

## Precise and predictable esthetic rehabilitation through porcelain laminate veneers: A case report

<sup>1</sup>Dr. Roma Goswami, <sup>2</sup>Dr. Anshul Trivedi, <sup>3</sup>Dr. Apoorva Mowar, <sup>4</sup>Dr. Sumit Phukela, <sup>5</sup>Dr. Gowhar Majid

<sup>1</sup>Professor & HOD, Department of Prosthodontics and Crown & Bridge, Subharti Dental College and Hospital, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India (Corresponding author)

<sup>2</sup>Associate Professor, Department of Prosthodontics and Crown & Bridge, Subharti Dental College and Hospital, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India

<sup>3</sup>Professor, Department of Oral and Maxillofacial Surgery, Subharti Dental College and Hospital, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India

<sup>4</sup>Professor, Department of Prosthodontics and Crown & Bridge, Faculty of Dental Sciences, SGT University, Gurgaon, Haryana, India

<sup>5</sup>Prosthodontist Implantologist and Smile Design Specialist, Care and Beauty Medical Complex, Al Ahsa, Saudi Arabia

### Abstract:

Nowadays, patients have become esthetically conscious but at the same time desire a conservative treatment. An alternative to conventional full veneer crowns are direct or indirect laminate veneer restorations. Porcelain laminate veneers are considered to be the treatment of choice for cases with spacing between the teeth, as the preparation is minimally invasive and confined to enamel. However, the success of Porcelain laminate veneers depends upon proper case selection, careful planning and execution of various clinical and lab steps with accuracy. This case report describes a step-by-step rehabilitation of a 25 year old esthetically conscious patient with spacing in maxillary anterior region.

### Introduction:

Beautiful and pleasing smile is desired by all and with the advances in materials and techniques, multiple options are available. However, it is difficult to restore unesthetic dentition with conservative means. Porcelain Laminate Veneers (PLV) are the most conservative options alternative to full coverage restorations to modify smiles in rapid and painless manner. 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 esthetic restoration (GPT 9). Clinical studies report survival rates of porcelain laminate veneers above 80% in up to 20 years of follow up [1-3]. They are the most preferred treatment options in discolored anterior teeth, diastemas between teeth and malpositioned or abnormal teeth like peg laterals. The success of PLV depends upon 1) case selection 2) preparation design 3) proper selection of ceramics 4) proper

cementation material and technique 5) proper maintenance [4].

The aim of this article is to present a clinical case of esthetic rehabilitation of a patient with ceramic veneers with detailed operative protocol and the use of aesthetic preevaluation temporaries (APT).

### Case report:

A 25 Year old female patient reported to the Department of Prosthodontics and Crown & Bridge, Subharti Dental College and Hospital, Meerut with the chief complaint of esthetic concerns due to spacing in upper front region and greyish discoloration around right central incisor. Clinical examination revealed diastema between maxillary central incisors and between maxillary left central incisor and lateral incisor. Greyish discoloration of gingiva was present wrt maxillary right central incisor which was RCT treated and restored with PFM crown (Fig 1).



**Fig 1 INTRAORAL VIEW**

The patient was presented with treatment options to restore the esthetics, which included replacement of PFM crown with All Ceramic crown and porcelain laminate veneers with incisal overlap design on maxillary anterior teeth from right canine of one side to left canine on the other side of the arch. After the clinical examination, radiographs and diagnostic impressions of maxillary and

mandibular arch were made with alginate (Fig 2). Diagnostic models were mounted and occlusion was analysed. Diagnostic wax up was done as it allows in predicting the treatment outcome and the patient can preview the desired appearance of his teeth (Fig 3). Putty index of the wax up was made for aesthetic preevaluation of temporaries in patient's mouth before the tooth preparation (Fig 4-5).



**Fig 2 DIAGNOSTIC IMPRESSIONS**



**Fig 3 DIAGNOSTIC WAX UP**



**Fig 4 PUTTY INDEX**



**Fig 5 PREEVALUATIVE TEMPORARIES**

### **Tooth preparation:**

The desired shade was selected and the maxillary teeth were prepared for the veneers. Depth orientation grooves were placed on the labial surface of the teeth (Fig 6). Chamfer finish line was placed at the gingival margin with 0.3-0.5mm facial and 1mm incisal preparation. The proximal margins were extended into facial and gingival embrasures (Fig 7). Gingival retraction was achieved using retraction cords (ultrapak cord #00).

Impressions were taken with polyvinyl siloxane (Dentsply, Germany) and master cast obtained (Fig 8). Temporization was done by spot etching on the labial surface of each prepared tooth with 37% phosphoric acid. Bonding agent was applied on etched spots and light cured for 20 seconds. The clear matrix made from diagnostic wax up was loaded with temporization material (Protemp plus, 3M ESPE) and placed over the prepared teeth. Light curing for each tooth was done and the matrix removed. The temporaries were refined, adjusted and polished.



**Fig 6 ORIENTATION GROOVES PLACED**



**Fig 7 TOOTH PREPARATION**

### **Cementation procedure:**

Impression of both the arches along with bite registration and diagnostic wax up data was sent to the lab along with work order which had information about shade selection and the ceramic system. Ceramic veneers and the All Ceramic crown were fabricated with lithium disilicate reinforced glass ceramic (IPS emax Press, Ivoclar Vivadent ) (Fig 9-11).



**Fig 8 MASTER CAST**



**Fig 9 WAX PATTERN FABRICATION**



**Fig 10 VENEERS BEFORE GLAZING**



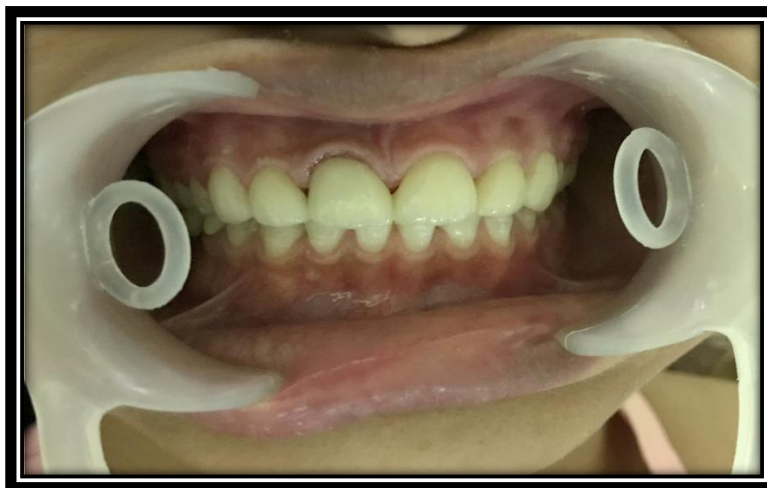
**Fig 11 VENEERS BEFORE GLAZING (PALATAL ASPECT)**

The teeth were cleaned with pumice after removing the temporaries and the ceramic veneers tried in using try in paste (Variolink Veneer try-in paste, Ivoclar Vivadent) to assess marginal adaptation and shade. The intaglio surface of the veneers were etched with 5% Hydrofluoric acid for 60 seconds,

washed and rinsed with water for 60 seconds and dried with syringe. A layer of silane coupling agent was applied next and air dried for 1minute. The prepared teeth surfaces were etched with 37% phosphoric acid for 30 seconds, rinsed and dried and a layer of bonding agent was applied onto teeth and dried. The intaglio surface of the veneers was

loaded with light cured cement ( Variolink Veneer, Ivoclar Vivadent) and placed carefully onto prepared teeth. Excess cement was removed before curing. Each veneer was light cured from labial aspect for 40 seconds followed by 40 seconds from the lingual aspect. Occlusion was checked in

maximum intercuspation and protrusive movement (Fig 12). Finally the veneers were finished using rotating abrasive disks. Patient was instructed to avoid highly colored and hard foods and extreme temperatures for another 72-96 hours.



**Fig 12 POSTOPERATIVE VIEW**

### Discussion:

The aim of the treatment in the present case was to esthetically rehabilitate the patient with conservative treatment means. PLV prevent excessive removal of natural tooth, hence are conservative in approach [5]. Case selection plays a crucial role in the success of ceramic veneers. They are indicated in small enamel defects like cracks to extreme discolorations of teeth and spacing between the teeth. However, incases of insufficient coronal tooth structure, actively erupting teeth, extensively dentin exposure and endodontically treated teeth, laminates are contraindicated. Patients withocclusal interferences and parafunctional habits like clenching and bruxism are also contraindications for treatment with ceramic laminate veneers as they result in crack formation[6]. Occlusion decides the choice of tooth preparation design [7]. Ceramic veneers due to their glazed surface accumulates less plaque and thus keeps gingiva healthy. Due to their thinness, they are prone to fracture but once they are bound to etched enamel surface by composite luting agent, long lasting restoration is produced[8]. Glass ceramics are the first choice for esthetic and conservative rehabilitation cases. Their long term survival rate is about 80%-100% in less than 5 years [9]. Conversely composites are prone to wear,

marginal fractures and discolorations, hence their durability is questionable[10]. PLV have shown a higher survival rate with maxillary veneers compared to mandibular ones, due to wider surface available for bonding with maxillary teeth and thus a less risk for failure [11].The aesthetic preevaluative temporaries help in evaluation of the final outcome of the treatment. After tooth preparation, temporaries serve biologic,esthetic and mechanical purpose for the patient [12]. Thus, ceramic veneers provide excellent esthetic results when proper treatment plan is executed with accurate clinical and lab procedures.

### Conclusion:

Porcelain Laminate Veneers have added a new dimension to esthetic dentistry. Bonded porcelain veneers provide long term success to esthetically compromised patients. Though the treatment is technique sensitive but the surface texture, color, flourescence and overall esthetics obtained are regarded as exceptional.

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