



## CASE REPORT

### PROCELAIN LAMINATE VENEERS FOR MANAGEMENT OF SPACING IN MAXILLARY ANTERIOR REGION: A CASE REPORT

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#### ABSTRACT

Esthetics dentistry strive for providing esthetically pleasing results without compromising the biological and functional principles of natural dentition. Porcelain laminate veneers are one of the most conservative and esthetics restoration that can be used for enhancing esthetics Present Case report discusses a patient having spacing in maxillary anterior region treated with porcelain laminate veneer. The patient was satisfied with the result and had no complaints during 6 months of follow-up.

## INTRODUCTION

Esthetics is now considered as fourth dimension of dentistry, along with biological, physiological and mechanical factors (Mathew *et al.*, 2010). Considering the growing patients cognizance, esthetics dentistry have evolved in the field of material as well as technique. Presently, laminate veneers are considered as one of the most viable treatment modality in esthetics dentistry (Kurien *et al.*, 2016). It is a conservative alternative to full coverage restorations for improving the appearance of an anterior tooth. There are two main types of material used to fabricate a veneer that are, composite and dental porcelain. Composite veneers are susceptible to discoloration, wear and marginal fractures, reducing thereby the esthetics result in the long term. On the other hand, porcelain laminate veneers (PVL) offers colour stability, life like translucency, high strength, resistance to abrasion and enhanced bond strength (Shetty *et al.*, 2013). The present case report describes the treatment of spacing in the anterior dentition with porcelain veneers, to restore esthetics and function.

## CASE REPORT

A 30 year old male patient reported to the Department of Prosthodontics, Government Dental College and Research Institute, Bangalore with a chief complaint of spacing in upper

front teeth and wanted cosmetic rehabilitation for the same (Figure 1).

**Diagnosis and Treatment Planning:** A thorough case history of the patient was recorded followed by clinical examination and diagnostic impression which was mounted with face bow transfer. Radiographic examination was done using intraoral periapical radiograph of maxillary anterior region and orthopantomogram. After examination, a provisional diagnosis angle class I malocclusion with maxillary anterior spacing was established. Considering the ideal occlusion condition, decision was made to correct spacing using porcelain laminate veneers. PLV were planned on the maxillary central and lateral incisors. Patient was informed about the existing condition, treatment procedure was explained and the consent was taken. Subsequently, dentofacial analysis and shade selection was done using Vitapan classical shade guide (Vita, Zahnfabrik, Germany). In present case, A1 shade was selected for incisal one third of teeth and A2 shade for the cervical two third.

**Teeth Preparation:** A key element in success with PLV is carefully controlled but appropriate tooth preparation. Bearing this in mind, depth orientation diamond bur (model S850,0.314.0.016 Brasseler, Germany) was used for tooth preparation.

#### Facial Reduction

- The preparation depth of the order of 0.4mm near the gingival margin, rising to 0.7mm for the bulk was achieved using the bur.

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- Two plane facial reduction was done to achieve the natural curvature of the tooth and to provide even thickness of porcelain.

#### Proximal Reduction:

- Proximal reduction was done to achieve a depth 0.4mm till the palatal outline.

#### Incisal Edge Reduction:

- Incisal reduction of 1mm was done with incisal overlap to improve translucency and to provide positive seat for luting.

#### Cervical Finish Lines:

- Equigingival Chamfer finish line of 0.4mm maximum depth were prepared with rounded internal line angles to decrease stresses. (Figure 2)



Figure 1. Preoperative photo of patient showing spacing in maxillary anterior region



Figure 2. Teeth preparation done with respect to maxillary central and lateral incisors

**Recording an impression:** Retraction cord (No.000) was placed in the gingival sulcus of prepared teeth for 5 minutes following which impression was made using poly vinyl siloxane material using putty reline technique (Aquasil soft putty, Dentsply, India). An impression of the opposing arch was made using irreversible hydrocolloid material (Algitex, alginate impression material, DPI, India).

**Laboratory Procedure:** The refractory cast was made using maxillary impression and was kept in furnace for hardening at 600 degree C for 10 minutes. Once the hardened cast was cooled, the prepared teeth on the cast were sealed with 30 ml glaze liquid. Again refractory die was hardened for 5 minutes at 600 degree C. Porcelain material (IPS e-max, Ivoclar

Vivadent) was then used to fabricate veneer over the refractory die.

**Trial of PVL:** The trial of PVL was done to assess quality of fit, gingival extension and shade match.

**Cementation:** The intaglio surface of the veneers were etched using 30% Hydrofluoric gel, rinsed and coated with a silane coupling agent. The prepared teeth were isolated and etched with 37% orthophosphoric acid (Universal Etch). Subsequently prepared teeth were rinsed and air dried. A self-curing resin based luting agent (Multilink Automix, Ivoclar Vivadent) was applied to prepared teeth and the cementation of the porcelain laminate veneers was done. Excess luting agent was removed using plastic scaler (Figure 3).



Figure 3. Post-PVL cementation photo of patient showing excellent esthetic results

**Instructions to patient:** The patient was given oral hygiene instructions for the adequate care of the porcelain laminate veneers and asked to follow up at 1st week, 3rd month, and 6th month for the assessment of the treatment procedures and oral hygiene measures

## DISCUSSION

Veneers as treatment for Unaesthetic anterior teeth were introduced by Dr. Charles L Pincus in 1928, using composite resin material and acid etching of enamel (Pincus, 2002). However, use of composite resins was associated with polymerization shrinkage, thermal dimensional changes, staining and poor wear resistance leading to decrease in long term success. Subsequently, acrylic laminates veneer was introduced as an attempt to overcome drawback of composite veneer, but long-term results of acrylic laminates veneer were also clinically unacceptable (Sowmya *et al.*, 2015). PVL have emerged as the most conservative and esthetics restoration modality. Various clinical studies have reported long-term success following the placement of anterior porcelain veneer. In one study after 7 years of follow up, 84% of patients reported with excellent satisfaction and in another study following 2.5 years 93% of patients reported with successful result (Jäger *et al.*, 2015; Meijering *et al.*, 1998). Patient selection is integral for success of PLVs, as they are contraindicated if there is inadequate enamel and tooth structure such as in amelogenesis and dentinogenesis imperfect, when there is existing large restoration or root canal treated teeth with less tooth structure and in patient with oral habit causing excessive stress on restoration (Heyde and Cammarato, 1981). In the present case because of young age, ideal occlusion condition with appropriate incisal angulation, presence of sufficient enamel and absence of parafunctional

habits, PLV is considered as most acceptable treatment option. As the placement of porcelain is an irreversible procedure due to involvement of tooth preparation, the criteria for porcelain veneer was carefully explained to patient before the procedure is undertaken. PVL offers an optimal bond if the preparation was located completely in enamel, if correct surface treatment procedures were carried out and if a suitable composite luting agent was selected. Hence, present case describe a comprehensive treatment procedure to be followed for optimum clinical success. PVL has reported to have clinically acceptable to excellent periodontal response and high esthetics properties with excellent patient satisfaction. Present case also reports excellent patient satisfaction both immediate and 6 months after PVL treatment. Literature reports that the major shortcoming of porcelain veneers was the relatively wide marginal discrepancy leading to exposure of the luting composite to the oral environment with unknown effect on its long term success (Peumans *et al.*, 2000). However, in present case no such marginal discrepancy was observed.

### Conclusion

In esthetics dentistry, dentist strive for minimally or non-invasive and conservative approach with excellent esthetics and functional outcome. PVL have proved to be a versatile and durable restorative material in this regard. However, proper case selection, comprehensive treatment planning and accurate treatment procedure are crucial factors in success of PVL restoration.

### REFERENCES

- Heyde JB, Cammarato VT. A restorative system for the repair of defects in anterior teeth. The laminate veneers. *Dent Clin North Am.*, 1981 Apr;25(2):337-45.
- Jäger K, Stern M, Wirz J. Laminates-reif für die Praxis. *Quintessenz.*, 1995; 46:1221-30.
- Kurien B, Vasunni GK, Kuruniyan MS, Correya BA, Vinni TK. Enhancing Smile with Laminate Veneers—A Case Report. *IOSR-JDMS.* 2016 Feb;15(2)
- Mathew CA, Mathew S, Karthik KS. A review on ceramic laminate veneers. *J Indian Acad Dent Spec Res.*, 2010; 1(4):33-7.
- Meijering AC, Creughers NHJ, Roeters FJM, et al. Survival of three types of veneer restorations in a clinical trial: a 2.5-year interim evaluation. *Journal of Dentistry*, 1998;26:563-8.
- Peumans M, Van Meerbeek B, Lambrechts P, Vanherle G. Porcelain veneers: a review of the literature. *J Dent.*, 2000 Mar 1; 28(3):163-77.
- Pincus CL. Pincus principles. In: Goldstein RE, Haywood VB, editors. *Esthetics in dentistry.* 2nd ed. Hamilton. Ontario: BC Decker 2002; 1:131.
- Shetty N, Dandakeri S, Dandakeri S. 'Porcelain Veneers, a Smile Make Over': A Short Review. *Journal of Orofacial Research*, 2013 Jul 1;3(3):186.
- Sowmya S, Sunitha S, Dhakshaini MR, Raghavendraswamy KN. Esthetics with veneers: A review. *Int J Dent Health Concern.*, 2015; 1:1-5.

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