Abstract:

**Purpose** To compare the fracture resistance of two commercially available (CeramillZi and Lava plus) 3 unit All ceramic bridge copings in 0.45 mm and 0.9 mm radii of curvature (RoC) at the gingival embrasure (GE).

**Materials & methods:** A total of 24 stainless steel metal dies simulating a sectional FPD model replacing missing left first molar were used to fabricate 3 unit All ceramic bridge copings. They were divided into IV groups: Group I & II: 6 samples of copings with 0.45 mm and 0.90 mm RoC at GE each respectively (CeramillZi); Group III & IV: 6 samples of copings with 0.45 mm and 0.90 mm RoC at GE each respectively (Lava Plus). The RoC at occlusal embrasure for all the groups were 0.25 mm. The fracture resistance of all copings were evaluated with these two different connector designs.

**Results:** The mean fracture resistance were as follows. Group I: 1062 ± 123.80N, Group II: 1243 ± 72.35N, Group III: 1039 ± 62.33N, Group IV: 1237 ± 76.5N. Groups II and IV, (RoC-0.90 mm) exhibited significantly higher fracture resistance than groups I and III (RoC-0.45 mm) (p value<0.05). The performance of CeramillZi and Lava plus is similar in 0.45 mm and 0.90 mm RoC (p value>0.05).

**Conclusion:** By increasing the RoC from 0.45 mm to 0.90 mm, the fracture resistance of 3 unit All ceramic bridge copings for CeramillZi and Lava Plus increased by 17.02% and 19.06% respectively.

**Keywords:**
Fracture resistance, CAD/CAM, radii of curvature (RoC), posterior All ceramic bridge connectors, gingival embrasure, occlusal embrasure.