(Deep) Dentine Caries and Restorative Care **[1]**

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Context

Current cariology principles recommend the level of hardness of the remaining demineralized carious dentine as the criterion for the removal of carious tissue in dentine cavities, predominantly for maintaining pulpal health[1]. However, the method of complete removal of demineralized and discoloured dentine, developed by G.V. Black some 150 years ago[2], is still taught at a large number of dental schools and practiced by a very large number of dentists in the world. This reflects the fact that recent scientific evidence on caries excavation and cavity preparation is not well translated into undergraduate dental education and clinical practice, resulting in unnecessary removal of tooth substance.

Scope

This policy statement supports contemporary treatments of carious dentine developed according to evidence-based research outcomes and international consensus recommendations with the aim of maintaining the vitality of the pulp in (deep) cavities and consequently increasing tooth longevity[1,3].

Definitions

Dental caries: a disease resulting from an ecological shift within the dental biofilm from a balanced to a cariogenic population of microorganisms, maintained by frequent consumption of fermentable dietary carbohydrates resulting in mineral loss of dental hard tissue; the sign and symptom being a carious lesion[4].

Dentine cavity: a structural damage in the enamel and dentine resulting in a cavity.

Principles

Following ethical principles, the management of carious lesions should involve the least invasive approach capable of preventing disease development, halting its progression and empowering the patient to improve and maintain their oral health[5].

Policy

FDI supports the following recommended clinical guidelines for the removal of carious tissue in dentine cavities and symptomless teeth[1]:

- Preserve non-demineralized and re-mineralizable dentine.
- Achieve an adequate seal by placing the peripheral restoration onto sound dentine and/or enamel, thus controlling the carious lesion and inactivating remaining bacteria.
- Minimize discomfort/pain and dental anxiety.
- Maintain pulpal health by preserving residual dentine and preventing pulp exposure, i.e. leave affected soft dentine in proximity to the pulp if required.
- Maximize longevity of the restoration by removing enough soft dentine to place a durable restoration of sufficient bulk and resilience and ensure proper sealing.

FDI recommends that national dental associations, universities and dental schools:

- encourage their members to apply evidence-based research results into daily practice;
- discourage their members from using invasive treatment methods that completely remove carious tissue close to the pulp;
- support less-invasive and tooth-preserving carious excavation methods as recommended by the International Caries Consensus Cooperation (ICCC), such as the selective removal of carious tissue to soft, firm and hard dentine, step-wise excavation, Hall Technique, Atraumatic Restorative Treatment (ART) and non-restorative caries control methods like silver diamine fluoride when indicated[1].

Keywords

Carious tissue removal, unnecessary removal of tooth substance, cariology, restorative treatment, dentine cavity, minimally invasive treatment procedure

Disclaimer

The information in this policy statement was based on the best scientific evidence available at the time. It may be interpreted to reflect prevailing cultural sensitivities and socio-economic constraints.

References

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[1] https://www.fdiworlddental.org/resources/policy-statements/deep-dentine-caries-and-restorative-care
[2] https://www.ncbi.nlm.nih.gov/pubmed/28195749
[3] https://www.fdiworlddental.org/resources/toolkits/caries-prevention-and-management-chairside-guide
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