

HKU Faculty of Dentistry researchers propose simpler way to bond metal retainers to teeth

Bonding metal retainers to teeth with a resin adhesive kit does not need the traditional first step of applying the liquid adhesive before the solid adhesive, and this simpler method could potentially help minimise patients' exposure to a hormone-disrupting chemical, a research team from Sweden and Hong Kong (including [Dr Alexander TH Tang](#) and Prof Urban Hägg from the HKU Faculty of Dentistry) has reported.

Both solid and liquid components of a “composite resin” adhesive kit commonly used in orthodontics (tooth-straightening) contain the compound bisphenol A-diglycidylmethacrylate. However, some composite resins have been shown to release the hormone disruptor bisphenol A (BPA), the researchers note in the background to their study published in the *American Journal of Orthodontics & Dentofacial Orthopedics*. Given general public concern about possible health effects of BPA exposure, a routine precaution could be for dentists to avoid using liquid resin—the most likely source of any leached BPA in composite resin adhesives, the researchers propose. Furthermore, according to their clinical study, omitting the liquid resin would not affect the 5-year performance of bonded metal retainers, they add.

The study tracked randomly chosen patients in Sweden who had previously undergone orthodontic therapy with fixed appliances and who needed fixed retainers to prevent relapse. A total of 40 metal retainers were bonded to the tongue side of front teeth. After tooth enamel had been roughened with acid, 20 retainers were attached in 18 patients by the usual procedure of applying liquid resin followed by resin paste. For the other 20 retainers in 17 patients, only resin paste was used for attachment.

According to statistical tests, failure rates after 5 years were similar for the two groups. Retainers came apart from 14% of the 110 bonded tooth surfaces in the liquid+paste adhesive group and in 15% of the 74 bonded tooth surfaces in the paste-only group. Retainers stayed in place for a similar time for the liquid+paste and paste-only groups (average duration of 36 and 32 months, and midpoint duration of 43 and more than 47 months, respectively); similar proportions of patients (50% and 60%, respectively) showed no bond failures. The findings lead the research team to conclude that “the bonding of lingual retainers does not need to involve liquid resin” and without it, retainers stay bonded “for a clinically acceptable time”.

Commenting that future studies could account for related factors such as dentists' clinical skills and patients' diet, the authors draw two implications from their results. Firstly, excluding the liquid adhesive would result in the “elimination of the contribution of the liquid resin in the overall BPA release without compromising the clinical longevity of the retainer”. Secondly, manufacturers of dental adhesive kits need to reassess their standard recommendation of applying liquid resin before the paste, which was widely thought to improve bonding to tooth enamel.

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Source: Tang AT, Forsberg CM, Andlin-Sobocki A, Ekstrand J, Hägg U. Lingual retainers bonded without liquid resin: A 5-year follow-up study. *American Journal of Orthodontics & Dentofacial Orthopedics* 2013;143:101-4. Medline link to research article: <http://www.ncbi.nlm.nih.gov/pubmed/23273365>

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