CLINICAL INSIGHTS

PRESENTED BY

ESCONDIDO ENDODONTICS

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A REVOLUTIONARY NEW ENDODONTIC IRRIGANT - MTAD

Various concentrations of sodium hypochlorite (NaOCl) have been used as root canal irrigants for many decades. The main advantages of NaOCl are its toxicity to most microorganisms and its ability to dissolve vital and necrotic tissue.

The use of NaOCl, combined with rubber dam isolation remain as the cornerstones of successful endodontic treatment.

The main disadvantages of NaOCl are its unpleasant taste and odor, and inability to remove the smear layer. Removal of the smear layer with chelating agents such as EDTA is important for allowing NaOCl to penetrate infected dentinal tubules. Contemporary nickel-titanium rotary instrument techniques create a smear layer that can prevent penetration of disinfecting solutions into dentinal tubules.

A new endodontic irrigant, currently undergoing FDA approval, will provide smear layer removal and disinfectant properties in one solution.

MTAD (not to be confused with MTA - mineral trioxide aggregate - the Portland Cement material used to repair root perforations) is a liquid that is composed of the following ingredients:

MTAD Mixture Tetracycline citric Acid and Detergent. The detergent (Tween - 80) is a surfactant that reduces surface tension and allows the liquid to flow into dentinal tubules. Citric acid is available for smear layer removal. Tetracycline acts as the disinfectant. The tetracycline (actually doxycycline) is also known for "substantivity", meaning that it binds to calcified tissue and can be released gradually over a period of time. Additionally, doxycycline has a low pH and exhibits anti-collagenase activity, further enhancing anti-bacterial properties. MTAD maintains its efficacy against Enterococcus faecalis when diluted as much as 200 times.

To date, several carefully controlled MTAD in vitro studies have been conducted at Loma Linda University School of Dentistry.

Current research suggests maintaining sodium hypochlorite as the irrigant of choice for dissolving vital and necrotic tissue, then enhancing root canal system cleansing by using MTAD as a final "soak". Another important finding of the current research is the ability of MTAD to exert its antimicrobial efficacy during brief exposure times (The time of root canal instrumentation). This property may eventually obviate the need for intracanal medications such as calcium hydroxide placement that requires multiple patient visits.

Many materials and devices are introduced through the years that claim to be revolutionary, but we believe that MTAD will have a significant impact on endodontic treatment regimens.

Shabahang S, Pouresmail M, Torabinejad M. In vitro antimicrobial efficacy of MTAD and sodium hypochlorite. J Endodon 2003;29:450-452.

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