Case Report

AESTHETIC MAKE OVER WITH PORCELAIN LAMINATE VENEERS

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Abstract

Aesthetic dentistry is one of the most challenging branches as it involves multi- disciplinary approach. The idea of porcelain veneers is not a new one. PLVs are the restoration of choice for discoloured teeth, anterior teeth that require major morphologic modifications such as conoid teeth, diastemas, to prolong the incisal edge of the tooth to increase its length, for extended rehabilitation of compromised anterior dentition such as coronal fractures, congenital and acquired malformations where dentino-enamel junction is not altered.

Case Report 1: Describes in detail about aesthetic corrections in patient with discolouration.
Case Report 2: Describes in detail about aesthetic correction in patient with midline diastema.

Keywords: Porcelain Laminate Veneers; Discolourarion; Midline Diastema;

Introduction

The term aesthetic comes from Greek word that was coined by Alexander in 1735 which means “the science of how things are known via the senses”.[1] Aesthetic cosmetic dentistry can be defined as art and science of dentistry applied to create/enhance beauty of an individual within functional and physiological limits.[2] PLVs have become the aesthetic alternative to ceramic crowns and the traditional porcelain-fused-to-metal. With the successful use of laminates smiles can be transformed painlessly, conservatively and quickly with long lasting results. Laminates show an excellent tissue response, and their finished surface is very similar to the natural teeth.[3]

Case Report 1:

A 24-year-old female patient reported to the Department of Prosthodontics, The Oxford Dental College with a chief complaint of discoloured anterior teeth and wanted cosmetic rehabilitation for the same (Fig: 1).

Figure 1: Pre-operative intraoral photograph

Diagnosis and Treatment Planning:

A thorough case history of the patient was recorded followed by diagnostic impression, mounting with facebow transfer and radiographs including OPG and IOPA were done. The OPG (Fig:2) reveals Endontic restorations seen with respect to 22, 23, 24 and Type III dental restorations with respect to 21, 11, 12. After examination, a provisional diagnosis of compromised anterior aesthetics was made.

Figure 2: OPG

Dentofacial Analysis and shade selection was done. Then shade was selected for the anterior laminates with respect to 21, 11, 12, 13 and crowns with respect to 22, 23, 24 The treatment objectives were to manage the discoloration and modify the contours of the teeth in most conservative method possible. Patient was informed about the existing condition; treatment procedure was explained and the consent was taken.[5]

Figure 3: Facebow transfer

Case Report 2:

A 35-year-old female patient reported to the Department of Prosthodontics, The Oxford Dental College with a chief complaint of spacing in anterior teeth and wanted cosmetic correction for the same (Fig: 4).

Figure 4: Pre-operative intraoral photograph

Diagnosis and Treatment Planning:

A thorough case history of the patient was recorded followed by diagnostic impression, facebow transfer and radiographs including OPG and IOPA were done. Dentofacial Analysis and shade selection was done. Then shade was selected for the anterior laminates with respect to 21, 11. The treatment objectives were to manage the space closure and modify the contours of the teeth in most conservative method possible.

Patient was informed about the existing condition; treatment procedure was explained and the consent was taken.[5]

Diagnostic Wax-Up:

For the case study the wax-up was done. Case 1 involved no alteration in the mesiodistal dimensions (Fig 5).

Case 2 involved alteration in the mesiodistal dimensions and closure of midline diastema (Fig 6).

Once the wax-up was completed, a silicone guide (GC Flexceed – Vinyl polysiloxane Dental Impression Materials) was made.

Figure 5: Case 1: Diagnostic wax up

Figure 6: Case 2: Diagnostic wax up

Teeth Preparation:

Armamentarium required are a diamond depth cutter with a wheel diameter of 1 mm, another depth cutter with a wheel diameter of 1.6 mm, a round bur, a round end tapering bur, finishing diamond burs, and Airotor handpiece.[6]

Facial reduction: Since the amount of enamel decreases at the cementoenamel junction, some teeth permit less reduction at the gingival finish line. Three horizontal surface depth cuts are prepared on the labial surface with three-tiered depth cutting diamond. Pencil lines are marked on the enamel which serves as guide grooves (Fig 7). Using the depth cuts as guide, labial surface is prepared to prevent over reduction (0.3-0.5 mm).

Figure 7: Case1: Pencil lines are marked on the enamel

To mimic the natural curvature of the tooth and to provide even thickness of porcelain two plane facial reduction was done.

The remaining tooth structure is removed with round end tapered diamond. The tip of the diamond establishes a slight chamferfinish line at the gingiva.[5]

• **Proximal reduction**: Proximal extensionis just a continuation of facial reduction with the round end tapered diamond.[5](Fig: 8). Adequate reduction is recommended at the line angle and uneven finish line is avoided by keeping the bur parallel with the long axis of the teeth.

Figure 8: Case1: Tooth preparation

• **Incisal reduction:** The wrap around preparation will place the veneers in compression and will provide better results.[5] Incisal reduction of 1mm was done with incisal overlap to improve translucency and to provide positive seat for luting(Fig: 9)

Figure 9: Case 2 Tooth preparation

Lingual reduction: Lingual finish line is created by round end tapered diamond by holding the bur parallel to the lingual surface and forming a slight chamfer of 0.5-mm deep (Fig: 10).

Figure 10: Case 1: Lingual reduction

Recording an impression:

Retraction cord (No.000) was placed in the facial gingival sulcus for 5 minutes. Full arch impression was made using poly vinyl siloxane material using putty reline technique. An impression of the opposing arch was made using irreversible hydrocolloid material.(Fig: 11).

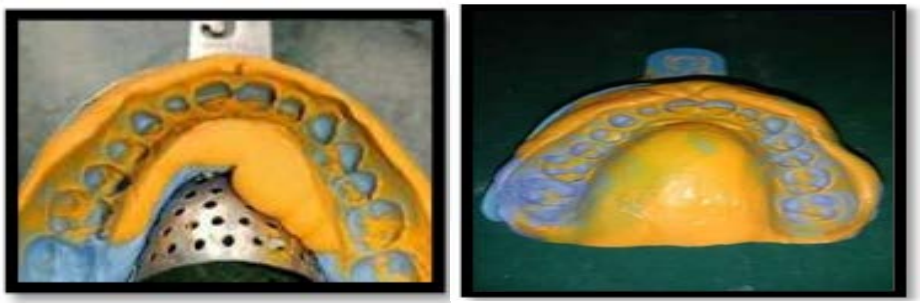

Figure 11 Case1 & 2: Impressions

Provisional Restoration:

The silicone guide was partially filled with a bis-acryl resin material (Protemp 4, 3M ESPE, St. Paul, MN, US) and placed in the patient's mouth. Before complete setting, a scalpel blade was used to define the correct gingival contour, respecting the manufacturer's recommendations. Then it was cemented with zinc-oxide non- eugenol temporary cement(Fig: 12).

Figure 12: Case1: Provisional restoration

Laboratory Procedure: The laboratory prescription, pre-treatment models, photographs of the teeth pre-op and post-preparation with shade tab is required.The refractory material which is poured into the impression and was allowed to set for 30 minutes. The CAD designing of the veneers was done. After which IPS^{TM} e.Max is milled and bisque trial was seen in patients mouth(Fig: 13).

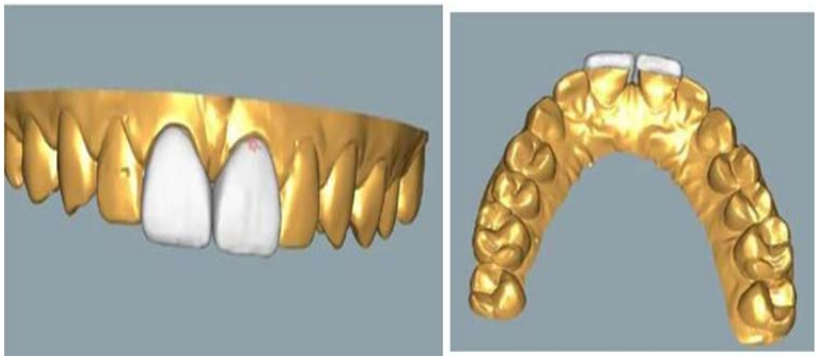

Figure :13 Case 2: CAD Designing

Try-in Procedure:
The teeth were cleaned prior to the trial with Pumice. Try in each veneer dry. Check the fit, marginal integrity. The quality of fit, gingival extension and colour match of the veneer was assessed. Try in one or two veneers with try-in paste and check masking of discoloration and approximation of desired final appearance(Fig: 14).

Figure 14: Case1: Try-in

Cementation:

The cementation procedure followed a true bonding that is the intaglio surface of the veneers were etched using 30% Hydrofluoric gel (Fig: 17), rinsed and coated with a silane coupling agent (Fig: 18). The prepared tooth was well isolated and etched with 37% orthophosphoric acid (Universal Etch) (Fig: 19), rinsed and Prime & Bond NT dentin bonding agent (Fig: 20) was applied following manufacturer's instructions. Ivoclar Vivadent Multilink N System Pack Resin Cement luting cement was used for the cementation of the porcelain laminate veneers. Once all gross excess was removed, the luting resin was cured using visible light activation unit for 40 seconds each (Fig: 21).

Figure:15 Case1&2: Final Restorative crowns

Figure 16: Case1: Final Restorative crowns

Figure 17: Etching intaglio surface of veneers

Figure 18: Conditioning intaglio surface

Figure 19: Etching intaglio surface of tooth

Figure 20: Conditioning tooth surface

Figure 21: Visible light activation

Maintaince:

The patient was given oral hygiene andhome care instructions for the adequate care of the porcelain laminate veneers and asked to follow a strict follow-up protocol 1 week, 3 months, and 6 months for the assessment of the treatment procedures and oral hygiene measures.

Discussion:

Laminate veneer restoration is the most preferred treatment method for anterior teeth to improve aesthetic appearance.[1] Patient selection is integral for success of PLVs, in the present case because of young age a conservative method of treatment PLVs were selected.[5] Presence of normal overjet and overbite with favourable smile line and absence of parafunction and presence of sufficient enamel made PLVs most acceptable treatment option.[5]

Tooth veneering is a minimally invasive procedure that enables the practitioner to apply biomimetic materials in cosmetic dentistry, finding a balance between ceramic and enamel. The great majority of restorative procedures violate the balance between enamel and dentin in natural teeth. Unlike these procedures, the use of porcelain laminate veneers offers an excellent combination of hardness, resistance, and resilience.[1]

Figure 22: Case 1 Cemented veneers

The diagnostic wax mock-up allows for individualized planning and a predictable outcome in cases where a certain shape and position are expected.[2] Establishing a treatment plan using diagnostic wax-ups is utterly necessary to determine the exact final position and anatomy of the veneer.[1]

The majority of cases restored with laminate veneers do not require tooth preparation but rather enamel recontouring.[2] In Case 1, a minimal and calculated enamel proximal recontouringwas necessary (Fig: 23).

Aesthetics is often a primary concern among those seeking orthodontic treatment while

treating the adult patient.[2] In Case 2, the patient would not want to remake orthodontic treatment, because this was done in childhood and looking for immediate results (Fig: 24).

Figure 23: Case 2: Cemented veneers

Conclusion:

The porcelain veneer is very aesthetic and conservative treatment option for many indications. Bonded porcelain veneers can provide successful aesthetic and functional long-term service for the patients. The success of porcelain veneer depends very much on the method of fabrication and most importantly case selection.

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