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Case Report

Management and Reversal of Tissue Ischemia after Lip Filling with Hyaluronic Acid: A Case Report

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Abstract

Introduction: Even taking all the necessary measures for the non-occurrence of adverse events resulting from the application of hyaluronic acid, the risk of complications will still be present due to anatomic factors.
Objective: To report a clinical case of vascular management complications after lip filling performed under conditions considered safe to prevent this type of event.

Case report: Female patient, 27 years old, with the desire to improve the appearance of her lips by filling procedure. The procedure was performed entirely with a 22G canula, with two entry points done near the lip corners. The result of the immediate post-intervention was satisfactory, with no visual alteration of adverse effects. A few minutes after the procedure, it was possible to diagnose the occurrence of a complication related to vascular compression or intravascular filler injection. To prevent tissue necrosis, hyper concentrated hyaluronidase was applied at 15 minute intervals until signs and symptoms were resolved.

Conclusion: In the clinical case reported all instructions for performing a safe lip filling procedure were followed, but this did not prevent the progression to a vascular complication with risk of necrosis. The prompt intervention of the application of hyaluronidase generated excellent and sufficient results for the management of this complication.

Introduction

The lips are common associated with an image of beauty and youth. For this reason, people have been looking for aesthetic procedures that are able to improve the anatomy, volume and/or definition of the lips. One way to achieve these results is by filling with hyaluronic acid (HA). Data show that HA represents about 78.3% of all dermal fillers used [1], possibly due to advantages such as biocompatibility, reversibility and safety [2]. With regard to safety, adverse events resulting from the use of HA, as a partial or total vascular obstruction, are rare [3]. However, with the increased use of this procedure, the risk of more serious complications occurring has also increased. In order to avoid the occurrence and reduce the potential risk of such complications, it is essential that the professional, in addition to having technical knowledge to perform the procedure, adopt preventive measures and carry out an adequate follow-up of the patient [4]. Despite all the necessary measures for the non-occurrence of adverse events resulting from the application of HA, the risk of any complications will always be present due to biological and anatomical factors such as the diameter of the artery, the degree of constriction of the vessel or the blood flow through the network of anastomoses, which can favor vascular occlusion [5]. For this reason, the professional must be prepared to early identify possible complications that may still occur and act quickly and assertively in order to reduce or eliminate damage to the patient. Thus, this study aimed to report a clinical case of vascular complications management after lip filling performed under conditions considered safe to prevent this type of event.

Case Report

Female patient, 27 years old, caucasian, attended to a private dental clinic with the desire to improve the appearance of her lips. After performing the evaluation, anamnesis and photographic protocol, a case planning was carried out and the lip filling was indicated. Initially, the skin asepsis was performed with 2% aqueous chlorhexidine and an intraoral rinse (0.12% chlorhexidine). For regional anesthesia, a topical anesthetic Pliaglis (Galderma Pharma, Switzerland) was applied for 20 minutes. The material of choice for filling was 1ml of Restylane Kysse (Galderma Pharma, Lausanne, Switzerland). The lip filling technique was completely performed using a 22G canula (Biometil, Santa Catarina, Brazil) with two lateral entry points close to the labial commissures. The immediate post-procedure result was satisfactory and without visual signs of any adverse effect. A few minutes after the procedure, the patient reported severe pain in the region and ischemia was observed on the right side of the lower lip (Figure 1). Faced with this symptomatology, the patient was kept under observation at the clinic. After 50 minutes and without clinical improvement, it was possible to diagnose the beginning of a complication related to vascular compression or intravascular injection of filler. The time to perform an intervention was still favorable to prevent the event from progressing to possible sequelae or tissue necrosis (Figures 2-6).

Figure 1: Clinical appearance of labial ischemia after lip filling with hyaluronic acid.

Tissue necrosis protocol

Hyaluronidase: 0.5ml of diluent in 2000UTR (hyper concentrated)
Applications in each 15 minutes until the sinals and symptoms disappear

*Additional protocol - Avaliate after the use of hyaluronidase
*DO NOT make allergic tests when necrosis risk exist

Chart 1: Hyaluronidase application protocol adopted.

Due to this clinical appearance, the protocol (Chart 1) was performed to avoid tissue necrosis using hyper-concentrated hyaluronidase at 15-minute intervals until the disappearance of signs and symptoms. Thus, 0.5ml of diluent was used for 2,000 hyaluronidase URTs (Biometil, Santa Catarina, Brazil),.

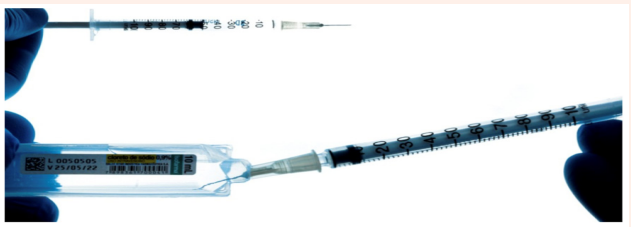

Figure 2: Preparation of hyaluronidase (hyper concentrated).

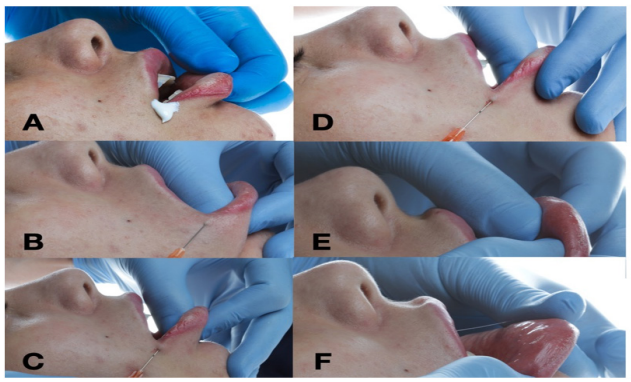

Figure 3: Clinical steps performed in the hyaluronidase application protocol (A: topical anesthetic; B: entry point; C: 22G canula; D: hyaluronidase injection; E: massage; F: final result).

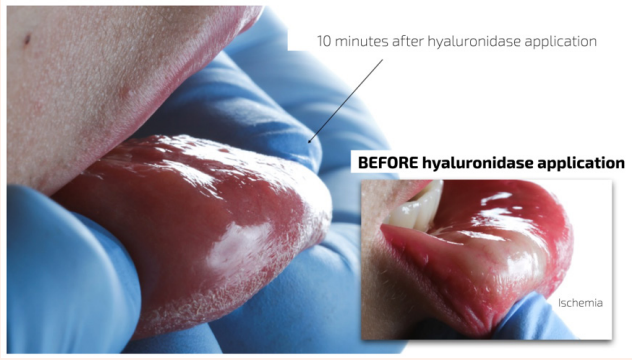

Figure 4: Labial clinical aspect immediately before and 10 minutes after the hyaluronidase application

Figure 5: Detail of the labial clinical appearance 10 minutes after the hyaluronidase application.

Figure 6: Labial ischemia clinical aspect before the hyaloronidase application and normal labial color clinical aspect after the hyaloronidase application.

The 0.5ml of product was then distributed with a 22G cannula (Biometil, Santa Catarina, Brazil) throughout all the ischemic region of the lip (Figure 4). After three minutes, it was already possible to notice the return of normal lip color and a marked improvement in pain was reported (Figures 5 & 6). The proposed protocol suggests the application of repeated doses of Hyaluronidase until complete reversal of signs and symptoms, but in the case reported with only one application, the complication was fully managed.

Discussion

Complications with dermal facial fillers have increased recently due to the increase in the number of procedures performed1. Thus, the professional must be increasingly strict with preventive measures, and prioritize the conditions that favor the performance of the procedure as safely as possible [4]. However, this does

not exempt the patient from suffering some vascular complication after filling with HA, since the human being is an organism with different biological and anatomical responses. In the clinical case reported above all possible precautions found in the scientific literature [4,6-8] were taken in the pre, trans and postoperative periods in order to avoid the occurrence of complications caused by filling with HA. Thus, a detailed anamnesis was performed in order to observe local and systemic factors related to the patient that could contraindicate the procedure [7]. A detailed physical examination and pre-treatment photographs were also performed beforehand. Also, the dermal filler product selection was made taking into account the rheological and physical chemical characteristics necessary for the best behavior of the product in the area in question [9]. Thus, we chose to use Restylane Kysse (Galderma Pharma, Lausanne, Switzerland), a hyaluronic acid with OBT technology - Optimal Balance Technology. Products with this technology have the same HA concentration (20 mg/ml), but they differ in terms of the degree of crosslinking and particle size, generating products that vary in terms of flexibility and volumization capacity, depending on the area of interest [10]. Within the OBT line, Restylane Kysse (Galderma Pharma, Lausanne, Switzerland) has an intermediate crosslinking and small-caliber particles, making it an ideal material to perform lip filling, which is an area of greater mobility [11,12].

Before the procedure, a correct asepsis was performed on the patient's face with 2% aqueous chlorhexidine. She also rinsed her mouth with 0.12% chlorhexidine to reduce the microbiota. Studies show that prior cleaning of the skin with antimicrobials such as 2-4% aqueous or alcoholic chlorhexidine is essential to prevent infections [6,7,13]. In addition, the mouthwash with 0.12%-0.2% oral chlorhexidine was the most effective in reducing dental biofilm *in vivo* [7,14].

The entire procedure was performed with the aid of a 22G cannula. This lip filling technique has some advantages [15] such as reducing the number of entry point needed, reducing the possibility of intravascular injection of the product and edema, and even promoting more accurate injection of the product into the desired layer, when compared the use of a needle [16]. Regarding the cannula gauge, the literature [17] shows that 22G and 25G cannulas are safer than needles because they need greater force to promote vascular penetration.

However, even taking all these precautions, this lip filling was able to cause a complication related to an eventual vascular compression/obstruction, for reasons that were not within the professional's reach to avoid. This can be explained by the fact that some hemodynamic conditions can influence the degree of vascular occlusion, such as the diameter of the artery, the degree of constriction of the vessel, the applied pressure gradient, the blood flow through the anastomoses network and the size of the puncture hole made in the arterial wall [5]. Regardless of the circumstances in which vascular compression/obstruction occurred, it is necessary that the professional to know how to act within a favorable intervention time window to avoid the evolution to sequelae or tissue necrosis. In the case reported, this knowledge was essential for clinical success. The HA reversibility with the use of hyaluronidase is one of the characteristics that makes this product the gold standard for facial filling [18]. The use of hyaluronidase for the management of vascular complications is advocated by several authors in the literature [19,20]. Faced with the risk of evolution to lip necrosis in the case reported here, the professional performed a protocol where hyaluronidase is used in its hyper-concentrated form (0.5:2,000) and injected throughout the ischemic area with a 22G cannula at 15 minute intervals until signs and symptoms disappear. A protocol with repeated high doses of hyaluronidase, has been shown in the literature [21] as sufficient to achieve success in reversing complications of this type. However, in the case presented here, a single application of hyaluronidase was enough to reverse the condition. Also, this protocol could still have been complemented by ultrasound investigation to guide the location of the product in the tissue [22].

Conclusion

The professional must be increasingly strict with preventive measures and prioritize the conditions that favor the realization of facial fillings in the safest way as possible. However, it is interesting to emphasize that vascular complications can still occur and that the professional must be able to act in these conditions to avoid unfavorable results. In the case of lip filling reported above, all guidelines were followed for the execution of a safe procedure, but this did not prevent the evolution to a vascular complication with risk of necrosis. Rapid intervention based on a hyaluronidase-based protocol generated excellent results and was sufficient to manage this complication.

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