One of the most challenging tasks in endodontics is successfully treating a patient who is anxious and has been in pain from a severe pulpitis. But the key to making sure it goes smoothly is fantastic anaesthesia. When faced with “Hot Pulps” (usually mandibular molars that have caused severe pain and seem impossible to anaesthetise), the normal injection of choice is the inferior dental block. The cortical plate of the posterior mandible is quite thick and the easier infiltration injections are rarely found successful in this situation.

A practice lifesaver

The intra-osseous injection is more often than not the lifesaver in the practice. We often get patients referred in due to anaesthetic failure and this injection technique has prevented procedures from being abandoned.

The intra-osseous injection is where the buccal mucosa adjacent to the tooth is anaesthetised and a perforator is used to drill through the cortical plate into the cancellous bone, allowing direct placement of the anaesthetic into the bone. Success rate of this injection, if coupled with an inferior dental block, is high at approximately 80 per cent and rises to 98 per cent for repeat LA.

Intra-osseous injections can be used as a stand-alone procedure and as an alternative to local infiltrations. When used as a stand-alone injection, a study has shown that in the upper incisor region, intra-osseous injections had a quicker onset, but shorter duration than an infiltration injection. It has been suggested that the advantages of injecting into the upper incisor is to obtain single-tooth anaesthesia and avoid uncomfortable labial or lingual numbness. But generally for the hot pulps, it is recommended that the intra-osseous injection can be used as a supplementary injection.

To make sure you find the optimal injection site for anaesthesia, ideally it should be distal to the tooth; although with mandibular second molars, it should be mesial. Ideally, the injection should be through the attached gingiva to allow injection through a minimal thickness of cortical bone. This should be perpendicular to the gingiva and between two-four mm apical to crestal bone. Placement may need to be varied according to proximity of adjacent teeth so that roots are not damaged.

In addition, if there is deep pocketing, the injection needs to be more apical and may be in the alveolar mucosa. This would not present a problem with the

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Dr Michael Sultan looks at how treating inflamed teeth with intra-osseous anaesthesia can help relax a nervous patient

**Stabident**

**Intraosseous anesthesia delivery system**

**ADVANTAGES**

The technique of intraosseous anesthesia is one whereby teeth are anesthetized by injecting local anesthetic solution directly into the cancellous bone spaces around the tooth. In order to reach the cancellous bone from the outside it is necessary to pass through four tissue layers; epithelium, connective tissue, periosteum and cortical bone.

The outer three layers, which comprise the attached gingiva, contain sensory innervation but can easily be anaesthetized with a small injection of local anesthetic solution. The fourth layer, cortical bone, does NOT have sensory innervation and can be perforated painlessly using a rotary instrument.

**ADVANTAGES FOR THE CLINICIAN**

- When anesthetic solution is delivered into cancellous bone, excellent pulpinal anesthesia is obtained, even in patients with irreversible pulpalitis or hypersensitive teeth.
- Intraosseous Anesthesia saves valuable time because there is no delay between injection and effect. Work on the tooth can commence in less than 30 seconds after the injection.
- The Clinician will find patients to be very appreciative of the absence of pain and numbness.

**ADVANTAGES FOR THE PATIENT**

- The patient experiences minimal pain during the dental procedure itself, and on leaving the dental office there will be no ballooning of soft tissues and a much lessened feeling of numbness.
- If an extraction is required, the patient is often spared the need for an unpleasant palatal injection.
- Postoperative pain is rare.

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Injecting anesthetic into the cancellous bone space around the tooth

The technique of Intraosseous Anesthesia therefore consists of three essential steps:

1. Anaesthetizing the attached gingiva
2. Perforating the cortical plate of bone
3. Injecting anaesthetic into the cancellous bone space around the tooth