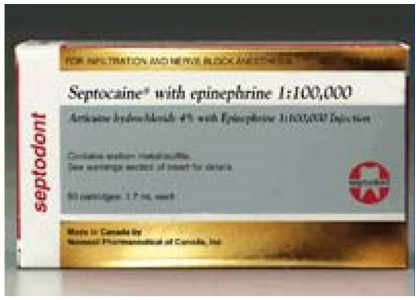
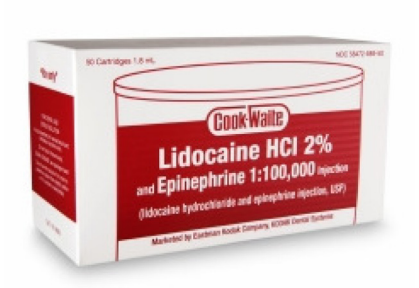
RICHMOND
ENDODONTIC CENTRE

DENTAL ANAESTHESIA

OCT 2010





Articaine vs. Lidocaine

Adequate pain control has always been of paramount importance in dentistry. In the late 19th century, a revolutionary advancement was the discovery of the local anaesthetic cocaine. It facilitated pain prevention without the loss of consciousness. In 1904, Einhorn synthesised procaine (Novocaine), an ester anaesthetic which became the mainstream choice for many years. Forty years later, the Swedish chemist Nils Løfgren synthesised lidocaine. This new group of local anaesthetic compounds, the amides, quickly gained popularity. This is due to their favourable efficacy, low allergenicity, and minimal toxicity. The amides replaced the esters as the "gold standard" for local anaesthesia in dentistry.

In 1969, carticaine hydrochloride was synthesised as the first amide-type drug with a lipophilic thiophene ring and an additional ester group. Carticaine hydrochloride became available for clinical use in Germany in 1976. In 1984, it was renamed articaine hydrochloride. It is the thiophene ring of articaine that increases the lipid solubility compared to lidocaine, permitting more of the anaesthetic to penetrate the nerve membrane.

The main reason articaine then became so popular was its perceived superior anaesthetic efficacy. However, in comparison to lidocaine, it only demonstrates superior duration of anaesthesia for inferior alveolar nerve blocks. No difference in efficacy is apparent. For buccal and lingual infiltration, articaine demonstrates superiority in both efficacy and duration of action. Thus in comparison to lidocaine, articaine only demonstrates a longer duration of action for inferior alveolar blocks but it is superior in both efficacy and duration for infiltration injections.

When evaluating the dental use of articaine and lidocaine, potential complications must be considered. Paraesthesia is persistent anaesthesia or altered sensation beyond the expected duration of anaesthesia. It is the main concern with the administration of articaine via an inferior alveolar nerve block. The Ontario Professional Liability Programme performed an analysis of the reports of paraesthesia over a twenty year period. A frequency of 2.27 paraesthesia cases per 1 million injections of articaine, versus 1.20 paraesthesia cases per 1 million injections of lidocaine was demonstrated. The cost of articaine per carpule is approximately 95¢ while lidocaine is approximately 60¢. Thus, the clinical rationale for restricting the use of articaine to an occasional infiltration injection is based on balancing its limited benefits versus the higher costs and greater risk of complications.

If an inferior alveolar injection with lidocaine fails to provide sufficient local anaesthesia, buccal infiltration with articaine is a reasonable option to consider. Other options include, a PDL or intra-osseous injection with an anaesthetic that does not contain epinephrine, a Gow-Gates or a Vazirani-Akinosi injection with a non-articaine anaesthetic.

In conclusion, articaine demonstrates more favourable efficacy and duration of action than lidocaine for infiltration administration. However, due to a lower rate of paraesthesia and similar efficacy results lidocaine is favoured for inferior alveolar nerve block administration. We hope you enjoyed this newsletter and we look forward to working with you, your office, and your patients in the future.

Regards,

Dr. Joel N. Fransen
BSc(OT), DMD, FRCD(C)
Certified Specialist in Endodontics

Richmond Endodontic Centre
Dr. Joel N. Fransen

110-11300 No.5 Rd
Richmond, BC V7A 5J7
office@endodonticcentre.com
T 604.274.3499
F 604.274.3477

Office Hours
8am to 5pm - Monday to Saturday
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If you have any questions about this or other newsletters please contact our office.