

Treatment Protocol for Dentin Hypersensitivity

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INTRODUCTION

Dentin hypersensitivity (DH) is a dental pain from the dentin exposure to different stimuli that cannot be ascribed as any other dental problem.¹⁻³ The DH prevalence is very variable and depends on age, gender, ethnicity, periodontal involvement, and the evaluation method, occurring in up to 57% of the population.^{1,4} The DH must present dentin exposure due to the loss of hard dental tissue (erosion, abrasion, abfraction, etc.) or soft tissue (gingival recession); thus, the dentinal tubules are opened and exposed to the oral environment to the stimuli triggering the painful response.⁵⁻¹¹

Several materials and treatment protocols have been proposed, such as potassium nitrate, strontium chloride, and, recently, new calcium phosphate compounds.¹²⁻¹⁵ Nowadays, many doubts still exist in relation to the different desensitizing protocols and about the best agent that obliterates the dentinal tubules and protects the exposed dentin in the presence of intrinsic acids and extrinsic challenges. Therefore, we propose a DH treatment protocol using new desensitizing agents available in the market, i.e., replicable in research groups as well as by dental practices.

DEVELOPING THE PROTOCOL

The treatment protocol was developed by our research group at the Araraquara Dental School, – UNESP.

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It presents six sessions (patient appointments) and the DH evolution is accessed using visual analog scale (VAS) that quantifies the pain on numbered scale of 10 cm at 1 cm intervals from 0 to 10 (0 = no pain, 10 = worst tolerable pain). The patient rated his/her pain and mark the scale to quantify the pain level during a specific stimulus, showing the treatment of choice is efficient or not. Thus, the standardization of cases (age, gender, pain level, type of stimulation, etc.) allows this protocol to evaluate new desensitizing agents that are available in the market as a part of research projects.

The 1st session's objective (Fig. 1) is to develop a proper diagnosis that identifies the cause and quantifies the DH level (VAS scale) to indicate the best desensitizing agent to improve the patient habits. When DH is suspected, the clinical history must be detailed to collect the maximum relevant data to identify the DH cause. During the anamnesis, it is important to know the brushing frequency and type, if he/she was submitted to a periodontal treatment in the last 6 months (surgical or nonsurgical treatment), frequency of consumption of fruit, fruit juice and soft drinks, previous and current gastrointestinal problems (gastroesophageal reflux, bulimia, etc.), aggressive medical treatments (such as radiotherapy), as well as the patient can tell which stimulus provokes his/her DH.

A detailed clinical examination allows confirming a presumptive diagnosis. Afterwards, we must identify the teeth with DH (Fig. 2A), the tooth region with exposed dentin (its dimensions, if possible), and the oral conditions associated with DH (gingival recession, erosion, abrasion, abfraction, bruxism, etc.). At the end of the clinical examination, a diagnosis and a proper desensitizing agent can be determined. Subsequently, the 1st VAS scale is performed in each teeth with DH. We recommend two types of stimuli application: a mechanical stimulus, when the exploratory probe tip scrapes on the exposed dentin (Fig. 2B), and a thermal stimulus, the air-spray applied directly on the exposed dentin and isolation using latex glove (Fig. 2C). Both stimuli must be recorded because the patients do not have similar responses to a specific stimulus. The VAS scale is also useful to identify the patient's DH degree, considering that values less than 3 correspond to mild DH, values between 3 and 7 correspond to moderate DH, and values higher than 7 correspond to severe DH.

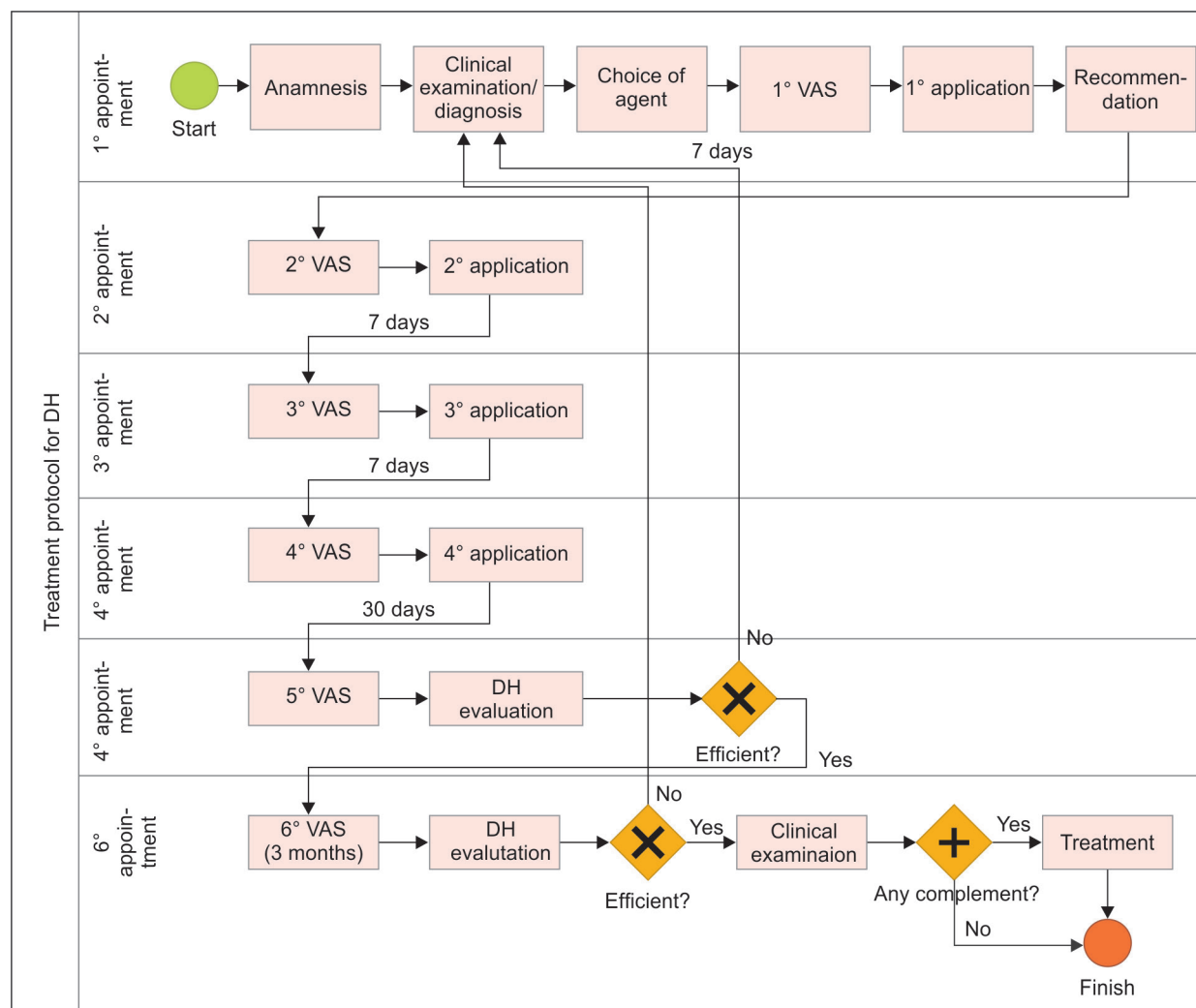


Fig. 1: Treatment protocol for dentin hypersensitivity

The application of the desensitizing agent must follow all steps recommended by the manufacturers. Figure 2 shows the Desensibilize NanoP (FGM, Brazil) desensitizing agent containing calcium phosphate nanoparticles associated with potassium nitrate and sodium fluoride, which combines more than one mechanism of action: obliteration of dentinal tubules, inhibition of sensitivity nerve, and dental remineralization. This product has a pasty appearance (Fig. 2D), and it should be applied under friction for 10 seconds on the dentin exposure using a rubber cup at low-speed handpiece (Fig. 2E) and left undisturbed for 5 minutes (Fig. 2F).

At the end of the 1st session, we must give the recommendations for the DH management and risk factors to the patient. Moreover, it is relevant to emphasize the acid diet reduction (acidic fruits, acidic fruit juices, soft drinks, etc.) and he/she should wait at least 40 minutes after eating to brush his/her teeth. Furthermore, inadequate brushing techniques, excessive force, abrasive pastes, hard bristles brushes, etc. must be modified. In case of abfractions, we must consider an occlusal

adjustment of these teeth and/or myorelaxing plate confection in patients with bruxism. If nonsurgical periodontal treatment is necessary, it must be performed before the desensitizing agent application to prevent a DH increase.

In the following sessions (2nd, 3rd, and 4th sessions), the desensitizing agent will be weekly applied and the DH will be quantified (2nd, 3rd, and 4th VAS scales). In the 5th session, after the quantification, the DH evolution (according to VAS scale over time) will be accessed; if no improvement was obtained, the patient should be submitted to a new clinical evaluation, a new diagnosis should be performed, the desensitizing agent should be changed, and the protocol should be done again (1st session). After the DH disappearance/improvement (5th session), a sixth control session should be performed at 3 months and the DH evolution should be quantified. If the desensitizing treatment is not effective anymore, another 1st session and a new clinical examination/diagnosis (considering the desensitizing agent change) should be done, however, if the desensitizing effect stables



Figs 2A to F: Clinical treatment protocol for DH; (A) Teeth 25 and 26 with gingival recessions (Miller class I) with severe DH; (B) mechanical stimulation using exploratory probe; (C) thermal stimulus using air-spray stimulus and isolation using latex glove; (D) Desensibilize Nanop (FGM, Brazil) application on the exposed dentin and relative isolation; (E) desensitizing agent application under friction for 10 seconds on each tooth; and (F) desensitizing agent was left undisturbed for 5 minutes (protocol according to manufacturer)

over time, a complementary treatment (composite resin, mucogingival surgery, myorelaxant plate, etc.) must be considered to finish the protocol.

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