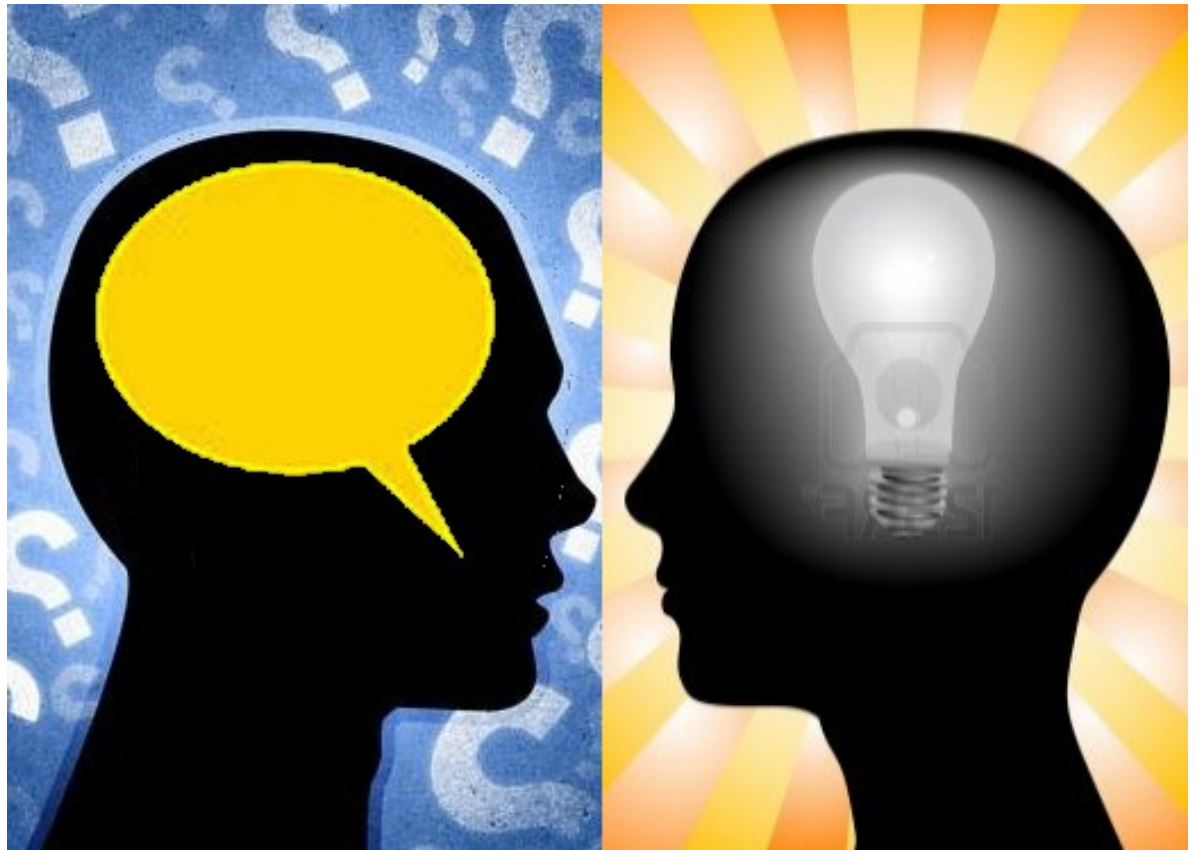




Deciphering Dentistry

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July 2024 - A bi-monthly newsletter : Vol 1 : Part 2
**Eliminating sensitivity from all teeth (Restored
as well as natural)**



Eliminating sensitivity from all teeth (Restored as well as natural)

A very interesting combination which has been tried and tested in dentistry has been the combination of two chemicals – Glutaraldehyde (GA) and hydroxyethyl methacrylate (HEMA) since the early 1990's. This combination provides a number of very useful actions when used prior to carrying out any bonding dentistry. GA has been used for a long time in dentistry for instrument disinfection and various treatments for tooth preparations. Sufficient evidence is available to show that GA when used on the tooth structure for the prescribed period of time successfully disinfects the tooth



Fig 1: A Class II carious lesion seen on the two premolars. Both will be treated with Restorite Desensitiser prior to a final restoration

surface. Furthermore, GA coagulates collagen, which is one of the principal components of dentin. This coagulation of the dentin effectively blocks the canals in the dentin leading to a sharp reduction in the ability of the dentin to transmit pain stimuli further on to the pulp. Hence it controls the post of sensitivity on the concerned tooth.

HEMA on the other hand is a monomer based on methacrylic acid. Sufficient evidence also exists to show that HEMA can be absorbed by dentin because of the collagen component. When GA is cross linked with HEMA polymerization of the HEMA takes place. This reaction of this combination, makes it works as a desensitizer. The GA first reacts with the serum albumin in the dental fluid, which in turn induces a precipitation of the serum albumin, and a secondary reaction is the polymerization of the HEMA.

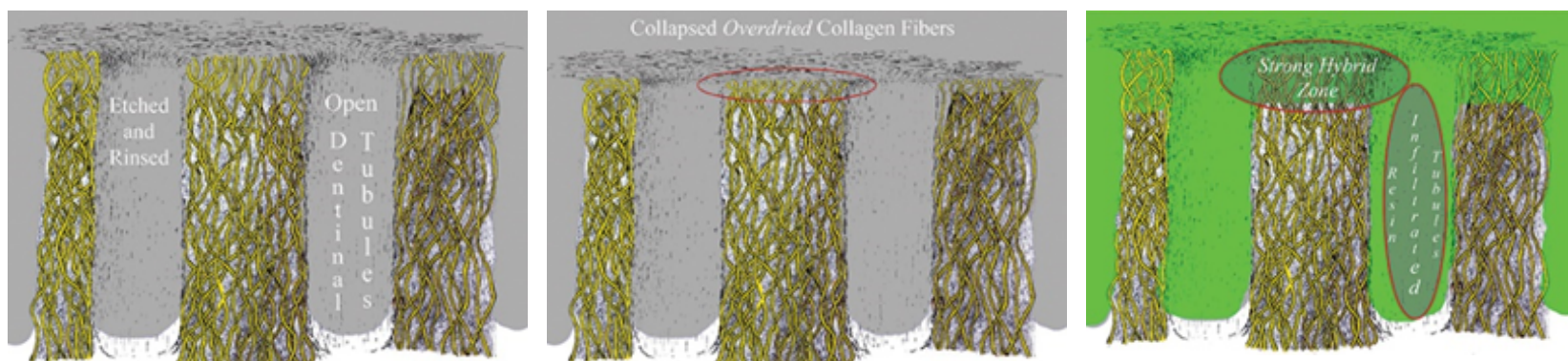


Fig 2 : The above graphics show a pictorial explanation of how the strong hybrid zone is created by use the GA/HEMA combination to enhance the bond strength.

Thus this combination works very effectively in this manner. A very standard combination is to use a 5% GA along with 35% HEMA with water and ethanol as solvents for the two agents. In addition to working as a desensitizer this combination provides three additional benefits which go a long way to ensure a successful restoration of the tooth. One such material is Restorite Desensitiser from Prime Dental Products Pvt Ltd.

The GA component is very effective in creating a very strong anti bacterial effect of the tooth surface. Studies have shown that the GA treated tooth surface exhibited clear zones of inhibition for almost all the target bacteria through a six month period. On checking the bactericidal activity the material could kill all the tested bacterial immediately after polymerization.

The strength of the dentin matrix is enhanced considerably due to the cross linking between the resin dentin bond. Studies have shown that there is an increase in the stiffness of the demineralized dentin and the overall bond strength. Yet one more study has shown an effective increase in the shear bond strength of the material after the application of the combination.



The last beneficial effect of using this combination is that it works very effectively as a wetting agent and does desiccate the dentine structure. The wettability makes it a very effective to allow the bond to permeate the prepped area completely.

Effectively using GA/HEMA combination

In spite of the literature evidence in favour of the GA/HEMA combo, it still seems to be controversial in its common place usage. These thought can be dispelled by logically working out on how to use this combination effectively.

The problem lies in the usage of the material. The following is the ideal protocol to follow in the usage of the material.

1. Prep the tooth – either for a restoration or even for an onlay/crown or a natural tooth
2. Place the combination for two one-minute applications and carefully suction off the excess.



Fig 3: The above graphics show a pictorial example of how the cavity look after application of Restorite



MADE IN INDIA

Restorite Desensitiser

Desensitising & Re-wetting Agent



- To treat pain in exposed cervical areas not indicated for restoration
- To alleviate or prevent dentinal sensitivity after preparation of teeth to receive direct or indirect restorations.
- For total etch system Restorite Desensitiser can be used as a re-wetting agent

Available Packing : **5ml****Prime-Dental.in**



Fig 4 : Immediately after application of the bonding agent.



Fig 5 : After the second application of Restorite Desensitiser followed by light polymerization.

3. Etch either the complete prep or only the enamel based on your decision to etch the dentin or not.

4. Wash and dry the area ensuring that the area is not desiccated

5. Again, place the GA/HEMA for one short application

6. Place the bonding agent.

7. Place the resin and complete the restoration.

If the concern is about the bonding strength, it is sufficiently proved by various studies that the bonding strength actually improves after using the combination.

It is mentioned at times that the resin should be blown off. This is not correct. Washing off the GA/HEMA combination will defeat the purpose. The material should be left in place as it stimulates the entry of the molecules into the collagen based dentinal matrix.

Ideally, the excess material, if any should be taken away with a high vac suction tip.



Fig 6 : Restoration of the second molar completed. Case courtesy Dr. Sudha Murali

In fact, the use of the GA/HEMA combination should become a de facto protocol when carrying out any restorative procedure. It works very effectively in multiple ways on the restoration being carried out as follows

1. Controlling any sensitivity
2. Disinfecting the tooth surface
3. Enhancing the bond strength
4. Works as a wetting agent

It is highly recommended that the proper protocol is followed to achieve excellent results without any issue of either post of sensitivity, a proper disinfection and enhancing the bond strength. It can also be used for abrasion lesions as well as sensitivity after restorations by applying etching the area and then applying the Restorite Desensitiser.



Fig 7: A small carious lesion with sensitivity. The lesion is treated with Restorite Desensitiser prior to being restored. The first image showing the carious lesion, The second picture shows the acid being applied and the third pictures shows the Restorite applied. Case courtesy Dr. Deepa Ravichandran.



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