

'Wet or Dry tooth surface?' - for self-adhesive resin cement

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Q Does the dryness of tooth surface influence the bonding efficacy of self-adhesive resin cement? I would like to know how much I should dry the tooth surface for better adhesion of self-adhesive resin cement.

A Self-adhesive resin cements are designed to adhere to the tooth substrate without a separate adhesive or etchant. The first commercial product, RelyX Unicem, was launched in 2002 and gained commercial popularity rapidly, partly because these materials are very simple to use in the daily practice.¹

More than two hundreds articles have been published but only few concerned about the moisture control of these materials and even then, like wet bonding technique, no one can define the ideal amount or method of moisture control.²⁻⁴ To answer the question, we have to consider the chemical reaction of these materials.

The basic composition of self-adhesive cements is similar to conventional resin cement, and they also contain additional acid-functionalised methacrylate or related monomers because effective chemical bonding to tooth requires a polyacid matrix structure. The similar chemistry was derived from the glass-ionomer cements and the setting reaction include the acid-base reaction within an aqueous environment.⁵ For this reason, it is recommended by the manufacturer to avoid overdrying the dentin surface while using these cements.

However, the effect of moisture on the bond strength of self-adhesive cement to the tooth structure is controversial. Yoon *et al.* reported that the wetness of the dentin does not affect the bond strength of three commercial self-adhesive cements, while Guarda *et al.* reported higher bond strength on

the moist dentin than dry dentin, and these results comes from the difference of the moisture control methods.^{3,4} Under *in vivo* conditions, if the self-adhesive cements were used for the cementation of an inlay, an onlay or a crown, we have to consider the intrapulpal pressure and dentinal fluid movement. Hiraishi *et al.* reported the effect of the pulpal pressure on three different resin cements: etch-and-rinse resin cement, self-etch resin cement and self-adhesive resin cement. According the result of this experiment, when the pulpal pressure was applied, these former two conventional resin cements showed decreased bond strength while the self-adhesive resin cement did not show any difference.⁶ When the etch-and-rinse or self-etching bonding systems were applied, dentin permeability of these two groups was 10 to 13 times higher than self-adhesive cement group, and this might be the main reason of the dropped bond strengths.

Following the review of the published articles, when we use self-adhesive resin cement, leaving a thin visible layer of water (not pooling amount) on the dentin surface by absorbing water is better than overdrying the dentin surface with a strong air stream of 3-way syringe. If self-adhesive cement is used in post cementation, it is recommended to use a paper point to control the moisture of the post space.

However, considering that self-adhesive resin cements are a kind of resin cement, the practitioner should be aware that too much water remaining on the bonding surface, also should be avoided because this can deteriorate the infiltration of the hydrophobic component of cement.⁷

References

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