

Treatment of dentine hypersensitivity.

by Dr. Rakesh Jivan

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The most common treatment of hypersensitivity is the application of topical fluoride either through the use of “sensitive” toothpastes or the application of Sodium Fluoride varnish within the dental surgery directly to the exposed root surface. Topical fluoride applications create a barrier by precipitating sodium/calcium fluoride (NaF or CaF₂) on the tooth surface, blocking patent dentinal tubules and so reducing permeability and hypersensitivity. 3M™ Clinpro™ White Varnish with Tri-Calcium Phosphate (TCP) represents an advancement in topical fluoride varnish treatment whilst addressing the negative issues associated with previous generations of topical varnishes.

Introduction

Dentine hypersensitivity is a common condition of short lived pain associated with a variety of stimuli such as thermal, evaporative, tactile, osmotic and chemical. Although the pain is short lived, patients present with a variation in the response to certain stimuli and the degree of pain associated with the stimuli differs from patient to patient. Except for sensitivity related to tooth decay or tooth whitening, the clinical cause of dentine hypersensitivity is normally associated with exposed dentinal tubules as a result of gingival recession and subsequent loss of cementum on root surfaces. Not all exposed root surfaces will be sensitive or respond to the same stimuli. The severity or indeed presence of cervical dentine hypersensitivity is often dependant on the site and size of the dentine exposure and the patency of the dentinal tubules. Most of the treatments carried out within general dental practice involve occluding the open dentinal tubules in one way or another to prevent the osmotic movement of fluid (Table 1 & 2).

TABLE 1. Common Reasons for Gingival Recession

| | |
|-----|--|
| 1. | Inadequate attached gingivae |
| 2. | Prominent roots |
| 3. | Toothbrush abrasion (Fig 1) |
| 4. | Pocket reduction periodontal surgery |
| 5. | Oral habits resulting in gingival laceration, i.e. traumatic tooth picking eating hard foods |
| 6. | Excessive tooth cleaning |
| 7. | Excessive flossing |
| 8. | Gingival loss secondary to specific diseases, i.e., periodontitis, |
| 9. | Crown preparation |
| 10. | Poor Oral Hygiene (Fig 2) |

TABLE 2. Treatment Options

| | | |
|----|----------------------------|---|
| 1. | Desensitise the nerve | a. Potassium nitrate e.g. "sensitive" toothpastes |
| 2. | Cover the dentinal tubules | a. Periodontal surgery/grafting b. Composite/glass ionomer resoration c. Crown placement d. Plug (sclerose) the dentinal tubules |
| 3. | Ions/salts | a. stannous fluoride b. sodium fluoride/stannous fluoride combination c. potassium oxalate d. ferrous oxide e. strontium chloride f. in combination with an adhesive |
| 4. | Resins | a. dentine sealers b. methyl methacrylate |



Figure 1. Buccal Abrasion Cavities



Figure 2. Poor Oral Hygiene

Clinical Application Technique

Treatment of Recession Upper Left Lateral Incisor and Canine

STEP 1: The lips and cheeks are retracted and excess saliva removed with cotton wool or suction around the teeth to be treated. The teeth do not have to be entirely dry which increases patient compliance and remove the need to blow dry the teeth or apply anaesthetic.

STEP 2: The individual package is opened and the varnish sachet removed. If children are being treated, a dosage sticker should be used to meter the dose (Fig 3). For adults, the entire contents can be used without the need to measure a specific volume (Fig 4). The Clinpro varnish sachet is opened by pulling the side of the sachet.

STEP 3: OR the entire contents of the varnish is dispensed into a dappens dish or similar vessels and mixed to ensure that the varnish is homogenous.

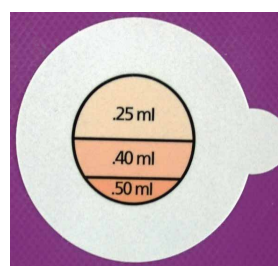


Figure 3. Dosage Guide Sticker

0.25ml For primary dentition

0.40ml Used for mixed dentition

0.50ml (full contents of pack) used for all adults



Figure 4. 3M™ Clinpro™ White Varnish dispensed onto dosage guide. Clinicians can then dispense and apply an exact volume and dose of varnish dependent on patient age and/or individual circumstances.

The varnish is applied to the tooth/root surface using the applicator brush. Contact with saliva begins the setting of the varnish. This setting reaction helps to keep the varnish in place over a four hour period and allows the fluoride to penetrate the dentinal tubules. As the varnish is tooth coloured, application in the aesthetic zone is possible.



Figure 5. Pre-operative view of the upper left lateral incisor and canine showing exposure of root surface dentine at the gingival margin.



Figure 6. Varnish applied to the root surface. Note the aesthetic appearance of the varnish in the anterior region.



Figure 7. Final Image showing set Clinpro White Varnish



Figure 8. Same teeth treated with Traditional NaF varnish (above left) and 3M[™] Clinpro[™] White Varnish with TCP (above right).

A patient feedback diary

History

The patient, Mrs. C, a 56 year old female presented with a complaint of generalised chronic sensitivity to cold stimulus. The sensitivity had been present for many years and to date anti-sensitive toothpastes had been relatively unsuccessful. Clinical examination revealed generalised gingival recession and exposure of root surface dentine. The patient reported being unable to rinse with cold water or comfortable to eat or drink cold foods and drinks.

Initial Examination

The patients' hard and soft tissues were carefully examined to ensure that the patient was fit and healthy and no other pathology existed. A diagnosis of generalised sensitivity caused by root surface dentine exposure was made. Pain scores were recorded and the patient was advised to keep a pain diary with a scale from 1 to 10. 10 representing the chronic sensitivity pain she originally presented with and 1 representing mild to moderate symptoms. Retraction of the soft tissues was carried out using cotton wool rolls and the teeth gently air dried. An alternative technique of drying teeth with cotton wool pledgets can also be carried out. 3M[™] Clinpro[™] White Varnish with TCP was applied as indicated on the manufacturers' instructions to all the buccal root surfaces of the upper and lower teeth and extended onto the labial enamel surfaces. The patient was advised not to eat or drink for four hours.

Pain Diary

The following text is from the actual pain diary kept by the patient over a 10 day period.

Patient: Mrs. P. C

Dentist: Dr. R. Jivan, Euston Place Dental Practice

1. Attended for check up and to point out a particularly painful tooth which was initially thought might need a filling. Examination found no cavitation but exposed root surface.
2. Dr Jivan suggested treatment using Clinpro o White Varnish with TCP.
3. This was applied first to the problem tooth then after further discussion to all my teeth.

Day 1 Initial taste not bad - bit like toothpaste. Stickiness developed over the next few hours. No drink or food as instructed till 5:00pm. Teeth cleaned at 11:00 pm. **Pain score 10**

Day 2 Teeth felt better for getting rid of stickiness but no significant change to sensitivity.

Day 3 Just a slight feeling that things were improving instead of pain at 10, **Pain Score 9.**

Day 4 Definitely something going on - was able to rinse mouth out after cleaning without dread

Day 6 Much improvement - pain on rinsing mouth out. **Pain Score 5.**

Day 10 Can drink hot tea and rinse mouth out without worry. Problem tooth so much better. **Pain Score 1.**

Haven't eaten ice cream - am looking forward to doing so - cold beer was a dream in comparison to previous times.

Conclusion

3MTM ClinproTM White Varnish with TCP represents a significant change in the way in which dentine sensitivity is treated. The adhesion of the varnish ensures that exposed tubules are completely occluded whilst the tooth coloured solution allows for higher patient acceptance. The use of such an innovative product in general practice to eliminate a common problem is not merely a clinical success but a practice builder and gives confidence to dentists, hygienist and patients. Treatment is quick, clean and easy and the results speak for themselves.



Dr. Rakesh Jivan

Rakesh graduated with a Bachelor of Dental Surgery degree from the University of Birmingham (UK) in 2000. Initially working within the National Health Service, he returned to university to complete his post-graduate studies in Restorative Dentistry at University College London which enabled him to provide more advanced treatment and take a whole body approach to dentistry.

Contact: 👤 Dr Rakesh Jivan ✉ info@plazacentraldentists.com.au

For more information on the 3M materials utilised in this case, please visit 3M.co.id or contact your local 3M Product Specialist.



3M Oral Care

3M Indonesia

Perkantoran Hijau Arkadia, Tower F, 8th floor Jl TB
Simatupang | Jakarta Selatan 12520 Indonesia

Office : +621 2997 4000
Phone : +62 813 1554 0844

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