



Dental fluorosis: The Dilemma of Therapeutic Management



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Abstract

Dental fluorosis is a disorder resulting in anesthetic coloration of enamel due to excessive ingestion of fluoride during enamel maturation. Disturbing the appearance, it has considerable implications on patients' esteem and quality of life. Depending on the severity of fluorosis and the thickness of the layer of enamel involved, wide ranges of approaches of varying invasiveness are proposed. Alone or in combination, they can provide esthetic masking of the discolored enamel unless the effect of each treatment the clinical situation is well considered.

Abbreviations: TFI: Thylstrup and Fejerskov Index; TSIF: Total Surface Index of Fluorosis; IDS: immediate dentin sealing

Short Communication

Dental fluorosis is an esthetic developmental disturbance of enamel due to chronic absorption of high concentrations of fluoride during enamel maturation. This disorder is characterized by outer hypermineralization and subsurface hypomineralization that has as consequences optical and physical tooth surface changes. The severity; linked to fluoride dose and the timing and duration of fluoride exposure; ranges from narrow white lines to discrete white opaque areas leading in some cases to surface pitting. When it affects the anterior teeth, this may have considerable socio-psychological influence resulting in a decline in patient' self-confidence, self-esteem, and hidden smiles [1-4]. Based on the severity of enamel damage, several indices have been already used to enhance the choice of the treatment options. Dean's Index, Thylstrup and Fejerskov Index (TFI) and Total Surface Index of Fluorosis (TSIF), were from the most index proposed to establish an appropriate diagnosis [5].

Minimally invasive approaches including tooth bleaching, microabrasion, macroabrasion and resin infiltration; alone or in combination; are recommended for treating mild cases of fluorosis. Such techniques seem to be the best alternative when as patient seeking treatment are quite young. Indeed, prosthetic treatment, apart from the fact that is time consuming and expensive, it requires removal of healthy sound tissue which is inappropriate at an early age. Whereas, in moderate to severe cases, they seem to be either ineffective or lead to only transient improvement, thus the proposed treatment option is often invasive including veneers and crowns [6]. From this side, ceramic veneers are increasingly

favored over crowns since they are thinner restoration, which meet the criteria of minimally invasive dentistry and preservation of healthy tooth structure. Moreover, it has been reported that ceramic veneers provide durable and successful restoration with an estimated survival probability of 93.5% over 10 years [7]. Nevertheless, fluorosis is expected to make etching of enamel more difficult because the hydroxyapatite in the hypermineralized surface layer of enamel has been replaced by the acid-resistant fluorapatite [8].

Akpata and al, have demonstrated that etching teeth with mild fluorosis (TFI =1-3) is similar to etching non-fluorosed teeth. However, for those with moderate fluorosis (TFI=4), etching time should be doubled. When the surface enamel loss is too important (TFI=5) and more, the depth of etch depended if the enamel is intact or detached. In fact, it has been demonstrated that removal of enamel increased the resin-enamel bond strength in fluorosed teeth than those with unground enamel, as the outer hypermineralized enamel (200 μ m) where the high fluoride content is concentrated, was not removed. It was approved too that high bond strength is achieved by using 40% phosphoric acid [8,9]. On the other hand, since vital dentin could be exposed after preparation, immediate dentin sealing (IDS) has been proposed as an effective technique to reduce sensitivity, avoid bacterial colonization but especially enhance the bond strength of the final restoration [10]. Nevertheless, when the surface enamel loss exceeds 50%, the remaining enamel is insufficient for effective adhesive bonding. Thus, fluorosed teeth should be crowned to

improve the esthetics. Every treatment has its pros and cons but conservatism and patient's expectations and wishes must be of the highest priority of clinicians when planning to treat dental fluorosis [11].

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