

REVIEW ARTICLE

AN ALTERNATIVE TO FILLING AND DRILLING - EAER

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ABSTRACT:

Electrically Accelerated and Enhanced Remineralisation is a technique that uses electric currents and aids to restore the important minerals of the tooth that are lost due to cavity formation. This technique requires no drilling of the tooth structure and filling by amalgam, composites and other resins used for the restoration of tooth. A pain free, two step procedure in which natural healing and remineralising process of teeth is accentuated. This method has a different slant by boosting tooth's natural repair process by drifting of calcium and phosphate minerals into the damaged tooth, thus encouraging the teeth to self-repair themselves without drilling, filling or injections. It is developed by the scientists of King's College London in collaboration with Reminova Ltd.

Keywords:-No drilling, no filling, painless Dentistry.

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INTRODUCTION

Dental caries is one of the commonest dental ailments in which a carious lesion develops when too much mineral is lost affecting the enamel. But getting it treated is a big dental phobia relying in the minds of patients suffering from it. Heavy drills, tooth preparation and restoring it with composites and amalgams are required to cure the cavity. It takes a number of sittings and strenuous work by the dentist himself. Dentists are addressing to dental phobia by reaching out to people who are too afraid to come in for care. Some have their dental assistants help patients relax with deep breathing, lowering their anxiety and others offer sedation dentistry where patients are given pharmacological agents, either by ingesting a pill or inhaling a gas, to overcome their fear of drill. These therapies often effective can significantly add to the cost of dental care.

EAER can be breakthrough to ease the process of restoration and it just may kill the drill for all but the most complicated dental treatments. It is a pain free and two step technique in which natural healing and remineralising process of teeth is emphasized. This article would brief you regarding EAER, its bright scope and the revolutionary changes it can bring in the dental industry.

WHAT IS EAER?

EAER stands for Electrically Accelerated and Enhanced Remineralisation. To know EAER one should understand how dental caries forms. Teeth are coated with a protective mineral shield called enamel. Dental caries are caused by the action of acids on this enamel surface. The caries triad including the diet (sugars mainly sucrose), time and microbes (bacteria) forms dental biofilm on the tooth surface by various reactions. The acid produced leads to a loss of calcium and phosphate from the enamel and causes demineralization of the tooth. Saliva acts as a natural healer by its buffering action on acids and acts as a reservoir of minerals for the remineralization of the tooth surface. But when this balance upsets, demineralization exceeds, breaks down the enamel surface leading to a cavity. It gets worse when cavity deepens and the underlying tooth begins to decay. Traditional way of treating cavities involves drilling out the decayed and damaged part of the tooth and its replacement with composite resin or amalgam. The researchers at King's College discovered a way out to accelerate tooth's own remineralization process and eliminate the need for invasive drilling. This technique has a different approach by boosting tooth's natural repair process by movement of calcium and phosphate minerals into the damaged tooth.

HOW EAER WORKS?

According to dental researchers it is a two-step process. Firstly, it includes preparing of the damaged part of enamel, outer layer of the tooth. Following this a small electrical current is used to persuade minerals to enter the repair site to encourage 'natural healing'.

The use of electrical currents to drive minerals deep into the tooth and accelerate natural remineralization is the basis of EAER.

The defect is remineralized in a painless process that requires no drills, injections or filling materials. Also the current used is not felt by the patient and is far smaller than the amount already used by the dentists to check pulp or nerve of the tooth in various practices.

It will encourage dental health in the general population due to minimized pain experienced during the procedure, which often deters patients from seeking dental treatment.

HOW IS EAER IN COMPARISON TO TRADITIONAL METHODS OF TREATING CAVITIES?

The standard practice of treatment includes drilling out the damaged tooth portion and replacing it with a filling material. As a disadvantage many people have fear of needles, sounds and smell associated with the drill. The various resin fillings including amalgam needs to be replaced between 7-12 years because of polymerizing shrinkage, micro leakage or new cavities under or adjacent to the restored surface. In addition, mercury used in silver amalgam alloy has its own hazards. World Health Organization (WHO) considers dental amalgam for over half of the mercury emissions into the environment. On the contrary, EAER is completely painless, and it is accomplished with a small "healing hand piece" that is placed on the damaged surface of the tooth for a short period. No foreign materials are introduced into the patient's body, only naturally occurring minerals.

Unlike drilling and filling, no healthy portions of the tooth are destroyed to prepare the tooth for repair and the tooth maintains its integrity. Teeth treated with EAER are stronger after treatment. EAER actually helps fight decay. Also, treatment with EAER can whiten the teeth without the risk of bleaching products which attracts the patients towards it.

IS EAER THE FUTURE OF DENTISTRY?

According to the World Health Organization globally 100 percent adults and 75 percent school going children need treatment for cavities. In such scenario,

EAER can be great cost effective and long lasting treatment for dental caries.

Teeth treated with EAER don't have any filling material that needs to be replaced over time.

It is also beneficial for people of developing countries who have limited access to regular dental treatment. It will attract people who put off dental care due to dental phobia.

No anesthetic injections or invasive drilling are required in this technique which makes patient comfortable and invites them to come up with more dangerous conditions of oral cavity.

Dental drills is one of the most common fear cited for which people deny dental care.

Professor Nigel Pitts from King's says "The way we treat teeth today is not ideal. When we repair a tooth by putting in a filling, that tooth enters a cycle of drilling and refilling as, ultimately, each 'repair' fails. "Not only is our device kinder to the patient and better for their teeth, but it's expected to be at least as cost-effective as current dental treatments. Along with fighting tooth decay, our device can also be used to whiten teeth."

WHEN EAER WILL BE AVAILABLE?

The spin-off company formed by the dental researchers, Reminova Ltd. Perth, Scotland is set to commercialize the research of Dr Chris Longbottom and Professor Nigel Pitts from King's according to whom the technology should be available in three years.

EAER is also supported and promoted by London mayor Boris Johnson as part of the Med City initiative.

In the United States, the technology is regulated by the FDA, which has more demanding requirements than Britain's regulatory bodies. However, Pitts says that he and his team are working closely with international organizations, including the FDA, to promote acceptance of the technology.

CONCLUSION

While the concept of remineralization has been a viable research topic since the 1980s, EAER is the first solution to harness technology to accomplish natural healing and tooth remineralization as a treatment for dental caries. This painless process could revolutionize dentistry and dental care as the world knows it. The dental industry is looking forward to innovative ways to treat patients and make their teeth healthier and stronger.

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