

Abstract

Statement of problem

In many situation, the provisional material requires a long- span prosthesis and the main disadvantage is discoloration over time and the marginal integrity. There is a limited data to predict the entire material properties of provisional materials

Purpose

This study compare and evaluate the color stability, flexural strength and polymerization shrinkage using three provisional materials in crown and bridge prosthesis.

Materials and methodology

Three provisional materials, one selfcure (Luxatemp), one light cure (Revotek LC) and one multicure (Integrity) in which 30 specimens each where made based on material properties such as color stability, flexural strength and polymerization shrinkage. For color stability 20×2 mm disc were made and color measurement was done before (baseline), 7 days, and 10 days after immersion in coffee solution using CIEL* a* b system. Data were subjected to paired 't' test analysesn of variance ($p= 0.01$). For flexural strength $25 \times 2 \times 2$ mm rectangular specimen were made and immersed in artificial saliva at 37° C for 10 days. Standard three- point bend test were conducted on an Instron universal testing machine. The mean and standard deviation estimated from the specimen for each material were statistically analysed using paired 't' test. For polymerization shrinkage 20×2 mm disc were made with 'V' shaped end and measurement were done 10 mins, 20 mins and 120 mins after fabrication using co-ordinate measuring machine (CMM). The values were calculated and analysed using ANOVA.

Result

Revotek LC proved to be highly color stable than Luxatemp followed by Integrity. Luxatemp showed more flexural strength than Integrity and followed by Revotek LC. Luxatemp exhibited lesser values for polymerization shrinkage than Integrity and subsequently the higher values for Revotek LC.

Summary and Conclusion

Light cure Urethane Dimethacrylate resins are highly color stable than Selfcure Bisacrylic and Multicure Bisphenol whereas selfcure Bisacrylic document excellent flexural strength which is above the accepted levels in comparison to other provisional materials. Meanwhile lesser polymerization shrinkage was discernible with Selfcure Bisacrylic signifying the materials capacity incorporating good clinical fit of the restoration made of these. Immersion media exaggerated the color stability values of Selfcure Bisacrylic and Multicure Bisphenol alarming that these are unfaithful in terms of esthetics when given for a longer period of time. So long term provisional situation demands Lightcure Urethane Dimethacrylate is the choice of material.

Keywords

Selfcure (Luxatemp), Lightcure (Revotek LC), Multicure (Integrity), Color stability, Flexural strength, Polymerization shrinkage, Coffee solution, Distilled water, Artificial saliva, UV Spectrophotometry, Universal testing machine (Instron), Coordinate Measuring Machine (CMM).