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Dermal Filler Presenting as Lobular Radiopacities in an Edentulous Patient: A Clinical Report

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Abstract

This clinical report describes the unusual appearance of radiopacities, lobular in nature, observed on a dental panoramic image of an edentulous patient. Upon questioning, the patient described a history of recently having hydroxylapatite-based dermal filler placed in her right and left cheeks to reduce wrinkles and enhance cosmetic appearance. The localization and shape of the radiopacities were consistent with the placement of the dermal filler.

A 64-year-old Caucasian female patient was referred to a specialty private prosthodontic practice for fabrication of a new maxillary complete denture and a new mandibular implant-retained overdenture. She had worn her existing prostheses for 8 years. The existing prostheses demonstrated poor fit to the residual ridges and moderately worn artificial teeth. The patient appeared to have insufficient occlusal vertical dimension. After a thorough discussion of the risks and benefits, advantages and disadvantages, and prognosis for complete dentures, implant-retained overdentures, and fixed implant complete dentures, the patient chose a treatment plan of a new maxillary complete denture and a new mandibular implant-retained overdenture.

Clinical report

During a radiographic evaluation, a panoramic image was obtained (Fig 1) using a Planmeca ProOne imaging unit (Planmeca, Helsinki, Finland) using settings of 68 kV and 7 mA. The image was captured and processed using Romexis 3 software (Planmeca). The image was remarkable for the presence of radiopacities observed on both the right and left sides in the premolar-molar areas near the crest of the maxillary alveolar ridge, not confined to the maxillary sinuses and on the right side, extending inferiorly to approach the crest of the mandibular edentulous ridge. Clinically, all tissues intra- and extraorally appeared normal and did not elicit any discomfort upon palpation. The patient was unaware of the radiopacities and noted that she had not been informed of them before at any dental

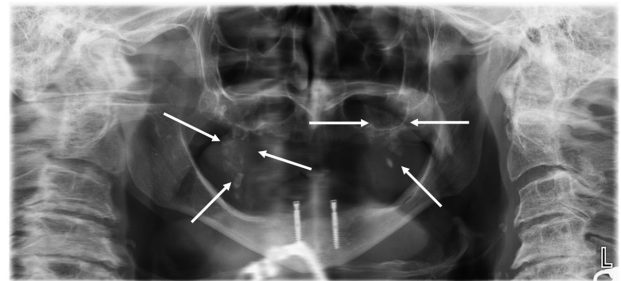


Figure 1 Panoramic radiograph obtained at initial consultation appointment showing radiopacities (arrows used to localize reader's focus).

visit where radiographic images had been obtained. She left the consultation appointment with the etiology of the radiopacities undetermined.

The image was sent to one of the co-authors, an oral pathologist, who suggested that the radiopacities could be dermal filler placed in the cheeks for cosmetic enhancement. When the patient returned for her next appointment, she confirmed that dermal filler had been placed recently by a plastic surgeon. With the patient's consent and HIPAA approval, correspondence with the plastic surgeon was initiated to learn more about the material and timing of placement. The physician reported that the patient received Radiesse dermal filler (Merz Aesthetics North America, Raleigh, NC). This dermal filler is a mixture of calcium hydroxyapatite microspheres and an aqueous gel methyl-cellulose carrier.¹ The material was first placed in early

September 2015 and again in late October 2015. On December 7, 2015, the patient presented to our office, and the panoramic image was obtained.

Discussion

The face is often the first place to show age, with both underlying structures and skin affected as a result of age-associated tissue volume loss. Consequently wrinkles and folds appear, and the naso-labial folds and commissures are primarily involved.

Dermal fillers are routinely used by plastic surgeons to correct these soft tissue deformities and to enhance appearance of wrinkled skin. The underlying principle is to temporarily replace lost tissue volume and smooth out moderate to severe wrinkles and folds. Injectable materials approved for this clinical indication are calcium hydroxyapatite, liquid silicone, collagen, collagen mixed with polymethylmethacrylate, hyaluronic acid, poly-L-lactic acid, and polyacrylamide gel.² The dermal filler reported here is called Radiesse and is a mixture of calcium hydroxyapatite in an aqueous gel carrier. Placement of Radiesse is typically accomplished by subdermal injection with the material mixed with a local anesthetic like xylocaine to minimize discomfort during the injection process. This particular dermal filler is intended to replace lost volume immediately post-placement and is also reported to stimulate native collagen production intended to replace the Radiesse as it is resorbed. Clinical trials indicate the benefits of Radiesse dermal filler treatment may last up to a year.^{3,4} The patient's physician noted that, in his experience, approximately 80% of the calcium hydroxyapatite microspheres usually resorbs in 3 to 6 months, while some material may remain as long as 8 to 10 months before complete resorption occurs, which aligns well with clinical trials.

As with any invasive procedure there are accompanying risks. Possible adverse effects include bruising, redness, swelling, pain, tenderness, and pruritus, possibly due to an allergic response. In most instances, these adverse effects usually disappear within a few hours or days. Complications from surgery rarely occur and are most often due to the result of injecting the filler material into a blood vessel. Vision abnormalities, blindness, stroke, and scarring of the skin may result.

The calcium hydroxyapatite microspheres may be seen on X-rays or computerized tomography (CT) scans. The unusual dental panoramic radiographic presentation of dermal filler has been described previously in a patient treated with multiple reconstructive plastic surgeries to diminish the appearance of scarring secondary to surgical excision of a basal cell carcinoma under the right nasal ala and ensuing electron beam therapy.⁵ The present report represents the first description of dermal

filler radiopacities in a patient who electively chose therapy for cosmetic reasons only and without prior pathology in the region. Given the increased numbers of patients seeking cosmetic enhancement, it is likely that dental clinicians will encounter dermal filler-associated radiopacities in their patients with greater frequency.

Regarding the patient described in this report, being edentulous in the maxilla rendered the radiopacities clearly distinguishable in a manner that may not have been so apparent if the patient were dentate, and the radiopacity of enamel, dentin, and cementum had masked the radiopaque dermal filler. Inasmuch as the material is radiopaque, this type of dermal filler would also be visible on other types of dental X-rays including periapical images, MRI, and CT imaging of the jaws. Furthermore, since the commissures are commonly a site for injection of dermal fillers, it could be anticipated that in such instances, the location of radiopacities would be inferior to those seen in this report. In such instances where atypical radiopacities are observed, it would be prudent to ask the patient about recent surgery or therapy involving dermal filler. It may be prudent to send images with atypical radiopacities to an oral radiologist for evaluation.

Since the panoramic radiographic image was obtained on December 7, 2015, a significant portion of the dermal filler material remained visible, leading to its appearance on the panoramic image. It could be anticipated that had the image been obtained 10 months or more after last placement, little or no radiographic evidence would remain. To minimize unnecessary radiation exposure for the patient, and since there has been no clinical indication to do so, a follow-up radiograph has not been obtained.

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