The Effect of a Matrix Band on the Surface Properties of Short Fibre-Reinforced Composite Resin

Murray Macpherson
College of Medicine and Dentistry, James Cook University, Australia

Dr. Touraj Nejatian
College of Medicine and Dentistry, James Cook University, Australia

Assoc. Prof. Michael Liddell
Associate Professor, College of Medicine and Dentistry, James Cook University, Australia

Abstract

Background: Dental composite resins have been used to restore tooth tissues, namely enamel and dentin. In recent years, short fibres have been added to the resin as reinforcing filler to improve their mechanical properties. However, the literature has raised concerns about the exposure of fibres to the oral cavity. This study raised a question whether matrix bands which is used in shaping and forming the proximal surface in class II cavities can change the surface characteristics of these composite resins.

Methods: This study aimed to investigate the proximal surface of flowable bulk-filled Short Fibre Reinforced Composite (SFRC) resins in comparison to packable Particle Filled Composite (PFC) resins formed against a matrix band. Surface hardness, surface roughness, degree of conversion and qualitative surface imagery were used as indicators of potential clinical acceptability of composite resins used on the proximal surface of Class II restorations.

Results: In this in vitro study, the use of flowable bulk-filled SFRC resins on the proximal surface when adapted with a matrix band presented comparable or favourable surface properties to those of packable PFC resins.

Conclusions: Within the limitations of this in vitro study, these findings suggest that the use of flowable bulk-filled SFRC resin is safe to use on the proximal surface of Class II restorations.