

Re-Creating A Smile With Porcelain Laminate Veneers: From Planning To Cementation – A Clinical Report.

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Abstract

With the evolution of restorative materials and adhesion procedures in dentistry, ceramic laminates veneers have been used in corrections and dental re-constructions with a high predictability of success, especially because they require less tooth preparation or, in many cases, no preparation, preserving a greater amount of sound dental structure, contributing to pulp and periodontal health. Besides these advantages, the aesthetic treatment using ceramic laminates also presents other promises such as biocompatibility, colour stability, and good optical properties, enabling the dental re-establishment with bio-mechanical characteristics similar to natural teeth. This is a clinical report depicting a case of porcelain laminate veneers using IPS Emax 2 veneers for a case of midline diastema.

Keywords: *Aesthetic Dentistry, Dental ceramics, Veneers, Laminates, Conservative preparation.*

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I. Introduction

A simple glance at someone's smile can tell you a lot about them. People have always struggled with their appearance of crooked, spaced or yellow teeth. If we wind the clock back to 1928, the first dental veneers were used in Hollywood. This film industry paved the way for one of today's most sought after dental cosmetic procedures. Developed by celebrity dentist, Dr. Charles Pincus, dental veneers were initially made to act as temporary solutions to enhance the smiles of on-screen actors during that era. At the end of the day, there was a provision to remove these laminates.

Porcelain laminate veneers however, are a cornerstone of contemporary aesthetic dentistry, offering a conservative yet highly effective approach to correcting anterior dental imperfections such as discoloration, enamel defects, minor malalignments, and spacing issues.¹ These ultra-thin ceramic restorations require minimal tooth preparation, preserving enamel while providing excellent aesthetics and biocompatibility.² The success of veneers is attributed to the advancements in adhesive systems, material science, and digital technologies, including CAD/CAM fabrication, which have significantly improved precision, fit, and long-term clinical outcomes. Veneers are especially beneficial for patients seeking predictable, durable, and minimally invasive solutions with natural tooth-like translucency and colour stability. As the demand for smile makeovers increases, veneers enable clinicians to deliver personalized, functional, and aesthetically pleasing results with minimal biological cost. Their versatility and proven longevity make them a preferred option in comprehensive aesthetic treatment planning.³

II. Clinical Report

A 25-year-old male patient reported to the Department of Prosthodontics and Crown & Bridge with a chief complaint of discoloration and repeated wearing of the previous composite restoration in upper front teeth. Patient gave a history of undergoing direct composite veneer in upper anterior teeth six month back and was dissatisfied with the aesthetics. A thorough visual assessment was performed to evaluate the occlusion, morphologic, and optical characteristics were analysed. On clinical examination which was done after removing the previous restoration, a midline diastema was found in his maxillary anterior region involving the upper central incisors (Fig. 1). It was also noted that the patient had group function occlusion. A highly conservative treatment i.e. the porcelain laminate veneers was selected as the treatment plan best suited to rehabilitate the patient's aesthetic concern.

Diagnostic models and Fabrication of mock-up:

At the onset of the treatment, thorough scaling and polishing was done. After thorough clinical examination and patient consent, impressions for diagnostic models were made using irreversible hydrocolloid (Algitex, Bombay Burmah Trading Company, India). The models were studied to decide the shape and size of the restorations with help of a diagnostic wax up (Fig. 2).

Shade Selection:

The shade selection was done using Vita 3D Master Shadeguide (Vita Zahnfabrik, Germany) (Fig. 3). Facebow transfer was done, incisal guidance was checked. Condylar guidance was set and the casts were mounted on a semi-adjustable articulator (Fig. 4).

Tooth preparation:

Tooth reduction for maxillary anterior veneers began by using a 0.5mm depth cutting bur on the labial wall, starting from the gingival level moving towards the incisal edge. The tooth preparation was kept at a depth of 0.5mm at the enamel using a 1mm diameter tapered diamond bur. Dual convergence was given on the labial surfaces to preserve the anatomical form of the labial surface. The chamfer margin of 0.25mm was maintained in the cervical region with the margin at the level of gingiva. The incisal chamfer was reduced by 0.5mm and the proximal preparation was extended beyond the contact area to avoid visibility of the tooth-restoration junction. (Fig. 5) A slight palatal overlap of 0.5mm was given. Impression of the maxillary arch was made in addition silicone (Photosil, DPI, India) by two-step technique (Fig. 6).

Temporisation:

Provisional restorations which were laboratory fabricated were then placed as the patient had a lot of social engagements and luted using non-eugenol temporary cement (T Cem NE, Avue, India) (Fig. 7). The impression was sent to the laboratory along with the instructions regarding the underlying final shades, the desired length, width and position of the front teeth (IPS e-max 2).

Try-in:

The porcelain laminate veneers were inspected in the dental office prior to the final placement in the patient's mouth for fit, marginal adaptation, appearance, translucency, shade and the absence of the black triangle in the gingival area. They were individually tried-in individually using glycerine as a holding medium to check for marginal accuracy. Patient's approval was obtained at the time of try-in.

Final cementation:

For final placement, care was taken to maintain a contamination-free and dry operating field. The teeth receiving the veneers were then pumiced and rinsed. The 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. Universal primer (Monobond N, Ivoclar, Schaan) was applied in two layers on the etched teeth surfaces using an applicator brush and polymerized with a light-curing unit (Demi LED Light Curing System, 450 nm, Kerr, USA) for 20 seconds. The intaglio surface of the veneers was etched with 4% hydrofluoric acid after which silane agent (Multilink N Primer A and B, Ivoclar, Schaan) was used on the interior surface of the porcelain laminate and were then cemented using resin cement (Multilink N, Ivoclar, Schaan). The veneers were gently pressed in place, and held with a gloved finger while polymerizing with the light for 5 to 8 seconds. The initial excess cement is removed with the probe. After which, final cure was done.

On completion of the cementation procedure, the occlusion was checked in centric and eccentric positions for interferences. The high points were removed and polished. Recall and follow up was done at 6 months. (Fig. 8).

III. Discussion

The use of porcelain laminate veneers has become a widely accepted conservative approach for the aesthetic correction of anterior teeth discrepancies, including midline diastemas. In this case, porcelain laminate veneers were selected to address the patient's midline diastema, offering a minimally invasive alternative to orthodontic or more extensive restorative procedures. The decision to use porcelain laminate veneers is supported by their excellent aesthetic properties, biocompatibility, and long-term colour stability, which contribute to high patient satisfaction.⁴

Midline diastemas often present aesthetic concerns and may negatively impact a patient's self-esteem. While orthodontic treatment is a viable option, many adult patients prefer a quicker solution that yields immediate aesthetic improvement. Porcelain laminate veneers offer such benefits while preserving the majority of the tooth structure, adhering to the principles of minimal intervention.⁵ Moreover, when a fragile veneer is correctly bonded with a suitable resin cement, they demonstrate increased tensile strength, reliable longevity and resistance to wear.⁶

The success of this procedure depends significantly on accurate diagnosis, appropriate case selection, and meticulous planning. In this case, careful shade selection and smile design analysis were performed to ensure natural integration of the veneers with the adjacent dentition. In addition, the use of high-quality ceramics and adhesive bonding systems played a crucial role in achieving a seamless result.

Ultimately, porcelain laminate veneers provided an efficient and aesthetically pleasing outcome for the patient's midline diastema, with the added benefit of requiring minimal alteration to the natural dentition. As supported by current literature, porcelain laminate veneers remain a predictable and conservative solution for addressing localized anterior spacing.⁷

IV. Conclusion

Observational studies and research are proving that as the time passes, dental veneers are an efficient solution for smiles makeover in terms of function and aesthetics contributing to around 96% success. The proper selection of a ceramic system for certain clinical situations may provide greater longevity of these restorations. Moreover, the key to successful treatment in clinical cases is to establish a careful and realistic treatment plan, taking into account the patient's wishes. The time factor is often determinant for the selection of the treatment plan, since some patients want to solve their problem in the shortest time possible.

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Figures



Figure 1: Pre-Operative Photograph Showing Diastema Between 11 And 21.



Figure 2: Laboratory Wax Mock-Up.



Figure 3: Selection Of Shade Prior To Tooth Preparation.



Figure 4: Mounting Of Maxillary And Mandibular Casts On A Semi-Adjustable Articulator.



Figure 5: Steps Of Tooth Preparation In 11 And 21. (Clockwise)



Figure 6: Addition Silicone Impression Of Prepared Teeth.



Figure 7: Provisionalisation.



Figure 8: Post-Cementation Photograph Of Veneers.