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Case Report

Esthetic rehabilitation of patient with dental fluorosis using CAD-CAM fabricated Ceramic veneers: A case report

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ABSTRACT

In the ever-evolving field of esthetic dentistry, veneers are the most conservative and hence preferred treatment of choice due to their promising results. Veneers are mainly fabricated from conventional low fusing feldspathic porcelain. The conventional technique used for fabrication of porcelain veneers are the platinum foil technique and the refractory die technique. However, these are time consuming and technique sensitive. Technological advancements in this field have proven that CAD/CAM restorations can be fabricated in a single visit. Studies have shown them to have improved marginal fit and internal adaptation. This case report focuses on esthetic rehabilitation of patients having dental fluorosis, using CAD-CAM fabricated veneers.

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1. Introduction

Ceramic veneers' are a conservative solution for patients requiring improvement of shape, colour or position of their anterior teeth. In recent years porcelain laminates have revolutionized the field of esthetic rehabilitation. Direct veneering by composite resin laminates is also an option but exhibits high failure rate due to fracture of restoration, marginal defects, or a high degree of colour instability and discoloration.¹ Cases of fluorosis are ideally treated with laminates.² This case report highlights the rehabilitation of discoloured maxillary anterior teeth secondary to dental fluorosis, using CAD CAM fabricated Ceramic veneers.

2. Case Report

A 22-year-old male patient presented with a chief complaint of discoloured upper front teeth. Family history revealed

patient had an elder brother and had a similar discoloration of teeth. All teeth were discoloured since childhood and it was elicited that he belonged to Sholapur district of Maharashtra state, which is a part of the fluoride belt. No other medical history was found relevant to the present dental condition of the patient.

Extra-oral and Intra oral examination revealed generalized Grade IV fluorosis of enamel (Figure 1a-b). The mottled enamel appeared to be of normal thickness. Patient was diagnosed as a case of moderate dental fluorosis (Dean's index code-4) with Angle's Class I type I dental malocclusion.

Based on patient's complaint, clinical presentation and patient's esthetic requirement, it was planned to rehabilitate the patient with ceramic veneers fabricated with CAD-CAM technology. Diagnostic models were prepared and wax mock-up was done so as to give a tentative idea of the final outcome to the patient. A putty index was fabricated using the wax mockup, which was later used for

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provisionalization. Appropriate shade selection was done prior to tooth preparation.

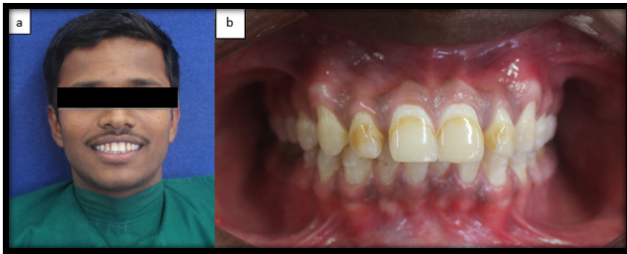


Fig. 1: A-b:



Fig. 2:

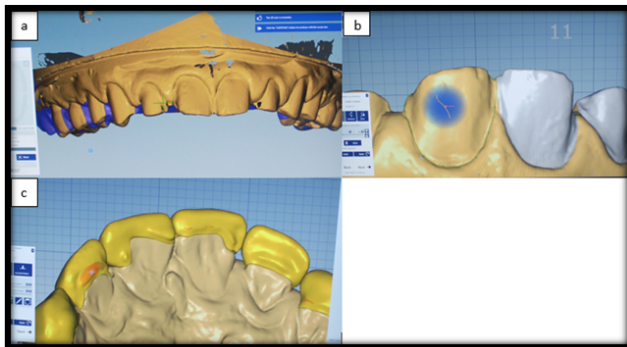


Fig. 3: a-c



Fig. 4:

Maxillary teeth were prepared, following prescribed guidelines for a veneer preparation. Depth cuts were marked



Fig. 5: a-b



Fig. 6:

for labial reduction of 0.5mm at the body of tooth and 0.3 mm at cervical region. Chamfer margin of 0.3 mm was maintained uniformly in the cervical region. Incisal edge was included in the tooth preparation to form a butt joint palatally for better esthetics, stress distribution and positive seating of the veneer (Figure 2). Gingival retraction was done using a “000” non-impregnated retraction cord. Polyvinylsiloxane material was used for making impression. Immediate provisionalization was done using the previously fabricated putty index. Elastomeric impressions were made using putty wash technique and cast was poured using type 3 dental stone. Veneer restorations were designed on CAD-CAM machine (Amann Girrbach AG) and milled (Figure 3 a,b,c). ‘VITA TRILUXE FORTE’ blocks were used for fabricating the veneers (Figure 4). Aesthetic try in was done using flowable light cure composite resin. The veneers were conditioned with 5% hydrofluoric acid and silane coupling agent and the tooth surface with 37% phosphoric acid. Luting was done using a dual cure resin cement (3M ESPE RelyX™ Ultimate Adhesive Resin Cement). Excess cement was removed, and curing of the cement was done for 20

seconds on each side (Figure 5). Post cementation, the oral hygiene maintenance instructions were given to the patient and he was on a regular follow up initially on a monthly basis and later three and six months. Patient was highly satisfied with the result and has had no complaints in the past one year (Figure 6).

3. Discussion

Conscious esthetic demands by the patient and introduction of newer adhesive systems and veneering methods has exhilarated the practitioners to aim for more conservative treatment options. It has revolutionized the most minimally invasive techniques ‘Veneering’ as a conservative and esthetic modality.^{3–5} Ceramic laminates imitate the translucency of natural tooth structure providing more promising esthetic results. Various clinical studies have reported the biocompatibility, durability, esthetic and performance of porcelain laminates.^{6,7} Treatment options for fluorosis vary with severity.⁸ Different treatment options include bleaching, composite restorations, Direct laminates and full crowns.

Discoloration of teeth caused by fluorosis have been successfully treated using ceramic veneers. Veneers fabricated using Vita Triluxe Forte as used in this case has sufficient opacity to mask the discoloration as well as acceptable translucency to enhance esthetics. Fabrication of laminates using CAD/CAM technology limits the complex laboratory procedures and thus enhances the accuracy of internal adaptation and marginal fit of the restoration, thus enhancing the durability and longevity of the restoration.

4. Conclusion

The final restoration by ceramic veneers in the present case gave us aesthetically superior results without the need for extensive tooth preparation. This case report indicates that superior esthetics can be achieved, with a minimum invasive approach and taking advantage of an excellent material like glass ceramic combined with CAD-CAM technology. Ceramic veneers provide a highly esthetic, minimally invasive option for rehabilitation of patient

requiring esthetic rehabilitation in anterior teeth.

5. Conflict of Interest

The authors declare that there is no conflict of interest.

6. Source of Funding

None.

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