Summary of: Comparing the onset of maxillary infiltration local anaesthesia and pain experience using the conventional technique *vs* the Wand in children

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FULL PAPER DETAILS

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Refereed Paper
Accepted 6 July 2012
DOI: 10.1038/sj.bdj.2012.988
©British Dental Journal 2012; 213: E15

Aim This prospective, randomised, parallel, controlled study was conducted firstly to compare the onset of local anaesthesia (LA) when using the conventional technique *versus* the Wand computer-controlled LA and secondly to assess the pain experience in children. **Method** Thirty children were randomly allocated to the treatment group (Wand) or the control group (conventional). Lidocaine 2% with adrenaline (1:80,000) was given as a buccal infiltration. The onset of pulpal anaesthesia was tested using an analytic electric pulp tester (EPT). The pain experience during the LA was recorded using a modified visual analogue score (VAS). **Results** Median time for the onset of LA was 6.30 minutes for the control and 7.25 minutes for the Wand group. Mean pain experience score for the control group was 9.78% as opposed to 8.46% in the Wand group. Statistical analysis showed that there was no statistically significant difference in the onset of LA ($p = 0.486$) and the pain experience ($p = 0.713$) between the two groups. **Conclusion** When placing a buccal infiltration on upper first permanent molars, the onset of LA and the pain experience was no different using the Wand and the conventional technique.

EDITOR'S SUMMARY

Clinical science is never easy because it attempts to measure biology and more specifically human biology which is rife with variables, contradictions and individual variants. This study provides an excellent example of the difficulties of research methods, the speed with which technology is adopted (or not) and the reasons (or not) for beneficial use of a new technique.

To begin with the conclusion, which is something of a negative and as such the type of study that journals are often reluctant to publish, it states that there was no appreciable difference between the new and the existing techniques in terms of this specific local anaesthetic application. This may or may not be useful information for the practitioner but certainly does not undermine the reason for conducting the work. It may have demonstrated quite the opposite and pointed the way to greatly improved care.

What is of value are the other issues that the investigation raises and on which the Commentary also touches. How far does use of the Wand and other computer aided techniques depend on operator skill and on the individual patient and the circumstances surrounding their treatment; particularly temperamental in the case of children? Also of note is the comment that the market will often reveal the value of a new piece of equipment or technique long before traditional research has caught up. While the proof of the pudding might be in the eating the fact that the authors' future aspirations include looking into other variables such as specialist *versus* generalist and one formulation of anaesthesia compared to another only serves to illustrate the range of puddings and the possible variation in taste.

As with so much clinical practice the ultimate testament that an engaged practitioner will give you is 'it works in my hands', which is often also their genuine response to the issues raised by evidence-based dentistry and why, with the very best will in the world, clinical research can only ever be part of the story.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 213 issue 9.

Stephen Hancocks
Editor-in-Chief

DOI: 10.1038/sj.bdj.2012.1014

IN BRIEF

- Emphasises the availability of alternative LA techniques, in order to provide our paediatric patients with optimum comfort and experience.
- Presents a randomised, controlled study reviewing the difference between the Wand and conventional LA in terms of the onset of anaesthesia and pain.
- Provides an understanding of the use of both the conventional and computerised LA technique in paediatric patients.

RESEARCH

COMMENTARY

Local anaesthesia is the most effective solution to avoid pain during dental treatment. Unluckily, this solution may cause comparable problems. Last year's computer-controlled local anesthetic delivery systems (CCLADs) are widely used in paediatric dentistry. To actually prove their efficacy, however, is a burden for the researcher. In most cases the market has found whether the tool is effective before proper trials have been finalised.

In the present study, the authors' method is flawed; based on earlier small studies claiming CCLADs work quicker, cause less pain and sometimes result in deeper anaesthesia. Studies on these findings give contradictory results since many variables (age, anxiety, operator skills) are likely to cause bias. Now what manufacturers do is listen to the skilled paediatric dentist who is willing to explain the benefits of the CCLAD. Up to now, a few benefits of CCLADs have been advocated, but without the support of proper research. CCLADs:

- Work effectively at painful injection sites (incisive foramen)
- Are useful for difficult kids (toddlers) due to limited invasiveness
- Can be used intraosseously in children with reduced bone density (approximately <6-years-old)
- Reduces lip and cheek biting.

The present study is appropriate research and has been performed according to the rules, but it does not tell us anything about the true nature of a CCLAD. CCLADs work because they are easy for the operator and can be very convenient for the patient in specific situations. There is hardly need for a study on reduced painless anaesthesia since every well-trained dentist knows how to use topical anaesthesia and is able to perform a painless local. What we should do is train a number of paediatric dentists to use a CCLAD in the aforementioned situations against the classical LA as a control and ask them which technique they prefer. For instance, a CCLAD is is effective during the first 15 seconds. After that, the young child gets restless because it takes more time. Why not use it in sedated patients? CCLADs cannot replace classic LA. Not now. But they do pave the way for new ideas. In daily practice we often need a quick and smooth LA (buccal) and sometimes we need a solid profound mandibular block (abcessed tooth). The CCLAD is, however, a big step forward in local anaesthesia, with serious potential to improve one of the most anxiety provoking aspects of dentistry. We need to prove it in the situations where we already know they are beneficial, not in routine situations but in specific ones.

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AUTHOR QUESTIONS AND ANSWERS

1. Why did you undertake this research?

As a trainee in paediatric dentistry, I had started to use the Wand routinely in patients and found it a success. The success in patient acceptance was very noticeable especially in the anxious patient and sometime in conjunction with inhalation sedation.

The review of previous research revealed that there were no subjective studies looking into the onset of anaesthesia in children and therefore it was important to investigate the onset of the Wand local anaesthesia compared with the conventional technique.

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

One of the factors that may have limited this study is the fact that a paediatric dentist was carrying out the delivery of the local anaesthesia. It would be interesting to investigate the difference between the pain experienced by children when the Wand local anaesthesia was used by general dental practitioners compared with paediatric dentists. In addition, different types of local anaesthesia could be tested using the Wand and conventional techniques eg the use of articaine *versus* lignocaine could be reviewed.

In terms of the study design it would be ideal for any future studies to have subjects that have been matched according to sex and age of the patients and have a larger sample size.