

Esthetic Correction of an Anterior Open Bite Using Porcelain Laminate Veneers: A Case Report

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Abstract : Porcelain laminate veneers can be considered for esthetic correction of a number of conditions such as tooth discoloration, malalignment, diastema, tooth defects, tooth abrasion, coronal fracture, etc. Orthodontic therapy with or without surgical repositioning of the jaws is considered to be the conventional approach for correcting mild to severe open bite. This case report describes the esthetic rehabilitation of a patient with anterior open bite who was not willing for a surgical- orthodontic correction.

Keywords: Esthetics, Porcelain laminate, open bite, veneer

I. Introduction

A confident smile is an integral part of one's personality. An esthetic smile may be impaired due to various skeletal and dental malocclusions. An anterior open bite is a lack of contact in a vertical direction between the incisal edges of the maxillary and mandibular anterior teeth.¹ Anterior open-bite (AOB) is considered as a challenging malocclusion to treat, and its correction is prone to relapse.^{1,2} Relapse after AOB treatment has been attributed to tongue posture, growth pattern, treatment parameters, and surgical fragment instability.^{3,4} Technological advances in the field of porcelain bonding has created the possibility of using porcelain veneers as a treatment modality for many clinical conditions such as diastemas, malaligned teeth, worn out dentition and tooth discolorations.⁵ Porcelain laminate veneer may be considered as a conservative treatment in certain cases of malocclusions for providing a pleasing smile.

II. Case Report

A 28-year-old female reported to the Department of Prosthodontics, Government Dental College, Trivandrum with a chief complaint of increased gap between upper and lower front teeth in the anterior region (Fig. 1). Clinical examination revealed that the patient had anterior open bite (Fig. 2). The patient was apprehensive about surgical and orthodontic treatment procedures. She wanted the treatment to be completed in a short period of time. It was decided to esthetically rehabilitate the patient by reducing the open bite space with porcelain laminate veneers. Esthetic correction was planned on 12, 11, 21, 22, 33, 32, 31, 41, 42 and 43. Impressions of the upper and lower arches were made and diagnostic wax up was done (Fig. 3). Change in size and position of the teeth was discussed with the patient. Once the patient was satisfied with the mock wax up, the teeth were prepared for porcelain laminate veneers.

Clinical Procedure: The teeth were prepared for veneers starting with the labial surface using depth cutting burs. The facial and palatal surfaces were reduced to 0.5-1.0 mm and an incisal wrap preparation with minimal incisal reduction was given since an increase in length of the teeth was planned. A definitive chamfer finish line with rounded internal line angles (0.3-0.4mm in depth) was established using a long tapered diamond bur. The margins were made smooth to prevent stress concentration (Fig. 4,5). Impressions were made after tooth preparation using polyvinyl siloxane impression material (Fig. 6). The veneers were fabricated from lithium disilicate-reinforced glass ceramic material, IPS Empress 2, using the heat press technique according to the manufacturer's recommendations. After divestment, the veneers were finished and glazed. Air-particle abrasion of the inner surfaces of veneers was done using 50 µm Al₂O₃. Acid etching was done with 5% hydrofluoric acid prior to silanization. Then the internal surfaces of veneers were treated with a silane coupling agent for 60 seconds and air dried. Teeth surfaces were first cleaned with a slurry of fine pumice and the prepared surfaces of teeth were etched for 15 seconds using a 37% phosphoric acid etch-gel. After thorough rinsing and drying, dentin primer and adhesive were applied according to manufacturer's instructions (Fig. 7). A dual cure composite resin luting cement (Variolink®, Ivoclar Vivadent) was mixed and applied at the intaglio surface of the veneers, placed onto the prepared teeth and light-polymerized for 40 seconds from palatal, buccal and incisal sides (Fig. 8). The excess luting cement was removed and the marginal area was polished with abrasive discs and strips. Home care instructions were given and recall appointments were scheduled. The patient was very much satisfied with her new smile (Fig. 9).

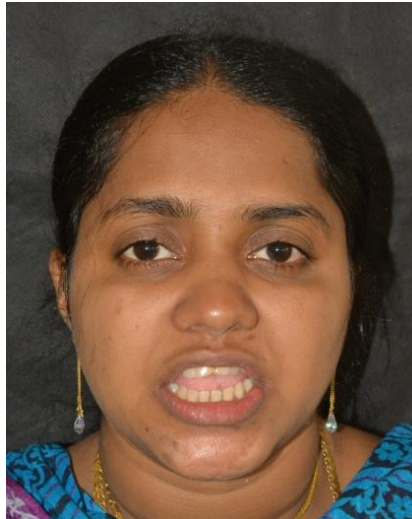


Figure 1: Pre operative smile.



Figure 2: Anterior open bite.



Figure 3: Diagnostic Wax up.



Figure 4: Porcelain laminate veneer tooth preparation (Maxillary).



Figure 5: Porcelain laminate veneer tooth preparation (Mandibular).



Figure 6: polyvinyl siloxane impression.



Figure 7: Resin cement used for cementation.



Figure 8: Porcelain laminate veneers cemented.



Figure 9: Post operative smile.

III. Discussion

Malocclusions like anterior open bite causes severe psychological trauma to the patients because of impaired smile esthetics. Though orthodontics and surgical repositioning are the ideal treatment options, the patient may not give consent due to apprehension about surgical procedures, prolonged treatment time and expenses. Dental ceramics is a good choice for various dental treatments because of their color stability, mechanical strength, clinical longevity, esthetic appearance and compatibility with periodontal tissues.⁶ Porcelain laminate veneers are extremely conservative in terms of tooth structure. Also they offer a predictable restoration with an estimated survival probability of 93.5% over 10 years.⁷ The color of the porcelain laminate veneer should blend with the color of the luting cement and the underlying tooth structure. Exact color matching requires significant artistic ability and patience from the part of both the dentist and the technician.⁸

IV. Conclusion

The success of a restoration depends upon understanding the principles involved in their preparation, fabrication and application. Communication between dentist, patient and the laboratory technician during the whole treatment procedure is very important. This case report describes the use of porcelain laminate veneers to improve the smile characteristics of a patient with anterior open bite.

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