



A novel case of a broken dental anesthetic needle transecting the right internal carotid artery

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Over the past century, broken dental anesthetic needles have plagued dentists.¹ With improved education, new metallic alloys, and nonreusable needles, there has been a precipitous decrease in the incidence of dental needle fractures.¹ On the basis of data collected in northern California, Pogrel² estimated an incidence of 1 needle fracture in 14 million inferior alveolar nerve blocks. Most of these needle fractures occurred in patients with fear of needles who moved unexpectedly while receiving inferior alveolar nerve blocks or as a result of improper handling of the dental syringe. Although authors in most of the literature recommend immediate referral for the removal of retained dental needles, several authors proposed retrieval only in patients demonstrating persistent pain, trismus, dysphagia, or anxiety.^{3,4}

In this article, we present what is to our knowledge a novel case of a broken dental anesthetic needle that migrated toward the skull base into the carotid space and jugular foramen. We champion immediate intervention to prevent migration and other sequelae from a foreign body.

CASE STUDY

A 47-year-old man sought care at the emergency department of a regional hospital after experiencing acute pain localized in the right mandible and neck area. The patient reported having undergone a routine dental extraction several weeks earlier. After completion of the procedure, the general dental practitioner informed him that a dental anesthetic needle may have been lodged in the area of injection. The practitioner reassured the

ABSTRACT

Background and Overview. Although dental anesthetic needle fractures remain an uncommon occurrence, there is a lack of consensus on the management of the treatment of this complication. Complications could include trismus, dysphagia, or infection that may lead to more deleterious results.

Case Description. In this case study, a 47-year-old man underwent a routine dental extraction at a private office. During administration of the inferior alveolar nerve block, a dental anesthetic needle fractured. The general dental practitioner dismissed the patient and reassured him that no retrieval of the needle was needed. Several weeks later, the patient sought care for severe, acute pain and dysphagia. Traditional retrieval techniques were unsuccessful, and the authors consulted the neurosurgery team. The patient underwent endovascular surgery with digital subtraction angiography for retrieval of the needle from the right internal carotid artery.

Conclusions and Practical Implications. Most authors in the literature agree that proper technique and equipment are paramount in avoiding fractures of dental anesthetic needles. Although needle fracture is a rare complication, immediate referral and retrieval of the broken needle by an appropriately trained surgeon is essential for optimal outcomes. This case demonstrates an example of a broken needle that migrated and transected the internal carotid artery at the jugular foramen. All dental practitioners must be cognizant of the potentially serious complications associated with a retained broken needle.

Key Words. Carotid artery; computed tomography; decision making; nerve block; oral and maxillofacial surgery; stroke; syringes.

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Figure 1. Sagittal noncontrast material-enhanced computed tomographic scan showing a broken needle fragment (arrow) near the skull base. The needle appears to transect both the internal carotid artery and the internal jugular vein in the location of the jugular foramen.

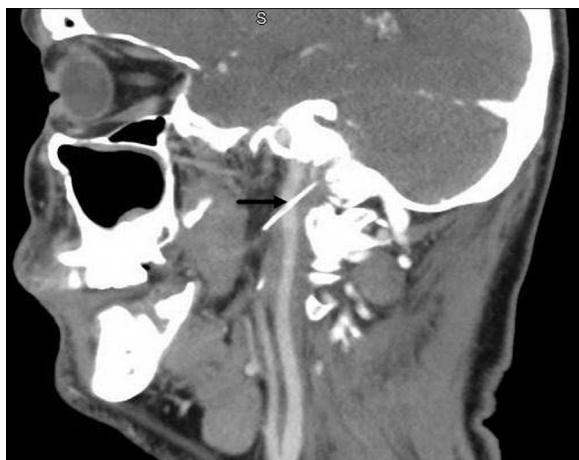


Figure 2. Sagittal contrast material-enhanced computed tomographic scan showing the broken needle fragment (arrow) located within the right internal carotid artery. The contrast material highlights the internal carotid artery.

patient and did not recommend intervention. However, 2 to 3 days before the patient sought care at the emergency department, he began having severe pain and dysphagia. The emergency department team obtained contrast material-enhanced and noncontrast material-enhanced computed tomographic scans (Figures 1 and 2), which demonstrated a 2-centimeter metallic radiopaque foreign body within the right carotid space, adjacent to the right internal carotid artery and extending superiorly into the right jugular foramen. The emergency department team

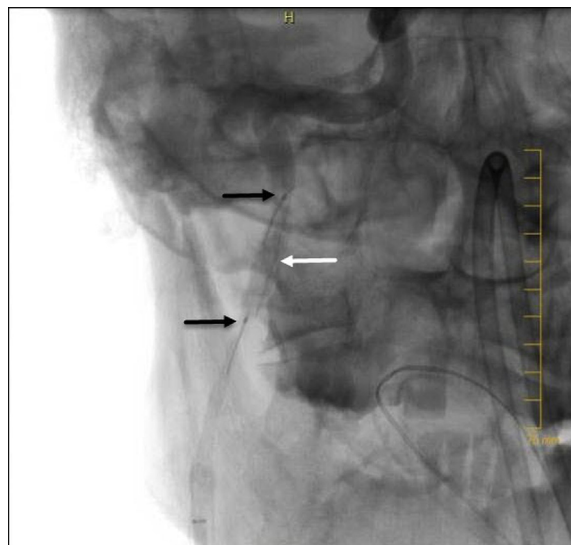


Figure 3. Coronal conventional angiogram showing 2 microsnares (black arrows) grasping the proximal and distal aspects of the broken needle (white arrow) within the right internal carotid artery.

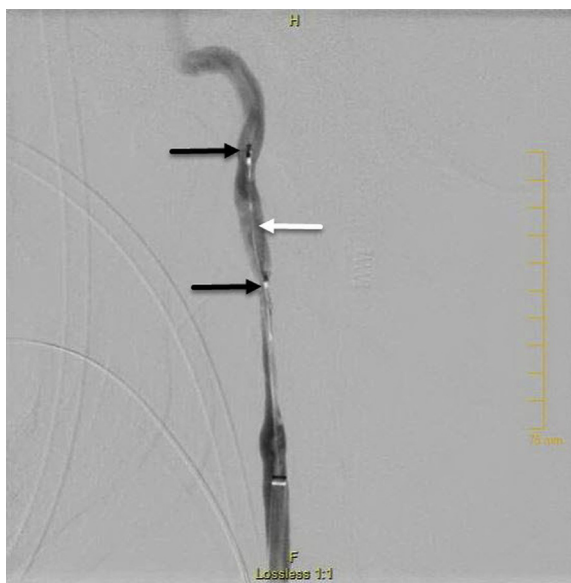


Figure 4. Coronal digital subtraction angiogram showing 2 microsnares (black arrows) grasping the proximal and distal aspects of the broken needle (white arrow) within the right internal carotid artery.

consulted oral and maxillofacial surgery, vascular surgery, and otolaryngology services to evaluate and treat the patient. Because of the location of the needle transecting the right internal carotid artery, the otolaryngology and vascular surgery teams treated the patient.

After appropriate medical clearance, the patient went to the operating room, and the surgical team obtained a right common carotid arteriogram to see the needle

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