Antibacterial Effect of a Temporary Cement–Dissolving Liquid

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Purpose: Methods for removing temporary cement with an antibacterial effect might improve prosthetic treatment prognosis. Materials and Methods: Three removal methods were assessed: (1) immersion of an acrylic provisional restoration in a temporary cement dissolver (Temp-off); (2) mechanical removal with a dental explorer; and (3) sandblasting. Two temporary cements, one with eugenol (Temp-Bond) and one without eugenol (Temp-Bond NE) and of two thicknesses (100 µm and 250 µm), were examined. Results: Immersion in Temp-off produced the most effective bacterial count decrease compared to the other methods (P < .05). No significant difference was found between the two cement types, although the decrease in count was more evident in the thicker (250 µm) cement layer. Conclusion: Temp-off dissolving liquid used for removal of temporary cement exhibited an antibacterial effect and nonmechanical cleaning ability.

The International Journal of Prosthodontics

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(SEM) of the provisional restorations’ inner surface was used to depict the bacterial distribution. A similar protocol was applied to Temp-Bond NE cement.

**Results**

Provisional restoration margins immersed in Temp-off and then placed on agar showed no bacterial growth (Fig 1). This cement removal method resulted in a significant reduction in viable cell count compared to the other methods (Fig 2). Restorations allowing 250-µm cement thickness showed a significantly lower viable cell count compared to the 100-µm thickness cement ($P < .05$) (Fig 3). There was no significant difference between the two cement types used (Temp-Bond with/without eugenol). SEM showed fewer bacterial structures following cement removal using Temp-off (Fig 4).
Discussion

The use of Temp-off dissolving liquid to remove temporary cement from a provisional acrylic restoration resulted in the most effective bacterial count reduction compared to the other methods. The results were even more evident when the cement was of 250-µm thickness. Temp-off dissolving liquid is composed of ethanol amine, Triton X-100, and potassium hydroxide (KOH), and its antibacterial effect may be explained by its components’ properties. Triton X-100, a nonionic surfactant, is a detergent used often in the laboratory to lyse cells or to permeabilize live cell membranes. 4 Also, the thorough, high-quality nonmechanical cleaning may be responsible for the completely smooth removal of the cement and the significant bacterial count reduction on the inner surfaces of the acrylic provisional restorations.

Provisional acrylic restorations allowing a thicker cement layer (250 µm) showed a significantly lower viable cell count. The thicker cement layer came off more easily and in a more unified manner, reducing the rubbing repetitions. In general, mechanical rubbing or sandblasting roughens the restoration’s inner surface and may embed additional bacteria in the provisional crown walls. 5

The present study has the limitations of an in vitro setting and small study groups, but the promising results encourage further studies of this material.

Conclusions

The present results indicate that using Temp-off dissolving liquid for removal of temporary cement exhibited an antibacterial effect and nonmechanical cleaning ability.

Acknowledgments

The authors report no conflicts of interest.

References


Literature Abstract

Oral Appliances for Managing Sleep Bruxism in Adults: A Systematic Review from 2007 to 2017

This review focuses on the last decade of research on the use of various oral appliances (OAs) in the management of sleep bruxism (SB) in adults. Sixteen (n = 16) papers of 641 identified citations involving 398 participants were included in the review. Of them, seven were randomized controlled trials (RCTs), seven were uncontrolled before-and-after studies, and two were crossover trials. Analysis of the included articles revealed a high variability of study designs and findings. Generally, the risk of bias was low to unclear for RCTs and high for crossover studies, while the before-and-after studies exhibited several structural limitations. Nine studies used polysomnography, polygraphy, and/or electromyography for SB diagnosis, while others used history taking and clinical examination. Most of these studies featured small samples and were short term. Of the studies using objective SB evaluations, eight showed positive results for almost every type of OA in reducing SB activity, with a higher decrease for devices designed to provide a certain extent of mandibular advancement. Of the studies using subjective SB evaluations, one demonstrated a significant reduction in SB activity, and an additional two showed a myorelaxant effect of OA in SB patients. Although many positive studies support the efficacy of OA treatment for SB, accepted evidence is insufficient to support its role in the long-term reduction of SB activity. Further studies with larger samples and sufficient treatment periods are needed to obtain more information for clinical application.

Jokubauskas L, Baltrušaitė A, Pileičiūnienė G. J Oral Rehabil 2018;45:81–95. References: 60. Reprints: Laurynas Jokubauskas, laurynas.jokub@gmail.com — Brian Fitzpatrick, Australia