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ESTHETIC REHABILITATION OF MAXILLARY ANTERIOR TEETH WITH LITHIUM DISILICATE VENEERS: A CASE REPORT

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ABSTRACT

Rehabilitation of anterior esthetics using veneers following the principle of minimal teeth preparation offers predictable result in dentistry. This case report aims to describe prosthetic rehabilitation of anterior esthetic by restoring the six anterior teeth with pressable lithium disilicate veneers. Step by step procedure has been described with regards to diagnostic evaluation, mock up transfer, teeth preparation and cementation. Reproduction of optimum esthetic and patient satisfaction confirmed the success of the treatment.

INTRODUCTION

Ceramic veneers have gained wide acceptance in restoration for aesthetic dentistry. They fulfill the criteria of requiring minimal tooth reduction. Apart from being esthetic, they are incomparable in terms of longevity. Advances in ceramic materials and veneering techniques allow practitioners to restore function and esthetics using conservative and biologically sound methods as well as promoting long term oral health.^{1, 2} However, they also have some limitations like the procedure is technique sensitive; repair can be difficult, fragile before cementation. Veneers are not indicated in heavily restored teeth or teeth with insufficient enamel, discolored tooth.³ Success of the restoration depends on understanding of the principles used in fabrication and its application. Long term survival rates of veneers are high if correct cementation protocol and optimum oral hygiene is followed.⁴

This case report describes rehabilitation of erosive wear in anterior teeth with lithium disilicate ceramic veneers, to restore esthetics and function.

Case Report

A 35 year old female patient reported to the department of Prosthodontics, Goa Dental College, India with chief complaint of discolored and worn off maxillary anterior teeth. The patient was unhappy with the appearance of her teeth and restrained herself from smiling. On thorough assessment following a diagnostic protocol, which includes collecting data

on the patient's medical history and dietary history, occupational history, dental history, and oral hygiene methods, it was revealed that the cause of the erosion was dietary intake of acidic foods and drinks. There was a history of rehabilitation of severely eroded posterior teeth three months back and composite restoration on her maxillary incisors which got discolored and chipped off. (Figure 1)



Figure 1 Preoperative intraoral view

The following steps were followed.

Informed consent

After diagnosis, treatment plan was formulated and different alternatives were suggested to the patient. Since veneers are an esthetic procedure and have benefits as well as risks with the functional and aesthetic objectives, informed consent of the patient was taken. Patient consented to the treatment of maxillary teeth correction with ceramic veneer; however she refused for the treatment of mandibular anterior teeth.

Shade selection

Selection of shade was done such that the shade of the veneer is compatible with the posteriorly restored teeth and also the mandibular anterior natural teeth.

Impression and Facebow transfer

Following this, diagnostic impressions were made in irreversible hydrocolloid (Vignette chromatic, dentsply) and cast poured with gypsum stone. (Kalstone, Kalabhai Pvt., Ltd., Mumbai, India) Face bow transfer was done and casts were mounted on semi adjustable articulator. (Figure 2)



Figure 2 Diagnostic Facebow transfer

Diagnostic evaluation

On studying the cast, discrepancy was noted in the lengths of central incisors. In addition to correction of this discrepancy, certain considerations like accentuating the incisal dominance, providing a flat defined incisal plane for the lower anteriors and occlusion free from interferences were carried out during diagnostic wax up procedure. (Figure 3)



Figure 3 Diagnostic wax up

Mock up transfer

Mock up transfer was done intraorally with bis acryl composite material (Visalys Temp Temporary Crown and Bridge Material, Kettenbach LP) using putty index (panasil putty, Kettenbach gmbh & Co. KG) to evaluate the diagnostic wax up.

The patient was evaluated on the basis of phonetics, esthetics and occlusion and necessary corrections made. With the patient's approval, recording of this transfer was done by

photographs and by making cast which was sent to the lab as a guide for fabrication of veneers. (Figure 4)



Figure 4 Intraoral mock up transfer

Teeth preparation and impression

- A. Teeth Preparation was minimal such that 0.25 mm chamfer was maintained in the cervical region since the teeth were already eroded. Finish lines were kept at the level of gingival margin. To avoid visibility of the tooth restoration junction, the proximal preparation was extended beyond the contact area. Since little increase in height was desirable, the incisal chamfer was extended palatally. The centric stops were carefully avoided during preparing the palatal finish line.
- B. After the tooth preparations, a small diameter retraction cord (number 00 Ultrapak, Ultradent Inc.) was placed in the bottom of the sulcus to obtain an adequate gingival displacement. Two stage impression was made using addition silicone elastomeric material, putty and light body consistency. (Flexceed kit, GC India) (Figure 5)



Figure 5 Teeth preparation for veneers

Temporization

Provisional restoration was fabricated using bis acryl composite material to give the patient a preview of the final result. (Figure 6)



Figure 6 Temporaries placed

Try in of Veneers

The veneers were fabricated with lithium disilicate pressable ceramic; the six veneers fabricated were carefully inspected prior to trial intraorally for any flaws. Following this, the teeth surfaces were cleaned, teeth isolated and each veneer was tried using KY jelly individually first to assess fit and marginal adaptation and then together to evaluate the contact points.

Veneer preparation

Veneers were arranged denoting the position of tooth in the arch to prevent incorrect placement and breakage. Each veneer was then embedded in putty to carry out veneer preparation for cementation. Inner surface was first etched with 9.5% hydrofluoric acid for 20 seconds. The acid was then thoroughly cleansed with air-water spray to remove any residues remaining on the surface. Silane primer was then applied to the etched porcelain surface for 60 seconds and air-dried.

Intraoral preparation

Teeth preparation was etched using 38% phosphoric acid for 30 seconds, washed for 60 seconds, gently dried and dentin-bonding agent was applied. Cementation was carried out using dual cure composite resin cement.

Cementation

The procedure for cementation was performed on two teeth at a time starting from the midline continuing distally. The laminates were spot cured for 5 seconds initially, Excess cement removed and then complete curing was done for 20 seconds.

Finishing and polishing

On completion of the cementation procedure, finishing was carried out by removing any residue of cement with no. 12 blade. Occlusion was checked in centric and eccentric positions for interferences. (Figure 7, 8)



Figure 7 Post cementation intraoral view



Figure 8 Cementation of veneers (palatal view)

DISCUSSION

Conservative rehabilitation of anterior teeth can be done with both direct⁵ and indirect methods⁶. The latter technique is favourable for both the clinician and the patient since preview of final result is possible. For this reason, careful case selection and diagnostic approach is highly recommended especially when the area of treatment lies in the esthetic zone.

In this case report, pressed lithium disilicate ceramic material have been used due to its superior properties like greater biaxial strength and fracture toughness compared to other ceramics.⁷ Try in of veneers before cementation with the KY jelly simulates cementation with clear bonding cement and optically connects the veneer to the tooth. Cementation was carried out using dual cure resin cement following Tack and Wave technique⁸. Cementation of multiple veneers can be a little tedious, however, breaking them down into manageable numbers is recommended.

Since the long term success of the veneers depends upon the patient's oral hygiene, in addition to correct cementation protocol, the dentist should plan a careful follow-up program and give patients appropriate instructions for maintenance and preservation of the obtained success.

CONCLUSION

Conservative reduction of tooth structure always forms the basis of ideal restorative dentistry. The restoration delivered in this case report followed the principle of minimal tooth reduction to achieve best esthetic for the six maxillary anterior teeth. The integration of various factors in diagnosis as well as treatment protocol helped to achieve the success to the treatment

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