

## Effect of Sterilization on Fiber Posts Fracture Strength

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**Objectives:** Fiber post sterilization could be required for various reasons during clinical procedures. The purpose of this study was to evaluate the effect of autoclave sterilization on the fracture resistance of fiber posts made with different types of fiber.

**Methods:** The specimens were subdivided in four groups of 10 posts each, as follows:

- 1) "S" glass Prosthetic OverPost #3 (Overfibers);
- 2) silica glass RelyX Fiber Post #2 (3M ESPE);
- 3) Glass-zirconia Fototech 1.8 (Isasan);
- 4) Quartz Lightpost DT Illusion #2 (Dentsply)

In each group, five posts were subjected to two sterilization cycles at 135°C and 2 bar pressure, the other five were used as controls. The specimens were inserted in acrylic resin cylinders leaving an external portion 8mm in length, and loaded at 45° with an Instron machine until complete fracture occurred. A thin lead foil was inserted between the post head and the loading shaft to avoid stress concentration on the fiber composite. Fracture resistance and strain to failure were recorded and statistically analyzed (paired Student-t test, 1-way ANOVA, Bonferroni multiple comparison test,  $\alpha=0.05$ ).

**Results:** Fracture resistance of RelyX ( $41.3\pm 1.9$  MPa) and Fototech ( $33.3\pm 1.6$  MPa) posts was significantly reduced by the treatment (24% and 24.8%, respectively;  $P<0.004$ ). Prosthetic Over Post and DT Lightpost Illusion resistance was not influenced by sterilization cycles ( $P>0.9$ ); also, these posts showed a significantly higher strength ( $55.8\pm 3.8$  and  $46.3\pm 1.4$  MPa, respectively) than the other types. Strain to failure of Fototech posts was significantly reduced by the treatment, increasing the stiffness of the glass-zirconia composite.

**Conclusions:** fracture resistance of "S" glass fiber and quartz fiber posts are not affected by autoclave sterilization cycles. "S" glass fiber OverPost showed the highest fracture strength ( $P<0.05$ ).

