



Comprehensive Smile Makeover: A Case Report and 1 Year Follow up

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2023/v35i107349

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/98815>

Case Study

Received: 11/02/2023

Accepted: 12/04/2023

Published: 25/04/2023

ABSTRACT

Introduction: Dental Fluorosis is one of the common reasons of an unesthetic smile affecting confidence of patient. Depending upon the duration and exposure to fluoride, it can be mild, moderate or severe.

Case Report: The present case report aimed to rehabilitate esthetically a patient with fluorosis, rotated teeth and spacing in maxillary anterior region using a conservative approach.

Results: The post-operative esthetic appearance of the patient was enhanced and follow up to one year showed acceptable and stable esthetic outcomes.

Conclusion: Though, there are various treatment modalities available for esthetic makeovers, accurate diagnosis, diligent treatment planning and choice of available materials can lead to better esthetic results.

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Keywords: Fluorosis; microabrasion; bleaching; porcelain veneers.

1. INTRODUCTION

Dental fluorosis affecting the anterior teeth can be a matter of esthetic concerns. Depending upon various factors, fluorosis can be of varying degrees; small white spots manifest in mild form of fluorosis. While, moderate to severe forms are clinically presented as orange to brown color with pitting and abrasions due to defective enamel mineralization [1].

Microabrasion and bleaching are conservative modalities to treat patients with mild dental fluorosis; however, in resistant discoloration, only transient improvement is seen in case of bleaching and microabrasion [2]. Also, marginal discoloration, and cohesive failure are the common problems associated with composite restorations. Ceramic veneers offer an excellent option for treating moderate to severe cases of fluorosis [3].

The reasons and manifestations of dental fluorosis are discussed [3,4] in literature, but there is scarcity of proper treatment of dental fluorosis. Moreover, severity of fluorosis advocates customized treatment planning for the individual.

The current case report emphasized the details of an esthetic rehabilitation procedure of treating a higher degree of fluorosis affected dentition with porcelain veneers and crowns.

2. CASE REPORT

A young male of 32 years, referred to the department with a main problem of unpleasant color and spacing in upper front teeth and wanted treatment for the same. The patient had non-contributory medical history. On clinical examination, discolored teeth with rotation w.r.t 12, 22, 23 (FDI tooth notation system) and spacing w.r.t. 12,13,22,23 (Fig. 1). The final clinical diagnosis was moderate fluorosis i.e. Score 3 (Dean's Fluorosis Index) and the treatment plan of microabrasion and bleaching for upper and lower arch followed by ceramic veneers (IPS e.max Press, Ivoclar Vivadent) w.r.t 11,13,21,23 and full coverage crowns (IPS e.max Press, Ivoclar Vivadent) w.r.t 12,22.

Pre-operative shade (4M-3) was matched using VITA 3-D master shade guide. The microabrasion performed using slurry of pumice

and HCL. Also, in-office bleaching (Pola Office – 35% H₂O₂ – SDI Limited, Australia) carried out in upper and lower arches respectively to equilibrate the shade. Crown preparation done w.r.t 12, 22 using fine grit flat end tapered diamond bur and a shoulder finish line. Temporization was done post preparation of the tooth.



Fig. 1. Discolored teeth with rotation

For the ceramic veneers preparation, depth guides were oriented and tooth preparation was performed 0.8 mm into the enamel using round end tapered diamond burs with a chamfer margins and an incisal-labial butt-joint. Proximally margins prepared into the buccal and cervical embrasures. After teeth preparations, gingival retraction cords (Ultradent Products Inc.) placed to record details of finished margins in polyvinylsiloxane material (Kulzer) impressions.

Ceramic veneers made using lithium disilicate-reinforced glass ceramic (IPS e.max). The teeth cleaned using pumice to remove any deposits or plaque. Marginal adaptation of the veneers assessed using a transparent shade try-in paste (Variolink Veneer try-in paste, Ivoclar).

10 % hydrofluoric acid (Angelus Industries - Brazil) applied onto internal surface of veneers for 60 seconds, washed and dried. The fitting surface of veneers layered with silane coupling agent (Monobond Plus, Ivoclar Vivadent) and dried after 1 min. The rubber dam isolation done in the maxillary anterior teeth and labial surface of teeth treated with 37% phosphoric acid for 30 seconds, water rinsed, and blot dried. A mylar strip applied in interdental area to stop unintentional bonding to the adjacent tooth, also to remove excess of resin cement in the embrasure areas. Bonding adhesive (3M-universal bond – 3M Industries, USA) was applied on prepared teeth surface.

Dual-cured resin cement (Variolink Veneer, transparent shade, Ivoclar Vivadent) applied onto intaglio layer of the veneers and held appropriately onto teeth by mild pressing. Excess cement removed carefully with a tine of explorer. Porcelain veneers were tack cured for 2 seconds, and microbrush used to remove excess of resin cement. Thereafter, final light curing done for 30 seconds both facially & lingually. The two central incisor veneers were first simultaneously luted, followed by fixing of the crowns onto lateral incisors. Lastly, ceramic veneers luted on two canines.

The resin cement removed with a number 12 scalpel blade from the cervical margins and 30-fluted carbide bur finished the ceramic margins. Flossing done to ensure interproximal contact patency, occlusion assessed with 80 um articulating paper and adjusted. Final polishing of ceramic veneers performed with polishing cups (OpraFine polishing system, Ivoclar Vivadent). Interproximal contacts polished with strips. Diamond polishing paste with a rubber prophylaxis cup yielded ultimate surface luster. The immediate postoperative picture depicted in Fig. 2A. The patient was followed up to 1 year and was satisfied with the enhanced esthetic appearance (Fig. 2B).



(A)



(B)

Fig. 2(A-B). Postoperative clinical photographs

3. DISCUSSION

Dental fluorosis is a tooth malformation characterized by outer hypermineralization and subsurface hypomineralization and caused by

the chronic ingestion of fluoride during tooth development [5].

Treatment modalities for dental fluorosis can vary depending upon its severity and clinical manifestations. Although, dental fluorosis is area limited problem and treatment can provide better esthetic results.

The treatment planning aimed to enhance patient's esthetics and overall confidence. The goal achieved using a combination of microabrasion, bleaching and ceramic veneers. A uniform shade achieved through initial microabrasion followed by in-office bleaching. A diagnostic wax up was prepared before the tooth preparation giving patient a fair chances about his the final outcome. Teeth preparation completed while extending onto the interproximal area to mask the shade defects and luting of the veneers and crowns.

Discolored teeth can be masked with minimally invasive design veneer preparation. Additionally, advances in dental porcelains materials made it possible. Long-lasting and anticipated aesthetic outcomes can be achieved with ceramic veneers [6,7,8].

According to Beier et al. [9], shear bond strength of glass-ceramics to both non-fluorosed and moderate fluorosed enamel surfaces didn't get influenced by total etch bonding protocol.

The longevity and clinical accomplishment of porcelain veneers popularly discussed and it provides survival probability upto 93.5% over 10 years [9,10]. Also, ceramic veneers provide dependable restorative resolution with high esthetics, biocompatibility, function permanence and periodontal maintenance [11]. Another, case report of fluorosed dentition treated with porcelain veneers successfully followed up to 6-year [4]. Also, porcelain veneers yielded satisfactory aesthetic results in treatment of moderate to severe fluorosis [12].

4. CONCLUSION

The synergistic effect of the conservative treatment modalities helped the patient to improve the appearance and thereby enhancing the smile and self-esteem.

CONSENT

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:

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