Abstract

Aim:
The aim of the study was to evaluate the fracture strength and fracture mode of non-colored compared to colored, anterior three-unit FDP cores made from high translucent zirconia with the state-of-the-art core design.

Material and methods:
A total of 40 anterior three-unit high translucent zirconia FDP cores were manufactured according to the state-of-the-art core design. The FDPs were divided into two groups (Wieland Zenostar MT0 and DD cubeX²). Each group of manufacturer contained two subgroups, one colored and one non-colored. All FDPs underwent heat treatment and artificial aging in the form of thermocycling and preloading whereafter the specimens were subjected to load until fracture.

Results:
In one of the groups (Wieland Zenostar MT0) the non-colored zirconia had significantly (p=0.000001) higher fracture strength compared to its colored counterpart. No significant difference was found in the other group (DD cubeX² non-colored, DD cubeX² colored).

Conclusion:
Within the limitations of this study, the following conclusion was drawn
- Coloring of high-translucent Y-TZP with infiltration technique before sintering could decrease the fracture strength of FDPs.
- A decrease in fracture strength after coloring was found in one group (Wieland Zenostar MT0), whereas the other showed no difference (DD cubeX²).
- No clear conclusions regarding fracture mode could be made.