Electrically assisted enhanced remineralisation- Myth or reality?

Gopika Pradeep1, Shamna K.T2, Sham.S.Bhat3, Sharan.S.Sargod4

1-4 Department of Pedodontics and Preventive Dentistry, Yenepoya Dental College, Mangalore, Karnataka, India.

Commentary:

Dental cavities are not mere a stationary process of tooth loss but rather it’s a dynamic process; with a constant conflict between the demineralization and remineralization process. Various acids produced by the microbial flora leads to the dissolution of minerals such as calcium and phosphates from the tooth surface as well as sub-surface leading to demineralization of the tooth and ultimately leading to cavity formation1. Saliva acts as a natural healer due to its buffering action on acids as well as a reservoir of minerals for the remineralization of the tooth surface2. This remineralisation is a natural repair process for incipient lesions and contribute in restoring strength and function of the tooth. A number of new remineralization strategies have been recently developed or commercialized. One of the novel clinical method of caries remineralization that has been introduced is the Electrically Assisted Enamel Remineralisation3.

This technology has been developed with the rationale of keeping the enamel “whole” by remineralisation of the tooth lesions.

Electrically accelerated and enhanced remineralization (EAER) is a remineralization technology discovered by the researchers at King’s College, London. EAER works by the principle of iontophoresis to restore the initial and moderate carious lesions. This technique accelerates the natural repair process of the tooth by the flow of calcium and phosphate ions into the decayed portion of the tooth. Researchers describe it as a two-step process in which the damaged part of the tooth is prepared and then a small electrical current is applied. The passage of the electric currents results in the concentration of natural minerals at this site that is to be repaired, thereby shifting the equilibrium from demineralisation to remineralisation4. Preliminary in vitro studies on EAER suggests that it can achieve remineralisation throughout the depth of the caries and that the enamel treated with EAER appears to be harder than the healthy enamel. It is one of the most ideal way to practice as it not only saves the tooth but also strengthens it. In this technology, the integrity of the tooth is maintained as it does not involve the destruction of the healthy tooth structure. The electric current used in this technique is minimal and much lesser than the amount used for checking the pulpal status by means of electric pulp testing. This technology of EAER is completely painless as it eliminates the need for any anaesthetic injections. In contrary to the standard drilling practices, EAER does not use drills for caries management, and thus can eliminate the phobia associated with drills in patients. The minimal pain experienced during the treatment can thus encourage oral health in the general population5.

The approach of remineralisation for the management of caries has been a feasible topic of research as early as the 1980s. However, EAER has been proposed as the first solution to combine natural tooth repair and remineralisation for treating dental caries. Although the results of the in vitro studies with EAER technology seems to be promising, the application in the field of dentistry will be based on the results of the studies conducted in vivo6.
Keywords: Caries; Electrically Assisted Enhanced Remineralization; Iontophoresis; Minerals; Painless.

How to cite this article: Pradeep G, Shamna K T, Bhat SS, Sargod SS. - Electrically assisted enhanced remineralisation- Myth or reality?, PosterJ 2021; 10(1):12.

Source of Support: Nil.

DOI:10.15713/ins.dpj.094

Conflict of interest: None Declared.

Corresponding Author:
Gopika Pradeep,
Department of Pedodontics and Preventive Dentistry, Yenepoya Dental College,
Mangalore, Karnataka, India.
Email id: devigopika25@gmail.com