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Porcelain Laminates Veneers: Case Report

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Abstract: The print and electronic media is bombarded with models exhibiting perfect smiles. People are giving a lot of importance to the red and white aesthetics i.e., the teeth and the gums. Multiple options are available to treat the problems arising in the highly aesthetic zone. This article describes the restoration of four upper anterior teeth with porcelain veneers. The current porcelain veneers are esthetically superior, conservative and durable treatment modality. Because such treatment is usually elective, all precautions should be taken to ensure treatment is as conservative as possible. Present Case report discusses a patient having discolouration of the teeth in a maxillary arch in the anterior region.

Keywords: Etched enamel, Esthetics, Laminates, Conservative Preparation, and Porcelain.

INTRODUCTION

Extremely minimal preparation with enamel preservation offer best results in esthetic dentistry. In the aesthetic dentistry, the porcelain veneers present the first class clinical conservative modalities. With the successful use of laminates, smiles can be transformed painlessly, conservatively and quickly with long lasting results.¹ The concept of no preparation or minimal-preparation² has followed the development of appropriate enamel bonding procedures. The colour and integrity of dental tissue substrates to which veneers will be bonded are important for clinical success³ using additional veneers with a thickness between 0.3mm and 0.5mm, 95% to 100% of enamel volume remains after preparation and no dentin is exposed.⁴ A number of clinical studies have concluded that bonded laminate veneer restorations delivered good results over a period of 10 years and more^{5,6}. PLVs are the restoration of choice where discoloured teeth are resistant to bleaching such as degree III and IV tetracycline stains, when anterior teeth require major morphologic modifications such as conoid teeth, diastemas, to prolong the incisal edge of the tooth to increase its length⁷, for extended rehabilitation of compromised anterior dentition such as coronal fractures, congenital and acquired malformations where dentinoenamel junction is not altered.^{8,9}

The present case report describes the treatment of discoloured teeth in the anterior dentition with thin porcelain laminate veneers, to restore esthetics and function.

CASE REPORT

A 21-year-old female patient reported to the Department of Prosthodontics, crown & bridge, GDC & Hospital, Srinagar, with a chief complaint of discoloured anterior teeth and wanted esthetic rehabilitation for the same. The patient was unhappy with the appearance of his teeth and restrained himself from smiling due to self-consciousness.

DIAGNOSIS AND TREATMENT PLANNING

A thorough case history of the patient was taken followed by diagnostic impression, mounting with facebow transfer and radiographs including OPG and IOPA. After examination, a provisional diagnosis of enamel hypoplasia due to moderate fluorosis was made (Fig 1). The treatment plan was formulated and options were suggested. Then shade was selected for the anterior laminates.³ The Porcelain laminate veneers were planned on the four maxillary anterior teeth. The patient was informed about the existing condition, treatment procedure was explained and the consent was taken.



Fig.1: Pre-operative view



Fig. 2: Tooth Preparation



Fig 3: Finished and polished veneers



Fig 4: Application of silane coupling agent and drying



Fig 5: Etching with phosphoric acid



Fig 6: Application of bonding agent



Fig 7: Seating the laminate



Fig 8: Curing luting cement



Fig 9: Cemented laminates

TOOTH PREPARATION

The 4 maxillary anterior teeth were prepared to receive porcelain laminate veneers. (Fig 2) Tooth preparation was kept in enamel at a depth of 0.5mm using a depth cutting diamond and a tapered diamond 1 mm in diameter. 0.25 mm chamfer was maintained in the cervical region finish lines were kept at the level of gingival margin. All the internal line angles were rounded to reduce stresses in the margins of the veneers. To mimic the natural curvature of the tooth and to provide even thickness of porcelain two planes facial reduction was done.¹⁰

RECORDING AN IMPRESSION

Retraction cord (No.000) was placed in the facial gingival sulcus for 5 minutes. The full arch impression was made using polyvinyl siloxane material using putty relined technique. An impression of the opposing arch was made using irreversible hydrocolloid material.

Provisional restorations were not required as the tooth reduction was minimal and restricted to enamel. The porcelain laminates were fabricated (Fig 3) and were tried in for shade, fit, marginal adaptation, shape, size, symmetry, and contacts. Patient's approval was obtained at the time of try-in.

CEMENTATION

The intaglio surface of the veneers was etched using 30% Hydrofluoric gel, rinsed and coated with a silane coupling agent.^{1,10,11,12} (Fig 4) The prepared tooth was well isolated and etched with 37% orthophosphoric acid (Universal Etch), rinsed and Prime & Bond NT dentin bonding agent was applied following manufacturer's instructions.(Fig 5,6). Resin luting cement was used for the cementation of the porcelain laminate veneers (Fig 7). Once all gross excess was removed, the luting resin was cured using visible light activation unit for 40 seconds each. PLVs were finished using rotating abrasive disks. (Fig 8,9)

HOME CARE INSTRUCTION

The patient was given oral hygiene and home care instructions for the adequate care of the porcelain laminate veneers and asked to follow a strict follow-up protocol 1 week, 3 months, and 6 months for the assessment of the treatment procedures and oral hygiene measures.

DISCUSSION

The introduction of new dental technology combined with changing patients attitude is slowly altering dentistry's approach to esthetic problems.^{13,14} The patient's acceptance of the porcelain laminate veneer technique nowadays seems to be high. A study conducted by Goldstein and Lancaster¹⁵ showed that patients would readily accept shorter restoration life expectancy (five to eight years) if enamel could be saved by not reducing the tooth for a full crown. The technique is expected in the near future to be drastically simplified. A clinical research to date has shown excellent retention rates. The introduction of high strength dentin bonding agents and reliable resin cement will accelerate the progression towards bonded porcelain used in clinical practice¹⁶.

The advantages of using these restorations are they are biologically acceptable to the body owing to their increased chemical stability, lesser cytotoxicity and reduced risk of causing irritation or sensitivity. These restorations exhibit reduced plaque build-up and its easy removal due to their smoothly glazed surface.^{1,9,10}

Owing to their ceramic thickness (0.30.5mm), the PLVs can be easily fractured even before they are bonded. However, once bonded to the etched enamel surface they integrate with the tooth structure and become extremely durable. The union of etched enamel and porcelain, combined with the bonding composite resin-luting agent with a silane coupling agent provides a long-lasting restoration.^{1,9,10,11}

PLVs should be avoided when enamel is insufficient, the tooth is pulpless, parafunction, unsuitable anatomical presentation of teeth and poor dental care.

It is possible to use composite restorations instead of porcelain laminate veneers to cover up tooth discolouration or unesthetic forms. However, the longevity of composites is questionable as they are susceptible to discolouration, marginal fractures and wear.^{1,9,10}

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