

# DISTRIBUTOR'S FEEDBACK ON RCDSO PRACTICE ALERT:

## Paraesthesia Following Local Anaesthetic Injection

### LETTER NO.1 – WEDNESDAY, AUGUST 17, 2005

I'd like to bring to your attention a few points in regards to your article published on page 26 of the *Dispatch* Summer 2005 issue that I strongly feel should have been pondered before writing an article under the heading of "Practice Alert."

Over the years, I've heard many references to Dr. Haas's and Dr Lennon's paper published in 1995 on the subject of dental paraesthesia. As we all know, his conclusions were that there is a higher incidence of that condition with the use of 4% anaesthetics. There are several things to be kept in mind about that study:

- As stated in Dr. Dower's article, which you also quote in yours, "most dentists and patients would define paraesthesia as a prolonged numbness." In reality, what most people think of when they hear the word paraesthesia is permanent numbness; but, as stated in the same article, this condition includes a wide range of symptoms. They range from numbness for a few hours longer than expected, tingling sensation, loss of taste, etc. to the actual permanent paraesthesia. The latter condition is the only one that does not resolve itself with time. All of the other symptoms usually disappear hours, days or, at worst, months after the onset. The article doesn't clarify how long the condition was present in each case.

- Out of the 143 reported paraesthesias that were analyzed in this study, in 47 of the cases the anaesthetic drug used was unknown. Therefore, over 30% of the reported cases could have very well be attributed to, say, Lidocaine, or even Articaine, which would have changed the statistics dramatically. The lack of such an important piece of information in such a large percentage of the cases reported would, at the very least, make questionable the rest of the information provided in these reports.
- Dr. Haas's was not a double-blind study. It was a subjective assessment and not a true scientific study.
- His own conclusions were that there is a possibility for paraesthesia of 2.8 (Prilocaine) to 2.05 (Articaine) paraesthesia cases per million injections. Considering the average practitioner performs 1,800 injections every year, and assuming the incidence is 1:250,000 just in blocks, the average dentist can expect a true anaesthetic-caused paraesthesia case every 100 plus years. And, we are not even talking about permanent cases.
- Therefore, even assuming his conclusions are accurate, it is quite surprising that you would consider this a Practice Alert, even more so, when this study was published 10 years ago or so.

I can envision a lawyer using Dr. Haas's conclusions to question the use of

Articaine on a patient. Nonetheless, any dentist should feel very safe using a drug that has a probability of 1:500,000 or 1:250,000 to cause a paraesthesia. (We are not even talking of a permanent one.) What about the increased risk of trauma to the nerve sheath by having to inject a patient two or three times using, say, Lidocaine to obtain the same results as less than one cartridge of a 4% drug? Damage alone does not prove malpractice.

There are a number of studies like those of Krafft and Hickel (*Journal of Cranio-Maxillo-Facial Surgery*, 22, 294-296, 1994) or Harn and Durham (*Journal of the American Dental Association*, 121, 519-523, 1990) that show an incidence of direct trauma to the nerve during blocks of 7.7% and 3.62% respectively. What about that risk? For a practitioner, taking a calculated risk of one incident every 10, 20 or 100 plus years would not outweigh all the benefits of using these drugs on a patient which can reduce the number of injections required, patient stress, chair time, number of appointments, etc.

B. Hoffmeister published an article (*Dtsch Zahnartzl Z* 46, 828-830, 1991, 12) of a study called "Morphologic changes in peripheral nerves following intraneural injection of local anaesthesia," in which he concluded that, after direct intraneural injection of 4% Articaine, no morphologically detectable toxic lesions were observed. His paper reports that the neurosensory disturbances caused by intraneural local-anesthetic injection are the result of intraneural hematomas with consecutive fibrosis and cicatrization.

The Ontario court system has also ruled accordingly, as you also reference in your article. They have determined that paraesthesia is not a common enough occurrence that would deem obtaining consents from patients necessary before administering an anaesthetic drug. They considered this possibility, based on expert witness testimony "infinitesimal, minimal, extremely small, or in order of magnitude of 1:800,000."

Nonetheless, anecdotal evidence seems to be significant when talking about this issue.

Thousands of dentists across Canada, let alone across the world, swear by 4% anaesthetics and have been using them every single day in their practices for many years, some even for decades. Dentists using them as extensively would have stopped using these drugs years ago, regardless of any publications against or in favour, if their clinical experience showed they were indeed experiencing a high number of paraesthesias that could only be attributed to the anaesthetic drug itself.

All of these drugs would already be history and no one would buy them, if people had really experienced permanent paraesthesias that could only be attributed to the drug, in the numbers some people are claiming they are. Or, actions from the health authorities, such as the ones that banned the use of paraben as preservative in local anaesthetics, would have made these anaesthetics completely unavailable.

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Ever since Septocaine started selling in the USA, this discussion reached a different level. This could be explained by the concerns of the dental professionals for all the malpractice lawsuits that are prevalent in that country.

If you read the application submitted to

paraesthesia rate for Articaine in this study, but forgets to mention that Lidocaine had an identical percentage of cases: 1% for both groups after 7 days! Strangely enough this information is missing from your article too. (See below direct-copied images from the application documents available at the FDA site.)

### Section 8.4.1 Paresthesia:

All information on parasthesias was collected by follow-up phone calls. Some of the parasthesias reported resolved before the first phone call and others occurred only after the first call. Paresthesia was not always considered an adverse event. The sponsor felt that when symptoms began after the day of drug administration, it indicated that these symptoms may have been due to the procedure rather than the anesthetic. The sponsor calculated the incidence of parasthesia at 2% for both treatment groups. All cases of parasthesia resolved without sequelae.

[Item 7.2 Vol.1.40, pp.93-94]

The sponsor reported that, overall (drug related and non-drug related), 21/882 (2%) of Septanest<sup>®</sup> patients and 10/443 (2%) of lidocaine patients had numbness or tingling at either or both one and seven days post-op. Of these patients, 8 (1%) of Septanest<sup>®</sup> patients and 5 (1%) of lidocaine patients reported numbness or tingling of the mouth or face at approximately seven days post-procedure. In the Septanest group, one patient had speech impediment, burning and drooling with the numbness or tingling, and concomitant pain was associated in two other cases. In the lidocaine group numbness and tingling was accompanied by pain, speech impediment and drooling in one case and only pain in a second case. The sponsor further reported that there were no differences between treatment groups in the rate or nature of prolonged numbness/tingling following anesthesia and a dental procedure. These patients are listed in the table beginning on the next page:

the US Food and Drug Administration (FDA) for the approval of Septocaine, in the section about the clinical complications in the clinical trials (Part 2 of the Medical Review section of the application), you will be shocked to see they report 21 of 882 (2%) subjects receiving Articaine 1:100 and 10 of 443 (2%) patients receiving Lidocaine 1:100 experienced numbness or tingling 1-7 days after the injection. Then again, among the adverse events reported, there were two patients that experienced diarrhea, one reported constipation, and another one back pain.

It is interesting to note, also, that Dr. Dower's article emphasizes the "high"

Needless to say, the FDA approved the drug based on the findings of this study. Now, this is the only "three identical, single-dosed, randomized, double blind, parallel group, active-control, multicentre" study. The conclusions of this study are that Articaine and Lidocaine were comparable in many ways, even their likelihood of causing a paraesthesia.

If you read the details in this application of the parasthesias they refer to, you'll find the following details:

"It's always important to hear what a key practitioner responsible for these studies says, more so when he is probably the most respected authority in dental anaesthesia in the world."

These are Dr. Stanley Malamed's thoughts about these issues posted by him personally in the Anesthesiology Forum of Dentaltown.com.

**Posted by Dr. Stanley Malamed in Dentaltown.com: 6/4/2004 7:50:32 AM**

*(1) The published paraesthesia rate of 1%: In the clinical trials we did for the FDA's approval of articaine we used 1400 patients, 2/3rds of whom received a-caine, the remainder lidocaine. Both LAs contained epi in a 1:100k concentration. Dentistry was done... whatever the patient required (the overwhelming majority of patients received non-surgical perio or conservative restorative procedures. The study was double-blinded. The results of the efficacy and safety studies were published in three subsequent papers: two in JADA the third in a pedo journal. As for the 1% paraesthesia rate, we found an equivalent rate with lidocaine and articaine. Now, with a study involving only 1400 patients it is difficult to come up with any truly significant differences between the two drugs... after all lidocaine is one hell of a great anaesthetic. Our findings are similar to what happens in many clinical trials of drugs: the numbers of patients included is adequate to demonstrate the clinical efficacy and safety of the drug... and THAT is what the FDA wants to know about a drug before approving it. It is not until a drug is released for general use and the numbers of patients receiving it soars into the millions that we oftentimes find out that there are, indeed, differences between the new and the old drugs.*

*So, our clinical trial (29 dental schools in the USA and UK) demonstrated conclusively that a-caine is a safe and effective drug.*

Now that it is being used extensively (it is available in more than 132 countries... dating back to 1975) we are 'hearing' about differences. These are anecdotal, non-scientific, 'in-my-opinion' type stories, not evidence-based data.

Does a-caine work better than other LAs? Does it work faster? Is the anaesthesia more profound? Is there an increased risk of paraesthesia with a-caine or any 4% LA?

So far the answers to all of the above questions are PURE CONJECTURE...

Judging by the postings on DentalTown re a-caine I would have to say that in the opinion of the vast majority of you, a-caine appears to be in many and varied ways a superior LA to the other LAs we have available... but again, this is unscientific... but really, except for a few of us who really care about evidence-based medicine or dentistry, all the doctor in practice wants to know is (1) is this drug better than what I have now, and (2) should I use it.

So far the answer appears to be YES, even though in the more than 170 published papers on a-caine not a single one (yet) has demonstrated its superiority to other locals.

As I say in all of my LA lectures: local anaesthetics are the safest and most effective drugs in all of medicine for the management and prevention of pain.

Even if you decide to conclude that every single recent report, from any source, about paraesthesias due to 4% Articaine is reliable and accurate, you have to keep in mind that these reports are mostly originating from the USA and that the formula for Septocaine is not

exactly the same as all the 4% Articaines available in Canada. There are distinct differences that could maybe explain why the experience with Articaine in Canada has been significantly different over the last 20 years or so.

These recent claims are also a handful of reports out of millions of 3 and 4% anaesthetic cartridges administered every year around the world.

But let's go back to Canada.

I have recently reviewed all the Adverse Reaction Reports (1983 to date) in Health Canada's Web site on 4 and 2% anaesthetics, and these are my findings:

#### **Paraesthesias caused by Articaine and reported by dentists**

Definite: 5

Possible\*: 9

(\*possible means the file shows the patient had symptoms that could be associated to a paraesthesia, but the Adverse Reaction Report does not read "paraesthesia.")

#### **How long ago?**

Most recent "definite" one: April 1994 (UC DS)

Most recent "possible": one: May 2000 (Astracaine F)

#### **I also checked Citanest F, Citanest and Prilocaine (the other 4% drug)**

Possible: 1 (July 1987)

Lidocaine (Xylocaine 2%) has only four paraesthesias reported, but the files do not show they were claimed by dentists, and all were resolved. The four say they were reported by "pharmacist," and notifier location was "Hospital."

I choose to believe that Health Canada's figures are accurate and, had the incidence been higher or concerning in any way, they would have issued a

warning themselves. There is no clear indication in those 19 reports on when the paraesthesias were resolved, and if there are still any permanent cases out there. I do not think Canadian dentists would create a "cover-up" to protect 3 and 4% drugs by not reporting the adverse reactions they encounter in their practices to the relevant authorities.

In a country where upwards of 12 million injections are given per year, 19 reports over so many years are negligible, to say the least.

I really feel that the publishing of the article is a disservice to your colleagues and the members of the RCDSO that currently use, or intend to use 3 and 4% anaesthetics in their practices. I believe you had an obligation to publish both sides of this issue and to quote the studies that support every angle allowing the readers to decide for themselves.

Issuing a warning, as you did, in such a prestigious publication and under the heading of "Practice Alert" will undoubtedly cause panic in some instances, and at the very least, will have dental professionals questioning their own good judgement and experience over many years.

Some professionals may feel forced or pressured to stop using these drugs that work so well in their hands, with the thought in mind that an article like yours can be used against them in the court of law.

In the past few days, I have already had

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to address these concerns with several of our loyal customers and, fortunately, the vast majority sees things in the same light. Their experience with Ultracaine, the original 4% Articaine, and other 4 and 3% drugs over so many years, is what really counts, and the likelihood of a complication of this nature caused by the drug itself is very remote, as their own personal experience can attest.

HANSAMed will also take whatever measure needed to ensure dentists across Canada and abroad promptly get all the pieces of information that were missing in this article, so they can better decide what to do about their local anaesthetic use.

Our company feels the RCDSO members deserve an immediate clarification on this issue from you, and we also request an opportunity for a rebuttal in the pages of the next issue of the *Dispatch*.



**DR. MAURICIO DIAZ**

Manager, Pain Control Division  
HANSAMed, Mississauga

### COLLEGE REGISTRAR REPLIES

Under the *Regulated Health Professions Act, 1991*, we are the regulator for the dental profession, and pursuant to that statute, we have obligations and objects with respect to human health care. We are also required to develop and establish programs with respect to standards of practice to assure the quality of the practice of the profession. We are required as well, as part of our mandate to develop, establish and maintain standards of knowledge and skill, to promote continuing competence among our members.

Section 3(2) of the legislation states "in carrying out its objects, the College has a duty to serve and protect the public interest."

The purpose of the advisory was to raise an awareness in our members to the research findings and significant experiences from this College's Professional Liability Program respecting the seemingly high risk of temporary or permanent paraesthesia associated with the use of certain local anaesthetic agents for mandibular block injections.

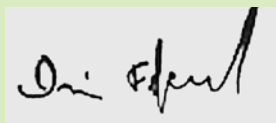
We made it very clear in the notice that, while the incidence of such paraesthesia is low, there appears to be a growing body of statistically significant scientific knowledge supporting the fact that Articaine and Prilocaine are more likely than other local anaesthetics to be associated with paraesthesia, especially lingual paraesthesia.

The research was conducted by the Assistant Dean of the Faculty of Dentistry at the University of Toronto, Dr. Daniel Haas, who is an internationally recognized expert in the field of anaesthesia.

In addition, I am confident that you are aware that the *British Dental Journal* has published an article in the year 2003, noting at the Leeds Dental Institute, "...we too have observed an apparent increase in the incidence of prolonged dysaesthesia following inferior alveolar nerve block injection in the last few years (seven cases), all but one of which has been associated with articaine administration." I am attaching a copy of that article.

This College received legal advice from our general counsel, and from outside counsel, before publishing what we did. It was never our intention to interfere with our members' professional judgement in their selection of an appropriate local anaesthetic agent. However, the advice we received was that it was certainly within our obligation to advise members to be aware of the literature before determining which agent to utilize for mandibular block injections.

We did comment that it would be helpful if there would be further research to clarify this issue. That said, the College believes that the information that was provided to our members is both in their interest, as well as in the interest of the public of this province.



**Irwin W. Fefergrad, BA, BCL, LLB**

Registrar, Royal College of Dental Surgeons of Ontario

**LETTER NO.2 – WEDNESDAY,  
SEPTEMBER 14, 2005**

I read your letter with great interest, and would like to make a few comments.

Among other things, you mention that the RCDSO decided to publish the advisory based on “significant experiences that this College’s Professional Liability Program respecting the seemingly high risk of temporary or permanent paraesthesia associated with the use of certain local anaesthetic agents for mandibular blocks.”

I have no questions about Dr. Haas’s reputation and credentials, but it is also my understanding that he sourced the information for his publication in 1995 from these same reports that the College compiles. As expressed in my previous letter, there are some important bits of information that I understand, based on my conversation with Dr. McFarlane, are still, to this date, not being collected. These include needle size and gauge, pain during injection, duration of the episode, etc. These are very important pieces of information that can further bring light to this issue, and should be pondered, before making any assumptions one way or the other.

On the other hand, is the information on these reports available? Would you be kind enough to share the statistics with us? What specifically does the questionnaire ask?

As direct representatives for the manufacturers of the original Articaine, this information is very valuable.

I also don’t understand why you consider a letter to the editor of a Journal (BDJ 2003; Vol 195, No 3, page 119) an “article.” This lacks even the most basic information. How can anyone put that emphasis on a letter that reports “an apparent” increase in paraesthesia cases “in the last few years?”

Even if these reports were accurate and 100% reliable, millions of cartridges of Articaine are injected worldwide in a year. These reports make up an infinitesimal part of the total injections of Articaine.

Please don’t think that an advisory such as the one in question is not taken VERY seriously by the dentists in our province. They know that you are the governing body that really holds their licences. They also know any lawyer or patient can use this publication, successfully or not, against them. They will have to put their professional judgment in a balance versus the legal implications of not paying attention to your advice.

You titled the article “Paraesthesia Report: Important Member Advisory” on the cover of the *Dispatch*, “Important Practice Alert” in the index, and “Practice Alert” in red letters on page 26.

If your intention was not to sway your College members one way or the other and just present the facts, the titles reflected quite the opposite, to say the least.

The RCDSO put many dentists across the province in the position of having to switch anaesthetics due to legal

concerns, even though their experience with this drug had been completely different, in some cases for over 20 years.

HANSAméd proudly distributes Ultracaine, a product with an impressive safety and performance track record worldwide for almost 30 years, and in Canada for over 20 years. We would like to better understand why the information you have on Articaine is so different from our own, our customers’, and even our health authorities’ experience. Again, I’d like to request that you share the information you have on these incidents, and which name brands are involved in those reports. It is also my understanding that there is a comparative study in progress that I’m sure will provide us with more current data.

I sincerely appreciate the fact you are willing to publish my letter to Dr. McFarlane in the next issue of the *Dispatch*, and look forward to reading it. Should you deem it appropriate, please feel free to publish this letter as well.



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