ISSN 2394–806X (Print), ISSN 2454-5139 (Electronic)
IJHRMLP, Vol: 04 No: 01 January, 2018
Printed in India




**CASE REPORT**

# Esthetic rehabilitation of fluorosis affected teeth

***Kataki Rubi[1], Bora Proxima[2], Shekhawat Krutika[3], Neingutunuo Angami[4]***

***Received on July 18, 2017; editorial approval on August 18, 2017***

**ABSTRACT**

*This article describes an esthetic rehabilitation of a case of severe fluorosis. Dental fluorosis is caused by an excessive fluoride intake during tooth formation. Fluoride-related alterations in enamel lead to surface hyper mineralization and subsurface hypo mineralization which are characterized by white opaque appearance with secondary brown stain. Esthetic rehabilitation of fluorosis affected teeth. Direct composite technique was applied to improve the color, shape and alignment of the teeth using direct composite veneering. Esthetically pleasing result. Long-term clinical trials are needed to evaluate the appropriateness of the various management options for fluorosis of varying severity.*

***Keywords**: Bonding, management, veneer, discoloration*

## INTRODUCTION

Dental fluorosis is a specific disturbance due to chronic ingestion of excessive fluoride during the formative period of the dentition.[1] The increased incidence of dental fluorosis in developing countries over the last few decades is considered to be largely due to the wide spread usage of fluoride. Fluoride-containing drinking water is the main potential sources for this developmental tooth disorder in many parts of the world. Drinking water containing excessive amount of fluorine (3 to 5 mg /L), endemic fluorosis has been observed. Endemic fluorosis has been reported in certain parts of Indiaand is an important health issue. Fluoride-related alterations in enamel lead to surface hyper mineralization and subsurface hypo mineralization which are characterized by white opaque appearance with secondary brown stain.[2, 3]

The successful treatment of fluorosed teeth is a subject of interest in the literature. An appropriate treatment plan may be selected depending on the severity of the fluorosis.[2, 3] In the mild cases of dental fluorosis, clinical appearance is characterized by opaque white areas presenting as horizontal lines and cloudy patches on the enamel surface. Bleaching and microabrasion have been recommended for these forms of fluorosis. In the moderate-to-severe level of fluorosis, all tooth surfaces are affected by white opacities.[2, 3] Brown stains also present in the involved teeth. Some pits and wear area may be observed on the surfaces as a result of damage to the poorly mineralized enamel. Treatments include microabrasion, direct composite restorations or combination of both methods. In some instances, esthetic veneers or crowns may be necessary for some patients.[2, 3]

Direct composite veneers allow operator to control and evaluate entire procedure from shade selection to final morphology usually in a single appointment. It is most commonly utilized form of veneering.[4] These are often been heralded as a more conservative alternative to porcelain. With the advent of microhybrid and nanohybrid composites, finishing and polishing of these restorations can rival that of porcelain.[5] Frequently, the management of fluorosis involves resin composite restorations. This article presents the stages of esthetic rehabilitation of a patient with severe fluorosis including direct composite veneering. Constant advancement of resin technology and advent of newer materials have resulted in reduced shrinkage, improved color stability, wear resistance, and biocompatibility.[6-8]

## CASE REPORT-1

A 23 Year old female patient reported to the Department of Conservative Dentistry and Endodontics, Regional Dental College, Guwahati with the chief complaint of poor esthetic smile due to discoloured teeth. The clinical examination and history revealed that the present discoloration was due to fluorosis in cervical and mesial and distal areas of the middle third of the tooth representing as subsurface brown staining and small pits in enamel representing severe fluorosis [fluoride concentration in drinking water; 3ppm] **(Figure 1)**.The diagnosis was made based on the Dean's fluorosis index. Due to young age, patient

**Address for correspondence**:
[1]Professor (**Corresponding Author**)
**Email**: rubikataki@ymail.com
**Mobile**: +919864010215
[2, 3,4] post graduate student
Department of Conservative Dentistry & Endodontics
Regional Dental College, Guwahati, Assam

was insisting for esthetic correction of anterior teeth only. Radiographic and clinical examination did not reveal any periapical pathological condition. Therefore esthetic correction with more conservative procedure direct composite for maxillary anterior teeth was planned. The color was recorded using the Vita Classical shade guide. The tooth preparation involved a minimal chamfer in the facial surfaces (**Figure 2**). The enamel surface was acid etched using 35% phosphoric acid gel for 15 sec, rinsed and dried (**Figure 3**). Bonding agent was applied on the prepared enamel and dentin surface and light-cured (**Figure 3**). A stratified layering technique was used to fill the tooth with nanohybridresin composite. The contouring and finishing was accomplished with finishing burs. The polishing was performed with recommended polishing procedures (**Figure 4**). Patient was recalled in 2 days and encouraged for better dental flossing and also recalled every 6 months for periodical controls.

**Figure 1** Preoperative clinical photograph

**Figure 2** Tooth preparation

**Figure 3** Etching and application of bonding agent

**Figure 4** Postoperative clinical photograph

## CASE REPORT-2

A 21 year old male patient reported to the Department of Conservative Dentistry and Endodontics, Regional Dental College, Guwahati with the chief complaint of poor esthetic smile due to discoloured teeth. The clinical examination and history revealed that the present discoloration was due to severe fluorosis fluoride concentration in drinking water; 3·2 ppm representing as opaque patches, subsurface brown staining and small pits in enamel representing severe fluorosis **(Figure 5)**.The diagnosis was made based on the Dean's fluorosis index. Due to young age, patient was insisting for esthetic correction of anterior teeth only. Radiographic and clinical examination did not reveal any periapical pathological condition. Therefore esthetic correction with more conservative procedure direct composite for both maxillary and mandibular anterior teeth was planned. The color was recorded using the Vita Classical shade guide and the shade $A_2$ and $A_3$ was considered as the initial colour. Cotton rolls, salivary ejectors and retraction cords were used for field isolation. The whole procedure was carried out in the same manner as described in the previous case (**Figure 6**,**7**). Patient wasrecalled in 2 days and encouraged for better dental flossing and also recalled every 6 months for periodical controls.

**Figure 5** Post-operative clinical photograph

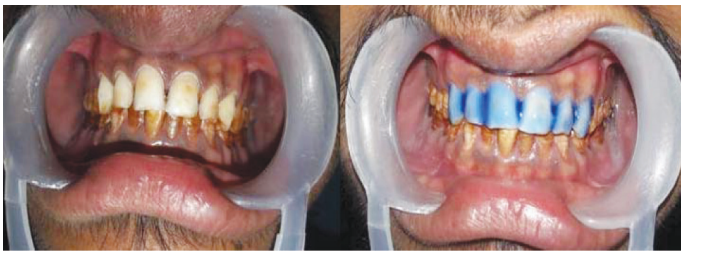

**Figure 6** Clinical photograph of tooth preparation and Etching procedure

**Figure 7** post-operative clinical photographs

## DISCUSSION

In both the above presented cases tooth discolouration was due to increased fluoride content in drinking water. The aim of the treatment in these cases was to restore the patient esthetics and self-esteem. Different treatment plans have been proposed for the treatment of discoloration in the fluorosed teeth depending on the severity of the fluorosis. A direct composite restoration

was a conservative alternative which offered the ability to correct the shape and the contour of maxillary anterior teeth in addition to the removal of discoloration. Direct composite veneers are becoming more popular in repairing defects and to resurface teeth so as to make them appear straight and aesthetically pleasing. It is recommended to grind the fluorosed enamel surface to remove the hyper mineralized layer. Etching with phosphoric acid for 15 seconds achieved the best results in the normal enamel.[11] While the best etching result were obtained at 30 seconds for the moderate fluorosed enamel, increased etching time for severe fluorosis result in less retentive surface.[9] Polishing of direct composite veneers is easy and any cracks or fractures on the restoration may be repaired intraorally.[10] Also, marginal adaptation for composite veneer is better than that of indirect veneer restorations.[11] In these cases, the use of conservative direct composite resins provided both symmetrical and harmonious restoration of the teeth. So in this case we have followed a conservative approach with composite veneering technique to build up an esthetically pleasing smile and restore patient's self-esteem.

## CONCLUSION

Discoloured and pitted enamel of fluorosed teeth may be esthetically objectionable and a cause of psychological and sociological health problems. Hence, therapeutic interventionwith minimally invasive procedure is often needed to correct cosmetic defects due to dental fluorosis and several management strategies have been proposed for treating teeth with fluorosis of varying severity.

## REFERENCES

1. Moller J. Fluorides and dental fluorosis. Int Dent J 1982;32:135-47.
2. Akpata ES. Occurrence and management of dental fluorosis. Int Dent J 2001;51:325–33.
3. Denbesten P, Li W. Chronic fluoride toxicity: dental fluorosis. Monogr Oral Sci 2011;22:81–96.
4. Fahl Junior N. A direct/indirect composite resin veneers: a case report. Pract Periodontics Aesthete Dent 1996;8(7):627-38.
5. Fahl N. A polychromatic composite layering approach for solving a complex class IV/direct veneer/diastema combination: part II. Pract Procedures and Aesthetic Dentistry 2007;19:17–22.
6. Vaidyanathan J, Vaidyanathan TK, Wang Y and Viswanadhan T. Thermoanalytical characterization of visible light cure dental composites. J Oral Rehabil 1992;19(1):49–64.
7. Villela LC, CarvalhoJRF and Araujo MAJ. A modified veneering technique using composite resin. Revista Da APCD 1994;48:1535–7.
8. McCabe JF and Kagi S. Mechanical properties of a composite inlay material following post-curing. Br Dent J 1991;171(8):246–8.
9. Torres-Gallegos I, Zavala-Alonso V, Patiño-Marín N, Martinez-Castañon GA, Anusavice K, Loyola-Rodríguez JP. Enamel roughness and depth profile after phosphoric acid etching of healthy and fluorotic enamel. Aust Dent J 2012;57:151–6.
10. Berksun S, Kedici PS and Saglam S. Repair of fractured porcelain restorations with composite bonded porcelain laminate contours. J Prosthet Dent 1993;69(5):457-8.
11. Jordan R E. Esthetic Composite Bonding Techniques and Materials. 2nd ed. USA: Mosby-Year book, St. Louis, Mo; 1993.