

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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Bond Strength of Different Luting Agents to Yttria-Zirconia Ceramics after Different Surface Treatments

By

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INTRODUCTION



In the last few years, esthetic dentistry has become more and more important focus for both clinicians and their patients. The primary objective of esthetic dental treatment is to generate a natural, healthy appearance for a damaged dentition.

Recently new dental materials and techniques have been introduced to fabricate esthetic ceramic restorations with improved strength and marginal adaptation.

The clinical application of resin-bonded fixed partial dentures requires a strong and stable resin bond to the ceramic. To create a reliable bond between the ceramic material and adhesive resins, different ceramic surface treatments have been recommended.

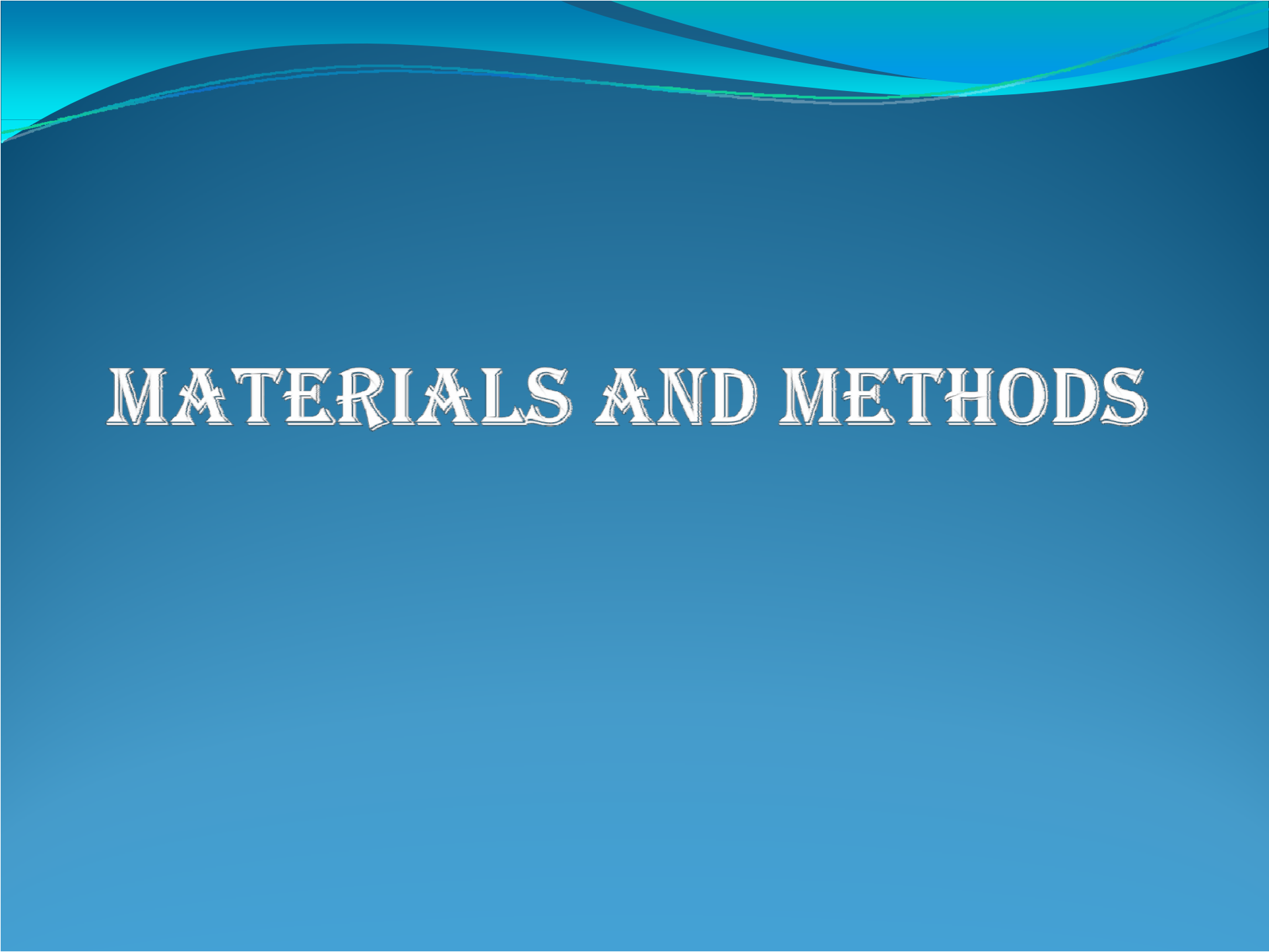


Bond is usually created via two mechanism, micro mechanical attachment by air borne particle abrasion, silica coating or etching (hydrofluoric acid or phosphoric acid) and chemical bonding by silane coupling agents.

Few studies have evaluated the effect of different surface treatments on the bond strength of resin luting agents to YZ ceramic material.

AIM OF STUDY

This study was conducted to evaluate the bond strength of three commonly used dental luting agents to yttria-stabilized tetragonal zirconia polycrystals (Y-TZP) structures following different surface treatments.



MATERIALS AND METHODS

I) Ceramic material used:

VITA In-Ceram YTZ-P (**yttria stabilized Zirconia polycrystal**) blocks



II) Three types of luting cements:

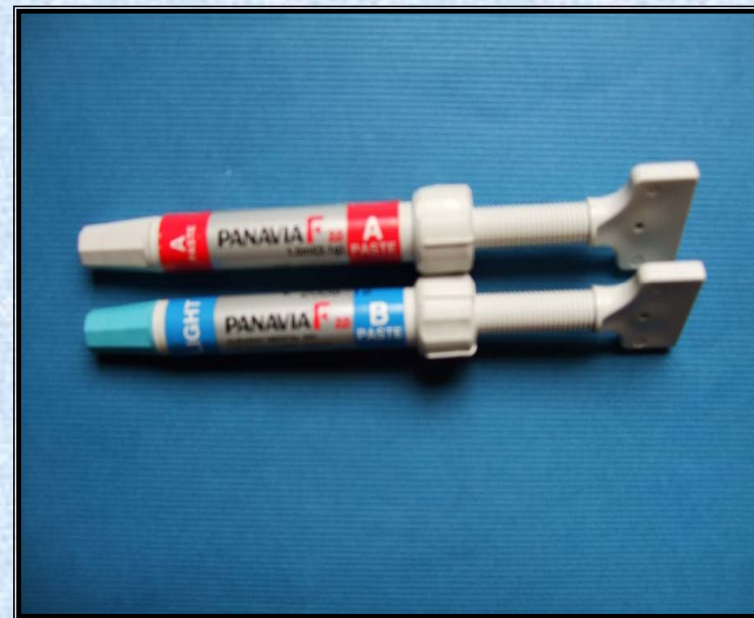
a) *Resin modified glass ionomer* (**Fuji PLUS**)



b) Regular resin cement with Bis-GMA monomer (**Variolink II**)



c) *Resin cement with phosphate monomer* (**Panavia F**)



III) Silane coupling agent (**Metal/Zirconia Primer**)



The ceramic discs were divided in to four groups according to the different surface treatments.

	<i>Group I</i> <i>Control</i>	<i>Group II</i> <i>Silane ttt</i>	<i>Group III</i> <i>Al₂O₃ ttt</i>	<i>Group IV</i> <i>Al₂O₃+Silane ttt</i>
<i>Subgroup A</i> <i>RMGI</i>	5	5	5	5
<i>Subgroup B</i> <i>RC</i>	5	5	5	5
<i>Subgroup C</i> <i>RC-PH</i>	5	5	5	5
Total	15	15	15	15

Zirconia ceramic construction:

Zirconia ceramic discs were constructed from prefabricated Zirconia ceramic blocks using the **CEREC inLab system** with '**CEREC inLab 3D Software**' .

