



УНИВЕРЗИТЕТ  
ГОЦЕ ДЕЛЧЕВ

# Polymerization contraction in composites - How to reduce it?

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In modern restorative dentistry , polymer resin-based composite materials are alternative materials for traditional amalgam fillings in posterior teeth. It is a fact that currently, no composite material provides a good one adhesion to the cavity walls and inappropriate marginal the adaptation of the filling and leads to the appearance of a microcrack, marginal discoloration, post-operative sensitivity, secondary caries, and pulp diseases.

Introduce

Material  
and  
methods

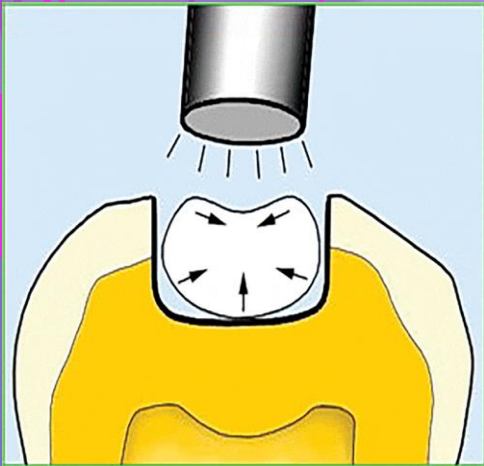
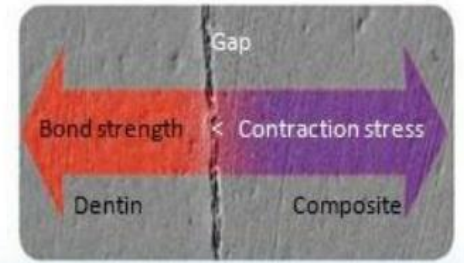
Aim

The aim of this paper is to evaluate the influence of different placing and light polymerization techniques on marginal adaptation of composite restorations.

The review includes relevant literature from online databases (PubMed, MedLine) , on the topic of polymerization contraction in composite materials and factors that will lead to its reduction.

# Result and discussion

Modern composite materials used in restorative dentistry show a polymerization contraction of 1-6%, depending on the composition and conditions of the polymerization process. The polymerization process leads to the physical approach of monomers that react with each other via free radical groups. As a result, a dimensional, volumetric contraction occurs, a characteristic manifestation of all materials that are polymerized by a free-radical mechanism.



Several clinical methods are proposed in order to reduce the negative effects of polymerization contraction. One way to reduce the effect of contraction stress is to place a liner with a low modulus of elasticity between the teeth and the composite material. Another approach to solving this problem is incremental placement of composite material in the cavity. By eliminating a single point of stress, centrally placed, the marginal adaptation of the composite material is improved. One of the methods is the two phase soft-start polymerization, and the configuration factor determines the tension behavior of the adhesive materials placed in the cavities.