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Short Communication

How to Successfully Bond Fluorotic Teeth?

Oumayma Mejri, Imen Kalghoum*, Emna Boudabous and Dalenda Hadyaoui

Department of Fixed Prosthodontics, Research Laboratory of Occlusodontics and Ceramic, University of Monastir, Monastir, Tunisia

***Corresponding author:** Imen Kalghoum, Department of Fixed Prosthodontics, Research Laboratory of Occlusodontics and Ceramic, University of Monastir, Monastir, Tunisia.

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Abstract

Fluorosis is a hypo-mineralization of the tooth due to chronic fluorine intoxication during the amelogenesis period, The bonding of ceramic veneers is a crucial surgical step in the durability of the restoration, This paper aims to highlight the way to successfully bond fluoritic teeth.

Keywords: Fluoritic teeth; Bonding; Ceramic; Veneers

Introduction

Fluorosis is a hypo-mineralization of the tooth due to chronic fluorine intoxication during the amelogenesis period. It is clinically manifested by a dyschromia, a symmetry of the lesions and sometimes porosities [1, 2]. There is no stereotyped or reproducible treatment plan for patients with fluorosis: each treatment must be individualized, and must take into account the patient's request [3]. While respecting the therapeutic gradient [4]. Regarding dental fluorosis, the gradient starts with lightening as the most conservative method up to full coverage crown [5]. When non-invasive solutions find their limits and could not meet the needs of patients, prosthetic solutions find their indications [6]. Ceramic veneers have the reliability and aesthetic qualities to correct discoloration problems while allowing tissue economy, And given their delicacy, their retention is mainly ensured by the bonding Which must be done with a lot of rigor [7, 8].

The Impact of Fluoride Enamel on the Way Ceramic Veneers are Assembled

Adhesion is the set of interactions that unite two surfaces. This adhesion is characterized by its mechanical anchoring properties via micro rugosities, and the chemical bonds that can be established between the adhesive and the different surfaces [9]. When the protocol bonding protocol is mastered, veneers can not only restore the mechanical properties of natural teeth, but also increase their resistance compared to a healthy untreated tooth. Bonding increases the strength b no.f the ceramic restoration by creating a unique body between the restoration and the tooth [10].

1. The effectiveness of adhesive systems on fluoride enamel: Mordanting and rinsing systems (M&R) is much more effective for enamel-resin bonding and more stable over time than the Self-etching systems (SAM) for fluorite teeth. The bonding material penetrates 3.5um into the enamel when using phosphoric acid (MR), while the material penetrates only 1um when using self-etch (SAM).

2. Application time: Double etching technique: For moderate fluorosis, it is recommended to double the enamel etching time (30 seconds) with phosphoric acid in order to obtain an effective bonding strength and to remove the outer layer of hyper-mineralization 50 to 80mm thick. However, in the case of severe fluorosis, increasing the etching time may decrease the

surface roughness and depth profile, which may result in a less effective micromechanical enamel surface for effective bonding [11].

3. The concentration of ortho-phosphoric acid: Fluorotic teeth have an acid-resistant surface layer in their enamel. Bonding to fluorotic teeth decreased as the severity of fluorosis increases. Maximum bond strengths were achieved when phosphoric acid of 40% concentration was used. But too high a concentration can conversely lead to the opposite, leading to an apparent decrease in adhesion [12].

4. Deprotection of fluoride enamel: De-processing is the application of sodium hypochlorite NAOCL at 5.25% for 60 seconds on the fluoride enamel before etching. This technique allows the removal of organic elements on the enamel surface, which allows the etching acid to penetrate deeper and therefore penetration and therefore a more effective bonding and a higher bond strength for fluorotic teeth. Studies have shown that the bond strength after bonding is about 8.14Mpa for teeth without deprotection, while for NAOCL-conditioned enamel the bond strength after bonding is 12.53 MPa. [13].

5. Immediate dentin hybridization or immediate dentin sealing (IDS): It is an application of a dentin adhesive on the freshly prepared dentin in order to create a hybrid layer, before the global impression, between the dentin tubuli and the collagen fibers on the one hand and the bonding materials on the other hand. It allows an optimization of the quality of the bonding, a protection of the dentin-pulp organ, and reduces the risk of postoperative sensitivities [14, 15].

Conclusion

The bonding of ceramic veneers is a crucial surgical step in the durability of the restorations. this step is delicate because very operator-dependent, and requires at least one practitioner and one assistant, both experienced in this art.

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Conflict of Interest

No conflict of interest.

References

1. Levy SM (2014) An update on fluorides and fluorosis. J Can Dent Assoc 69: 286-291.
2. Sherwood IA (2010) Fluorosis varied treatment options. J Conserv Dent 13(1): 47-53.
3. Kruetongsri K, Leevailoj C (2013) Treatment of moderate dental fluorosis using porcelain laminate veneers: A case report. Chulalongkorn Univ Dent J 35(1): 49-64.
4. Tirlet G, Attal JP (2009) The Therapeutic Gradient, a medical concept for aesthetic treatments. Inf Dent (41/42): 2561-2568.
5. Chiranir RA, Foray H (2005) Dental fluorosis: etiological diagnosis. Arch Pediatr 12(3): 284-287.
6. Akpata ES (2014) Therapeutic management of dental fluorosis: A critical review of literature. Saudi J Oral Sci 1(1): 3-13.
7. Dogui H , Dakhli R, Abdelmalek F, Nouira Z, Amor A, et al. (2019) Aesthetic rehabilitation of severe dental fluorosis with Porcelain Veneers: About a case report. IOSR J Dent Med Sci 18(11): 57-63.
8. Kruetongsri K, Leevailoj C (2013) Treatment of moderate dental fluorosis using porcelain laminate veneers: A case report. Chulalongkorn Univ Dent J 35(1): 49-64.
9. Della Bona A, Borba M, Benetti P, Cecchetti D (2007) Effect of surface treatments on the bond strength of a zirconia-reinforced ceramic to composite resin. Braz Oral Res 21(1): 10-15.
10. Ermis RB, Van Landuyt K, Van Meerbeek B, Swift EJ Jr (2009) Bonding to fluorosed teeth. J Esthet Restor Dent 21(4): 213-214.
11. Torres Gallegos I, Zavala Alonso V, Patiño Marín N, Martinez Castañon GA, Anusavice K, et al. (2012) Enamel roughness and depth profile after phosphoric acid etching of healthy and fluorotic enamel. Aust Dent J 57(2): 151-156.
12. Gu M, Lv L, He X, Li W, Guo L (2018) Effect of phosphoric acid concentration used for etching on the microtensile bond strength to fluorotic teeth. Medicine 97(35): e12093.
13. Sharma R, Kumar D, Verma M (2017) Deproteinization of fluorosed enamel with sodium hypochlorite enhances the shear bond strength of orthodontic brackets: an in vitro study. Contemp Clin Dent 8(1): 20-25.
14. Pomperski M, Jalladaud M, Tirlet G (2018) Immediate Dentin Sealing: Clinical Protocol. Biomat Clin 3(2): 2-8.
15. Qanungo A, Aras MA, Chitre V, Mysore A, Amin B, et al. (2016) Immediate dentin sealing for indirect bonded restorations. J Prosthodont Res 60(4): 240-249.