

ポスター発表 PA-1

新規ツーステップセルフエッチング接着システムの象牙質接着評価
—サーマルサイクル後の微小引張り接着強さ・窩壁適合性, ABRZ 形態観察—

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A comprehensive evaluation of dentin bonding durability of a novel two-step self-etch adhesive

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Objective: The bonding performance of one-step self-etch adhesives was reported to improve with a hydrophobic coating layer. Based on this result, a novel two-step self-etch adhesive (2-SEA) was designed, and its micro-tensile bond strength (μ TBS) to dentin, interfacial gap formation, and acid-base resistant zone (ABRZ) were evaluated and compared to a clinically well-proven 2-SEA.

Materials and Methods: The novel 2-SEA BZF-29 (GC) and Clearfil SE Bond 2 (CSE2, Kuraray) were examined. For the μ TBS test, coronal dentin surfaces of 20 sound human molars were ground with a 400-grit SiC paper, bonded with BZF-29 or CSE2, and built up with a resin composite. From each bonded specimen, 2 beams were assigned for the μ TBS test after 1 week, 6-month water storage, and 10,000 or 20,000 thermal cycles (TC). Failure mode was determined using scanning electron microscopy (SEM). In addition, ABRZ formation was evaluated using SEM, and gap formation at the interface of 2-mm deep tapered cavities with enamel border was observed using swept-source optical coherence tomography (SS-OCT).

Results: BZF-29 and CSE2 exhibited similar μ TBS ($p>0.05$), and they were not significantly affected by the aging conditions ($p>0.05$). In all groups, cohesive failures in dentin were prevailing. The interfacial gap formation was similar for both adhesives after 1 week ($p>0.05$), but BZF-29 exhibited a significantly lower gap formation than CSE2 after TC ($p<0.05$). ABRZ of a similar thickness was observed with both adhesives.

Conclusion: The tested experimental adhesive BZF-29 performed similarly or better than CSE2.

COI disclosure statement: None.