

Research Article

## Minimally Invasive Management of Dental Fluorosis Case by Implementing Microabrasion and Bleaching Techniques

Anum Moiz<sup>1</sup>, Hajrah Tariq\*, Nazia Jehan<sup>2</sup>, Kiran Imtiaz Khan<sup>3</sup>

1,2,3 BDS, FCPS trainee (operative).

\***Corresponding Author: Dr. Hajrah Tariq**, BDS, FCPS trainee (operative)

Islamic Internal Dental Hospital, St# 42, G-7/4, Islamabad.

**Received Date:** December 07, 2020

**Publication Date:** January 01, 2021

### Abstract

*Micro abrasion and in-office bleaching are minimally invasive procedures that eliminate enamel irregularities and discoloration. The article describes the management of a patient 20 years of age, presented with mild fluorosis, unaesthetic yellowish-brown and opalescent white stains. The esthetics concerns of the patient were dealt with by in-office vital bleaching preceded by micro abrasion with promising results.*

**Key Words:** *Micro abrasion, In-office vital bleaching, Mild fluorosis.*

### Introduction

Intake of a surplus amount of fluoride amid tooth development results in the condition commonly known as dental fluorosis. (1) In this condition the tooth is affected both anatomically and morphologically; clinically presenting from mild white patches on the teeth to severe mottling or pitting of the teeth with brown staining. (2) The occurrence of fluorosis among 12 years old children of Pakistan ranges from 3%-93%. (3)

The management of dental fluorosis requires both preventive and invasive strategies depending on the intensity of the diseased condition. (4) Preventive measures require judicious use of fluoride in all forms,

whereas esthetically compromised teeth are managed by both minimally invasive techniques such as bleaching, microabrasion or macroabrasion and interceptive approaches that include veneering and crowning. (5)

The best treatment option for a fluorosis case should be the most conservative, affordable to an average patient, consumes minimal time and thus provides an esthetically pleasing result. This article presents a case report in which esthetic display of teeth afflicted with mild dental fluorosis was enhanced by minimally invasive management modality.

### Clinical Case Description

A 20years female patient presented to the operative unit of Islamic International Dental Hospital, Islamabad, Pakistan with a complaint of yellowish-brown and white spots on the teeth. History revealed that discolorations were present only on the permanent teeth and the primary teeth were unaffected. There was no significant family history. The subject prerequisite was an esthetic improvement of the teeth appearance. There was an absence of any complaint of sensitivity or pain.

Clinical examination showed yellowish-brown spots on incisal 1/3rd of maxillary anterior teeth and generalized white spotting on the rest of the teeth. The periodontal status was healthy with good oral hygiene. Based on history and clinical examination the diagnosis of mild fluorosis was made for the patient as per Dean's fluorosis index. (6) (Fig 1)



Fig1. Clinical picture showing mild fluorosis.



Instead of the above findings, the treatment plan devised for the patient was microabrasion followed by in-office vital tooth whitening. The stages of the planned treatment were elucidated and with the patient's consent treatment was started. The initial phase of treatment was started with scaling and polishing to hamper inflammation and improve the gingival condition. The patient was called after a week for initiation of the formal treatment.



Fig2a. Material used for micro abrasion. 2b. Micro abrasion procedure.

In the second phase, the rubber dam was applied on the upper arch from 1st premolar to 1st premolar. The preparation of the teeth was carried out with the pumice and rubber cup in a slow-speed hand-piece (Fig 2a & 2b). In the second step, acid etching of the stained enamel surface was done with 17% HCl for 5s with the aid of wooden sticks, followed by rubbing with a hybrid bristled cup for 15s. The abrasive compound Opalustre (Ultra dent Products Inc.) was applied in 5 applications for each tooth, with irrigation between each application. The third step involved prophylaxis with fluoridated prophylactic paste followed by rinsing and drying. At the end of treatment, the patient was instructed to avoid intake of any solid or liquid food for at least 30 minutes (Fig 3).



Fig3. Clinical picture after micro abrasion



Fig 4. In office bleaching



Fig 5. Post op picture



Following micro abrasion, an in-office bleaching product (Everbrite In-Office Tooth Whitening Kit, 35% Hydrogen Peroxide) was performed for better harmonization of colour (Fig4). A desensitizing product (Fluorinated protector, Beyond Technology Inc) was applied on bleached teeth for 5 minutes. Desensitizing agent removal was accomplished by profound water rinsing with effective suction, along with the removal of the liquid rubber dam (Fig5). The patient was satisfied with her esthetic improvement and follow up was scheduled to determine the colour stability.

## Discussion

Esthetic improvement of discolored teeth without any loss of surface integrity of enamel is achieved via a more conservative, economical and minimally invasive technique termed micro-abrasion. (7) Several studies and case reports had proven that microabrasion has long term effectiveness with little or no post-operative complications such as dentine hypersensitive or gingival problems. (8) This technique helps in eliminating almost all of the brown stains, minor defects and 60-100% white opaque areas resulting in an improved appearance. (9)

In comparison with the previous studies, in this case, microabrasion helped in removing the brown stains without any adverse effects and resulted in a marked enhancement in appearance. Microabrasion of enamel followed by in-office tooth bleaching unifies color, achieving a more homogenous and lighter tooth surface.

Several studies had shown that great results are obtainable in cases of mild fluorosis by combining two techniques. (10, 11) In-office bleachings is preferred because the operator fully governs the procedure, the results are quick and obviously in just a single visit. In addition to these advantages, this technique also helps in keeping away the unease of using the home bleaching trays and also the danger of ingestion of the chemicals. (12,13)

The management of fluorosis depends on the severity of the disease, and it varies from highly conservative to invasive treatment options. To optimize the aesthetic of a tooth different management modalities can be combined such as bleaching followed by laminate veneers. (14) The other alternate options include laser-assisted bleaching, components, and more aggressive ceramic or porcelain crowns. (15)



## Conclusion

Current evidence depicts that the association between microabrasion and in-office bleaching in the above-presented case resulted in improved esthetic and patient's satisfaction. The results were immediate and least invasive, thus helping professionals and dentists to use such treatment modalities in the future.

## Conflict of Interest

None

## References

- 1.Habbu N, Joshi N, Ramamoorthi M, Mabrukar V. "Esthetic management of dental fluorosis". INTJDC 2011; 3(2):80-1
- 2.Singh P, Gupta ND, Bey A. "Dental fluorosis and periodontium: A game of shadow". J Oral Biol Craniofac Res 2014 Jan-Apr; 4(1):47-8
- 3.Sami E, Vichayanrat T, Satitvipawee P. "Dental fluorosis and its relation to socioeconomic status, parents' knowledge and awareness among 12-year-old school children in Quetta, Pakistan". Southeast Asian J Trop Med Public Health 2015 Mar; 46(2):360-8.
- 4.Ardu S, Stavridakis M, & Krejci I. "A minimally invasive treatment of severe dental fluorosis" Quintessence Int. 2007; 38(6):455-8.
- 5.Akpata ES. "Occurrence and management of dental fluorosis". Int Dent J. 2001 Oct; 51(5):325-33.
- 6.Funmilayo1 ASM, Mojirade AD. "Dental Fluorosis and its Indices, what's new?" IOSR-JDMS 2014 Jul; 13(7): 55-60
- 7.Sundfeld RH, Franco LM, Gonçalves RS, de Alexandre RS, Machado LS, Neto DS . "Accomplishing Esthetics Using Enamel Microabrasion and Bleaching—A Case Report. Oper Dent". 2014 May-Jun; 39(3):223-7.



8. Chhabra N1, Singhal KP. "Viable approach to manage superficial enamel discoloration". *Contemp Clin Dent*. 2010 Oct; 1(4):284-7.
9. Yildiz G, Celik EU. "A minimally invasive technique for the management of severely fluorosed teeth: A two-year follow-up".. *Eur J Dent*. 2013 Oct;7(4):504-8.
10. Pontes DG, Correa KM, Cohen-Carneiro F. "Re-establishing esthetics of fluorosis-stained teeth using enamel microabrasion and dental bleaching techniques". *Eur J Esthet Dent*. 2012; 7(2):130-7.
11. Bertassoni LE, Martin JM, Torno V, Vieira S, Rached RN, Mazur RF. "In-office dental bleaching and enamel microabrasion for fluorosis treatment". *J Clin Pediatr Dent*. 2008; 32:185-7.
12. Agarwal N, et al. "McInnes solution-APhoenix solution in dentistry-The case series". *Indian J Dent Sci*. 2012; 4(2):78-80.
13. S PM, M AB, Tejaswi S, Shetty S, K SH. "Effect of Power Bleaching on the Fluorosis Stained Anterior Teeth Case Series". *J Clin Diagn Res*. 2014 Aug; 8(8): 1-3.
14. Bahadır HS, Karadağ G, Bayraktar Y. "Minimally Invasive Approach for Improving Anterior Dental Aesthetics: Case Report with 1-Year Follow-Up". *Case Rep Dent*. 2018 Sep 6;2018.
15. Jagadeesh K, et al. "Esthetic Management of Dental Fluorosis with Ceramic Veneers". *JOHSR*. January-June 2018;9(1):27-30.

**Volume 2 Issue 1 January 2021**

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