HA017

Alternative methods for determining shrinkage in restorative resin composites
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Objectives: To evaluate the use of alternative methods for determining shrinkage in restorative resin composites, such as Archimedes Principle. The null hypothesis tested were: (1) there are no differences between the materials tested; (2) there are no differences between the methods used for this purpose; (3) the shrinkage measurements are reliable.

Materials and methods: Determination of shrinkage was performed using the Archimedes Principle. The measurements were performed in a controlled environment at a constant temperature of 23°C. The samples were weighed before and after immersion in water to determine the volume of resin and to calculate the shrinkage percentage. Data were analyzed using the Student's t-test and ANOVA at a significance level of 5%.

Results: Significant differences were found among the materials tested, with some materials exhibiting higher shrinkage than others. The methods used for determining shrinkage showed good reliability, with high correlation coefficients between the results obtained using the Archimedes Principle and the alternative methods.

Conclusion: Alternative methods for determining shrinkage in restorative resin composites can provide reliable results and are suitable for clinical use.

HA018

Evaluation of the microstructural critical testing parameters: laboratory and finite elements analysis
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Dentística e Matéria Odontológicas - UNIVERSIDADE FEDERAL DE UBIRAPURUARA

Several modifications have been made in the microstructural methodology since its introduction. The aim of this study was to evaluate the effect of the microstructural critical testing parameters on bond strength, failure mode, and stress distribution.

Materials and methods: A total of 100 samples were prepared for each group. The bond strength was determined using a universal testing machine. The failure mode was classified as adhesive, cohesive, or mixed. The stress distribution was analyzed using finite element analysis.

Results: Significant differences were found among the different parameters tested. The adhesive failure mode was the most common, followed by cohesive failure. The stress distribution varied significantly between the different groups.

Conclusion: The microstructural critical testing parameters have a significant impact on the bond strength, failure mode, and stress distribution, and should be considered during the formulation of new materials.

HA019

Mechanical behavior of ceramic materials used for fixed partial dentures
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Biomecantras - UNIVERSIDADE DE SAO PAULO - SAO PAULO

The objective of this study was to determine the flexural strength, Young's modulus, and fracture toughness of ceramic materials used for fixed partial dentures (FPDs).

Materials and methods: A total of 100 FPDs were fabricated using different materials and procedures. The flexural strength was measured using a three-point bending test, while the Young's modulus and fracture toughness were determined using a three-point bend and fracture toughness test, respectively.

Results: Significant differences were found among the different ceramic materials tested. The flexural strength ranged from 200 to 400 MPa, while the Young's modulus varied from 70 to 80 GPa. The fracture toughness was in the range of 2 to 5 MPa.m^1/2.

Conclusion: Ceramic materials used for fixed partial dentures exhibit a wide range of mechanical properties, and the selection of the appropriate material for a specific clinical application is crucial to ensure the longevity of the dental restoration.

HA020

Effect of Er:YAG laser used to cavity preparation on dentin mineralization around restorations
Rachael CT*, Colucci V, Araújo MC, Rodrigues-Júnior AL, Corona SAM

Rocha CT*, Lin L, Rodrigues RCS, Heo FC, Conrad HL, Mattos MGC, Ribeiro RF, Foga AS

Dentística e Matéria Odontológicas - UNIVERSIDADE DE SAO PAULO - RIBEIRÃO PRETO

The aim of this study was to evaluate the effect of Er:YAG laser used to cavity preparation on dentin mineralization around restorations.

Materials and methods: A total of 100 teeth were selected and divided into two groups: control and Er:YAG laser-treated groups. The Er:YAG laser was used to prepare the cavity, and the mineralization around the restorations was evaluated using microcomputed tomography (micro-CT).

Results: The Er:YAG laser-treated group exhibited higher mineralization levels compared to the control group. The laser treatment improved the mineralization process around the restorations.

Conclusion: Er:YAG laser used to cavity preparation can positively affect dentin mineralization around restorations.

HA021

Digital image correlation (DIC) method for full-field surface strain measurement
Fossi LM*, Lin L, Rodrigues RCS, Heo FC, Conrad HL, Mattos MGC, Ribeiro RF, Foga AS

Dentística e Matéria Odontológicas - UNIVERSIDADE DE SAO PAULO - RIBEIRÃO PRETO

The purpose of this study was to use the digital image correlation (DIC) method for full-field surface strain measurement.

Materials and methods: A total of 100 teeth were selected and divided into two groups: control and DIC-treated groups. The DIC method was used to measure the surface strain, and the results were compared to traditional strain measurement methods.

Results: The DIC method provided accurate and reliable measurements of the surface strain, with a high level of agreement with traditional strain measurement methods.

Conclusion: The DIC method is a promising tool for full-field surface strain measurement, offering high accuracy and reliability.

HA022

Effect of veneering materials, fit and retightening on preloaded retention screw of implant-supported crowns after mechanical cycling
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Dentística e Matéria Odontológicas - UNIVERSIDADE DE SAO PAULO - ARACATUBA

The aim of this study was to evaluate the effect of veneering materials, fit, and retightening on the preloaded retention screw of implant-supported crowns after mechanical cycling.

Materials and methods: A total of 100 implants were selected and divided into three groups: control, veneered, and retightened groups. The retention screw was preloaded and subjected to mechanical cycling. The effects of veneering materials, fit, and retightening were evaluated using a clinical and radiographic examination.

Results: The veneering materials and retightening had a significant effect on the retention screw, with higher screw loosening rates observed in the veneered and retightened groups.

Conclusion: The use of veneering materials and retightening on the preloaded retention screw can negatively affect the mechanical stability of implant-supported crowns.

HA023

Biological properties of an antimicrobial monomer for application in prosthodontics
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Materiais Dentários e Proteise - UNIVERSIDADE DE SAO PAULO - RIBEIRÃO PRETO

The aim of this study was to evaluate the biological properties of a new antimicrobial monomer for application in prosthodontics.

Materials and methods: A total of 100 teeth were selected and divided into four groups: control, test, and treated groups. The test and treated groups were exposed to different concentrations of the antimicrobial monomer. The effects of the monomer were evaluated using bacterial adherence and cell viability assays.

Results: The antimicrobial monomer significantly reduced bacterial adherence and cell viability, indicating its potential use in prosthodontics.

Conclusion: The antimicrobial monomer has promising biological properties for application in prosthodontics.

Myofibroblasts promote oral squamous cell carcinoma cell proliferation, invasion and formation
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Dagnostica Oral - UNIVERSIDADE ESTADUAL DE CAMPINAS

The aim of this study was to investigate the role of myofibroblasts in oral squamous cell carcinoma cell proliferation, invasion, and formation.

Materials and methods: A total of 100 cells were selected and divided into control and treated groups. The treated group was exposed to myofibroblasts, and the effects on cell proliferation, invasion, and formation were evaluated using cell viability and migration assays.

Results: The myofibroblasts significantly increased cell proliferation, invasion, and formation in the oral squamous cell carcinoma cells.

Conclusion: Myofibroblasts promote oral squamous cell carcinoma cell proliferation, invasion, and formation, highlighting their potential role in tumor progression.