Monolithic Zirconia survey crowns fabricated with Digital-Analog Protocol

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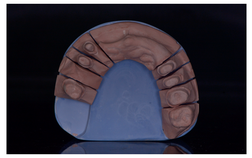
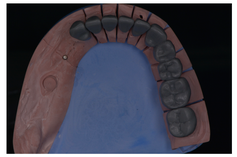
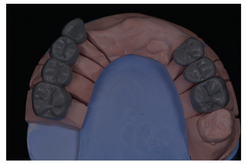
Abstract

All-ceramic crowns are used as alternatives to conventional metal-ceramic crowns to restore single teeth. Traditionally, all-ceramic restorations possessed physical properties that contraindicated their use in many treatment situations. The strength that zirconia ceramics exhibit supports the hypothesis that, in specific situations, an all-ceramic crown may be used to restore removable partial denture (RPD) abutments in areas previously reserved for metal or metal-ceramic restorations.

Introduction/Background

A female patient age 52 years presented to Grad Prosth UMN to replace her missing teeth in the maxilla and mandible with partial dentures. But her clinical situation needed full mouth rehabilitation to restore back her function and esthetics. Though the metal-ceramic survey crowns were the ideal choice, because of patient financial limitations, we could not involve the dental laboratory to do the technique-sensitive metal ceramic survey crowns. We decided to help the patient with Monolithic zirconia survey crowns fabricated with our own digital-analog protocol.

Methods

Method

Crown prparation

↓ Occlusal,Incisal -2mm, Buccal,lingual,axial - 1mm

PVS Impression of prep teeth

↓

Two sets of models

↓

Mounted solid models — Pindex models

↓

Wax up done on pindex dies and final contour corrected on solid models

↓

Survey the mounted models with wax up

↓ Rest seat :- 1mm depth, width :- ⅓ distance btw buccal & lingual cusp

bench top scanning - Individual Pindex die without wax up and with wax up

↓

Teeth chosen from the digital library is morphed and adapted to the wax up

↓

Milling followed by sintering the zirconia crowns

↓

Stain → Glaze → Finish → polish

Results

The accuracy of the technique was analyzed with industrial software geomagic control X comparison. compare to wax up the occlusal surface of the zirconia crown is 0.2956mm higher and the axial difference is 0.123mm

Clinical - Pre op & Mock Up

Pre -op

Mock up with bis acrylics to analyze the occlussal plain and esthetics

Conclusion

Compare to the conventional metal-ceramic survey crowns which require skill full lab support, and multiple adjustments to maintain the survey plains the monolithic zirconia survey crowns fabricated with the digital analog technique are less technique sensitive and the survey contours have been maintained intact without requiring any chair side adjustments. Modifying the staining and glaze technique may minimize or eliminate the minimal difference between occlusion and axial walls. Further studies are required.

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