

EVALUATION OF MARGINAL AND INTERNAL FIT OF IMPLANT-CEMENTED METAL CERAMIC RESTORATIONS

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ABSTRACT OF RESEARCH PROTOCOL / DOCTORAL DISSERTATION

Introduction

The Co-Cr frameworks of implant-cemented metal ceramic restorations can be fabricated using four different manufacturing techniques: Casting, Hard Milling, Soft Milling, Selective Laser Melting. The marginal and internal adaptations are the most important and crucial factors in the success and longevity of implant-cemented metal ceramic restorations. The fit of metal ceramic frameworks may change after the application of veneering ceramic because of framework design and manufacturing, type of alloy, shrinkage of the ceramic during firing, and different coefficients of thermal expansion for ceramic and alloy.

Purpose

The purpose of this in vitro study is to evaluate the marginal and internal adaptations of the Co-Cr frameworks of implant-cemented metal ceramic Crowns, and 3-unit Bridges fabricated using four different manufacturing techniques before and after the application of veneering ceramic.

Materials and methods

Two Groups, an implant-cemented metal ceramic Crowns and a 3-unit Bridges, will be created and for each Group of implant-cemented metal ceramic prostheses will be created four Subgroups according to the different fabrication methods of Co-Cr frameworks. The frameworks will be fabricated with Casting, Hard Milling, Soft Milling and Selective Laser Melting techniques. After the fabrication of the Co-Cr frameworks of implant-cemented metal ceramic crowns and 3-unit bridges, measurements of the marginal and internal discrepancies with scanning electron microscopy will be executed. Then the Co-Cr frameworks will be veneered by porcelain. After the veneering of Co-Cr frameworks by porcelain, measurements of marginal and internal discrepancies will be done for each group; the implant-cemented metal ceramic crowns and the 3-unit bridges.

Expected results

The marginal and internal discrepancies of the Co-Cr frameworks of implant cemented metal ceramic crowns and 3-unit bridges potentially will be affected by the porcelain firings. Thus, the marginal and internal fit of the implant cemented metal ceramic crowns and 3-unit bridges will be different from the initial marginal and internal fit of the Co-Cr frameworks.

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