Bilateral lower-lip foreign body granuloma secondary to hyaluronic acid injection

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Hyaluronic acid injection has become one of the most common dermal filler procedures performed by clinicians worldwide. Although it is considered to be a very safe and successful treatment option, several complications have been reported from this type of filler injection. A case of bilateral lower-lip foreign body granuloma secondary to hyaluronic acid injection is presented. The granulomas were successfully resected and histopathology confirmed the diagnosis.

Key Words: *Cosmetic filler; Hyaluronic acid; Lip nodule; Restylane*

Hyaluronic acid (HA) is becoming the most common dermal filler used to treat facial wrinkles and augment the lips (1). In 1989, Balazs and Denlinger (2) were the first to introduce HA as a dermal filler. Since then, it began to gain popularity in Europe and the United States, and has been available in Canada since 1998. Many HA dermal fillers have been used to reduce skin wrinkles and grooves caused by facial aging and to augment lips. Restylane (Q Med, Sweden) is one of the main commercially available HA formulations.

Although HA has been reported to be a nontoxic, nonimmunogenic product, nodules, hypersensitivity and foreign body granulomas have been reported with its use (3-7). Common adverse effects following injection of HA dermal fillers include redness, discomfort, firmness, swelling and bruising.

Herein, we report the development of bilateral lower-lip foreign body granulomas in a new patient after injection with Restylane. Informed consent was obtained from the patient.

CASE PRESENTATION

A 52-year-old woman was treated with HA injection (Restylane) for lip augmentation by a general practitioner. It was the first time the patient had undergone such treatment. At first, the cosmetic result was satisfying to the patient. However, four weeks after the treatment, she began to notice simultaneous nodules developing on both sides of her lower lip. The treating physician reassured her and no actions were taken. The nodules continued to grow slowly over a couple of months.

Three years later, she was referred to the authors' institute for further evaluation and treatment. Cutaneous examination revealed two nonerythematous nodular lesions on both sides of the lower lip, which measured 1.5 cm in diameter (Figure 1). The nodules were nontender and firm at palpation. The patient agreed to undergo nodule excision under local anesthesia. The procedure was performed in a staged fashion, with the left side completed first and the right completed three weeks later, to protect the lower lip vascularity. A wedge excision performed through and through, and the defects were closed primarily (Figures 2 to 4). She withstood the procedure very well.

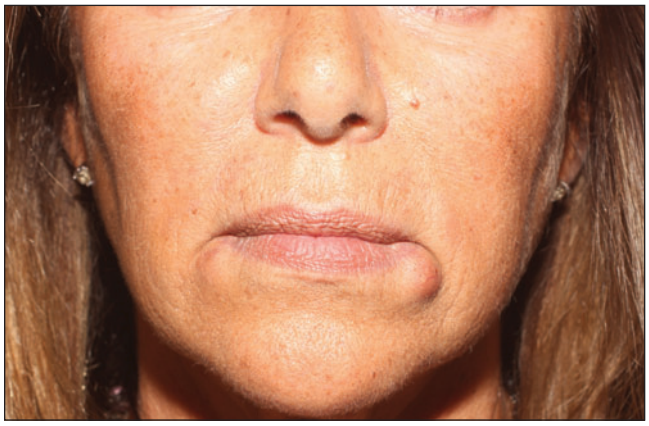

Figure 1) *Bilateral lower lip nodules secondary to hyaluronic acid injection*

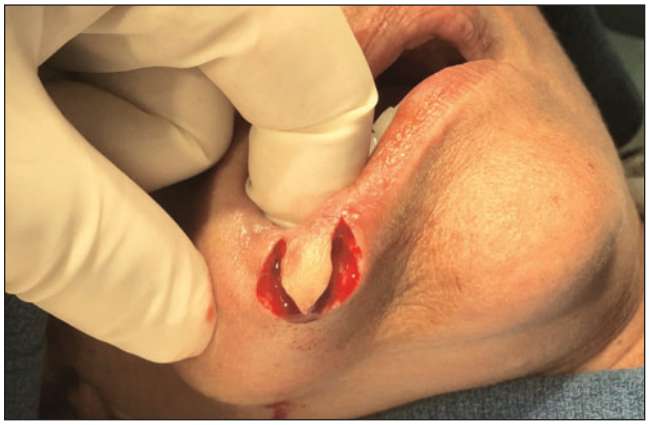

Figure 2) *Wedge resection of the right nodule*

Histopathological examination revealed heavy granulomatous inflammation with focal necrosis. The granulomas contained abundant foreign material.

DISCUSSION

The use of cosmetic fillers is the most common clinical procedure performed in the field of plastic surgery. The ideal filler material is supposed to be safe with a predictable outcome, nontoxic, biocompatible, easy to use, inexpensive and have a long duration of action, but be reversible at the same time (8). These features are yet to be reached by any product; however, HA filler is definitely a step forward.

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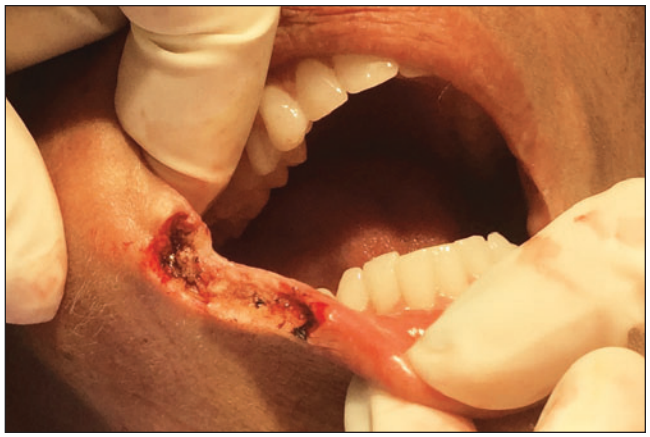

Figure 3) *Defect after complete excision of the nodule*

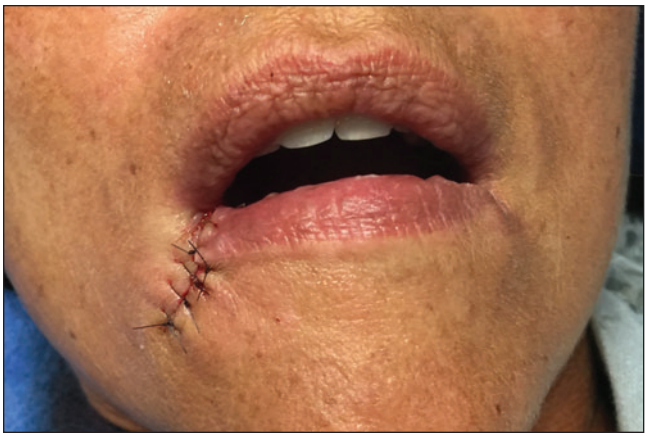

Figure 4) *Immediate postoperative photograph showing primary closure of the right-side defect*

Dermal fillers can have two generic classifications: temporary (degradable) and permanent. Another classification adopted by DeLorenzi (9) is that fillers are either reversible or nonreversible. An example of reversible dermal filler is HA because it can be completely removed by hyaluronidase. Most of the temporary dermal fillers are made of either collagen or HA (10). Permanent fillers, on the other hand, are usually synthetic and show very little break down in the tissue (3). Examples of permanent fillers include silicone and polymethylmethacrylate.

Karl Meyer and John Palmer discovered HA in 1934. They were able to isolate it from a cow's eye and chose the name from *hyalos* (Greek for 'glass') and the uronic sugar found in it (11). HA is, to date, the most ideal filler available in the market. It is found naturally in the body in the extracellular matrix, and is present in the connective tissues of skin, cartilage, bone and synovial fluid. For that reason, it is biocompatible and nontoxic, with no risk for immunogenicity. HA has a short half-life, which manufacturers have extended by using cross-linking to retard its natural breakdown (9).

With aging, the viscoelasticity and volume of facial skin diminishes, in part, due to the altered amount and function of HA (8). Many classification methods have been adopted to determine the amount of rhytides in facial skin: the most popular of these methods are described by Fitzpatrick et al (12), Glogau (13) and Lemperle et al (14). HA injections have been used to reduce the aging affect in the facial skin. HA helps in reducing lines, such as the marionette line and the nasolabial fold, and in augmentation of the cheek and lip. It has also other indications in the head and neck, with use in vocal fold augmentation and some otological and ophthalmological procedures beyond the scope of this article.

Despite the nontoxicity and biocompatibility of HA, several adverse effects have been reported. Adverse reactions that are early and common include temporary redness, firmness, swelling and bruising. Migration of the material, which may create temporary nodules, papules, discolouration and allergic reactions, are uncommon. Delayed adverse reactions include foreign body granulomas, which occur in up to 0.6% of patients (15). Clinicians sometimes refer to nodules as 'granulomas' based solely on a clinical examination. It is important to distinguish between nodules and granulomas: the former is usually descriptive, and the latter must be assessed and confirmed through histopathological examination. The cause of granulomas is not known, but they could be due to the recipient's reaction to the protein residue of bacterial or avian origin. The other possible reason is the impurities created in the cross-linking process (10).

CONCLUSION

The present reports describes a foreign body granuloma secondary to Restylane injection. The cause remains not yet fully known; regardless, the patient must be informed about such possible adverse reaction. Further research is warranted to investigate the cause of such a reaction.

DISCLOSURES: The authors have no financial disclosures or conflicts of interest to declare.

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