Restoration of Esthetics using Ceramic Laminate Veneer : A Case Report

Dr. Shveta Jain
Reader
Dept. of Prosthodontics

Dr. Sarika Garg
Reader
Dept. of Pedodontics

Dr. Mridul Khanduri
Professor
Dept. of Prosthodontics

Dr. Vikas Ramola
Assistant Professor
Dept. of Oral & Maxillofacial Surgery

Uttaranchal Dental and Medical Research Institute, Mazri Grant, Dehradun (Uttrakhand)

Introduction

Ceramic veneers were introduced in the late 1930's by a California dentist named Charles Pincus[1,2], but only became widely accepted by the dental profession some 50 years later following the introduction of acid etching and porcelain silanisation [3,4,5,6,7,8].

The Main Advantages of Ceramic Veneers are [9,10]:

1. Colour stability Offers better inherent colour control and a natural look as well as ongoing stability of these colours.
2. Conservation of tooth structure Most preparation's have their margins on enamel (depth of reduction between 0.3-0.7mm), with /without involving the incisal edges. Lingually inclined teeth hardly need any preparation.
3. Bond strength bond strength of etched porcelain veneer to enamel surface along with the silane coupling agent is stronger than other veneering systems.
4. Periodontal health because of highly glazed porcelain surface there is less depository area for plaque.
5. High resistance to abrasion compared to composite and acrylic resins.
6. Inherent porcelain strength veneer itself is fragile but once luted to enamel, restoration develops high tensile and shear strengths.
7. Resistance to fluid absorption.
8. Esthetics better colour and surface texture control than other materials, can be stained both internally and superficially.
9. Allows transmission of light for natural appearance.
10. No requirement for provisional restorations unless dentine is involved in preparation.

Disadvantages of Ceramic Veneers [9,10]

1. Time placement is technique sensitive and time consuming.
2. Repair can be difficult.
3. Change of shade difficult to modify colour once the veneers are luted in position on the enamel surface.
4. Tooth preparation: some teeth preparation may be required to prevent potential problems associated with over contouring.
5. Fragile prior to cementation.
6. Cost- more costly than a number of possible alternatives.
7. Post firing modifications not possible.

Clinical Report

A 25 year old male reported with the chief complaint of unesthetic appearance due to lingual inclination of mesial edge of maxillary right central incisor with respect to maxillary left central incisor. He presented with an ovoid facial form and convex profile. He wanted a treatment that could enhance his smile. Intraoral examination revealed that the right central incisor mesial edge was lingually inclined. Good periodontal and gingival health was observed. Radiograph showed no bone loss around anterior teeth. The patient did not wish to go in for orthodontic treatment. Diagnostic impressions and study models were prepared. Mock preparation was done on the cast and diagnostic waxup was done. Patient was explained the treatment plan and his consent was taken to go ahead with it [11].

Oral prophylaxis was done prior to starting treatment. Prior to beginning preparation of the teeth the shade of ceramic veneer was chosen. Tooth preparation was begun using a 0.5mm depth cutting bur on the labial surface to place depth orientation grooves on distal half of tooth at a depth of 0.3mm at the gingival margin and 0.5mm at incisal area. Almost no preparation was done on the mesial part of the tooth intentionally to give it a bulk and to straighten the tooth with ceramic veneer[12]. A long tapered round ended diamond bur was used to prepare the labial surface now creating definite gingival and interproximal finish lines. The gingival chamfer was taken slightly into the interproximal areas to allow the veneers to cover all the visible aspects of the teeth. Incisal edge is prepared by first placing 0.5mm depth orientation grooves and then round end tapered diamond is used to remove the tooth structure between the grooves. The lingual finish line was carried just above the contact point. All the sharp angles were rounded off.

Gingival displacement was done.[13] An impression was made using polyvinyl siloxane impression material. No temporaries were needed as preparation was limited to enamel. Shade was selected with optimum care. Laboratory instructions included the underlying and final shades and the desired shape of tooth was communicated with help of waxup(diagnostic).

In the second visit, after proper isolation and gingival displacement the veneer was tried on the tooth for shape, size, shade match, occlusal interferences, margin fit etc. The prepared tooth was cleaned with a pumice slurry, rinsed and dried. The central incisor was etched and adhesive was applied to etched enamel and tooth side of ceramic veneer. Light curing resin cement (Calibra, Caulk Dentsply, USA) was applied to tooth side of the veneer in a thin layer. The veneer is then lightly pressed into place with finger pressure. Curing light is directed on the tooth for 60 seconds each from facial and lingual. Final finishing of margins is done with porcelain polishing cups and porcelain polishing paste. The margins are checked with a dental probe to ensure there is no excess cement. The patient was advised maintenance care by routine cleaning with a soft toothbrush and low abrasive toothpaste. The patient was advised not to shear food with the veneered tooth.

The patient was recalled after one week to recheck the proximal contact relationships, marginal integrity and gingival health. After restoring with the veneer the patient's malaligned anterior tooth exhibited significant esthetic improvement and the patient was satisfied with the final prosthetic restorations.

Discussion

Ceramic veneers are an extremely useful form of cosmetic dental treatment, but case selection and careful treatment planning is essential. When such preliminary care and attention is taken and allied with correct tooth preparation and bonding practices, then the technique is extremely predictable, yielding beautiful, esthetic restorations that can be life-changing.

References

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Pre-Treatment Photograph

Post Treatment Photograph