

## CASE REPORT

# Masking severely Fluorosed Teeth with Ceramic Veneers

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## ABSTRACT

**Objectives:** The purpose of this article was to demonstrate the preliminary report of masking fluorosed teeth with porcelain laminate veneers.

**Materials and methods:** The clinical findings on this patient were dental fluorosis of Thylstrup-Fejerskov Index (TFI)=5-7. The treatment plan was to place eight porcelain veneers. Study models showed that the teeth were in good proportion. The procedure involve minimal tooth preparation, shade selection, making of impression and fabrication of porcelain veneer. The laminate veneers were fabricated and dual cure resin was used as a luting cement.

**Results:** After 1-year follow-up, the porcelain laminate veneers were still in a good condition, with proper occlusion and function. Neither crack nor discoloration could be observed. Moreover, the gingival tissue showed good response with no inflammation. The patient was very satisfied with the results.

**Conclusion:** This case demonstrated the success of using porcelain laminate veneers as an alternative choice in solving esthetic problems that might previously have been treated with full coverage.

**Keywords:** Dental fluorosis, Esthetics, Porcelain veneer.

**How to cite this article:** Bhagat A, Marwaha S, Dev K, Mogla S. Masking severely Fluorosed Teeth with Ceramic Veneers. *Int J Prev Clin Dent Res* 2016;3(2):155-157.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Dental fluorosis is endemic to many parts of the world, including India, which reports more than 20% of children affected. The global prevalence of dental fluorosis has been reported to be around 32%.<sup>1</sup> Esthetic changes in permanent dentition are the greatest concern of patients who have dental fluorosis. Although there is a considerable amount of literature on the characteristic features of dental fluorosis, little appears to have been written on its management. Clinically, most moderate to severe types of fluorosis are cases requiring definitive dental treatment. Bleaching or microabrasion of severely

fluorosed teeth is often ineffective, or provides only transient results,<sup>2,3</sup> while composite restorations not only discolor and wear over time but may also chip or debond.<sup>4</sup> Porcelain veneers have been shown to be the restoration of choice for severely fluorosed teeth, as they retain their color, wear resistance, and biocompatibility.<sup>5</sup> This case report documented the result of porcelain veneer as a restoration in a patient with dental fluorosis.

## CASE REPORT

A 28-year-old female from Gurdaspur presented with permanent dentition resembling full-mouth fluorosis (Fig. 1). Her chief complaint was an unattractive smile due to generalized tooth discoloration. Her medical history was unremarkable. The level of fluoride in the water around Gurdaspur province is greater than 7 ppm, which can be considered to be a high level compared with a safe level of water fluoridation. It is possible that she had consumed the same water since her childhood.

## CLINICAL EXAMINATION

The clinical examination of the patient revealed generalized enamel fluorosis affecting all permanent teeth as seen in preoperative smile (Fig. 1). Loss of the outermost enamel in irregular areas involving less than half of the entire surface presented on most surfaces of the maxillary teeth. The clinical findings on this patient, as in Figure 1, were: Dental fluorosis of Thylstrup-Fejerskov Index (TFI) = 5-7, based on the 1978 dental fluorosis classification scheme of Thylstrup and Fejerskov.<sup>6</sup>



Fig. 1: Preoperative smile

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Fig. 2: Study model verifying the correct fit of veneers



Fig. 3: Postoperative smile of the patient

## TREATMENT PLAN

Considering the age of the patient and the severity of fluorosis, the accepted treatment plan to obtain esthetic results was to place eight porcelain veneers on the upper teeth from 14 to 24. The patient was advised to receive oral prophylaxis. Smile analysis was evaluated to determine the relationship between the smile line and the lower lip line. Study models were analyzed to evaluate the occlusal relationship, and diagnostic wax-up models were done (Fig. 2).

## Preparation for Porcelain Veneers Restoration

Final shade selection was made using a Chromascop Shade Guide (Ivoclar Vivadent, Liechtenstein). The color chosen was DL 3,030. Tooth preparation for porcelain veneers required the removal of tooth structure for adequate porcelain thickness. Following tooth preparation, a gingival retraction cord (Ultrapak Cord #000, Ultradent, USA) was inserted gently into the sulcus, and impressions were taken with additional silicone material (Flexitime, HeraeusKulzer, USA). Temporization was made and the laminate veneers were produced with the IPS Empress Esthetic system (Ivoclar Vivadent, Liechtenstein) using a combined press/layering technique. The veneer's fit, form, and color were checked on the master cast, both individually and collectively. Teeth were cleaned with slurry of pumice, and the laminates were again checked on the teeth. Dual cure resin was used as a luting cement. Finishing was done and occlusion was checked in both centric and eccentric excursions, and any needed adjustments were made. The patient was instructed to brush and floss regularly.

## Treatment Results

The restorations were placed and the postoperative smile of the patient was satisfactory (Fig. 3). Six-month recall showed that the combination of a glazed etched-porcelain to prepared tooth interface, and maintaining good oral



Fig. 4: Postoperative six-monthly follow-up smile of the patient

hygiene gave good gingival response. Patients did not report tooth sensitivity or adverse reactions. The pre- and posttreatment photographs show a significant improvement in esthetics (Fig. 4).

## DISCUSSION

The durability and clinical success of porcelain veneer have been extensively studied. The reported success rate is more than 95%. Satisfactory esthetic results were observed in a 6-year recall of fluorosed teeth restored with it.<sup>7</sup> Other studies have shown that moderate fluorosis or fluorosis-like discolored teeth restored with porcelain veneer demonstrated satisfactory results.<sup>8</sup> Current ceramic bonding systems are based on micromechanical bonding between cement and ceramic restorations. In addition, clinicians need to understand the masking ability and the transmittance of light that shine through porcelain restorations, including factors, such as the thickness and opacity of the materials.<sup>9</sup> Porcelain veneer can completely mask the underlying discolored tooth substance with minimal reduction of sound tooth substance.

## CONCLUSION

Porcelain veneer has become a popular method for solving esthetic problems in dentistry. The current case report demonstrates the use of a porcelain veneer treatment of choice to improve the esthetic appearance of a fluorosis patient, thereby increasing the patient's confidence.

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