

Abstract

Title; *The effect of finish line design on fracture resistance of CAD/CAM polyether ether keton copings.*

Background and Aim: *The development of new and innovative materials such as high performance polymers (Bio-HPP) opens a wide therapeutic range in prosthetic dentistry. They are presented as alternative materials to metal and ceramics. They are biocompatible and have great mechanical properties. The aim of this in vitro study was to compare fracture resistance of PEEK copings with three marginal design.*

Materials and Method: *Three resin molars were prepared according to a standard protocol with 2mm occlusal reduction and 1.2 axial reduction and 6° total convergence angle, each with a following finish line designs; chamfer, shoulder and sloped shoulder. They were scanned to produce 21 fiber glass reinforced resin dies. Then each die was scanned and 21 copings were designed and milled from Bio-HPP blocks. After cementation all specimens were thermocycled 2500 times (5/55°C). they were loaded until, fracture in a universal testing machine. The median fracture load for each group were analyzed using Mann-Whitney test (P=0.05).*

Conclusion: *The results of current study shows that fracture resistance of shoulder and sloped shoulder finish line was higher than chamfer finish line. All the tested crowns fractured at a higher level than the maximum occlusal forces.*

Key words: *Finish line, fracture resistance, PEEK, CAD/CAM*