

INFLAMMATORY RESPONSE OF BIOGLASS® AND Ca(OH)₂ IN DIRECT PULP CAPS IN HUMAN TEETH.

Litkowski LJ & Niehaus-Rohde C (Dental School, University of Maryland at Baltimore, Baltimore, MD, USA)

Abstract:

Previous animal studies have shown that particulate BioGlass® (NovaMin®) will stimulate dentinal bridging in exposed pulps with less inflammation when compared to Ca(OH)₂. Development of a bioactive glass materials could lead to significant reduction in morbidity associated with an insult to the pulp. The purpose of this study was to evaluate the inflammation present in exposed pulps when using NovaMin compared to Ca(OH)₂ as direct pulp agents in human teeth.

Methods: Human subjects with matched pairs of non restored teeth (3rd Molars, Premolars) slated for extraction were selected. Each tooth anesthetized with 2% Lidocaine with 1:100,000 epinephrine and isolated with a rubber dam. A 2mm diameter cavity preparation was prepared to a depth of 2 mm. A 1mm preparation was placed directly into the pulp. Ca(OH)₂ was placed in one tooth and particulate NovaMin in the other. Clinical changes were monitored by the patient and reported. Teeth were extracted at either 3 or 30 days after material placement, the root sectioned for adequate fixation and placed in 10% buffered formalin. Histologic evaluation was performed by two methods. 1) non-decalcified specimens by using the Exakt system, and 2) decalcified specimens using specimens using formic acid for 24-36 hours. Both preparations were then stained with Hematoxylin and Eosin and evaluated for inflammation according to the following scale: 0, none; 1, mild; 2, moderate; 3, severe. Data were compared using a Mann-Whitney U test.

Results:

	<u>Mean Rating</u>
Particulate NovaMin®	0.4
Ca(OH) ₂	1.8 (p<.05)

Particulate NovaMin showed significantly less inflammation (p<.05) when compared to Ca(OH)₂ when used as a direct pulp capping agent in human teeth.

This study was supported in part by a grant from U.S. Biomaterials Corporation.