

surrounding hypochlorite accidents in teeth with open apices, particularly regarding the effect of concentration on the incidence of injury.

The majority of hypochlorite accidents can be attributed to incorrect working length, the presence of perforations and excessive force during irrigation.² Although immature root development has been associated with an increased risk of extrusion, endodontic treatment can be carried out safely with careful pre-operative assessment, determination of working length and appropriate use of side-vented irrigation needles.^{3,4} Taking these measures prior to commencing treatment is therefore essential and clinicians should be competent in the appropriate management of hypochlorite injury.

Anecdotally, clinicians typically err on the side of caution for paediatric patients by using low concentrations of hypochlorite, with the aim to reduce the risk of injury through extrusion or perforation. However, the evidence base to support this is limited and there is lack of a protocol for endodontic treatment in teeth with immature apices. Whilst high strengths may increase tissue irritation, concentrations of 5.25% have been shown to demonstrate greater antibacterial activity in comparison to 2.5%, and when diluted, result in a significantly impaired ability to dissolve necrotic tissue.⁵ Furthermore, the effectiveness time of hypochlorite is significantly reduced when using 5.25% compared to 2.5%, allowing greater antimicrobial action within a more efficient timeframe.⁵

The nature of patients managed within paediatric dentistry may necessitate a limited treatment duration. The use of higher concentrations of NaClO may permit

superior antimicrobial activity during the restricted timeframe that often accompanies endodontic treatment for paediatric patients. Whilst the optimal concentration is open for discussion, the specialty should consider the viability of safely using 5.25% NaClO for endodontic treatment on teeth with both complete and incomplete root development. When used alongside a protocol to reduce risk of extrusion and guidelines for the management of potential injury, could higher concentrations be adopted to improve treatment outcomes for root canal treatment in children?

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References

1. Gernhardt C R, Eppendorf K, Kozlowski A, Brandt M. Toxicity of concentrated sodium hypochlorite used as an endodontic irrigant. *Int Endod J* 2004; **37**: 272–280.
2. Perotti S, Bin P, Cecchi R. Hypochlorite accident during endodontic therapy with nerve damage – A case report. *Acta Biomed* 2018; **89**: 104–108.
3. Pai A V. Factors influencing the occurrence and progress of sodium hypochlorite accident: A narrative and update review. *J Conserv Dent* 2023; **26**: 3–11.
4. Tomson P L (ed). *Guide to good endodontic practice*. London: British Endodontic Society, 2022. Available at: https://britishendodonticsociety.org.uk/_userfiles/pages/files/a4_bes_guidelines_2022_hyperlinked_final.pdf (accessed March 2024).
5. Marion J J, Manhaes F C, Bajo H, Mageste Duque T. Efficiency of different concentrations of sodium hypochlorite during endodontic treatment. Literature review. *Dent Press Endod* 2012; **2**: 32–37.

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Occupational health

Noise damage in a dental clinic

Sir, I read with great interest the letter on 'Ear protection for dental practitioners' published on 9 February 2024.¹ During the pandemic and even post-pandemic, many protective measures have been added to dental offices,

contributing only to more noise. We have tried to highlight this issue during the pandemic, where we made an effort to account for noise coming from different instruments commonly used in dental practice.² While the authors of the current letter only mention that air rotors create high noise levels, we found that many commonly used instruments create even more noise. Typical examples would be scalars that were found to be generating 85.80 dBAeq of sound, while an air-blow syringe was leading to 100.00 dBAeq of noise generation during use.

While the authors have made a great effort to highlight the dementia-associated risks due to prolonged exposure to noise in a dental setting, there are many other associated risks, such as behaviour, digestion, cardiovascular system, and even neurological problems.

As dentists, we must be aware of the initial signs and symptoms of damage caused by noise damage, such as asking patients to repeat sentences, not hearing the phone ringing, or are unable to comprehend voices when there is background noise. The ADA has laid down guidelines regarding hearing loss, including the use of noise-cancellation headphones and ear plugs to prevent hearing damage.³

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References

1. Aukett J. Ear protection for dental practitioners. *Br Dent J* 2024; **236**: 148.
2. Marya A, Venugopal A, Ghoussoub M S. Are we hearing right? The negative impact of new SARS-CoV-2 preventive measures and prolonged use of treatment modalities during orthodontic treatment. *Pesqui Bras Odontopediatria Clin Integr* 2022; doi: 10.1590/pboci.2022.023.
3. American Dental Association. Safety tips to prevent hearing loss. Available at: <https://www.ada.org/en/resources/practice/wellness/safety-tips-to-prevent-hearing-loss> (accessed October 2021).

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