Ceramic laminate veneers- An innovative approach in esthetic dentistry

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Abstract
The purpose of this article is to describe the possibility of enhancing dental aesthetics with low-thickness glass ceramics without most important tooth instruction for patient with small to moderate anterior dental floursis and discoloration. Proper treatment planning is being considered as the important phase as it considers the preservation of the enamel and dentine as well. Moreover, the anterior guidance can also be altered with the improvement in the esthetic consideration. It can be concluded that the low thickness glass ceramic laminate veneers provides excellent esthetic outcome while maintaining the tooth anatomy.

Keywords: Laminates, Dental Veneers, Ceramic veneers, Dental ceramics, Dental esthetics.

Introduction
The esthetic dentistry, regarding the anterior teeth has a greater difficulty in the practice. As the evaluation in the dental materials is occuring, the better restorative materials like composite resins, Porcelain Fused Metal crowns, all ceramic crowns, ceramic veneers and zirconia crowns became available for treatment. This environment create the best of the treatment option for the excellent esthetic outcome.

Ceramic veneers can be considered as the one of the best treatment option in improving the esthetics. They are indicated in the condition where mild to moderate florosis is present and anterior dental wear. The important properties of the ceramics' include biocompatibility, colour stability, opaqueness and esthetic outcome.[1] For the successful permanent restoration, the minimal invasive treatment approach is being considered as the most important phase.[2,3] Thus, the use of the laminate veneers have been markedly improved.

Treatment planning is the essential part of the esthetic dentistry. The success of the ceramic veneers depends upon the remaining amount of the enamel and dentinal structures and the preparation design.[4] The smile designing and the cosmetic interferences have greater results due to treatment planning. Thus, the good interaction between the dentist and the well trained lab technician helps in achievening the better results. The thorough knowledge of the various ceramic types and the step by step cementation procedure have a huge impact on the good esthetic prognosis.[5] Therefore, the purpose of this article is to minimally prepare the tooth and achieving the beautiful smile.

Case Report
A 32 year old male patient reported to the department of conservative dentistry and Endodontics, Pacific dental college and Hospital, Udaipur with the chief complaint of various white spots on the front surface of the upper teeth since 10 years. On clinical examination, after evaluating the shape, opaqueness, and size of the white spots, it was diagnoses as generalised moderate flourosis in relation to maxillary anterior teeth on both the side. (Fig. 1).

Fig. 1: Pre operative Photograph

Due to case characteristics and the esthetic need of the patient, the treatment plan was decided for least invasive and long lasting Ceramic laminate veneers for six anterior teeth .Diagnostic casts were made and were used for treatment designing.

The tooth preparation was started with a #2135-diamond bur (KG Sorensen, Barueri, SP, Brazil) for each tooth. A careful labial reduction was carried out to provide minimum of 0.3 to 0.6 mm.The entire preparation were done on the enamel surfaces with no dentine exposure. (Fig. 2)

Fig.2: Completed Preparation Restricted to Enamel

The shade selection were done prior to the preparation in natural light source. The gingival cord was placed using gingival liquid containing adrenaline (Ultrapak Cord #000, Ultradent Products Inc., South Jordan, UT, USA) to provide transient gingival enlargement(Figure-3).The impressions were taken with heavy bodied impression material on trays and light bodied impression material (Express XT, 3M ESPE, Seefeld, Germany) on the prepared teeth.

Fig. 3: Gingival Cord Placement

Ceramic laminate veneer restorations contain a lithium disilicate-reinforced glass ceramic material (IPS e.max Press, Ivoclar-Vivadent, Liechtenstein), using the heat press technique. A layering ceramic (IPS e.max Ceram, Ivoclar-Vivadent) strengthen the incisal edge optical characteristics was used the impressions were send to laboratory for further procedure. No temporation were done due to minimal preparation of the tooth surfaces. Each veneer was tried individually to assess the fit. Once the patient is happy and had approved the final aesthetics, the restorations were prepared for cementation. (Fig. 4).

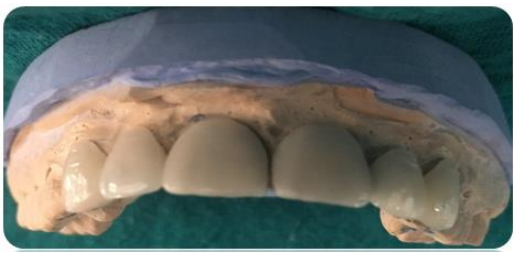

Fig. 4: Completed veneers on working cast

The inner surface of veneers etched with 5% hydrofluoric acid (IVOCLAR VIVADENT) for or 60 seconds. The acid was thoroughly cleansed with air-water spray. It must be ensured that all the residues of acid remaining on the surface was cleaned properly.

Restorations were dried and silane primer was applied to the fitting surface, which helped to provide a chemical covalent bond to the ceramic.[6]

Teeth preparation were cleaned with polishing paste PROXYT IVOCLAR VIVADENT properly. (Fig. 5)

Fig. 5: Cleaned With Polishing Paste

37% phosphoric acid gel was applied to the preparation for 30 seconds and cleaned properly. Bonding Agent TETRIC N BOND was applied on the surface of Teeth preparation and scrubbed for 10 sec. Resin cement (light cure) Variolink N LC was applied on Veneer restoration and then restoration was seated on the tooth preparation with a gentle force.

All the excess cement around the margins were cleaned up properly. A #12 blade was used to carefully remove excess cement. Occlusion was carefully checked initially with centric occlusion followed by other excursive movements. (Fig. 6)

Fig. 6: Post Operative Photograph

Discussion

The hue, value and chroma of the remaining dental structure and the thickness of the ceramic veneers leads the treatment towards the different restorative strategies. They are indicated in the cases where abrasion, coronal fracture diastema tooth discoloration and slightly deranged occlusion. The better esthetic prognosis with preparations limited only in the enamel were the main reason for this treatment option.

Glass ceramic does have better bonding ability as compared to conventional restorative materials. The role of hydrofluoric acid in acid aching and silane coupling agent leads to increase the retention.[7] The preparation which are wntirely in the enamel have excellent bonding as compared with the preparation which involves the dentinal structure.[8]

The tri-in paste which affects the better esthetics were used to select cement colour after the silane couplong agent was applied.10 It is washed out with water spray followed by air spray which helps in achievening the better bond strength of the tooth with the ceramics 6.11.while processing, some part of the unreacted silane coupling agents are remained unreacted .this unreacted part must be completely removed with water at room temperature. The presence of them can alter the coupling of the luting material to the ceramic by hydrolysis. This rinsing procedure can

not affect the inner part of the glass ceramic as it is hydrolytically stable due to the presence of covalent bonds with the silica.[12,13]

The ideal cement for cementation is light cured resin based cement.it has the extra advantage of having longer working time and increased bond strength where working time is the one of the major and crucial part of the placement and the cementation of the veneers.[14,15] The main aim of using light cured cement is that is can easily pass from through the veneers as they contained reduced thickness and high translucency. The mechanical properties and cementation properties have better influence of light.[16] Vehicle cementing with the dual cure resins, the light activation must be uses as it has an critical role on the restorative materials degree of conversion.[17]

Another important matter is that not all the curing lights have equal intensities of light transmission through ceramics.[18] It can only be possible with the use of fiber optic or polymer light guide tip.[19] Due to this fact, the veneers must be light activated through incisal, medium and cerival part on both the sides.

The complete success is achieved thorough patient education and motivation toward the good oral health. The regular evaluation and patient contribution have major role in better prognosis of the treatment as well.

Conclusion

It can be concluded that the reproduction of the life like aesthetic appearance of natural teeth can be gained with the help of Porcelain Venner. The long-term clinical success of porcelain veneers depends on a careful case selection and diagnostic approach, as well as accurate and appropriate tooth preparation and adhesive bonding procedures.

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