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Removal of the retained suture needle under C-arm fluoroscopy: a technical note

SHORT COMMUNICATION

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Abstract – Removal of foreign bodies or broken surgical armamentrium in the maxillofacial region may be quite challenging depending on the location and adjacent anatomical structures. Preoperative and intraoperative imagings are very important for successful removal. We report a case of a suture needle, accidentally retained in the pterygomandibular space during the extraction of upper wisdom third molar that was removed via intraoral route using C-arm fluoroscope.

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Breakage and retaining of the needles is one of the most distressing complications during intraoral surgical procedures. Removal of the needles in maxillofacial region may be quite challenging because of shape and size of a needle, deep entrapment in an anatomical space and proximity to vital structures such as major vessels and nerves. Determining the position of a broken needle could be difficult with routine panoramic radiographs that do not provide 3D orientation such as reconstructed CT images.

Several methods were described to determine the position of dislodged foreign bodies in maxillofacial region (1–3). C-arm fluoroscopy has been widely used for the retrieval of the foreign bodies in general and orthopaedic surgery. Recently, the removals of the broken needles in maxillofacial region using fluoroscopy were also reported (4).

The term fluoroscopy refers to the use of low continuous radiation exposure through a fluoroscope to obtain real-time moving images of patient's internal structures. Fluoroscopic systems consist of an X-ray image intensifier coupled with cameras.

A 22-mm ¾ stainless steel needle was detached off its silk suture in a 23-year-old man and dislodged into infratemporal space during an attempt to close oral-antral communication following the extraction of a left maxillary third molar. The patient was informed about the complication, and antibiotic (amoxicillin + clavulanic acid 1000 mg 2×1) coverage was prescribed. Immediately after, he experienced mild trismus and pain while he was yawning. Five days later, the patient underwent another unsuccessful attempt to have the needle removed under local anaesthesia. The panoramic radiograph showed the location of the retained needle (Fig. 1). The CT scans revealed the presence of a 3-cm suture needle located medially to the coronoid process of the mandible (Fig. 2).

The patient was taken to operating room for the removal of the needle under general anaesthesia via oroendotracheal intubation. After insertion of two needles (18 gauge), lateral (Fig. 3) and frontal (Fig. 4) radiographic images were obtained (Mobile digital C-Arm/Philips Medical Systems NL B.V. Veenpluis 4-6 5684 PC). The accurate location of the retained needle was determined by the fluoroscope. Following a 5-cm mucosal incision, sharp and blunt dissections were performed; needle was reached and removed (Fig. 5). The surgery took about 20 min. The postoperative period was uneventfully, and the patient was discharged from the hospital after 2 days.

There remains a degree of controversy with regard to the removal of the foreign objects from the maxillofacial region. The risk of infection or migration or the presence of symptoms such as pain and trismus necessitates the retrieval of the retained or broken needles from maxillofacial region (4).

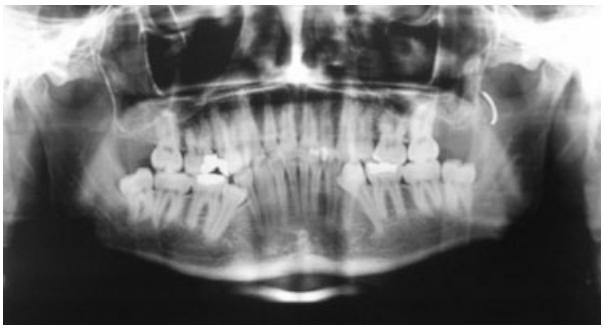

Fig. 1. The image of the needle on the panoramic radiograph.

Fig. 2. The coronal CT scan showed that the needle was located adjacent to the coronoid process of the mandible.

Intraoperative fluoroscopic imaging is used routinely to provide optical feedback to the surgeon during percutaneous insertion of surgical instruments (5). The immediate viewing of the images at various angles allows an operator to obtain stereotaxic navigation that decreases operative time. Although C-arms provide very valuable *in situ* images, the risk of a low-level radiation exposure (0.5–2 mA) derived from the use of an image intensifier to the patient and operating room staff is undesirable (5). When compared to the CT imaging, which is considered as the gold standard for the detection of the foreign bodies, the risk of radiation exposure to secondary the use of C-arms could be interpreted as an advantage.

As a conclusion, we believe that C-arm fluoroscopy can be a useful technique when surgeons are confronted by the location of retained surgical objects in the complicated anatomy of the maxillofacial region.

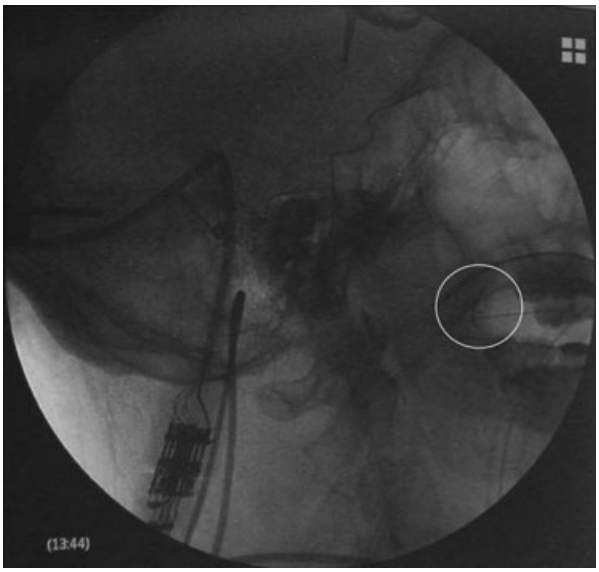

Fig. 3. The lateral digital C-arm view of the needle.

Fig. 4. The frontal digital C-arm view of the needle.

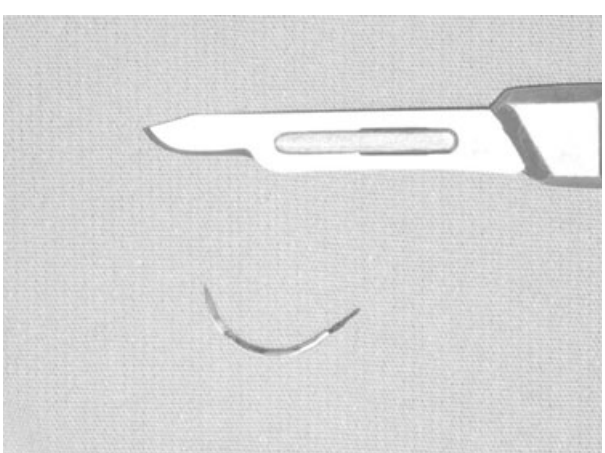

Fig. 5. Removed suture needle.

Conflict of interest

None.

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