

# Are Endodontically Treated Incisors Reliable Abutments for Zirconia-based Fixed Partial Dentures in the Esthetic Zone?

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## Source

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## Abstract

### INTRODUCTION:

This ex vivo pilot study tested the influence of defect extension and quartz-fiber post placement (QFP) on the ex vivo survival rate and fracture resistance of root-treated upper central incisors served as abutments for zirconia 2-unit cantilever fixed partial dentures (2U-FPDs) exposed to 10 years of simulated clinical function.

### METHODS:

Human maxillary central incisors were endodontically treated and divided into the following 5 groups (n = 8): (1) access cavity filled with core build-up composite, (2) bimaxillary class III cavities filled as in group 1, (3) specimens restored as in group 2 with QFP placed, (4) specimens decoronated and core buildup as in group 1, and (5) specimens restored as in group 4 but with QFP as in group 3. On all specimens, 2U-FPDs were placed with dual-curing resin cement. In order to simulate 10 years of clinical function, specimens were exposed to thermal cycling and mechanical loading with subsequent loading to failure. Kaplan-Meier curves were constructed, and log-rank tests were performed. Fracture force and patterns were compared by means of Kruskal-Wallis, Mann-Whitney U (post hoc), and Fisher exact tests, respectively (P = .05).

### RESULTS:

For specimens only with an access cavity, it was observed that 25% had catastrophic tooth fractures and the lowest load-to-fracture values. In all other groups, chipping combined with or without debonding occurred. Groups did not differ significantly regarding the survival rate (P = .603) and fracture patterns (P = .633), but they did for fracture load including technical failures (P = .017).

### CONCLUSIONS:

After 10 years of simulated clinical function, both defect extension and placement of QFP had no significant influence on survival of root-treated upper central incisors as abutments restored with zirconia-based 2U-FPDs.

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