharp needles, but it's important to get some practice with these prior to using them in your practice. These should only be used by advanced practitioners with the appropriate trainings. It's important to understand that this is another instrument in your toolbox to use to target precise areas. These shouldn't be used as a be all, end all, but really in specific areas that will help you produce the best results. Lastly, just because you're using a blunt tip microcannula doesn't mean that you don't need to respect the vascular anatomy in the face. It's important to have a real rich understanding of this prior to doing any injections, whether you're using a needle or a blunt tip microcannula.
So, when we talk about optimal techniques for precision cannula injections, we really will go through three important points, including the principles behind these injections, the ways to choose the right microcannula, and also opportunities to minimize some of the adverse events that can happen.

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