

LETTER TO THE EDITOR

Hyaluronidase use before rhinoplasty in noses previously injected with hyaluronic acid: is it always necessary?R. Rauso¹, GF. Nicoletti², R. Fragola¹, N. Zerbinati³, E. Nikolli¹, P. Bove⁴ and G. Tartaro¹

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To the Editor,

Filler rhinoplasty with hyaluronic acid (HA) has been a fast growing procedure during recent years due to the possibility of nasal reshaping without surgery (1, 2). Although filler rhinoplasty has shown to be effective, nasal injections may be challenging especially when accidental vascular compromise occurs. In medical literature, serious complications such as skin necrosis, visual loss or impairment have been described following this procedure (3). In order to reduce nasal filling risk and to have the possibility to reverse vascular embolization or compression, the use of HA is widely recommended, instead of other substances, because it is the only filler that can be reversed thanks to the use of hyaluronidase (HYAL) (4). Several HYAL injection protocols have been suggested in order to solve vascular problems following nasal injections, moreover, also delayed injections of HYAL have shown to be effective in order to reverse vascular compromise (5). However, patients who have received nose injections with filler may decide to undergo a surgical rhinoplasty, either for esthetic correction or respiratory improvement, which HA is unable to provide, because of the limited or temporary esthetic results from the injectable procedure. Concerns regarding the approach to

previously injected noses in patients looking for further surgical nasal modification has recently arisen (6).

HA fillers are the most used fillers worldwide, mainly because of their high safety profile. However, degradability of HA has 2 aspects: HA fillers exhibit an excellent safety profile as any unfavorable HA effect is temporary; on the other hand, virtually, the only downside of HA fillers is that any beneficial HA effect is also temporary (7, 8). Many HA products officially indicate that the materials are resolved within 6–12 months (7, 8). In the authors routine practice, patients looking for surgical rhinoplasty who had received nasal HA injections within the 12 months prior to the planned surgery are injected with HYAL at least 3 weeks before surgery, while HYAL injection is not performed if nasal HA injections were performed more than 12 months earlier. The authors present a case of surgical rhinoplasty where HA bolus was identified during surgical dissection, although HA injections were performed more than 18 months before surgery.

Case presentation

A 32-yearold female patient, unhappy with her nasal appearance, was scheduled for rhinoplasty. Her

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nasal tip had been injected with HA filler (Revofill plus, 23 mg/mL HA) by another physician more than 18 months before the planned surgery. Due to this long time frame, pre-operative HYAL injection was not performed.

The surgical procedure was carried out under general anesthesia, and an open rhinoplasty approach was performed. After trans-columellar incision, supra-perichondral tip cartilage dissection was performed. Once the supra-tip area was reached, between the passage from LLC to ULC, a bolus of HA placed in the subcutaneous tissue came out (Fig. 1). Once the HA was removed, the whole rhinoplasty procedure was performed and the patient healed without any problem.

DISCUSSION

Non-surgical rhinoplasty with filler, in selected cases, is an excellent alternative to surgical rhinoplasty in order to ameliorate nasal appearance with no down time (1, 2). On the other hand, the filling procedure

can be challenging due to the high vascular network present in a triangle shape on the middle of the face; this triangle is centered on the nose (3). Vascular compromise can arise for 2 main reasons: vascular embolization or vascular compression (9). In order to avoid vascular embolization, perpendicular injections above the bones or the cartilages have been suggested (1, 2); on the other hand, to avoid vascular compression it is mandatory to use a filler with the right rheology: in order to prevent vascular compression the use of an HA filler with a high G' should be avoided (9).

In a recent paper, Ramos and colleague evaluated the management of patients with previous nasal injections of HA seeking surgical rhinoplasty, and they proposed an algorithm based on the layer of HA injection (6). HYAL injection was suggested only when the HA injection layer was not represented by the supra-periosteal or the supra-perichondrial one, while in these cases direct surgical approach was suggested. Nevertheless, they concluded that once the surgeon has confirmed that the injected product



Fig. 1. Surgical field after supra-perichondral tip cartilage dissection. Black arrow points out the HA bolus identified during the dissection.

is HA and has established that a surgical procedure is the best option, he/she can inject HYAL before surgery or proceed directly to rhinoplasty (6).

In 2013, Mashiko et al. showed that long lasting results with HA injection, from 1 to several years, can be achieved in some facial sites, such as forehead, nasal root, chin, when the injection is performed on the periosteum. The Authors sustain that HA injection on the periosteum induces persisting inflammatory changes around the injected HA particles, which are expected to activate periosteal stem cells and contribute to the induction of tissue neogenesis, thus causing the formation of capsule/fibrosis during the process of HA absorption (7). Mashiko et al. concluded that, although volumizing effects by HA injections are typically temporary and repeated injections with an interval of 6–12 months are usually required for maintaining the cosmetic effects, the injection of an absorbable HA filler onto the bone only, instead of conventional intradermal or subcutaneous injection methods, led to long lasting results (7).

Another issue regarding previously injected noses with filler is the possibility to have a more challenging intra-operative dissection; this, of course, can be more evident with filler inducing neocollagenogenesis such as CaHA-based fillers. In the present case and in the Authors' experience, previous HA injection does not induce fibrotic tissue growth or, at least, does not require a more demanding surgical dissection.

In the present case, a subcutaneous HA bolus, injected more than 18 months earlier, was found during nasal dissection. This shows that also injection of the nasal subcutaneous layer, just like bone-only injection technique, induces a longer resorption time. Based on the presented finding, we started to inject HYAL to all planned rhinoplasties who refer previous nasal HA injections. To date, there is no consensus or recommendation on the optimum time to apply the enzyme before surgery. It is known that application of HYAL has an immediate action when injected into the skin and lasts between 24 and 48 hours with a half-life of only a few minutes, and it is metabolized by the liver and kidneys (9). However, after HYAL injection, an inflammatory process develops and, in order to avoid operating on an "inflammatory" field, we empirically started to inject HYAL at least 3 weeks

before the planned surgery. Further studies, such as blinded non-randomized controlled clinical trials, are mandatory to support the authors' hypothesis regarding the frame of time to wait between HYAL injection and surgical procedure to be performed in the same anatomical area.

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