



Minimally invasive Esthetic Rehabilitation in anterior Esthetic Zone by Lithium Disilicate (E-Max Press) Based veneering of a discoloured upper central incisor: A Case Report

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Abstract

Lithium disilicate ceramic veneers are minimally invasive requiring very less tooth reduction. These veneers have cosmetically promising results as their properties are similar to that of enamel. Laminate veneer restorations are in use for dental tissue conservation as well as esthetic management option. Lithium disilicate ceramic material yields least thickness veneers and has improved physical, mechanical and optical properties as compared to other materials. This case report aim`s to describe the complete clinical procedure till the cementation of lithium disilicate ceramic veneer. Tooth preparation was done using porcelain veneer preparation burs (Pivo, Korea) and was limited to enamel in this case. Etching of Veneers was done with 9% hydrofluoric acid after that a silane coupling agent was applied. Teeth were etched using 37% phosphoric acid followed by application of bonding agent. Cementation of veneer to the tooth structure was done with dual core resin cement. Just before light curing the resin cement a layer of oxygen barrier was also applied.

Keywords: *Esthetic, lithium disilicate, veneers.*

Introduction

The restoration of the anterior teeth has been the biggest challenges of esthetic dentistry. One of the treatment options are full-coverage crowns with the shortcoming including the excessive removal of healthy tooth structure also leading to damages to the adjacent soft tissues. Due to this the use of laminate veneers has gained importance in recent years because of its minimal invasiveness and better esthetics.¹

The ceramic restorations are more durable and last longer owing to superior mechanical properties as compared to direct composite veneers if the clinical procedure is properly performed.²

Both enamel and silicate ceramic materials have similar mechanical and optical properties. So this material is used in preference to others for the replacement of lost enamel.³ Lithium disilicate ceramic material has greater fracture toughness and biaxial strength as compared to other materials so it yields thin veneers.^{4,5}

Case Report

A young male patient in his early thirties presented to the department of Conservative dentistry and Endodontics of Bhojia dental college and hospital (Baddi, HP) with the complaint of discoloured upper left central incisor since a few years. The

tooth was completely asymptomatic and patient sought treatment due to esthetic concerns only, no history of traumatic injury to the affected tooth was given by the patient, an IOPA of the tooth was taken to rule out any pathology.

A2 shade was selected using the vita classic shade guide. Minimal tooth preparation was done using porcelain veneer preparation burs (Pivo, Korea) as shown in Figure 1(b). The preparation was confined to enamel with no dentin involvement as shown in Figure 2(a). Labially, 1 mm of tooth preparation was done. Two plane facial reduction was done using a round end tapered diamond to maintain the natural contour of the tooth and to ensure uniform thickness of the veneer. An “elbow preparation” type of extension just short of breaking the contact was done proximally. To improve translucency incisal reduction of 1 mm was done leaving a butt finish line configuration on the lingual surface and to provide positive seat for luting. To achieve a definitive margin, labially the gingival extensions of the tooth preparation were kept equigingival also encouraging correct positioning of the veneer while cementing. All the internal line angles were rounded to reduce the stresses in the margins of the veneers. The impression of the prepared tooth was made with Zetaplus C Silicone (Zhermack). Try-in was done after receiving the veneer from the dental lab. The veneer was checked for marginal adaptation, contour, alignment and shade. All these were found to be satisfactory.

Veneer was conditioned applying 9% hydrofluoric acid (Porcelain Etch, Ultradent) on the internal surfaces for 1 min, followed by rinsing with running water and air-drying. Then, a silane coupling agent (Ultradent Products) was applied on the internal surface for 60 sec followed by air-drying. The tooth was etched by the application of 37% phosphoric acid (Total Etch; Ivoclar Vivadent) for 15 sec followed by thoroughly rinsing and drying. After this bonding agent (Tetric N-Bond, Ivoclar Vivadent) was applied followed by gentle air-drying, and polymerization for 40 s. Dual-cure resin cement (Fusion Ultra D/C, Prevest Denpro Ltd) was used for luting the porcelain veneer.

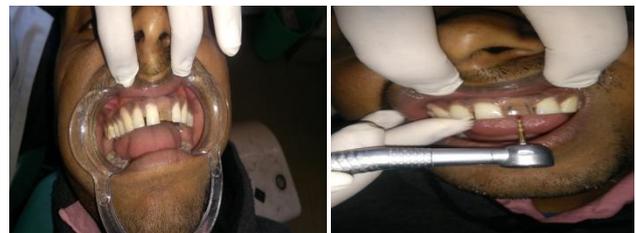


Fig.1 (a) Preoperative patient photograph
(b) Markings of mesiolabial and distolabial line angles and three tiered depth limiting diamond bur for minimal tooth reduction

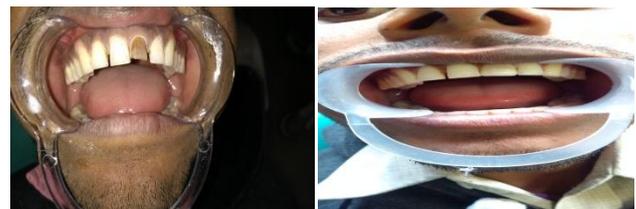


Fig 2 (a) Patients photograph after tooth preparation
(b) Patients photograph after veneer luting

Discussion

The full coverage crowns used earlier for esthetic corrections was thought to an invasive procedure as it required removal of 62 to 73 percent of coronal hard tissue.⁴

With the advent of newer materials like lithium disilicate ceramics, fabrication of veneers with 0.1–0.7 mm thickness is now possible.⁶

Thus these veneers are minimally invasive and even allows placement without enamel cutting.⁴

Modifications of the shape and size of the teeth, corrections of malpositioned teeth, fractured front teeth, closure of diastema, and tooth shade correction resistant to bleaching are the indications of these veneers.^{2,7} Severe parafunctional habits such as bruxism, without overjet anterior deep bite, and reduced interocclusal space are the contraindications.²

Porcelain veneers have a survival rate of 94% compared to indirect and direct composite veneers which have a survival rate of 90% and 74%, respectively.⁸ Other studies have shown that rate of success, for a clinical service of approximately 10 years, for bonded porcelain laminate veneers is greater than 90%.⁹⁻¹¹

Castable disilicate ceramic veneers are most thin. Its biaxial strength and fracture toughness is more than

other materials. It is either processed as pressed ceramic or as lithium metasilicate an easy- to- trim “blue” intermediate phase.⁴

A successful cementation depends on procedural accuracy of tooth preparation, conditioning of ceramic veneer and tooth structure, and the cementing agents of the veneer. phosphoric acid (37%) is used for conditioning the surface of the tooth followed by adequate rinsing with water. Reduction of surface energy of enamel through salivary contamination should be prevented.⁷ Using hydrofluoric acid and silane Conditioning of the inner surface of ceramic veneer is done. The duration of application can vary depending on the composition of ceramic.⁷

Conclusions

Indicated in cases with malformed, malaligned, discolored and teeth with extensive restorations, lithium disilicate ceramic veneers are thinnest and can be successfully used without removing excessive tooth structure.

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