



Transforming Smile Aesthetics with Porcelain Veneer – A Case Report

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Abstract : Porcelain veneers are widely regarded as one of the most conservative and aesthetic treatment options for anterior tooth restoration. The porcelain-resin adhesive interface offers excellent strength and reliability when proper clinical protocols are followed. Optimal results are achieved when the preparation remains within the enamel, appropriate surface treatments are carried out, and a suitable resin cement is chosen. Veneers have shown remarkable stability of aesthetics over time, high patient acceptance, and no adverse effects on gingival health when supported by good oral hygiene practices. While minor issues such as marginal discrepancies and limited wear resistance of resin cements have been noted, these factors have minimal influence on the overall clinical performance and longevity of porcelain veneers.

IndexTerms - Porcelain veneers, aesthetics, enamel preparation, adhesive bonding, ceramic restoration

INTRODUCTION

In modern dentistry, achieving a natural and harmonious smile is a key priority, with patients demanding restorations that blend seamlessly with their teeth. Porcelain laminate veneers are widely favored for anterior aesthetic corrections due to their lifelike translucency, color stability and minimal tooth reduction compared to crowns¹. They effectively address discoloration, minor malalignment, fractures and spacing issues while preserving tooth structure². With the advancements in ceramic materials and adhesive bonding, veneers offer a reliable and conservative approach to long-lasting aesthetic rehabilitation³. In cases of enamel-dentin fractures without pulp involvement, veneers can effectively restore form and shade with minimal invasiveness⁴. Here we report a case of a 28-year-old male with an Ellis Class II fracture of the upper left lateral incisor (tooth #22), treated with a porcelain laminate veneer.

CASE REPORT

A 28-year-old male reported to the Department of Career Post graduate Institute of Dental Sciences and Hospital, after a fall, 1 year back that fractured his maxillary left lateral incisor. He had no pain or sensitivity, and intraoral examination showed a clean fracture line without soft tissue injury. Electric pulp testing confirmed the tooth was vital, and a periapical RVG radiograph showed no root or periapical pathology. These findings were consistent with an Ellis Class II fracture (enamel and dentin involved, no pulp exposure). The patient's chief concern was the appearance of the broken tooth and he sought an aesthetic solution. Oral prophylaxis and shade matching were performed, selecting A2 on the Vita shade guide for the anticipated veneer. Depth-orientation grooves (~0.3–0.5 mm) were made on the labial surface using 3-wheel depth guide bur from a prime Veneer Kit to control enamel removal (fig no.4). A round-end tapered diamond bur (as provided in the veneer preparation kit) was then used to remove enamel between the grooves, conserving tooth structure. A chamfer finish line with slight incisal overlap was placed at the gingival margin per veneer protocol (fig no.5). Gingival retraction cord was placed and a C- silicone impression was made for the laboratory fabrication of the porcelain veneer. In the lab, a feldspathic porcelain veneer was fabricated to match the tooth morphology and the selected A2 shade (fig no 6,7). The veneer's fitting surface was etched with hydrofluoric acid gel (per manufacturer instructions) and rinsed. 30% Hydrofluoric acid gel etches the ceramic surface by dissolving the glassy matrix, creating micro-roughness for strong micromechanical bonding with resin cement (fig no.8). A silane coupling agent was applied to the etched porcelain for 60 seconds to chemically enhance bonding to resin as it chemically bonds the etched ceramic surface (inorganic phase) to the resin cement (organic phase) by forming siloxane bonds with ceramic and methacrylate bonds with resin (fig no.9). The prepared tooth was etched with 37% phosphoric acid for ~15 seconds, rinsed and air-dried (fig no.10). It removes the smear layer and demineralizes enamel/dentin to create microporosities, enhancing resin infiltration and micromechanical bonding. A bonding agent was then applied to the enamel and light-cured to form a hybrid layer. It infiltrates the conditioned tooth to form a hybrid layer and resin tags

that lock to the restorative resin on curing (fig no.11). Dual cure resin cement was chosen for luting. The veneer was seated with the cement, excess removed, and the cement light-cured with an LED curing light.

Final occlusion was checked and margins polished. (fig no.12). Final aesthetic result after cementation of the porcelain veneer, showing integration of the restoration with adjacent teeth (tooth #22 is restored to natural contour and shade). veneer remained intact with healthy gingival tissues. This outcome is consistent with the literature, which notes high patient satisfaction with porcelain Veneers when bonding protocols are properly executed.



FIG NO.1 ARMAMENTARIUM USED DURING PROCEDURE



FIG NO.2- PRE-OPERATIVE PHOTOGRAPH



FIG NO.3- MARKING THE INVOLVED TEETH



FIG NO.4- PREPARATION DONE USING 3 WHEEL DEPTH GUIDE BUR



FIG NO.5 – VENEER PREPARATION DONE ON 22



FIG NO.8- HF ACID APPLIED ON INNER SURFACE OF PORCELAIN VENEER



FIG 9-SILANE APPLIED ON INNER SURFACE OF PORCELAIN VENEER AND CURING LIGHT BEING PROJECTED



FIG NO.6- CERAMIC VEENER ON 3-D MODEL BY CADCAM



FIG 7-PALATAL VIEW ON 3-D MODEL BY CADCAM



FIG 12-VENEER PLACED USING DUAL CURE RESIN CEMENT FOR CEMENTATION

Discussion

Porcelain veneers have transformed aesthetic dentistry by offering a minimally invasive yet highly predictable approach for anterior restorations. They are particularly effective in managing Ellis Class II fractures, which involve enamel and dentin but leave the pulp intact. In the case presented, the choice of a porcelain veneer over direct composite restoration was guided by considerations of long-term durability, color stability, and superior aesthetics. Composite resins, although cost-effective and conservative, often display discoloration, surface roughness, and wear over time, whereas porcelain veneers maintain their gloss, translucency, and shade stability for years⁵. Feldspathic and lithium disilicate ceramics, in particular, offer lifelike translucency and a success rate of more than 90% at 10 years when proper bonding protocols are followed⁶. The patient's young age, high aesthetic expectations, and availability of sufficient enamel for bonding made the veneer the ideal choice.

The conservative nature of porcelain veneers is one of their major advantages when compared to full crowns, which require extensive reduction of tooth structure, sometimes involving up to 70% of the natural crown. In this case, careful preparation with depth cutting burs ensured that enamel removal was restricted to 0.3–0.5 mm, preserving most of the tooth structure. The chamfer finish line was deliberately kept supragingival to avoid periodontal irritation and ensure easy maintenance of hygiene⁷.

A critical factor in veneer success is bonding to enamel, as it provides the strongest and most predictable adhesion. Enamel etching with 37% phosphoric acid creates micro-porosities that facilitate micromechanical retention of resin adhesives⁸. Although newer universal bonding systems are available, total etch techniques remain superior for enamel. The internal surface of the porcelain veneer was treated with hydrofluoric acid to create a roughened surface, and a silane coupling agent was applied to promote chemical bonding between the ceramic and resin cement, thereby reducing the risk of debonding⁹.

Dual cure resin cement was selected in this case due to its aesthetic and adhesive properties. The aesthetic outcome was enhanced by proper shade selection and the intrinsic translucency of feldspathic porcelain, which allowed seamless blending with adjacent natural teeth¹⁰. The gingival tissues showed no adverse response because of the well-finished and supragingival margins. Long-term clinical studies report a survival rate of 91–98% over a decade for porcelain veneers bonded to enamel when proper protocols are observed.⁶

Conclusion

When comparing alternative treatments, full coverage crowns are less conservative, risk pulp involvement, and are often less aesthetically pleasing due to increased opacity.¹¹ Composite restorations, though cheaper and quicker, lack the long-term shade stability and wear resistance of porcelain. Leaving the tooth untreated would result in poor aesthetics, risk of hypersensitivity, and potential caries development due to exposed dentin. Hence, a porcelain veneer provided the most balanced solution—combining biological conservation, aesthetic excellence, and durability.

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