A Conservative Esthetic Treatment with Porcelain Laminate Veneers : A Case Report

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Abstract

The use of ceramic veneers provides predictable results and conservation of tooth structure, for the esthetic treatment of anterior teeth with anomalous positions or appearance. This article reports the management of a patient with maxillary incisors diastemas in which porcelain laminate veneers used to achieve the desired esthetic result.

Key words: Porcelain laminate veneers, Esthetics, Diastema closure, Conservative preparation.

Introduction

Esthetic parameter plays an important role when deciding the treatment choice of a patient with diastema. Development of the adhesive materials allows the dentist to construct more longevity and conservative restorations as laminate veneers[1]. Laminate veneers involve less tooth reduction, partial coverage, and still aesthetic outcome comparing to other treatment alternative: ceramic crowns[2-4].

Improvements in dental materials have made ceramic a desirable option for indirect esthetic restorative procedures, [5, 6] especially in the form of veneers[5, 7]. Ceramics have compressive strength, surface smoothness, abrasion resistance, gloss, and low plaque accumulation.[7, 8] Attempts to improve these properties have resulted in the addition of oxide crystals, [10] enabling the production of ceramic veneers that are thinner, highly esthetic, and more resistant to wear.[11] Ceramic veneers foster greater preservation of tooth structure, maintain tooth vitality, and produce predictable results, [12, 13] having failure rates of only 0% to 5% over 1 to 5 years[14].

Owing to the need to improve diastema-compromised esthetics and the scientific evidence of the successful use of lithium disilicate, this manuscript reports a case describing the treatment of diastema closure of maxillary incisors using lithium disilicate–reinforced porcelain veneers.

Case Report

Treatment Planning

A 35 year-old female patient presented herself at the department of Prosthodontics, Bharati Vidyapeeth Dental College & Hospital, Kharghar with esthetic concerns about her anterior teeth. (Fig.1)

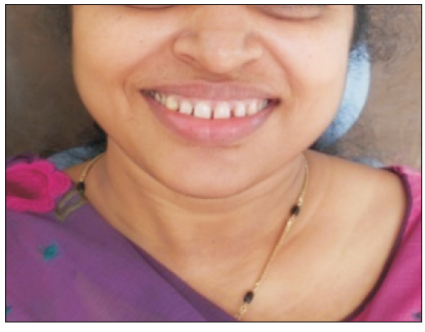

Fig 1 Initial appearance of patient's smile.

Fig 2 Initial dental appearance.

Intraoral examination revealed Angle Class I molar relationship bilaterally, Class I canine relationship on the right and left side. Maxillary and mandibular midlines coincided with the mid-sagittal plane. Vertical overlap was 1.5 mm, and horizontal overlap was 1 mm. There were 5.5 mm diastemas in maxillary ach: between central incisors- 0.5mm, right central and lateral incisor- 1.5 mm, left central and lateral incisor- 1.5 mm, right lateral and canine-1mm, left lateral and canine-1mm (Fig.2). Oral hygiene and periodontal health were within normal limits.

After study models had been prepared and radiographic images of the anterior teeth and intraoral photographs had been examined, a treatment plan was designed to address the patient's concerns. Various

treatment approaches were considered, including orthodontic treatment option, which was immediately refused owing to its long duration and much more expenses. The patient was interested in alternative approaches that would be less time consuming but still esthetic and conservative.

Fig 3 Study model and diagnostic wax setup

Based on our evaluation, we decided on a conservative treatment approach using indirect lithium disilicate laminate veneers. After clinical examination, diagnostic wax setup was performed (Fig.3).

A conservative preparation of the enamel was performed on all maxillary incisors using a diamond bur. Gingival displacement was obtained using retraction cord (#000, Ultra dent)(Fig.4). The retraction cords were removed and impression was made with putty silicone and light body silicone impression material (Fig5).

Fig.4: Minimally invasive preparation and gingival retraction- (a) labial and (b) occlusal view.

Fig. 5: Definitive impression step with addition silicone.

Fig. 6: Esthetic pre-evaluated temporaries

Impression of the wax-up with addition silicone was done on the study model. The silicone matrix was trimmed to include the gingival papilla so that excess material could be removed without disturbing the matrix. For temporization the silicone matrix was filled with Bis-acrylic resin (Protemp) and brought into position. Esthetics, symmetry, and occlusal high spots were analyzed (Fig.6).

The glass-ceramic lithium disilicate was used (IPS e.max press, Ivoclar Vivadent) for laminate preparation. The proximal and cervical adaptation, periodontal relation, and asymmetries were checked. A clear resin cement (Kerr™) was selected. The internal surfaces of veneers were etched with 10% hydrofluoric acid for 20 seconds (Condicionador de Porcelanas, ANGELUS) (Fig.7). The surfaces were washed with water. The veneers were silanized with silane coupling agent (ANGELUS SILANO) with disposable applicators; wait for 1 min. and gently dry with air. Self-etch / self adhesive resin was used and photo-cured for 20 seconds. (Fig.8). Excess cement was removed with brush and each surface was photo-activated for 60-seconds. Occlusal contacts were marked, and protrusive and lateral movements were checked. The final appearance is shown in (Fig.9).

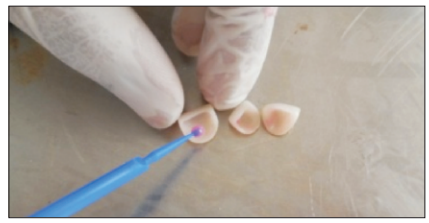

Fig. 7: Surface treatment of veneers.

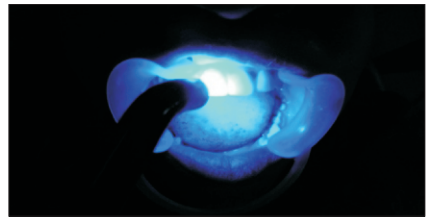

Fig. 8: Initially Photo-activated for 20 seconds.

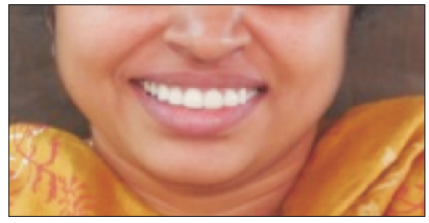

Fig. 9: Final appearance of patient's smile

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 p

Discussion

Esthetics is adversely affected by diastemas; one cause is microdontia, which affects from 1.5% to 2% of the population[15]. The present case report justifies the choice of diastema closure, because the patient desires to improve the esthetics. Study models and wax-ups are essential to assess clinical conditions, restoration form, occlusal factors, and esthetic design[16]. The mock-up fabricated with Bis-acrylic resin supports the dentist and patient to determine an esthetically acceptable shade, select the material, and shape the teeth[17].

The ceramics have predictable, esthetic, and long lasting results[18]. The procedure was intended to be minimally invasive; therefore lithium disilicate ceramic veneers with thicknesses ranging from 0.3 to 0.5 mm were fabricated because they have relatively high wear resistance without compromising optical properties[19]. The rehabilitation of smile esthetics with thin veneers is indicated to correct morphologic anomalies. However, due to the thinness, these veneers have limited application for color changes[20].

Conclusion

The recovery of smile esthetics of a patient with maxillary diastemas with porcelain laminate atient and professionals.

References

References are available on request at editor@healtalkht.com