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External vascular compression by hyaluronic acid injection via pneumatic microjet device

Compressão vascular externa por ácido hialurônico injetado por dispositivo a vácuo

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ABSTRACT

Filling with hyaluronic acid using a pen that injects with vacuum pressure in the lips region became popular due to not using needles, but it presents risks like any minimally invasive procedure. We present a case of injection of hyaluronic acid with this device in the labial region, which resulted in a subocclusion of the inferior labial artery. It is known that the use of pressure can offer a lower precision than the methods already used classically. Therefore, it is important to warn about the risks of this device, which despite not using needles, presents the same risks of complications.

Keywords: Dermal fillers; Hyaluronic acid; Lip

RESUMO

O preenchimento com ácido hialurônico por meio de caneta que o injeta com pressão a vácuo na região dos lábios popularizou-se por não usar agulhas, porém apresenta riscos como qualquer procedimento minimamente invasivo. Relatamos um caso de injeção de ácido hialurônico com esse dispositivo na região labial que teve, como consequência, uma suboclusão da artéria labial inferior. Sabe-se que o uso da pressão pode oferecer uma precisão menor do que os métodos já classicamente utilizados. Portanto, é importante alertar acerca dos riscos desse dispositivo que, apesar de não empregar agulhas, apresenta os mesmos riscos de complicações.

Palavras-chave: Ácido hialurônico; Lábio; Preenchedores dérmicos

Case report

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INTRODUCTION

With the popularization of hyaluronic acid fillers, there was an increase in cases of vascular complications, such as compression, vascular obstruction, and tissue necrosis, which intrigues patients and physicians.¹ The hyaluronic acid pen uses pneumatic pressure to administer hyaluronic acid into the skin. Thus, it is presented as a needle-free device that, theoretically, would make the procedure safer. However, like any minimally invasive aesthetic technique, it presents vascular risks. This study aims to report a case of vascular compression by a vacuum device and discuss the risk of this method.

CASE REPORT

A 31-year-old woman sought dermatological care reporting significant lip edema three hours after undergoing lip filling with two syringes of hyaluronic acid using a needle-free pneumatic injection device. Before the procedure, the patient had already ingested 80 mg of prednisone and 180 mg of fexofenadine on her own, as she had already presented an episode of lip edema four months ago, after the application of 1 ml of hyaluronic acid with a needle. At the time, she underwent an allergic test to lidocaine and mepivacaine anesthetics, both negative. On physical examination, she presented significant diffuse edema, with a hardened appearance of the lips and ecchymosis, but no pallor (Figure 1). We referred the patient for urgent ultrasound examination, which showed changes in flow amplitude and vascular resistance between the right and left inferior labial arteries, with reduced systolic velocity peaks and decreased vascular resistance distally, suggesting extrinsic compression of the artery horizontal labrum, but without signs of occlusion (Figure 2). Also, multiple

hypoechoic areas were observed in between, affecting the upper and lower lips throughout their extension, compatible with an important focal inflammatory process after using the filler. The patient was followed up and prescribed prednisone 40 mg and ciprofloxacin 500 mg daily. It was not necessary to apply hyaluronidase. Within 24 hours, there was a reduction in edema, with no signs of arterial occlusion.

DISCUSSION

The hyaluronic acid injection via a pneumatic micro-jet device is a system for administering substances into the skin through pneumatic pressure exerted by the equipment. As it is a needle-free device, it is believed to be safe.² However, as with any minimally invasive procedure, there are risks of complications, such as edema, ecchymosis, site infection, and arterial occlusion. Using a needle-free pneumatic injection pen, the application plan can be erratic, and the hyaluronic acid can penetrate the most diverse layers of the skin and lead to vascular compression, as in the case presented here. Furthermore, there are anatomical variations in the labial artery, which is a challenge for physicians³ because both labial arteries are branches of the facial artery (FA). In the upper lip, the main one is the superior labial artery (SLA), and the septal (SA) and subalar (SAA) arteries are usually optional. It is important to emphasize that the superior labial artery is bilateral; nevertheless, it can present significant variations.⁴ The lower lip, in its turn, is supplied by the inferior labial artery (ILA) and labiomental artery (LMA) – the last one has both horizontal and vertical branches.

Complications are classified as early (related to infiltration, such as edema, pain, ecchymosis, bleeding, inflammatory, and allergic reactions) or late (regarding infections, nodules, granuloma, and scars).⁵ Vascular complications can arise due to the anatomical location, the injected volume, the use of narrow gau-



FIGURE 1: Edematous appearance, with ecchymosis on the lips

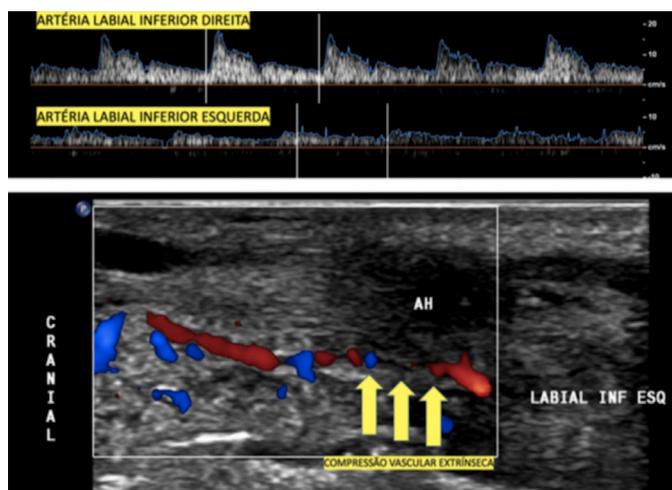


FIGURE 2: Compression external vascular of labial inferior artery

ge needles, previous scars, and the material composition.⁶ The applied technique, the high volume of hyaluronic acid, and the previous reaction to hyaluronic acid may have exacerbated the reaction of the patient in this study. Based on current scientific evidence, if any complications occur in the procedure, it is recommended to stop it immediately, massage the area, use high doses of hyaluronidase as a way to undo it, and wait around an hour to reassess the need for a new infiltration.⁵ In the case the patient evolves with greater edema and arterial occlusion, there would be a need for local injection of hyaluronidase to dissolve the product. Therefore, a good anamnesis, anatomical knowled-

ge, in addition to a professional trained to recognize complications and treat them, are essential to avoid a worse evolution of the case.

CONCLUSION

The application of hyaluronic acid using a pneumatic microjet device has risks. As the application is made via pressure, the product can penetrate the tissues erratically and lead to vascular occlusion and other complications. Thus, the search for a trained professional with well-studied filling techniques should always be recommended. ●

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