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## CASE REPORT

### Esthetic Rehabilitation of Anterior Teeth by Minimum Preparation with Ceramic Veneers: A Case Report

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#### ABSTRACT:

In present time the porcelain laminate veneers with minimal tooth preparation are more demanding and esthetically fulfilled restoration in enhancing esthetics. Advancement in adhesive dentistry made it possible to correct shape, size, and colour of the teeth by conservative approach. PLV are more esthetically superior, conservative and durable restoration. The present article discussing a case of porcelain laminate veneers in anterior teeth discoloured due to fluorosis.

**Key words:** Esthetic, laminates, conservative

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#### INTRODUCTION

In today's life the demand of patient for esthetic correction is increasing day by day. Earlier, the most predictable treatment was with full coverage crowns but it required a large amount of tooth structure loss. Introduction of acid etching by Buonocore in 1955 and advancement in bonding lead to the development of small particle hybrid composites having high clinical performance and esthetically good to correct unaesthetic appearance.<sup>1-3</sup> Resin composites which are used for correction of discolouration, shape and size in teeth, having many disadvantages like susceptible to discolouration, wear, marginal fractures, and limited longevity. So, they are recommended only for short to medium term restorations.<sup>4,5</sup> Charles Pincus was the first who introduced porcelain veneers having longer durability due to its biocompatibility and non-porous in nature which decrease plaque accumulation and enhanced healthy gingival condition.<sup>6,7</sup>

#### INDICATIONS

- Abrasion;
- Coronal fracture;
- Correcting tooth defects (e.g. the closure of interdental spacing and restoration of malformed teeth where crowns are not indicated);
- Diastema;
- Orthodontics (e.g. discrepancies in the size and shape of teeth that are not correctable by orthodontics alone);
- Tooth discoloration (especially for treatment of discoloured teeth that do not respond to tooth whitening or micro-abrasion procedures);
- To adjust occlusion (e.g. realignment of in-standing, rotated or protruding teeth).

#### CONTRAINDICATIONS

- Veneers are not indicated in heavily restored teeth, worn teeth and any teeth with insufficient enamel

available for bonding or teeth too weak to withstand functional forces

- Labial version
- Excessive interdental spacing
- Poor oral hygiene or caries
- Parafunctional habits (clenching,bruxism)
- Moderate to severe malposition orcrowding

#### ADVANTAGES

- Minimal tooth preparation required
- Porcelain veneers are stronger and more durable than composite veneers
- Alternative to full coverage restoration in case of incisal fractures or tooth discoloration
- Color stability

#### DISADVANTAGES

- Time consuming
- Prior to cementation they are fragile and difficult to manipulate;
- Repair can be difficult;
- Satisfactory provisional restorations can be difficult to make and retain;
- Some tooth preparation is usually necessary;
- Their colour cannot easily be modified once placed;
- They are more costly than a number of possible alternatives;
- They are technique-sensitive and time-consuming to place;
- There are not predictable results where the spaces requiring closure are too wide to be closed just by increasing tooth width alone;
- It should be aware veneers is not indicated where any tooth discoloration is too severe to be masked by a thin porcelain veneer and where thickening of the veneer would require extensive preparation into dentin;
- In non-vital teeth for reasons of tooth weakness and the possibility of subsequent, unfavourable, colour changes, ceramic veneers are not indicated.

The present article includes a case of porcelain laminate veneers in maxillary anterior teeth region with minimal preparation.

#### CASE REPORT

A 27 years old male patient reported to the Department of Conservative Dentistry and Endodontics, with a chief complaint of discoloured teeth in upper front tooth region of the mouth since 10-12 months and wants rehabilitation for the same. A detailed family history, medical history and dental history was obtained. In family history, none of his family members had similar problem. Past dental history and Medical history was also not relevant. Extra oral examination could elicit no abnormal findings. Intraoral examination revealed caries i.r.t. 23, root canal treatment was done in 14,24,25. Maxillary anterior teeth were vital and had no hypersensitivity. Generalized gingival inflammation was noted and on probing mild bleeding was found. Moderate amount of calculus was present.

The maxillary anterior exhibited brownish discoloration of the surface (Fig.1). Different types of treatment options were discussed which included laminate veneers, bleaching, composite veneering. Because of its minimally invasive nature and excellent aesthetic qualities it was decided to enhance her appearance using porcelain laminate veneers. Porcelain Laminate veneers for anterior maxillary segment from canine to canine teeth was planned. Firstly before starting the preparation for maxillary anterior teeth, patient was sent for the full mouth oral prophylaxis and Gingivectomy was done i.r.t. 11 (Fig.2).

Maxillary and mandibular diagnostic casts were made. Diagnostic wax up was done. The preparation of the tooth was done. The preparation was done in two planes (cervical 3rd and incisal 3rd) by placing grooves of 0.3mm and 0.5mm depth with depth orientation bur on gingival and incisal half respectively. The enamel was then removed between the grooves to achieve the required reduction in uniform depth. A broad rounded shoulder (Radial shoulder) was made as the finish line and was kept restricted to the labial surface as no change of anatomy was required. The tooth preparation distally terminated facial to the contact area. An overlapped incisal edge preparation was selected because it helps in the proper seating of the veneer.



(Fig.1) PREOPERATIVE



Fig.2) GINGIVECTOMY i.r.t. 11

The lingual finish line was placed approximately one fourth the way down the lingual surface connecting the two proximal finish lines with a round a round end tapered diamond bur. The finishline should be minimum 1mm away from centric contacts. The veneer extended onto the lingual surface will enhance mechanical retention and increase the surface area for bonding. All sharp angles of the preparation were rounded off (Fig.3).



Fig.3 TOOTH PREPARTION

The final impression of the preparation was made after placing gingival retraction cord with polyvinyl siloxane impression material (Coltene, Germany) using putty wash technique (Fig.4).The shade was selected under direct sunlight with VITA 3D master shade guide. Since the preparation remains in enamel, most patients will not require a provisional restoration. The impression was then send to the laboratory for the fabrication of final prosthesis.



Fig.4 ELASTOMERIC IMPRESSION

The cementing surface of the laminate is etched with hydrofluoric acid 9.5%for one minute and then is rinsed thoroughly and then gently air dried (Fig.5) and this is followed by the application of silane coupling agent one drop spread (Angelus, Switzerland) (Fig.6) and air blown to evenly spread on the surface of the laminate. The laminate is now ready for the cementation.

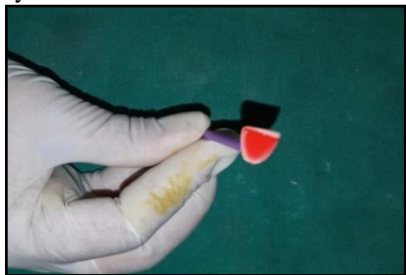


Fig. 5 HYDROFLUORIC ACID ON VENEER



Fig. 6 SILANE ON VENNEN

The tooth surface is first cleaned with pumice or polishing paste and rubber cups, this is followed by isolating the tooth by placing Teflon tape between the contacts. The tooth surface is now first treated with 37% phosphoric acid (Ivoclar vivadent, USA)(Fig.7) and a layer of bonding agent(Adper single bond 3M ESPE USA) (Fig.8) was applied on to the tooth surface. A dual cure adhesive resin cement (Calibra Universal, DentsplySirona, USA) is then dispensedand mixed. The material is loaded into thelaminare taking care not to incorporate any air bubbles, the laminate is then gently placed with little pressure till it is completely seated till the finish line, and the excess cement is removed with a sharp instrument (Fig. 9). Occlusion was carefully checked initially with centric occlusion and then by other excursive movements to ensure that no contact existed on tooth-porcelain interfaces. The patient was given all the instruction necessary for the proper maintenance of the laminate.



Fig. 7 ETCHANT ON TOOTH



Fig. 8 BONDING AGENT ON TOOTH



Fig. 9 CERAMIC VENEERS LUTED

### DISCUSSION

Due to the advancement in adhesive technology and patient awareness towards esthetic rehabilitation now slowly changing dentistry approach to esthetic problems<sup>8,9</sup>. Now a days the porcelain laminate veneer technique readily accepted by patient. According to Goldstein and Lancaster study that showed patients would readily accept shorter restoration life expectancy (five to eight years) if enamel could be saved by not reducing the tooth for a full crown<sup>10</sup>. A clinical research to date has shown excellent retention rates. Because of the introduction of high strength dentin and reliable resin cements will have increased the use of porcelain in daily clinical practice<sup>11</sup>. Based on the literature that showed if veneer preparation was done precisely then it ensure minimal damage to tooth and gingiva and ensure optimal long-term prognosis. Despite following all precautions, because of the delicate nature of porcelain veneers, a possible post-operative complication is cracking. If the veneer has been well bonded to the underlying enamel and is not an aesthetic concern, the patient should be informed and the veneer should be left in place<sup>12</sup>.

### CONCLUSION

Porcelain veneers includes minimum tooth preparation for the correction of esthetic problems and very useful adjuncts

in dentist's armamentarium. The veneers are technique sensitive but if used carefully and with proper knowledge can provide the best esthetic and functional result.

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