

Summary of: Trigeminal nerve injuries in relation to the local anaesthesia in mandibular injections

T. Renton,¹ D. Adey-Viscuso,² J. G. Meechan³ and Z. Yilmaz⁴

VERIFIABLE CPD PAPER

FULL PAPER DETAILS

¹Professor of Oral Surgery, ²Dental Student, ³Postdoctoral Fellow, Oral Surgery Department, King's College London Dental Institute, Denmark Hill Campus, Bessemer Road, London, SE5 9RS; ⁴Senior Lecturer, Department Oral and Maxillofacial Surgery, School of Dental Sciences, Newcastle University, Framlington Place, Newcastle upon Tyne, NE2 4BW
*Correspondence to: Professor Tara Renton
Email: tara.renton@kcl.ac.uk

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Objective This study reports the signs and symptoms that are the features of trigeminal nerve injuries caused by local anaesthesia (LA). **Methods** Thirty-three patients with nerve injury following LA were assessed. All data were analysed using the SPSS statistical programme and Microsoft Excel. **Results** Lingual nerve injury (LNI; n = 16) and inferior alveolar nerve injury (IANI; n = 17) patients were studied. LNI were more likely to be permanent. Neuropathy was demonstrable in all patients with varying degrees of paraesthesia, dysaesthesia (in the form of burning pain) allodynia and hyperalgesia. All injuries were unilateral. A significantly greater proportion of LNI patients (75%) had received multiple injections, in comparison to IANI patients (41%) (p < 0.05). Fifty percent of patients with LNI reported pain on injection. The presenting signs and symptoms of both LNI and IANI included pain. These symptoms of neuropathy were constant in 88% of the IANI group and in 44% of LNI patients. Functional difficulties were different between the LNI and IANI groups, a key difference being the presence of severely altered taste perception in nine patients with LA-induced LNI. **Conclusions** Chronic pain is often a symptom after local anaesthetic-induced nerve injury. Patients in the study population with lingual nerve injury were significantly more likely to have received multiple injections compared to those with IANI.

EDITOR'S SUMMARY

People who try to help but don't are often told that they 'do one job and create ten others'. Dentistry without local anaesthesia is quite unthinkable and yet, like so many other practices in life, there are minuses as well as plusses. In giving an inferior alveolar nerve block we do the one job that can create ten others.

Thankfully the rare occurrence of nerve injury, as indicated by this study and supported by the experience of our Commentator, means that the benefits far outweigh the risks. But even the relatively small number of patients who experience nerve injury are too many and it is our duty to discover further safeguards. To this end, the collation and analysis of the data from such cases makes for valuable indicators that inform both the clinical process as well as the subsequent patient experience in the event that nerve injury occurs.

It may well be that further research into alternative methods of administration and possibly of the formulation of the anaesthetics themselves will help to reduce the incidence of nerve injury and these are areas that need further exploration. Care over technique is also an important factor and the study indicates that repeat injections where the previous one, or ones, fail to provide sufficient analgesia are a more likely prelude to damage and thus an important warning sign.

Iatrogenic damage to the inferior alveolar and lingual nerves is unquestionably a serious concern with sometimes devastating consequences for those affected. The hope is that research of this type will help us all in the search for better outcomes and not being in the situation of creating further jobs when only one was required.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under

'Research' in the table of contents for Volume 209 issue 9.

Stephen Hancocks
Editor-in-Chief

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IN BRIEF

- Local anaesthetics have been known to cause trigeminal nerve injuries.
- Informs the reader of the key symptoms and functional disturbances experienced by patients with iatrogenic inferior alveolar nerve and lingual nerve injuries.
- Results indicate that multiple and high concentration inferior alveolar nerve block injections should be avoided.
- Strategies to reduce nerve injuries may include buccal infiltration with articaine.

COMMENTARY

This is another very useful piece of information as part of the puzzle regarding permanent nerve involvement from inferior alveolar nerve blocks. From our own studies, the following seems to be the case:

- By using some 'fuzzy math', we think there may be around 20-25 cases per year occurring in Northern California with a population of 12 million. We appear to see approximately 50% of these patients in our Department (10-12 patients per year)
- We now have a database of about 240 patients examined over the years.
- The incidence appears to be about 1 in 25,000 inferior alveolar nerve blocks. These only represent permanent cases, and we think that transient nerve involvement occurs four or five times as often but usually resolves after a few days or weeks. If they are going to resolve spontaneously, most seem to do so within three months
- It seems to occur with all local anaesthetic injections
- Of those that are permanently affected, a disproportionate number have pain as their predominating symptom
- Surgical treatment does not appear to help, and medication seems the best we have to offer. The patients have to cope with the side-effects of the medication
- A number of our patients had received multiple injections, and we

also noted that many of the patients had received multiple injections over a period of a few months. Many were in the process of having extensive dental restoration carried out over a period of time which necessitated multiple injections. In theory, this should not be a factor since the drugs are metabolised fairly rapidly but nevertheless it was an interesting finding.

Dr Renton's paper confirms and consolidates a lot of this information, and ultimately it appears that few changes have been made to the technique in inferior alveolar block over the years and that since this problem only appears to occur with the inferior alveolar nerve block (we have only four cases in our database where maxillary nerves are affected), it may be time to look for alternative techniques. Interligamentary, intraosseous and even articaine by infiltration appear to be viable techniques in many cases and are worthy of further research investigation.

M. A. Pogrel
Professor and Chairman/Associate
Dean for Hospital Affairs, Department of
Oral and Maxillofacial Surgery, University
of California San Francisco

AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

We undertook this research in order to establish the risk factors associated with local anaesthetic nerve injuries in relation to dentistry. We have already established how debilitating these injuries can be for the patient and we want to prevent as many of these injuries as possible. We want to furnish the dental practitioner with information that may prevent LA-related trigeminal nerve injuries where possible and based on this research we have provided some useful strategies to do so.

2. What would you like to do next in this area to follow on from this work?

We aim to undertake prospective studies to evaluate new methods of LA by which the necessity of inferior dental blocks will be reduced, thus preventing these nerve injuries. We are also undertaking review of patients with these nerve injuries and establishing better methods of management including CBT. We also want to develop patient literature for this patient group.