While the public and some scientists continue to claim that dental amalgam causes health problems, other scientists and the FDA concluded that clinical studies did not establish a causal link between dental amalgam and health problems.\(^2,3\) This case report will discuss the entrapment of amalgam particles.

**Case report**

Recently, a 50-year-old Caucasian male presented to the VA New Jersey Health Care System Dental Service at East Orange seeking dental care. The patient came to our facility exploring, among other things, the viability of a dental implant in the region of tooth \#30.

The patient gave the following dental history. Approximately three years ago, his right mandibular third molar (\#32) was scheduled for an amalgam-alloy core buildup following root canal therapy. A crown lengthening procedure using reflected, full-thickness buccal and lingual flaps was performed.

While the flaps were reflected, an alloy core buildup was performed. The foreign bodies visible in the radiographic images are most likely amalgam alloy particles that either became trapped in the apical portion of the flap or in the interstitial tissue.

Comprehensive oral and maxillofacial examination included an intraoral and extraoral exam, full-mouth periapical X-rays and a panoramic radiograph. Among other clinical findings, the panoramic radiographs revealed incidental foreign bodies, most likely amalgam, embedded in the soft and/or hard tissue of the oral cavity due to iatrogenic treatment (Fig. 1).

The patient consented to explore the feasibility of a dental implant in the region of tooth \#50 and, at the same time, explore the region of \#32 in order to determine the orientation and proximity of the foreign bodies to critical anatomical landmarks.

For that study, a cone-beam CT (CBCT) 3-D scan of his lower jaw was obtained utilizing an i-CAT® CBCT (Imaging Sciences International, Hatfield, PA). Inherent in the acquisition of the 3-D volume of information is the ability to explore the precise location of the foreign bodies.
Using CBCT to explore the amalgam pieces in the region of #32 revealed scattered pieces entrapped under the oral mucosa outside the alveolar cortical plates, both lingual and buccal to tooth #32. It was also noted that the crown-to-root ratio of tooth #32 was much compromised and the tooth should be considered for extraction.

By using the i-CAT 3-D CBCT, precise 3-D software was employed to visualize the bone in three dimensions from different viewing angles (Fig. 2). It was revealed that some of the amalgam foreign body fragments were resting on the buccal side of the jaw bone on the right side, while other foreign fragments rested on the lingual side of the jaw bone under the lingual undercut (Figs. 3a–c).

As no soft-tissue inflammation and/or bone remodeling has occurred, following a professional dialogue between the restoring dentist and the oral surgeon, the amalgam foreign body fragments observed in this case were left intact, posing no medical risk and or interference in our proposed dental treatment plan for a dental implant in the region of tooth #30. Nevertheless, continuous follow-up was strongly recommended.

Conclusions
Fortunately, following careful assessment, our patient did not experience symptoms associated with the amalgam remnants embedded under the oral mucosa, as has been reported in some cases in the literature. This case also demonstrates that restorative procedures and simultaneous full-thickness flap elevation, especially those involving amalgam restorations, ought to be reconsidered.

When the patient was seen by the oral surgeon for extraction of the adjacent tooth #31, the surrounding areas were evaluated as well. The patient wished to leave #32 alone, despite recommendations for extraction, so no further actions were taken at the time with regard to exploration of amalgam foreign bodies because they were asymptomatic.

This report also attempted to provide justification for the use of CBCT scans in order to visualize abnormalities from a 3-D perspective, ultimately facilitating case management.

While outcome assessments in this area of dentistry are difficult, the authors believe that it is justified from a diagnostic perspective, and what's more, with renewed interest in mercury toxicity from amalgam fillings, the use of a CBCT scan to visualize amalgam foreign bodies and possible bone remodeling may offer invaluable information regarding treatment protocols.

References

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