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Free Diced Cartilage: Tips and Tricks of a Customized Procedure in Rhinoplasty

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Summary: Free diced cartilage graft represents a relatively innovative technique with multiple applications. It is conventionally used for smoothening, augmentation, or camouflaging of the nasal dorsum in primary or revision rhinoplasties. The aim of the article was to give some tips and tricks about harvesting and preparation of free diced cartilage to maximize its exploitation and make it easily repeatable, extending the field of application not only to the nasal dorsum but also other sites, such as the tip of the nose.

Free diced cartilage (FDC), harvested from septum, auricular concha/tragus, or ribs is certainly a useful and effective method to camouflage, smoothen, or augment the nasal dorsum. In fact, a fine-particle cartilage paste (particle diameter less than 0.2 mm) is realized and directly put into the desired location with a Freer elevator or, more commonly, a previously holed 1-ml syringe.[1,2] The syringe is drilled first to allow any excess fluid to be squeezed out and inject "pure" FDC through an unilateral gap infracartilaginous incision. The FDC is finally molded into the desired shape and fixed with drapes. FDC mainly found applicability in the nasal dorsum for fine adjustments.

Erol,[3] author of the Turkish delight, emphasized the use of FDC in case of a closed pocket only. Moreover, he experienced difficulties in injecting both large and small nose areas with a 1-ml syringe. This is the reason why he preferred to perform FDC injection with stronger syringes.

In our opinion, FDC is a very effective tool that may find many applications in everyday nose surgeries. To better address FDC use and preparation, we tried to provide a series of tricks and tips allowing to maximize its benefits and facilitate its use. In fact, some points need to be raised (**see** video, Supplemental Digital Content 1, where tips and tricks in FDC harvesting and processing are given. This video is available in the "Related Videos" section of the Full-Text article at PRSGlobalOpen.com or at ***http://links.lww.com/PRSGO/A976***).

In accordance with Hoehne et al.,[2] harvesting particles whose diameter is less than 0.2 mm means that cartilaginous nutrition is facilitated, as the surface area is significantly enlarged and the diffusion distance reduced compared with larger diced or even solid cartilage grafts. As a result, cartilage viability is extremely likely, as demonstrated by their findings. Greater diameter particles would have minor nutrition properties and would be at risk of easy palpation from outside the nose. On the other hand, too small particles could easily get outside the syringe once squeezed.

The described squeezing process is crucial to let the sodium chloride (or gentamicin) solution out of FDC and obtain very realistic results, as they could be altered after fluid resorption.

In our opinion, it is important to perform FDC injection soon after the squeezing process: no later than 20 minutes. In fact, the paste may get too dry and it would be extremely difficult to push the plunger of the syringe in. Thus, if FDC is harvested in advance, it is better to leave a minimal amount of saline inside the syringe and postpone the squeezing process to a few minutes before the injection. Such tricks could avoid the use of stronger syringes than 1 ml. Moreover, to reduce the amount of cartilage wasted at the tip of the syringe, a "no-waste" 1 ml syringe should be preferred.

Furthermore, 24-gauge is a suitable size for a needle meant to drill the syringe surface, as mentioned by the authors.[1,2] In fact, a wider caliber would allow the small cartilage particles to get out of the syringe; a smaller one would be ineffective. However, as it is not a very resistant needle, it may be necessary to replace it during the procedure: its tip is likely to get blunted or bended. For this reason, also to have symmetrical holes it may be useful to exploit a Backhaus towel clamp. However, after the drilling process, it is usually necessary to push the plunger in and pull it out (3 or 4 passages) to smoothen the inner sharp holes edges.

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Video Graphic 1. Video, Supplemental Digital Content 1, which summarizes trips and tricks used during the harvesting and processing of FDC in rhinoplasties. This video is available in the "Related Videos" section of the Full-Text article at PRSGlobalOpen.com or at ***http://links.lww.com/PRSGO/A976***.

The authors[1,2] suggested the insertion through the infracartilaginous incision before skin closure in the open approach. However, we would like to emphasize the extreme versatility of this method, which is also applicable in case of closed approach, by placing the FDC on site through the intercartilaginous incision. This is remarkable, especially for those surgeons still performing the closed approach, even though nowadays the open one is preferred in most cases.

Furthermore, the same authors[1,2] focused on the dorsal placement of the cartilage paste. Anyway, we also found applicability of FDC for a better definition of tip projection, fullness, and blunt profile. Although differences exist and persist according to patient's ethnicity, sex, and age, it is always advisable not to obtain nasal tip sharp contours after surgeries. FDC also helps to reach a very natural-looking appearance in the tip by shaping minimal irregularities soon after final closure. Of course, nasal drape must be accurate to keep the FDC on site.

In accordance with Erol,[3] FDC is not always the best indication: in case of open roof, for example, wrapped diced cartilage may be preferable. In fact, as we previously mentioned, FDC should be considered as an ideal tool for refinements and with mild filling properties. Large areas to be filled usually benefit from other solutions. However, differently from his point of view, by using the aforementioned tips and tricks in cartilage harvesting and preparation, there is no need for stronger syringes and no particular force is required for injection, even in small areas.

Finally, according to us, FDC may also find applicability in cases where septum perforation needs a filling treatment.

In conclusion, although further studies are needed, in the future FDC may represent an ideal filler to use not only during major nose surgery but also minor ones and refinements, as happens nowadays with rhinofillers.

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