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Treatment options for an aesthetic outcome - a Case Report

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ABSTRACT

It's said beauty is power and smile is its sword**.** Every person is unique and so is their smile. It is the perception, talent, artistic flare and skills of the dentist in listening to the specific desires of his patient which helps to create a smile that suits the face and personality of each individual patient. Porcelain laminate veneers are the most conservative and esthetic restoration used for enhancing esthetics. These days the veneers used are far superior esthetically and durable functionally. This case report describes the restoration of maxillary central incisors and right mandibular canine with porcelain laminate veneers.

Keywords: Laminate Veneers, Esthetics, Porcelain, Temporization, Impression.

INTRODUCTION

Porcelain laminate veneers have evolved over the last several decades and have become an esthetic alternative to ceramic crowns and traditional porcelain fused to metal crowns.[1,2] With their help smiles can now be transformed and recreated in a much painless, conservative and faster way with long lasting results. Veneers have an excellent tissue response and the surface finish is as good and smooth as that of the natural tooth.[2,3] The veneers exhibit natural fluorescence and absorb, reflect and transmit light exactly as does the natural tooth structure.[1,2,3]

Porcelain laminate veneers are an exciting development in the dental armamentarium which allows a transition in shape, appearance, color, size, spacing and positioning of the teeth to some extent.

CASE PRESENTATION

A 45-year healthy female patient reported in Swami Devi Dyal Hospital and Dental College, Barwala with the chief complaint of irregularly shaped upper anterior teeth. She complained about the bad shape and appearance of upper center teeth and asked for a pleasing and better smile.

Extra-oral examination showed no abnormal finding, no sign of pain or tenderness in the head and neck area and no clicking or tenderness in TMJ area or muscles of mastication.

Intra-oral examination revealed missing 21 and 12 (as in figure 1 and 2) due to trauma about forty years ago followed by mesial migration of adjacent teeth. Also maxillary midline was shifted to right along with reverse plane of maxillary anterior teeth. The right mandibular canine was also lingually inclined. The patient presented generalised enamel hypoplasia, fair oral hygiene, staining & general plaque accumulation

and mild gingival recession. Patient's past dental history revealed crowns on 46 and 37 about 5 years ago. Patient also gave history of extraction of 35 ten years ago. Various treatment modalities were discussed for the case including composite veneering, all ceramic crowns and porcelain fused to metal crowns. Considering esthetics to be the prime concern of the patient and limitations of other treatment modalities, it was decided to give porcelain laminate veneers due to their excellent esthetic properties and minimally invasive nature.

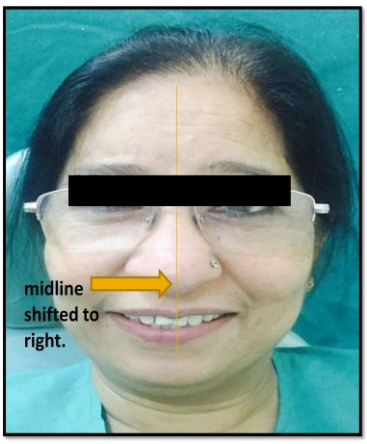

Fig 1 midline shifted to right

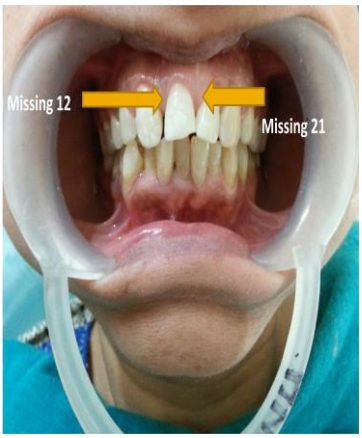

Fig 2 missing teeth w.r.t 12 and 21

TREATMENT PHASE

Esthetic treatment of the patient was planned by using treatment modalities like-:

1. Recontouring of teeth
2. Redistribution of space
3. Veneers.

Six anterior maxillary restorations were required while one was required for right mandibular lingually inclined canine. But keeping cost factor in mind, patient agreed for 2 maxillary anterior restorations and one mandibular restoration.

The choice is based upon not only on the wants and desires of the patient but also on the prognostic outcome of restorations i.e. mainly the functional longevity.

Every case has prematurities not suitable for occlusion. Prematurities in occlusion have to be corrected before doing any restoration. Hence, a facebow transfer (figure 3) and interocclusal records (figure 4) were taken in order to proceed with the case. The maxillary and mandibular casts were then mounted on Hanau wide vue articulator with the help of interocclusal records (figure 5). On intra oral examination the premature contacts were evaluated in both protrusive and excursive movements and eliminated (figure 6)

ACCORDING TO DAWSON'S 5TH REQUIREMENT OF OCCLUSAL STABILITY: [4]

"Non-interference of all posterior teeth on the working side with either the lateral anterior guidance or the border movements of the condyles (immediate disclusion is ideal if achievable)."

The size and shape of the restoration was decided with the help of diagnostic wax up (figure 7). The patient was shown a mock up (figure 9) after clear template fabrication (figure 8) and the consent to proceed with the treatment was taken.

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Fig 3 facebow transfer Fig 4 interocclusal bite records Fig 5 mounting done on Hanau wide vue

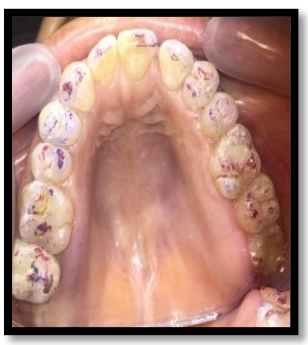
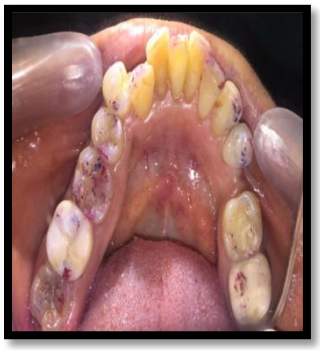

Fig 6 Premature contacts were checked with the help of red and blue articulating paper in both protrusive and eccentric positions.


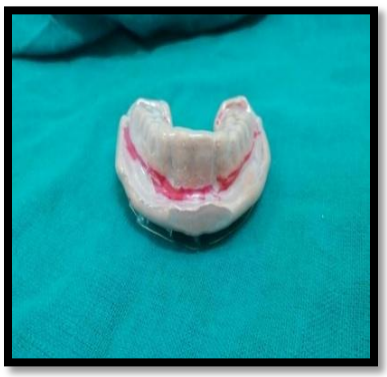


Fig 7 Wax build up Fig 8 Template fabricated Fig 9 Mock up done

Tooth reduction began by using a 0.5mm depth cutting bur .Very less reduction was done on the mesial aspect of left lateral incisor in order to compensate for the midline shift (figure 10). Tooth preparation was done for veneer also on bucally aligned mandibular right canine in order to camouflage. Using single cord gingival retraction technique (No. 000) (figure11) full arch impressions were taken with a polyvinyl siloxane impression material (figure 12) (Addition silicone, prime dental). Lab instructions included the underlying and final shades, the desired length, width and position of front teeth.

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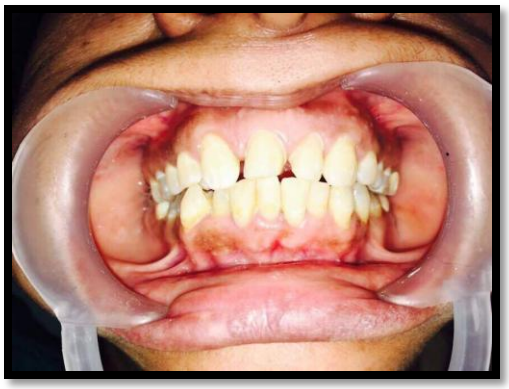

Fig 10 window preparation done for veneers

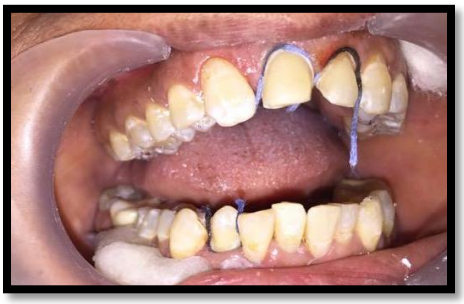

Fig 11 Single cord placed on prepared teeth (buccal view)

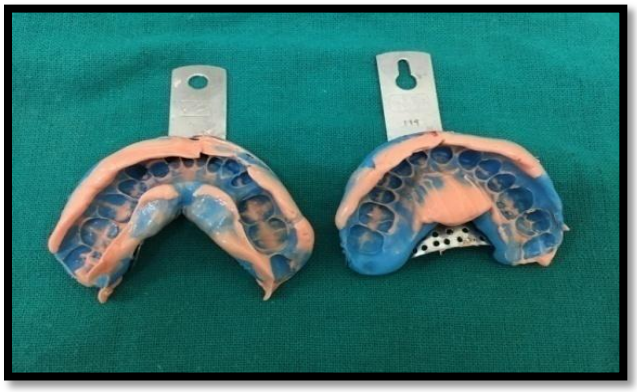

Figure 12 Final impression

TEMPORIZATION

The temporary restoration was done with light cure composite resin after spot etching the enamel surface (figure 13).

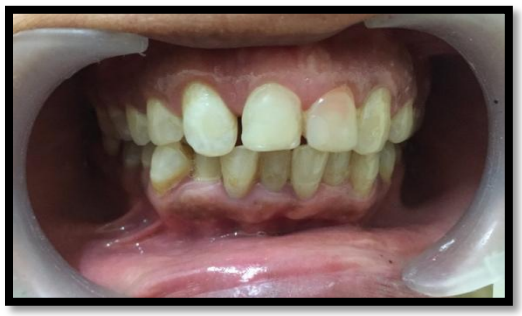

Figure 13 Temporization done

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VENEER CEMENTATION

The temporary veneers were removed, the teeth were cleaned and polished with pumice and dried. After verifying the fit, marginal adaptation and esthetics of the veneers, they were removed and the inner surface of the veneer is treated with 9% buffered hydrofluoric acid (ultradent) for 90 seconds, washed under running water and dried. A layer of silane coupling agent (ultradent) was applied on the inner surface of the veneer and gently air dried after one minute. The silane coupling agent forms a chemical bond between the porcelain and resin, besides it also reduces the marginal leakage and discoloration. The silanised surface is coated with a thin layer of bonding agent thinned with air from the air syringe. The surface of the tooth is conditioned by using 37% orthophosphoric acid etching gel (15 seconds on dentin and 30 seconds on enamel). Rinse and dry leaving prepared surface moist. Apply bonding agent to moist the preparation. The union of etched enamel and porcelain, combined with bonding resin-luting agent with silane coupling agent provides a long lasting restoration. Relyx 3M translucent shade was used to lute the veneers (figure 15).[5]

Fig 14 hydrofluoric acid and silane coupling agent Fig 15 relyx 3m cement

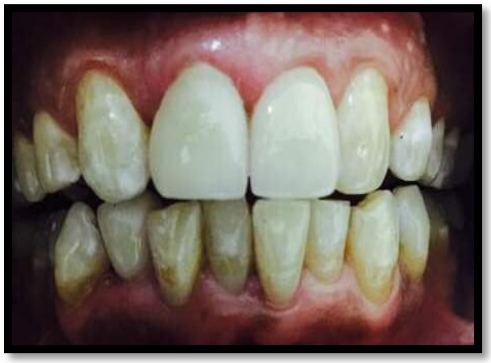

Figure15 Final prosthesis

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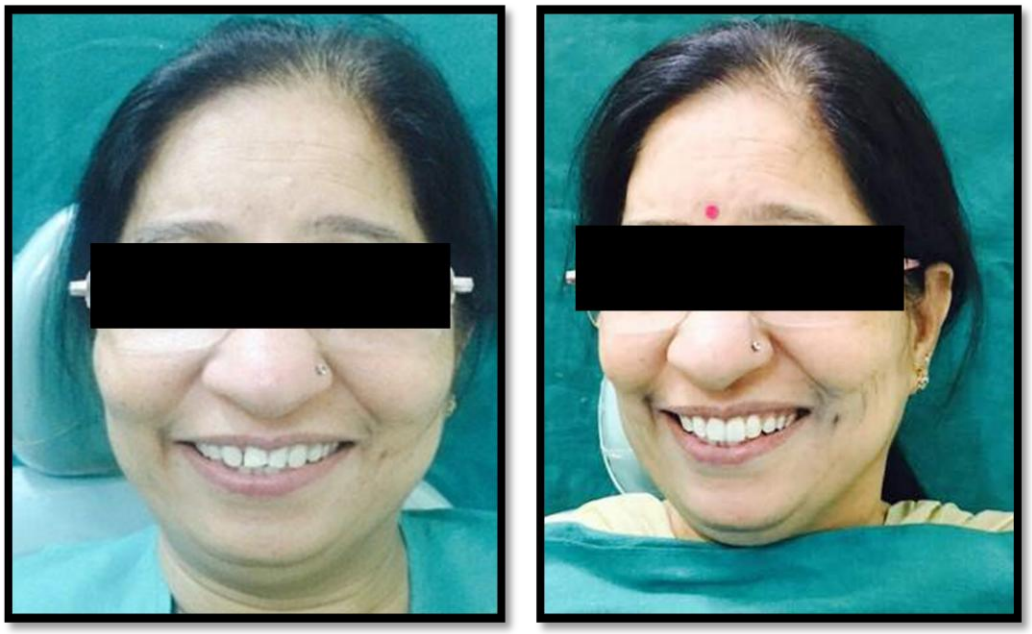

Figure 16: Pre and Post treatment photograph- smiling

DISCUSSION

The prime objectives of aesthetic dentistry are to achieve the best possible esthetic results and at the same time preserve the hard and soft tissue. But patient selection is integral for the success of porcelain laminate veneers. The Presence of normal overjet, overbite, favourable smile line, absence of parafunction and presence of sufficient enamel contribute to the success of porcelain laminate veneers. Their use should also be avoided in pulpless teeth, very darkly stained teeth and in patients with poor oral hygiene.

Major advantage of using porcelain laminate veneers is that these materials are biologically acceptable to the body owing to their increased chemical stability, lesser cytotoxicity and reduced risk of causing sensitivity or irritation. Also due to the smoothly glazed surface of the restoration, the chances of plaque build up are also rare.[3, 2, 6]

A study conducted by Goldstein and Lancaster showed that patients would readily accept shorter restoration life expectancy (five-eight years) if enamel could be saved by not reducing the tooth for a full crown.[7]

It has been shown that the lack of enamel and bonding to dentin is the main cause of failure of veneers. But even if the laminates fail in the long run, the conserved tooth structure can be treated with a full crown restoration.

CONCLUSION

The delivered treatment with porcelain veneers followed the principles of-: Enamel preservation to achieve an esthetic rehabilitation of the four upper incisors; the presented case report was based on an accurate diagnostic process (wax-up and in vivo mock-up) which allowed for minimally invasive and selective reduction of tooth substance.

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