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Aesthetic rehabilitation of discolored maxillary anteriors by porcelain laminate veneers- A case report

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Abstract
Success of anterior esthetic rehabilitation depends on resolution of patients esthetic issues, longevity and good integration with adjacent tissues. By the advent of new materials and techniques, extremely minimal preparations with enamel preparation has improved and provided best results. Porcelain laminate veneers are thin facings of ceramic that have become the esthetic alternative to full coverage restorations. Present case report discusses treatment of a patient having discoloured composite filling of maxillary anterior teeth. The patient was very satisfied with the result and had no complaints during the 1-year follow-up.

Keywords: esthetics, laminates, porcelain, veneer

Introduction
Porcelain laminate veneer is a tooth-coloured material and is a conservative treatment alternative to full-coverage restoration that has evolved since 1983 to harmonize the aesthetics [1].
According to Glossary of Prosthodontic Terms, Porcelain Laminate veneer is defined as a thin bonded ceramic restoration that restores the facial surface and part of the proximal surfaces of teeth requiring aesthetic restoration.
Porcelain laminate veneers have excellent aesthetics, mechanical, and optical properties along with the preservation of tooth structure. Therefore they can be used in cases such as small enamel defects, cracks, for rectifying midline diastemas, spacing, malformed, malpositioned teeth, teeth pretentious with fluorosis and tetracycline stains [2, 3].
Colour stability, mechanical strength, clinical longevity, esthetic appearance and compatibility with periodontal tissues make this material a good choice for such treatment..
A number of clinical studies have concluded that bonded laminate veneer restorations delivered good results over a period of 10 years and more [4, 5]. As being less invasive, for both hard and soft tissues and granting satisfactory aesthetic outcome, porcelain veneers has been widely welcomed by the patients.

Case Description
An 18-year-old male patient reported to the Department of Conservative Dentistry and Endodontics, Calicut with a chief complaint of discoloration of previous restoration in upper front teeth (Fig. 1). Patient had a history of composite restoration in upper anterior teeth 1 year back. He noticed discoloration of the restoration since 4 months. There was no relevant medical history.
On clinical examination, improperly finished and discolored composite restoration was found on the labial aspect of maxillary central incisors. Assessment of occlusion, morphology and optical characteristics was done. Considering the extent of defect and patients esthetic demands, it was found that ceramic veneers were best suited for the condition. Alginate impression was taken and mock-up was done on diagnostic cast (Fig 2). Putty index (Zhermack Elite Hd+ Putty Soft Fast Set) was made using the mock-up. Prior to beginning of teeth preparation, the shade selection was done using vita shade guide and incisal guidance was checked. Tooth preparation was done using putty index as a guide from the mesial, distal as well as palatal aspects (Fig 3). Tooth reduction for maxillary anterior veneers began by using a 0.5 mm depth cutting bur on the labial wall, starting from the gingival level moving towards the incisal edge. The lingual margin was placed above the contact point. A long tapered chamfer ended diamond bur was used to reduce the buccal wall to create definite gingival and interproximal finishing line angles. The chamfer was taken slightly into the interproximal areas so as to allow the veneers to cover all the visible aspects of the teeth (Fig. 4).
After completion of the teeth preparation full arch impressions were made using Putty wash single mix technique and an occlusal registration was made (Fig 5).
The impression was sent to the lab, refractory stone models of the prepared teeth were made and IPS Emax Pres veneers were fabricated Fig 6). Veneers were inspected for fit, marginal adaptation, appearance, translucency, shade and the absence of the black triangle in the gingival area. The try-in was done. Each veneer is individually fitted and checked for marginal accuracy.
For final placement, rubber dam and retraction cord were placed to maintain a contamination free and dry operating field. The teeth for veneers were then pumiced and rinsed. Then, enamel surfaces of the prepared teeth were etched using 37% phosphoric acid (Etching Gel, Kerr, USA) for 15 seconds followed by thorough rinsing with water spray for 20 seconds and then dried. Bonding agent (Adper Single Bond 2, 3M ESPE, USA) was applied in two layers on the etched teeth surfaces using a applicator brush and polymerized with a light-curing unit (Demi LED Light Curing System, 450 nm, Kerr, USA) for 20 seconds. Inner surface of the veneers were etched using 5% Hydrofluric acid (Angelus Porcelain Conditioner) for 1minute and then

one coat of adhesive was applied to the bonding surface of veneer and dried gently for 2-5 seconds. It was not light cured. Veneer luting cement (3M ESPE Rely X Veneer Cement Translucent) was applied to the inner surface of veneers. The veneers are gently pressed to place, and held there with a gloved finger while polymerizing with the light for 5 to 8 seconds. The initial excess cement is removed with the probe. Laminate is then completely cured for 20 seconds each on incisal, buccal and palatal aspects (Fig 7). The patient was very satisfied with the result and had no complaints during the 1 year follow-up (Fig 8)

Fig 1: Preoperative

Fig 2: Mock UP

Fig 3a: Assessment of labial reduction using silicone index

Fig 3b – Assessment of incisal reduction

Fig 4: Tooth Preparation

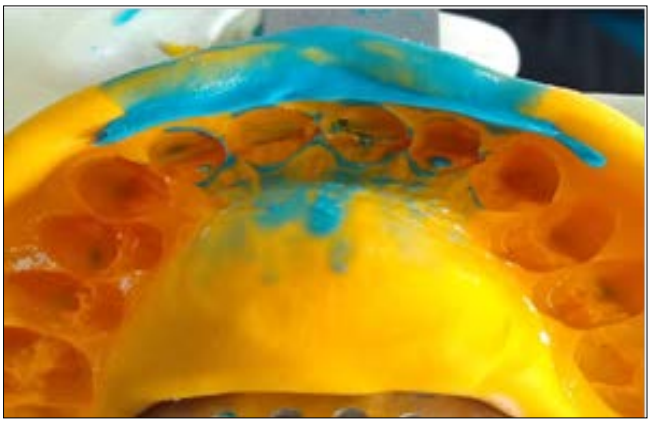

Fig 5: Putty Wash Impression

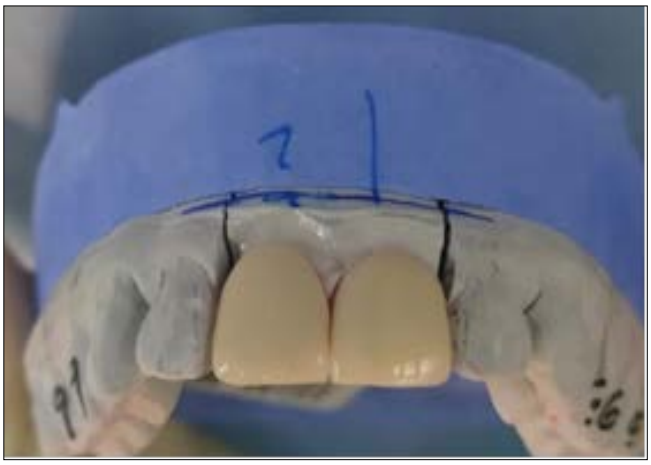

Fig 6a: Labial View

Fig 6b: Incisal View

Fig 7: Postoperative

Fig 8: Follow Up

Discussion

A key element in the diagnostic phase of porcelain laminate veneers is a clarification of the patient's expectations. If it can be determined initially that the patient's expectations are unrealistic, future disappointment may be avoided. A systematic approach to assessing the face and smile in every bit is as important as preparation design and adhesive choice.

It is considered as one of the most conservative treatments, which is able to modify the shape, size, and color of the teeth with the thickness ranging from 0.2 to 0.5mm. Three types of incisal preparation have been described—window, incisal overlapped, and feather preparation [6].

In this case, incisal lapping preparation was done considering the extend of previous restoration and esthetic requirements of the patient. The long-term success of ceramic veneers depends on proper case selection and treatment planning procedures such as shade selection, tooth preparation, cementation technique, and patient maintenance. Failures can be minimized provided there is careful treatment planning, proper material and case selection, effective communication with the lab and if close attention to each clinical stage is addressed to.

Conclusion

The minimally invasive porcelain laminate veneer technique is an extremely versatile clinical procedure that offers advantages of aesthetic quality, conservative preparation, fracture resistance, tissue acceptance, patient satisfaction, and negligible incidence of caries. Ceramic laminate veneers remain the esthetic restoration that best complies with the principles of present day esthetic dentistry. It is least irritating to gingival and adjoining periodontium, avoids the use of metal sub-structures and possesses excellent esthetic quality. Hence, the treatment has positive psychological effects of improving patients' smile with enhanced self-esteem.

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