

**SCIENTIFIC
SECTION**

Commentaries on scientific papers published in this edition

Molar band re-use and decontamination—a survey of specialists

P. Dowsing and P. E. Benson

This questionnaire-based survey investigates the topical issue of re-use of orthodontic molar bands amongst a random sample of UK specialist orthodontists. There is little information available in the scientific literature regarding this important clinical topic. Sound scientific evidence is required to ensure that our cross-infection prevention methods are appropriate. An acceptable response rate of nearly 75% was achieved. It can only be surmised that the 25% ‘non-responders’ are carrying out appropriate cross-infection prevention methods.

The vast majority (90%) of specialists were using bands for molar teeth with 95% of these clinicians routinely re-using them after they had been tried-in for size. The survey reported on a large range of pre-sterilization procedures currently being used in practice. It is unlikely that there is a single method of achieving band decontamination. However, it will be important for future research to show whether all possible sterilization scenarios are equally effective in order to provide us with clinical guidelines.

Each orthodontist was allocated a code to facilitate any required follow-up mailing. It is curious, therefore, why the authors did not produce a ‘non-response’ bias assessment, although the authors do endeavor to explain this. It was surprising to see that 3% of respondents were not wearing gloves routinely and that 9% failed to provide safety eye protection for their patients. Of particular concern was the 3% of respondents who were using either cold sterilization or a hot air oven as their sole method of sterilizing re-used bands.

On the whole, this survey was well conducted and provides useful baseline information for orthodontists with regard to the national picture of orthodontic molar band re-usage. This survey should allow all orthodontists to reflect on their clinical practice by peer review and to instigate changes accordingly.

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An investigation into the use of a single component self-etching primer adhesive system for orthodontic bonding: a randomized controlled clinical trial

K. House, M. Sherriff and A. J. Ireland

Bonding orthodontic brackets to enamel consists of a number of time-consuming steps. Recently, many manufacturers have tried to produce materials to simplify and speed up the process. The introduction of self-etching primers in orthodontics can enable the clinician to achieve those goals. Many *in vitro* studies have evaluated the bond strengths of self-etching primers, showing encouraging results. Although there are many laboratory studies indicating that brackets can be successfully bonded with self-etching primers, there are few published clinical studies. To date, no *in vivo* investigations have been published assessing the clinical performance of this single component self-etching primer system. The aim of this study was to investigate the *in vivo* bond failure rates of the single component orthodontic self-etching primer system, Ideal 1 (GAC Orthodontic Products), and to compare it with conventional acid etching. Thirty consecutive patients were to be enrolled in the study. A split mouth study design was used. Subjects were eligible for inclusion in the study if they satisfied specific selection criteria. Local research ethics committee approval was obtained. Data on bond failure were collected at 1 and 6 months, and 1 year after placement. Data were analysed using appropriate statistics. The cross-mouth controlled trial has the advantage of providing a self-control. Moreover, the authors were able to control carefully the numbers of variables, in an attempt to compare only the enamel pre-treatments, Ideal 1 self-etching primer versus the conventional acid etch regimen. Only one operator carried out the bonding.

This is a well written, *in vivo*, randomized, cross-mouth clinical trial, which will be of great interest for both clinicians and academicians.

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Tooth-size discrepancy and Bolton's ratios: a literature review

S. A. Othman and N. W. T. Harradine

As the title suggests this was a review of literature on tooth size discrepancy (TSD) and Bolton ratios. The authors used Medline and a hand search was carried out for the 4 major orthodontic journals. They included papers published in English language only. The other two inclusion criteria were studies investigating the prevalence of TSD, or studies reporting the speed or reproducibility of TSD measurement. Two persons independently identified 47 potential publications, but only 31 met the agreed criteria.

They found that in orthodontic population the prevalence of more than 2 standard deviations from the average Bolton ratio ranged from approximately 20 to 30% for the anterior ratio and approximately 5 to 14% for the overall ratio. Does this mean that every 4th or 5th patient in our orthodontic practice will have a TSD? The authors are right to state that this high prevalence does not agree with clinical practice where it

is an infrequent problem. Patients may have a Bolton's discrepancy if it is clinically difficult to achieve good overbite, overjet or good interdigitation. However, the reverse is not always true. Bolton's ratio was derived from a sample with 'excellent occlusions' and therefore a Bolton ratio that falls outside the standard deviation for that original sample may not indicate a clinically significant TSD. Perhaps, in these cases other factors, such as inclination and angulation of teeth, may be contributing to the complexity of these cases.

One important issue the paper has identified is that the Bolton ratio for the UK population of orthodontic patients remains uncertain and needs further investigation. They also recommend focusing more on the actual size of the discrepancy, rather than the Bolton ratio alone.

The paper has highlighted various aspects of Bolton's ratios and, although the paper is not a systematic review and is only a 'systematic style', it will be useful for postgraduates and clinicians alike.

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