

# Minimal Preparation Porcelain Veneer: A Better Option for Restoration of Esthetics

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## ABSTRACT

This article states that the ability to alter the tooth form and color without conventional crown preparation gives this ultra thin resin retained ceramics an excellent esthetic appearance. Porcelain laminate veneers (PLVs) conserve healthy tooth structure and have an obvious advantage. The discolored tooth with multiple restorations was esthetically corrected with the placement of porcelain laminate veneer. Proper case selection is important in obtaining a natural result when treating the dentition with laminate veneers. Patients have accepted the concept of a long-lasting, minimally invasive procedure that favors the preservation of tooth structure. If a patient is already naturally protrusive or has a bulky dentition, a no-preparation or minimally invasive preparation may have undesirable results. The ideal scenario is when a minimal change in shade is required and the teeth are slightly lingually inclined. In the present case, the patient had multiple restorations in single tooth and was slightly lingually inclined compared to the adjacent teeth. The patient benefits from the minimal or no-preparation veneers when treated in combination with shade change and labial restoration.

**KEYWORDS:** Veneers, Minimal preparation, Esthetics

## INTRODUCTION

The popularity of Porcelain laminate veneers (PLV) has increased since its introduction in the early 1980s because of the conservative nature of the technique. Laminate veneers are popular in recent times because of altering tooth form and color without conventional crown preparations which requires extensive tooth reduction, hence veneer preparation significantly reduce the periodontal and pulpal jeopardy often associated with crown procedures while offering excellent esthetic appearance.<sup>1</sup>

Dentistry has experienced a dramatic increase in the use of porcelain veneers for esthetics restoration in color stability, wear resistance and life like appearance. PLV's has many advantages over ceramic crowns, such as minimal tooth reduction, less involvement of surface area of the tooth and better control of shade for superior esthetics. Many of the problems associated with the use of acrylic and composite resins may be avoided by the use of laminate porcelain veneers.<sup>2,3</sup>

## HISTORIC PERSPECTIVE

It is Dr. Charles Pincus who first used temporary thin veneers to enhance actors appearances for close-ups in the movie industry in the 1930s. Bonded ceramic coverage of anterior teeth was only described in the early 1980s, integrating the adhesion principles developed earlier by Buonocore and Bowen, but it was Rochette in France who, in 1975, first proposed the use of bonded

ceramic restorations in the anterior dentition. He described a technique for making porcelain restorations for fractured incisors without operative interference. The ceramic block was baked in the laboratory on a 24-karat-gold matrix cast. A resin was bonded to the silane-treated porcelain block and etched enamel. In view of current techniques, it is obvious that Rochette's approach was visionary. Porcelain veneers bonded to etched enamel evolved from this technique and became popular in Europe through the works of Touati et al.<sup>4</sup> The success of porcelain laminates is not achieved through the use of so-called high-technology or advanced materials but simply by associating two traditional materials, ie, hybrid composite resins and porcelain.

## NEW CLASSIFICATION OF INDICATIONS FOR PORCELAIN VENEERS<sup>5</sup>

### TYPE I TEETH RESISTANT TO BLEACHING:

- Type IA Tetracycline discoloration of degrees III and IV
- Type IB No response to external or internal bleaching

### TYPE II MAJOR MORPHOLOGIC MODIFICATIONS:

- Type HA Conoid teeth
- Type JIB Diastemata and interdental triangles to be closed
- Type IIC Augmentation of incisal length and prominence

### TYPE III EXTENSIVE RESTORATION (ADULTS):

- Type IIIA Extensive coronal fracture
- Type IIIB Extensive loss of enamel by erosion and wear
- Type IIIC Generalized congenital and acquired malformations

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## CASE PRESENTATION

A 21-year-old female patient presented with a chief complaint regarding the esthetics of her maxillary anterior teeth. Maxillary right central incisor exhibited significant multiple discolored restorations and was slightly lingually inclined compared to the adjacent teeth (fig 1&2). After a complete clinical examination using digital photographs, radiographs, and examination for dental disease a conservative treatment plan was developed. The radiograph revealed the tooth was vital and was not root canal treated. Under spectrum of indications, it was of a type I, which is resistant to bleaching and hence with less tooth reduction porcelain laminate veneers was planned. This treatment modality was presented to the patient and, once informed consent was obtained, treatment commenced.



Fig: 1 pre-treatment facial view



Fig:2 Discolored tooth

A minimal-veneer preparation was performed with a Brasseler 8856 Fine Round End Taper 30 micron bur at the cervical area to provide a finishing line for the laboratory technician to create space for a smooth gingival emergence profile. The incisal preparation involved smoothing of rough edges extending onto the lingual. The facial margins were placed approximately at the gingival level. The interproximal facial embrasure was deepened to accommodate the veneer contact point. Contact with adjacent tooth was not removed, incisal edges were rolled and smoothed with the diamond bur

and then with a medium Soft-Lex disc. This disc was also used to smooth all sharp line angles. The finished prepared tooth were cleansed thoroughly with water (fig 3). The Impression was made with putty wash impression technique using light body silicone material. No provisionals were placed. Desensitizer was applied to a prepared tooth to reduce postoperative sensitivity.

### BASIC LABORATORY TECHNIQUE<sup>6</sup>

Porcelain-laminate veneers can be fabricated by the lab-oratory in one of the four ways: platinum foil backing, refrac-tory models, direct castings, or CAD-CAM machining.

**Platinum Foil Backing:** This method can also be used to construct the all-porcelain crown. **Refractory Models:** The use of refractory models is the most commonly used method of porcelain laminate veneer fabrication. The restoration is fired directly on a refractory die. This eliminates the platinum layer but makes repeated fir-ings difficult once the laminate veneer has been removed from the die. **Direct Castings:** Cast ceramic restorations are fabri-cated using the "lost wax" technique. **CAD/CAM Machining:** Ceramic restorations can be manufactured either in the dental office or in the lab-oratory. A model or video image of the preparation is re-quired, and the restoration always requires modification of the surface porcelain to obtain proper color esthetics. Here, in this case, a refractory model was made over which the restoration is directly fired on a refractory die.

### INSERTION AND FINISHING

After fabrication of porcelain veneers (fig 4), they were placed onto the master model, and the marginal integrity was evaluated. The right central incisor was isolated, and acid etched with 35% phosphoric acid. When the acid-etching is complete, a bonding agent was applied. This was thinned and dried thoroughly. The inner surface of veneer was etched with 10% Hydrofluoric acid and silanized to obtain effective bonding. Dual cure Relyx resin cement was placed into veneer and the veneer was carefully seated into position. Great care was taken when handling and seating them because of fragile nature of an extremely thin veneer. Digital pressure was used to seat veneer. When seated fully, veneer was light cured for 60 seconds. Residual cured cement was trimmed with a periodontal scaler (fig 5,6).



Fig: 3 Tooth prepared to receive PLV



Figure: 4 porcelain laminate veneer



Fig: 5 Cemented PLV on max CI



Fig: 6 post-treatment facial view

hence there is no need to fabricate temporary veneers, thereby reducing patient chair time.

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## CONCLUSION

Traditionally, the composite restoration has been the preferred treatment option in the above case. With recent advancement of minimal-preparation veneers, a longer-lasting and more durable result can be provided than with the composite restoration. Porcelain laminate veneers offers a virtually stain-free surface, permanent high luster and polish, and greater incisal edge strength, which is far greater than the microhybrid composites.<sup>7</sup> The tooth preparation for laminate veneers is very minimal and