Anesthetic dental needle breakage

Since the invention of disposable stainless steel needles in the 1960s, anesthesia in the oral cavity has become an effective method with rare complications. Modern day dental needle breakages are caused by the lack of proper methods and sufficient preventive measures rather than defective materials. This case report shows the process of favorable improvement wherein a dental needle that broke while performing infiltration anesthesia was successfully removed after being located through fluoroscopy during surgery.

A 46-year-old male patient was referred to our department in Seoul National University Bundang Hospital for the removal of a broken 27-gauge long dental needle. The needle had broken while performing filtration anesthesia to place implants in the right posterior maxilla in a local clinic. He suffered from stinging pain caused by the migrating broken needle for a week after surgery. The dental needle migrating to the right preauricular area was in a slanting position at the height of the subcondyle (Fig. 1A). Removal of the needle under local anesthesia was attempted but suspended.

Eight days later, the location of the broken needle was marked on the preauricular area. Two 18-gauge dental needles were inserted so that they were perpendicular to each other inside and outside of the oral cavity, then C-arm fluoroscopy (Ziehm vision: Ziehm Imaging Co., Nurnberg, Germany) was performed. The broken needle was positioned in the upper direction of the condyle higher than the needle outside the oral cavity (Fig. 1B–D). Skin incision and

![Figure 1](http://dx.doi.org/10.1016/j.jds.2012.12.008)

(A) The broken needle (arrows) can be seen in the right subcondylar area in the panoramic view. (B) Marking was done on the predicted subcondylar area. (C) An 18-gauge needle was located in the right pterygomandibular area for estimating the location of the broken needle. (D) C-arm image after injecting needles (black arrows). The broken needle (hollow arrow) was located latero-superiorly from the injected needles. (E) Clinical photograph of the removed needle. Note that the needle used was a 27-gauge long needle. The needle broke at the hub.
blunt dissection were performed. The removed broken needle was about 30 mm long. (Fig. 1E).

A week later, the patient complained of hypoesthesia on the cheek and paralysis of nose and upper lip. He was diagnosed with damage to the buccal and zygomatic branches of the right facial nerve and buccal nerve of trigeminal nerve. Thus, he was referred to the Department of Anesthesiology and Pain Medicine for stellate ganglion block. About 8 months after treatment, the symptoms were improved but there was mild declined movement of the orbicularis oculi and nasalis muscles, and of the upper part of the orbicularis oris muscle.

A large number of published articles found that a smaller diameter needle is broken more easily—especially when 30-gauge needle is inserted up its hub—than one with a larger diameter. The incorrect selection of dental needle length can cause breakage of the needle as much as the wrong dental needle diameter. Research by Pogrel showed the probability of needle breakage was higher when a 30-gauge needle was used for the inferior alveolar nerve block of patients.

In case of the surgeon not being able to find the actual location of the broken needle, limiting the broken needle’s location with two needles is recommended. Hai introduced a method of identifying the location of the broken needle using two spinal needles, perpendicular to each other. Skull anteroposterior view may be used to identify the location, but the best method is a fluoroscope applied via a C-arm.

A C-arm is very useful since the process of accessing the broken needle can be replicated repeatedly, indicating accessibility to the broken needle in real time. Accordingly, when utilized in surgical procedures, it is useful in identifying the location of the broken needle.

The breakage of a dental needle is a rare complication occurring during anesthesia in the oral cavity, but the identification of its location and the process of its removal are very difficult. Surgeons are required to make more effort to prevent such cases.