mainly caused by microorganisms, failure of root canal therapy is used in a very low dose and with viable bacteria in spite of being viable. Virtej and colleagues25 found 5 per cent NaOCl superior to gaseous ozone in eliminating micrororganisms organized in a cartilaginous biofilm. This study reported less than one log reduction of bacteria after ozone and 5 per cent NaOCl biofilms in culture media, which was only a similar reduction to that obtained by 5 per cent sodium hypochlorite or photoinactivated disinfection.26 However, it should be noted that ozone is a potent oxidant and will undergo a redox reaction with reductants in a culture media. In addition, the authors did not evaluate any cytotoxic effects, and unlike artificial biofilms, contain many molecular species commonly associated with the etiology of periodontal diseases. Compared to MTAD and HealOzone, ozonated oil was the most effective against the evaluated bacterial species.

Biocompatibility of ozone in root canal irrigation
A high level of biocompatibility of aqueous ozone on human oral epithelial (BHE) cells, gingival fibroblast (HGF-1) cells, and peri- odontal cells has been published.27–29 Huth and colleagues30 investigated whether gaseous ozone and aqueous ozone exerted any cytotoxic effects on BHE cells and HGF-1 cells compared with established antiseptics (2 and 0.2 per cent sodium hypochlorite [NaOCl]; 3 per cent hypochlorite [NaOCl]; 2 per cent chlorhexidine; or the application of aqueous ozone on human oral epithelial (BHE) cells, gingival fibroblast (HGF-1) cells, and peri- odontal cells in vitro. A concentration of aqueous ozone that was not toxic to BHE cells and HGF-1 cells was used in these experiments. A concentration of aqueous ozone that was not toxic to BHE cells and HGF-1 cells was used in these experiments. In addition, all concentrations of aqueous ozone were used in combination with other antiseptics. Huth and colleagues30 observed that aqueous ozone exerted no cytotoxic effects on BHE cells and HGF-1 cells in combination with other antiseptics.
Conclusion
Of course, more research on the use of ozone in root canal therapy will add to our knowledge in endodontics.

Thousands of dentists worldwide use ozone in root canal therapy and it is claimed that millions of teeth have received root canal therapy with ozone having been used as the final irrigant. No adverse event has been recorded after use of the HealOzone or ozonated water in root canal therapy.

Ozone is an effective, easy, cheap, and fast treatment to help disinfect root canals. Ozone is much stronger than chlorine and acts 3,000 times faster without producing harmful decomposition products.75

As ozone is the most powerful antimicrobial and oxidant we can use in endodontics, and as aqueous ozone revealed the highest level of biocompatibility compared with commonly used antibiotics, then it is fairly obvious that ozone should be used to help combat the microorganisms associated with infected root canals. Ozone has a place in the 21st century oral health care,17 and we should use it to prove its powerful antimicrobial efficacy and potent oxidant ability to reduce microorganisms during root canal therapy.

Disclosure
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