Migrating Foreign Body after a Dental Procedure

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INTRODUCTION

Objective: To report a case and review the literature on the localization techniques and surgical approaches used to retrieve a broken dental needle from the soft tissues of the head and neck.

Study design: A case report illustrating the migration of a soft tissue foreign body. A 27 gauge needle was broken during a dental procedure and within two days had migrated from its point of entry in the oral cavity to the infra temporal fossa. It was retrieved from the temporalis muscle with the aid of C-arm fluoroscopy.

Methods: The literature was reviewed for the use of different needle localization techniques. These techniques were compared to the use of intra operative x-ray use by a surgeon to complement the surgical plan in retrieval of the broken needle from the soft tissues of the head and neck.

Results: Identification of a broken needle in the head and neck can be quite challenging depending on the location, timing and mechanism of entry. The use of preoperative and intraoperative radiologic imaging is vital in demonstrating the location of a radio opaque object and can complement the surgical exploration.

Conclusion: Once a broken needle is identified, it should be removed because of the potential for migration. The incidence of a broken needle is quite rare but because of the potential for major complications it is recommended to retrieve the broken needle immediately after discovery.

CASE REPORT

A 46-year-old female was referred to Long Island College Hospital for delayed retrieval of a broken 27-gauge needle. The patient presented two days after the dental extraction procedure and local anesthesia in which it was known that a broken needle was lost during injection. She presented 48hrs after the dental procedure with progressively worsening right jaw pain and the sensation of the broken needle foreign body during mandibular movement.

The patient had no significant medical problems and was not taking any medications. The patient had a 2cm trismus due to pain. The remainder of the physical examination was negative and no foreign body could be visualized or palpated.

Preoperative location of the needle was obtained with a lateral skull view x-ray (fig 1), anterior-posterior skull view (fig 2) plain facial x-ray, and a computed tomographic (CT) facial bone (fig 3).

The patient consented to surgical exploration and extraction of the foreign body under general anesthesia.

An incision was made in the right gingivobuccal sulcus and the wound was probed. The foreign body was not palpable through this incision and thus, a second, 2cm incision was made overlying the zygoma, to explore the zygomatic process and to obtain access to the lateral maxilla and temporal fossa. Care was taken to avoid the temporal branch of the right facial nerve.

The dissection was carried deep by blunt dissection into the right temporalis muscle. With the aid of C-arm fluoroscopy, the needle was localized to the anterior end of the incision abutting the zygomatic process of the maxilla and notably partially embedded in the temporalis muscle (fig 4).

Post operative x-rays revealed that the foreign body had been removed. The surgical wounds were copiously irrigated with sterile saline. The right facial incision was closed with 4-0 chromic deep dermal, a 5-0 Monocryl subcuticular running, and overlying Dermabond. The oral cavity was then irrigated and the mucosa of the gingivo buccal sulcus was closed with 3-0 chromic suture.

The patient tolerated the procedure well and was transported to the recovery room in stable condition. She experienced no postoperative complications in followup and her trismus resolved.

DISCUSSION

Preventative techniques to minimize the incidence of fracturing dental needles have primarily been described in the oral surgery literature. (Pogrel, et al.) They are listed below and worth reviewing because broken needle foreign bodies continue to occur and to this is a preventable problem:

• Avoid using 30-gauge needle for inferior alveolar nerve block.
• Avoid inserting the needle up to the hub, as this is the weakest area of the needle.
• Never over bend the needle.
• Demonstrate additional care when administering an inferior alveolar nerve block to an anxious patient. (Augello and Jackowsky performed a systematic review that demonstrated most dental needle fractures occurred during the inferior alveolar nerve block).

There have been several described methods to remove broken instruments. One of them is the image intensifier C-arm fluoroscopy used for the case described here.

CONCLUSIONS

• To localize a broken needle fragment, we recommend the use of a multi-plane x-ray or fluoroscopy with at least two reference needles in place. If possible, a CT scan is recommended to provide further anatomic localization.
• Once a broken needle is identified, it should be removed because of the potential for migration to vital organs within the head and neck.
• The incidence of a broken needle foreign body is a rare but preventable problem that has the potential for major complications if not promptly removed.

REFERENCES

4. Pogrel MA, Thamby S. Permanent nerve involvement resulting from inferior alveolar nerve blocks. JADA 2000;131(7):901–907

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Fig 1. lateral view plain facial bone demonstrating the location of the broken needle (arrow)

Fig 2. Axial computed tomographic scan demonstrating location of the broken needle medial to the temporal process of the zygomatic bone on the right, which is embedded in the temporalis muscle (arrow).

Fig 3. Anterior-posterior view plain facial bone radiography demonstrating the location of the broken needle (arrow).

Fig 4. Photograph of a broken needle foreign body