

REDEFINING SMILES

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ABSTRACT

veneers have been one of the most used restorations for aesthetics. Aesthetics is a subject that is objective which needs thorough communication between the dentist, patient, and ceramist. Case selection and formulation of a treatment plan is crucial. The use of mock-ups, followed by a wax model, aesthetic pre-evaluative temporaries, and an index, provides the best aesthetic, phonetic, and functional outcome. The use of diagnostic Provisionals has a further impact on this solid communication. Patients have the chance to evaluate the aesthetics, function, and phonetics not only by themselves but also with their peers.

KEYWORD: conservative preparation, diastema closure, esthetic dentistry, ceramic veneers, lithium disilicate

INTRODUCTION:

A smile helps a person to portray one's inner self and feelings. A good smile does not only boost self-confidence but also enhances self-esteem. In today's world where social media plays a crucial role and everyone wanting to have celebrity smiles, veneer makes this dream possible.

A common feature about the maxillary anterior teeth is the presence of diastemas between teeth, which can greatly affect the smile and make it unpleasant for the patient. Diastema can be due to asymmetry, anatomical tooth size discrepancies, tooth angulations, the presence of a high labial frenal attachment, other developmental, pathological, or iatrogenic determinants.

Diastema closure is a frequently requested, technique-sensitive aesthetic procedure. There are many techniques and materials that can be employed to close diastemas. While direct composite techniques can be economical and successful, they do present challenges in achieving satisfactory clinical and esthetic results. Traditional porcelain veneer placement may offer an excellent esthetic result, but typically requires the removal of tooth structure; as such, this is an irreversible procedure.¹

Advances in adhesive material technologies has allowed a variety of more conservative indirect restoration techniques.²

Recently "no-preparation" also called "additional" or "minimal preparation" veneers have been proposed as a conservative option compared to conventional veneers.³⁻⁵

This case report presents the case of a maxillary diastema closure in a healthy dentition by means of ceramic veneers simply cemented onto the natural teeth and with minimal tooth preparation.

CASE REPORT

A 24-year-old female patient reported to the Department of Prosthodontics, Crown and Bridge, D. Y Patil University, School of Dentistry, Navi Mumbai with a chief complaint that she does not like her smile because of the shape and spacing between her upper teeth.

Clinical examination revealed class I occlusion with spacing between upper central and lateral incisors. The amount of overjet and overbite were 3 and 2 mm, respectively. Low attachment of labial frenum was noted. A mesial angulation of 11,21 and labial inclination of 12,22 was noted. Oral hygiene was satisfactory. Radiographic examination showed presence of root piece with

respect to 15. Various treatment alternatives such as fixed or removable orthodontic appliances and the patient's affordability in terms of treatment time were discussed. However, due to prolonged treatment and aesthetic issues related to these appliances, patient did not give her consent to orthodontic treatment modalities. The final treatment plan included Ceramic veneers on 12,11,21,22.

Galip Gurel's Veneer preparation technique was used.⁶

The procedure begun with analysis of the existing smile to visualize the final outcome. Function analysis of the teeth was done. Pre-operative diagnostic photos were taken. (fig. 1,2,3,4)

Diagnostic impressions were made with irreversible hydrocolloid material -alginate (Zhermack Tropicalgin Alginate) and sent to the lab for the fabrication of a wax-up(Fig. 5). Shade selection A2 was done in the first appointment using Vita Shade Guide.

Putty index (Hydrorise Putty, Zhermack dental) of the wax up was made. Aesthetic Pre-contouring (Fig. 6) of protruding teeth was done so that the putty index can fit passively.

Aesthetic Pre-Evaluative Temporaries(Fig. 7) were fabricated to know the final outcome of the smile. This was done by fabricating a transparent stent of the wax up model. It was filled with Pro Temp 4 (3M) and placed over the unprepared teeth. Excess material was removed. APT's were checked for occlusal discrepancies and corrected.

Hence the smile design was achieved without any major tooth preparation with APT's. APT's should mimic the final outcome in terms of shape, contour and texture. Lip support, aesthetic length, function movement for anterior constrictions and phonetics were evaluated. Patient was asked to use the APT's and evaluate for function and esthetics .

Tooth preparation for the final restoration was done, as per Galip Gurel's Veneer preparation technique through the APT's (Fig. 7). Depth grooves of 0.5mm were given by depth diamond cutting burs (DM-303,Mani inc.) followed by preparation with a rounded taper diamond bur(TR-13F, Mani Inc.). Supragingival chamfer margins were given. For incisal preparation depth grooves of approximately 1mm were given at an angle of 90 degrees and rounded off the labio-incisal line angle. Incisal preparation was necessary to reproduce the incisal translucency of natural teeth. Preparation was finished (Fig 8) by a finishing bur. (TR-1eEF, Mani Inc.) After the

preparation putty index was used to check and verify the correct preparation depth. Gingival displacement was obtained using retraction cord (#000 and #00, Ultradent) (Fig 8). The retraction cords were removed and two stage final impression was made using heavy body and light body addition polyvinyl siloxane material (Hydrorise Putty, zhermack dental).(Fig 9)

The temporary restorations (Fig 10) were fabricated with pro Temp 4 (3M) after spot bonding while the veneers were being fabricated in the lab. The veneers were fabricated in Lithium disilicate(ivoclar). (Fig 12)

The patient was recalled after a week. The proximal and cervical adaptation, periodontal relation, and asymmetries were checked. Veneers were tried in with try in paste (Variolink Veneer Try-In, Ivoclar Vivadent) and confirmed. Transparent shade of base and catalyst were used . Cementation protocol goes as follows-

- The internal surfaces of the veneers were etched with 9.5% hydrofluoric acid for 20 seconds (PULPODENT COPORATION , WATERTOWN ,USA).
- The surfaces were washed with water and dried and were silanized with a silane coupling agent (Monobond Plus, Ivoclar Vivadent) and covered .
- The enamel was conditioned with 37% phosphoric acid for 30 seconds (Total Etch) and rinsed and dried, while the adjacent teeth were isolated and protected with Teflon tape.
- The adhesive agent (ExciTE F DSC, Ivoclar Vivadent) was applied on the enamel. Transparent dual cure resin cement (Variolink Veneer, Ivoclar Vivadent) was used to cement the veneers to provide the highest color fidelity. It was tac cured for 3 secs and the excess cement was removed with a blade, and completely cured for 30 seconds.
- Occlusal contacts were marked, protrusive and lateral movements were checked. The patient was satisfied with the post operative (Fig.13,14,15,16) results.

DISCUSSION

There are several types of veneers used commonly in practice today. Fired or pressed ceramic veneers are the most popular. Thin ceramic veneers bonded to acid-etched enamel have been suggested as the most acceptable, predictable type of veneer. Direct resin-based composite veneers have been encouraged for the situations in which they are indicated. Thick ceramic veneers placed over deeply cut dentin surfaces have been discouraged because of the associated

gross reduction of tooth structure, common postoperative tooth sensitivity, occasional deficiency in retention and unpredictable longevity⁷

Traditional approaches to veneer preparation is usually freehand. It can lead to major enamel reduction and dentin exposure. As, the preparation thickness is frequently equal to the average enamel thickness.

The APT technique is based on the “additive mock-up” design, which takes into consideration the final volume of the restoration and has allowed a greater number of dental preparations to be completely confined to the enamel (80.5%). Without the guide, the dentist resorts to freehand preparation, invariably exposing dentin. To avoid overpreparation, it is advised to prepare the teeth as per the APT. This approaches used to preserve the enamel, to form a superior bond to the dentin, reduce post cementation sensitivity, enhance support for the final restoration, and reduced endodontic intervention.⁶

Due to the color stability and translucence of the veneer, it is necessary to use the test paste prior to cementing to simulate the cement color. Because the thinness of the restorations does not permit masking color changes with chemically activated cement, the cementing protocol is critical to the longevity of treatment.⁸⁻¹⁰

The main objective of any restorative case involving these restorations is to keep the preparation simple and be conservative in reduction of sound tooth structure.¹¹

CONCLUSION

Veneers are one of the most conservative and aesthetic technique that we can used when restoring the smile. Since their development 25 years ago, interpreting the indications and applying the correct techniques has been key to providing their longevity.¹²

APT technique facilitates diagnosis, communication, and preparation, providing predictability for the restorative treatment. Limiting the preparation depth to the enamel surface significantly increases the performance of veneers.

The recovery of function and smile esthetics of a patient with maxillary diastemas with ceramic veneers allowed conservative preparations. Detailed planning, correct selection of dental materials, and quality communication with the prosthetic technician contributed to a harmonious smile and the evident satisfaction of both patient and professionals.



Figure1: PRE-OP
EXTRA-ORAL
FRONT
PROFILE



Figure2: PRE-OP SMILE



Figure 3: MAXILLARY OCCUSAL VIEW



Figure 4: FRONTAL VIEW



Figure 5: WAX UP



Figure 6: AESTHETIC PRE-RECONTOURING APR

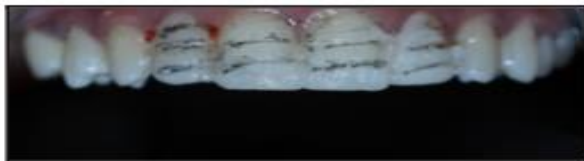


Figure 7: TOOTH PREPARATION
THROUGH APT



Figure 8: FINAL TEETH PREPARATION



Figure 9: FINAL IMPRESSION



Figure 10: TEMPORARY RESTORATION FABRICATED



Figure 11: FINAL RESTORATION



Figure 12: POST OPERATIVE FRONTAL VIEW



Figure 13: POST OPERATIVE OCCUSAL VIEW



Figure 14: CLOSE UP VIEW



Figure 15: POST OPERATIVE



Figure 16: POST OPERATIVE SMILE

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