Frustration of being unable to anaesthetise a patient sufficiently?

By DTI

Many clinicians have experienced the frustration of being unable to anaesthetise a patient sufficiently despite trying various approaches or using a combination of amides. A variety of failures are known by specialists, for example, one spot in a tooth cannot be touched, everything is numb except the tooth, the last bit of caries cannot be removed without pain or intra-pulpal injection is the last option in the case of irreversible pulpitis, et cetera. Mandibular teeth are the most common teeth to be associated with the failure of anaesthesia and it is even more frustrating that it usually concerns the same patients, therefore the specialist tends to become nervous when the patient’s name appears in the appointment book once again.

The main problem with failing anaesthesia lies with the dental curriculum, because dental schools do not allocate enough time, lectures and practical sessions to the subject. Often, the topic is interwoven within different subjects and it is assumed that students assimilate the information and will apply it successfully in the clinic. Infiltration anaesthesia, mandibular nerve block anaesthesia and intra-lingual anaesthesia are probably taught in every dental school as the ‘mainstream’ techniques. However, what one should do in case of failure probably depends more on who is involved in teaching the course. A plethora of solutions are taught in dental school by different clinical teachers, ranging from combining amides and combining techniques to increasing the dosage or to injecting intraosseously. By the way, why is a carpule 1.7 or 2.2 millilitres in volume, irrespective if articaine or lidocaine is used and irrespective if plain or adrenaline-added solutions are used? There does not seem to be an answer.

The literature is inconclusive about which techniques should be used, however more and more evidence of anatomical variations in the innervation of teeth surfaces have been found, as dental and maxillofacial radiologists diagnosed and identified neurovascular canals on CBCT images. These variations in anatomy were unknown or overlooked for many years, which explains why, for over 100 years, dental local anaesthetics have not seen a profound and efficient dental local anaesthesia for all patients. Therefore, if local anaesthetic can be administered directly into the cancellous bone, the teeth will become anaesthetised irrespective of which nerve branch provided innervation to the teeth or a particular tooth. It sounds simple, and it is.

The principle of intraosseous anaesthesia is not new. It was first described in 1906 by Dr Cavalor, who introduced direct injection into the cancellous bone as a better alternative to mandibular nerve blocks (known as the Halsted block). In fact, every infiltration anaesthesia is an intraosseous anaesthesia. The reason why it works relatively well in the maxilla, in contrast to the mandible, is because the cortical plate is thin and porous in the maxilla.

Therefore, the cortical plate of the mandible requires to be perforated in order to administer the local anaesthetic successfully and efficiently. This technique can obviously also be used in the maxilla. Advantages of the technique include the minimal collateral anaesthesia (no numb lip and no numb tongue), the immediate onset of the anaesthesia, the relatively short duration of the anaesthesia (depending on the volume injected and the concentration of the vasoconstrictor) and the fact that multiple quadrants can be treated in one visit, causing minimal discomfort for the patient. The key to success is the slow injection of the anaesthetic, which allows for the product to diffuse gently into the cancellous bone, causing profound and reliable anaesthesia of the pulp of the tooth, the tooth’s periodontal ligament and the attached gingiva. Additional soft tissue anaesthesia is required if more elaborate treatment than simple restorative treatment is planned—a simple exodontia or deep calculus removal, for instance. The comfort of the patient is paramount and when the patients are comfortable, so will the dentist be.
Recent study investigates dental anxiety and dental behaviour in children

By DTI

MANGALORE, India: A key reason behind people not attending regular oral health check-ups can be anxiety stemming from their first experience in a dental setting as a child. In a recent study, researchers from India investigated whether there is an association between the temperament characteristics of children 3–5 years old, dental anxiety, and their dental behaviour. Results were gathered over three check-ups, with the aim of determining the effectiveness of behaviour management techniques such as tell-show-do and live modelling.

In the study, led by Dr Baranya Shrikirshna Suprabha from the Department of Paedodontics and Preventive Dentistry at the Manipal College of Dental Sciences, the researchers examined 100 children aged 3–5 years who were attending their initial dental visit accompanied by a parent.

Speaking to Dental Tribune International, Suprabha said, “When we reviewed the literature, the role of temperament in the dental behaviour of preschool children during the initial dental visit was unclear. Earlier studies had been carried out in older age groups of children and not necessarily during the initial dental visit. The association of temperament with dental anxiety, which has been shown to have an important role in the behaviour of the child in the dental clinic, was also investigated.”

During the initial oral examination of the children and their oral prophylaxis, the behaviour of the children was measured using the Frankl’s behaviour rating scale, and temperament was assessed using the Emotionality, Activity, Shyness Temperament Survey for Children. “The facial image scale used to assess the anxiety in our study has been shown to have good validity and reliability. Though we did not assess the validity and reliability again, all children responded easily to the scale,” explained Suprabha.

According to the study’s results, techniques like live modelling and tell-show-do are very effective in helping children manage dental anxiety. (Photograph: Creativa Images/Shutterstock)

The study, titled “Association of temperament with dental anxiety and behaviour of the preschool child during the initial dental visit,” was published on 6 February 2019 in the European Journal of Oral Sciences ahead of inclusion in an issue.

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New study adds to evidence of relationship between erectile dysfunction and periodontal disease

By DTI

GUANGZHOU, China: Growing concern over an association between erectile dysfunction and periodontal disease has propelled more research into the subject in recent years. A new systematic review and meta-analysis from the Jinan University in Guangzhou has found further evidence of a relationship between the two. The results showed that men with periodontal disease were nearly three times more likely to be at risk of erectile dysfunction.

The researchers conducted quality assessments and sensitivity analysis of the five case–control studies that met the eligibility criteria. These studies included data on over 200,000 participants. The findings suggest that periodontal disease should be included among the risk factors for erectile dysfunction.

According to the World Health Organization, severe periodontal disease was estimated to be the 11th most prevalent disease globally in 2016. Both periodontitis and erectile dysfunction have been linked to C-reactive protein (CRP), a substance produced by the liver in response to inflammation. A high level of CRP in the blood is a marker of an inflammatory condition, including inflammation of the arteries associated with heart disease. Scientists believe erectile dysfunction and periodontitis are linked in that this same type of inflammation could very well start in smaller blood vessels of both the mouth and penile area before reaching the larger arteries.

A previous study from the University of Granada in Spain, published in the Journal of Clinical Periodontology last year, showed just how serious it can get. In the study, CRP levels were higher in men who had periodontitis/erectile dysfunction than men without these health problems. Furthermore, men with chronic periodontitis were twice as likely to suffer from impotence compared with men who had healthy teeth and gingivae, suggesting that treating periodontal disease to reduce inflammation of the gingivae can result in improved erectile function.

The study, titled “Updated evidence of association between periodontal disease and incident erectile dysfunction”, was published in the January 2019 issue of the Journal of Sexual Medicine.

Reducing the risk of periodontitis may help reduce the risk of erectile dysfunction. (Photograph: LightField Studios/Shutterstock)

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Researchers present prototype of interactive device that can be worn in the mouth

By DTI

AUCKLAND, New Zealand: Scientists in New Zealand have developed ChewIt, a novel user-configurable interface device worn in the mouth. The prototype, which is no larger than a piece of chewing gum, may soon allow people to answer their phones by simply biting on the soft ChewIt casing.

The research project in which ChewIt was developed was led by Dr Suranga Nanayakkara, an associate professor at the Auckland Bioengineering Institute who made international headlines in recent years with another prototype device, the FingerReader. Wearing it on a finger, the user points at words, such as those on the spine of the book or in a restaurant menu, and these are then translated to voice.

The custom-made flexible printed circuit board of the tiny ChewIt is fully encased, allowing users to pop it into their mouths. It allows for discreet and hands-free interaction with a phone, computer and smartwatch, among other devices, even while riding a bicycle. The wearer can use it to cancel a phone call or even to control a wheelchair. During the pilot test, users kept the device in their mouths for 30 minutes and reported no discomfort.

In his research, Nanayakkara wishes to address what he says is a mismatch between what technology has to offer and innate human behaviour. Owing to this, his research is focused on developing technologies that are more responsive to innate human behaviour instead of obliging humans to adjust to the requirements of the technology. “We want to design and develop systems that can understand the user, rather than us having to tell the technology what to do every time—technologies that can understand us much better than technology currently does,” he said.

He considers such technologies “assistive augmentation”: “It’s when the system understands the abilities, behaviours and emotions of the user, and when the system is unobtrusive and integrated with our body or our behaviour,” Nanayakkara explained. According to him, assisted augmentation should be concerned with strengthening and extending the users’ physical and sensorial abilities while allowing them to do what they could not do before.