

**SCIENTIFIC
SECTION**

Commentaries on scientific papers

A randomized controlled trial comparing the quadhelix and the expansion arch for the correction of crossbite
M. R. McNally, D. J. Spary and W. P. Rock

This paper reports a randomized controlled trial (RCT), supported by appropriate laboratory testing, which compared the effectiveness, in terms of canine and molar expansion, of the quadhelix appliance (QH) and the expansion arch (EA).

In this RCT, 60 patients, age 11–16 years, with either a unilateral (41) or bilateral (19) crossbite were recruited. 92% of participants (55) completed the trial. No significant differences in the amount of expansion obtained by each appliance over 12 weeks were found. The two appliances had similar discomfort scores. More patients disliked the appearance of the EA than the QH. However, the cost of the QH was significantly more (£15.20 compared with a few pence) than the EA.

I thought the strengths of this trial were that it was clinically relevant and involved sufficient patients to have the power to detect a clinically significant difference in expansion if there had been one. I liked the fact that patient-centered outcomes (discomfort and appearance) were recorded, rather than just dental ones. I thought that the design could have been improved by stratifying the randomization on the type of crossbite (bilateral or unilateral) so that differences could have been checked and accounted for in the data analysis. I would also have liked to have seen data on whether the amount of expansion achieved corrected the crossbites, which was the primary reason for the appliances to be fitted.

Overall, I thought the trial addressed a clinically relevant question, was well carried out and gave results that suggested that the relatively cheap EA was just as effective at expanding the upper arch as the more expensive QH. I think that the findings of this RCT may alter clinical practice and bring the EA into more widespread use as a cheap, easy to use, effective alternative to the QH.

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Chlorhexidine-modified glass ionomer for band cementation? An *in vitro* study
D. T. Millett, B. Doubleday, M. Alatsaris, D. Wood, F. Luther, D. Devine and J. Love

This laboratory-based study examined the effect of the addition of 10% chlorhexidine digluconate solution to a conventional glass ionomer cement (GIC) used for cementing orthodontic bands. In the experimental group in each case, the chlorhexidine solution was a direct replacement for the liquid used in the mixing of the glass ionomer cement. 80 third molar teeth had micro-etched first molar bands of appropriate size cemented to them, with there being equal numbers of maxillary and mandibular molars. In the two control groups, the bands were cemented using GIC, while in the two experimental groups they were cemented using GIC with the 10% chlorhexidine addition. An experimental and control group were then either debanded directly using a Nene testing machine to determine force to deband, or were placed into a ball mill in order to determine survival time. In addition, the site of failure was also noted in each case.

What was very encouraging to note from this work was that the experimental group, in which chlorhexidine had been added, performed as well as the control group for each measurement parameter. Indeed, from the Weibull analysis it may be that the experimental group may even perform slightly better in the clinical situation. Speculation as to the true mechanical performance and the hoped for additional benefit of this chlorhexidine addition will hopefully be answered by the authors undertaking an appropriately designed clinical trial using these cements. If additional benefits can be demonstrated, then what is certainly very attractive from the operator and assistant point of view, is that the material handling and clinical procedures required appear to be no different from that of a conventional GIC cement.

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