Fluoride in Restorative Materials

Published on FDI World Dental Federation (https://www.fdiworlddental.org)

September, 2003    Sydney    Australia

September, 2009    Singapore    Singapore

Rationale

• The most common reason for the replacement of restorations is secondary caries.
• Ionic fluoride has an anti-caries activity, can alter the dynamics of the caries process, can modify the dental hard tissues and has an anti-microbial effect.
• The effect of fluoride-releasing restorative materials on the incidence of secondary caries should therefore be further investigated.

Evidence

• Research has been carried out into the release of fluoride from glass-ionomer and resinmodified glass-ionomer cements, resin composites, polyacid-modified resin composites (‘compomers’), fissure sealants and amalgam.
• There is substantially more laboratory-based research than clinical research.
• Comparisons between studies are hindered by the lack of common study designs.
• There is equivocal clinical evidence that there is less secondary caries associated with glassionomer cements than with other restorative materials.
• There is negligible clinical evidence that other fluoride-releasing materials are associated with the inhibition of secondary caries.

Future research

• There is a need for long-term randomized controlled trials on the effect of fluoride-releasing materials on secondary caries.
• There is a need for research to establish the dynamics of fluoride release from such materials.
• There is a need to establish the clinical significance of the fluoride ‘recharge’ capability of fluoride-releasing materials.

Clinical significance

• When selecting a restorative material for a specific situation, all properties, including fluoride release, should be considered.
• The success of a restoration depends not only on the choice of material, but also on the skill of the dentist and appropriate caries-preventive measures, including dietary counselling, oral hygiene and exposure to fluoride.

References

