RICHMOND
ENDODONTIC CENTRE

COOL IT

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Attaining adequate pulpal anaesthesia in a mandibular molar with symptomatic irreversible pulpitis (SIP) is the Achilles' heel of local anaesthesia in endodontics. There are several theories as to why this is so:

- Anxiety and fear
- Inaccurate injections and needle deflection
- Accessory innervation from the long buccal, lingual, mylohyoid, or transverse cervical nerve
- Upregulation of tetrodotoxin-resistant voltage sodium channels on pulpal nociceptors and their sensitisation by prostaglandins

Our success rate is a meager 15% to 57% even with the use of the following supplemental approaches:

- Various techniques for the IANB
- 3.6ml of anaesthetic to fill the pterygomandibular space
- Use of multiple types of anaesthetics
- Buccal and lingual infiltration, PDL injection, intraosseous injection, and pulpal injection
- Topical anaesthetic on hand files
- Acupuncture
- Pre-op medications

Cryotherapy has recently been found to improve, statistically significant, the success of IANB in achieving full pulpal anaesthesia. Be warned, it is not a panacea and adjunct steps may still be necessary. Prior to initiating the access, confirm the ipsilateral lip feels frozen and you can attain two consecutive negative electric pulp test results.This does not guarantee full anaesthesia abounds but anything less is indicative of inadequate pulpal anaesthesia.The cryotherapy technique is as follows:

- After two IANB injections, place small ice packs (in sterile gauze) in the buccal vestibular space
- Leave this in place for five minutes
- Remove the ice pack for a minute if extreme cold or a burning sensation is felt
- Initiate the endodontic access as soon as practical after removal of the ice packs

It is best to not extend the cryotherapy technique for more than five minutes as this increases the chance of urticaria secondary to cold hypersensitivity and post-op redness, itchiness, severe pain, and muscular spasm secondary to cold-induced erythema.

The theory as to why this works is the cold slows down the conduction velocity of neural signals, reduces the release of chemical mediators for pain conduction, and increases the threshold for activation of nociceptors. In addition there may be a placebo or confidence-building effect as patients are aware one is taking extra steps to ensure the appointment proceeds without incident.

In Canada, an injection of local anaesthesia is colloquially known` as giving 'freezing' and we ask if one feels 'frozen' when enquiring about the level of anaesthesia.The 'numbness' one experiences with local anaesthesia is analogous to that of frostnip. It appears Canadian dentists were onto something. If we just cool things down we can increase our ability to completely 'freeze' even the 'hottest' of teeth and that is not bad eh!

Regards,

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