

## Case Study: Treating a NSR Complication

Dr Beatriz Molina discusses her unique way of managing a vascular complication following a non-surgical rhinoplasty treatment

**The majority of non-surgical techniques using hyaluronic acid (HA) dermal fillers, to rejuvenate and/or address facial disharmonies deliver safe, effective, and reproducible aesthetic results.** HA dermal fillers allow for the correction of rhytids, folds, and volume deficits in response to age-related changes or disease, and they can also be used for minor corrections following surgical procedures such as rhinoplasty.<sup>1</sup> Although the safety profile of HA fillers is favourable, adverse reactions can occur. Most of these are noted to be mild and transient – serious adverse events are rare. Early adverse reactions to HA fillers include vascular infarction and compromise, inflammatory reactions, injection-related events and inappropriate placement of filler material. Among late reactions are nodules, granulomas, and skin discoloration.<sup>2</sup> Most adverse events can be avoided; a detailed understanding of facial anatomy, suitable patient and product selection, and appropriate aseptic technique can reduce the chances of them occurring. Should an adverse reaction occur, practitioners must be prepared with the knowledge and tools available for effective treatment.<sup>6</sup>

### Non-surgical rhinoplasty procedures

'Non-surgical rhinoplasty' (NSR) is a treatment that commonly uses HA dermal filler to shape the nose. Although it is a relatively fast procedure, generally taking around 15-20 minutes, only highly experienced practitioners should attempt this treatment, as the nose is an extremely high-risk area due to the rich vascular blood supply.<sup>3</sup> For successful treatment, injectors must know the location of the relevant arteries. The facial artery comes from the external carotid and circles around the inferior and anterior borders of the

mandible, anterior to the masseter. It penetrates the masseteric fascia and rises upwards toward the eye. The facial artery lies deep to the zygomaticus and risorius muscles, but superficial to the buccinator and levator anguli oris. At the level of the mouth, the facial artery sends two labial arteries, inferior and superior, into the lips where they pass below the orbicularis oris. The continuation of the facial artery near the medial canthus beside the nose is the angular artery.<sup>4</sup> In the nasal area, the biggest concern in terms of complications is vascular compromise and anatomical structure damage. If a patient has had a surgical rhinoplasty procedure and wants to slightly add to this result with dermal filler, due to the added changes of anatomical variations, they are at a higher risk of compromising the vascular supply.<sup>5</sup>

### NSR complication case study

A 40-year-old female patient, who I had successfully treated three times before, came to me for another NSR treatment. Prior to my treatments, she had undergone a surgical rhinoplasty, but still had a small defect post-surgery that she wanted to correct.

Surgical rhinoplasty patients are particularly difficult to treat as their vascular supply may be compromised, so practitioners must be extremely careful when treating with fillers.<sup>7</sup>

On July 19, 2017, I performed the NSR treatment using a 25G cannula and a HA dermal filler. A small amount of lidocaine was firstly injected into the tip of the nose, then a 23G needle was used to facilitate an entry point for the cannula; it's important to note that only the tip of the needle was inserted. I injected 0.1ml of HA into the tip of the nose, then I injected 0.1ml into the right side. During the procedure, I noticed that there was a small area of blanching (a white discoloration) where I was injecting, on the right alar part of her nose. After injecting hundreds of noses in my 12 years' experience, this was the first time that I had seen this. Immediately, I stopped injecting, massaged the area vigorously and applied heat with warm compresses. After 30-40 seconds, there was an established blood flow of the skin and the colour went back to normal. Throughout this, the patient did not report any pain or discomfort. I decided to stop the procedure and informed the patient of what had just happened. The choice was to observe the patient, or to use hyaluronidase.

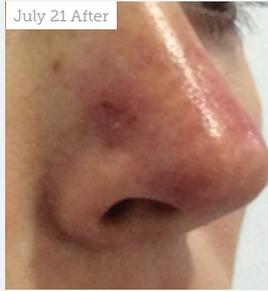
On occasion of a complication such as this, some studies suggest that practitioners should immediately use hyaluronidase and massage the area, using warm compressions if appropriate.<sup>4,11</sup> They also state that hyaluronidase should be injected immediately and used daily in liberal doses where signs and symptoms are present such as erythema, pain on injection or in the days following. They note that you should treat wherever the vasculature appears compromised, not only at the site of injection. I explained the situation to the patient and discussed options with her; in particular, the use of the hyaluronidase. I was debating whether or not to inject hyaluronidase in this circumstance, as the patient was not experiencing any pain and the skin seemed to have a normal colouration and good blood flow.

We agreed that we would have a follow-up appointment in 24 hours, unless there were any changes or concerns before then. She was fully aware that she could contact me if she had any worries and I gave her my personal mobile number. I advised her to contact me if she started to experience any discomfort or pain, or if any redness appeared on the skin and I also showed her photos of what skin may look like when compromised.

The following day, the patient was not reporting any pain or skin changes. However, on the morning of July 21, which was two days' post treatment, the patient woke up and noticed some skin



July 21 Before  
Figure 1: Patient presenting with discolouration and pustulation on the right side of the nose, two days following NSR treatment using HA dermal filler.



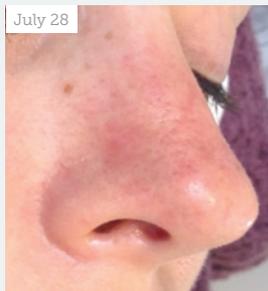
July 21 After  
Figure 2: Immediately after first treatment using Plasma Shower and 1,200 units of hyaluronidase transdermally.



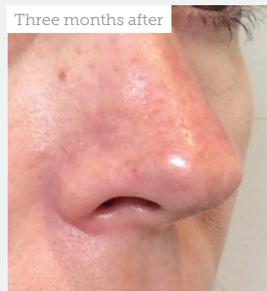
July 24  
Figure 3: Immediately after Plasma Shower with SSR HA and Dermalux for 30 minutes.



July 26  
Figure 4: Immediately after second treatment of Plasma Shower with SSR HA and Dermalux for 30 minutes.



July 28  
Figure 5: Immediately after third treatment of Plasma Shower with SSR HA and Dermalux for 30 minutes.



Three months after  
Figure 6: Patient three months after treatment.

discolouration on the nose, which she said was also painful. She contacted the clinic and I asked her to come in to see me straight away. When I assessed the patient, there was a livedo reticularis-like appearance (blotchy white and red skin) on the whole nose as well as a pustulation on the right side, which was the area where the blanching occurred (Figure 1). As soon as I saw this, I realised that there was a vascular compromise and I knew I had to dissolve the filler using hyaluronidase. As the patient's skin was very tender and sore, she was reluctant to be injected again. I was also concerned about injecting hyaluronidase, as it would add more pressure to the area, which could exacerbate the patient's pain and possibly make the complication worse. At this point, I tried to think of an alternative

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way to administer the hyaluronidase that would not require injecting and, therefore, not cause additional pain to the patient or risk further damaging the blood supply to the nose. I decided to use a device I have in my clinic called the Plasma Shower, part of the Plasma BT platform, which is an atmospheric pressure plasma technology. I had previously been using it in my clinic to deliver serums transdermally into the skin without having to inject them. I had not used it with hyaluronidase before, but I thought that I could target the HA by transdermally delivering the hyaluronidase. The Plasma Shower also has reported healing effects,<sup>13,14</sup> which I thought would be an added benefit. I started by using the Plasma Shower on the nose for three minutes. Then I topically applied 0.2ml of hyaluronidase onto the nose. For intravascular infarction, recommendations are of a minimum of 200-300 units of hyaluronidase (spread over the entire area of impending necrosis), repeated daily for a minimum of two days, until signs of permanent necrosis or reestablished blood flow appears. Doses of up to 1,500 units are suggested if needed, because the consequence of inadequate dosing is tissue necrosis. They also state that the patient should be reassessed every 24 hours.<sup>4</sup>

Other guidelines suggest a minimum of 500-600 units.<sup>6</sup> I therefore considered these guidelines for using hyaluronidase topically. Consequently, I applied 600 units of hyaluronidase topically onto the nose (1,500 vial diluted in 10ml of sodium chloride). I noticed that there was improvement, but it was too slow, so it was necessary for the solution to be in a higher concentration to increase its effectiveness. I decided to dilute 1,500 units of hyaluronidase in 1ml of sodium chloride and applied another 600 units. In total, 1,200 units of hyaluronidase was given transdermally. To my great relief, the patient felt the pain was subsiding, and we could see the skin's colour was improving dramatically (Figure 2). Once the patient was comfortable, and there was no pain on palpation, I stopped treatment and agreed to see her again the following day to review the results. When she came back on July 22, the patient was feeling better than the previous day, but there was still some mild tenderness on the tip of the nose. I decided to repeat the procedure, until the patient had no further pain. I delivered a further 750 units of hyaluronidase transdermally. We agreed to have a chat the next morning to discuss the possibility of further hyaluronidase treatment. When I called her on Sunday morning July 23, the patient said she felt that there was a vast improvement, she had no pain at all and did not wish to be seen that day. We agreed to wait until Monday for further review. On Monday July 24, the patient came back to my clinic. There was no pain and her skin colour seemed much better, but I decided to try and help the skin to heal and recover further by hydrating and stimulating repair. I used the Plasma Shower device again, to deliver a HA product, to hydrate the cells and speed up recovery. I chose to use SSR HA Injectable because I had been using this in my clinic to help skin recovery after deep chemical peels. Then we proceeded to lie the patient under a LED phototherapy device (Dermalux) for 30 minutes to assist with the



redness (Figure 4). We repeated the same treatment on Wednesday July 26 (Figure 5)<sup>3</sup> and on Friday July 28 to further help heal and hydrate the skin<sup>4</sup> (Figure 6).<sup>5</sup>

## Discussion

It is important that practitioners have the ability to recognise complications and make the correct clinical judgements for successful treatment. While the patient was obviously concerned about the complication occurring, she had been coming to me for treatment for years and trusted my clinical judgement. I ensured that I was available to her at all times while we were dealing with this complication, and after she had the first treatment she was very happy with the outcome. We have since not re-injected the nose, but she has been to see me for other treatments. I would never consider re-injecting the area for a minimum of three to four months, ideally six. There is no evidence or articles to support this statement; however I feel as though it is common sense to tread carefully when treating patients who have had known complications. For other practitioners who are experiencing similar complications where they feel like an injection of hyaluronidase might cause further pain, discomfort and irritation, I believe that delivering hyaluronidase transdermally is a useful solution. I believe this kind of complication approach is extremely interesting and would benefit from further study. I am therefore currently undergoing a retrospective study to look into this further, after which I am hoping to devise a protocol for its use.



**Dr Beatriz Molina** is medical director and owner of Medikas clinics. Dr Molina is a KOL for Galderma UK and is also an international speaker and a country mentor leader for Galderma Global. She is the founder of the IAPCAM and a finalist for the The SkinCeuticals Award for Medical Aesthetic Practitioner of the Year at the Aesthetics Awards 2017.

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