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### RESEARCH ARTICLE

#### PORCELAIN VENEERS: AN ULTRA CONSERVATIVE APPROACH FOR DIASTEMA CLOSER-A CASE REPORT

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#### Abstract

A fascinating smile showing an even row of natural gleaming white teeth is a major factor in achieving that elusive dominant characteristic called personality. The aim of cosmetic dentistry must be to provide the maximum improvement in aesthetics with the minimum trauma to the dentition. Porcelain veneers are a recent and very exciting development in dentistry. They enable the dentist to change the appearance, size, colour, spacing & minor extent the positioning of the teeth. Veneers provide predictable, stable, and satisfactory results for both the patient and the dentist.

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#### Introduction:-

A fascinating smile showing an even row of natural gleaming white teeth is a major factor in achieving that elusive dominant characteristic called personality. The aim of cosmetic dentistry must be to provide the maximum improvement in aesthetics with the minimum trauma to the dentition. There are number of procedure that begin in approximate the ideal parameter of cosmetic dentistry, most notably that of porcelain veneers. Porcelain veneers are a recent and very exciting development in dentistry .They enables the dentist to change the appearance, size, colour, spacing, and minor extent of the positioning of the teeth<sup>[1]</sup>.

Maxillary midline diastema (MMD) is a most common aesthetic complaint of patients. MMD can be defined as a space greater than 0.5 mm between the proximal surfaces of the two central incisors. The space can be a normal growth characteristic during the primary and mixed dentition and generally is closed by the time the maxillary canines erupt. For some individuals, however, the diastema does not close spontaneously. It can be one of the most negative factors in self perceived dental appearance<sup>[2,3]</sup>.

Porcelain veneers are indicated in cases of anterior dental wear, discoloration, minor changes in teeth contour, diastema closure, and sufficient remaining sound tooth structure. Since the introduction of in 1983, veneers have evolved and undergone vast improvement, making it one of the most viable treatment modalities that can replace bleaching and enamel microabrasion. It is considered one of the most conservative treatment procedures because the tooth preparation involves the removal of less than half of the thickness of the enamel and leaving the remaining

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portion intact before veneer placement. The use of ceramic veneers has increased due to colour & contour stability, superior aesthetics, and involvement of minimal tooth preparation. They have proved to be an effective treatment option to manage the aesthetic and functional problems, especially in the anterior region. Moreover, veneers are known to provide predictable, stable, and satisfactory results for both the patient and the dentist <sup>[1,2]</sup>.

**Case report-** A 24-year-old male patient reported to the Department of Conservative Dentistry and Endodontics of our institute with a desire to improve his unaesthetic facial appearance due to presence of 'gaps' present between his front teeth. He has healthy teeth with no caries or periodontal disease. Clinical examination revealed class I malocclusion with midline spacing of 2.5-3 mm limited to upper central incisors and class 1 Ellis fracture present in relation to 21(Fig-1) .



**Figure-1:-**

Oral hygiene was satisfactory. Radiographic examination revealed that the absence of any unerupted supernumerary tooth or mesiodens. Various treatment alternatives such as fixed or removable orthodontic appliances and the patient's affordability in terms of treatment time were discussed in detail. However, due to prolonged treatment time and aesthetic issues related to these appliances, patient did not give his consent to these treatment modalities. The space was managed with a conservative, aesthetic procedure using porcelain laminate veneers after getting informed consent.

#### **Treatment:**

During the initial appointment, diagnostic impressions were made using irreversible hydrocolloid (Algitex, DPI, India), poured with Type IV dental stone (Kalabhai, India). One set of study models was used for wax up of the central incisors alone. On the second set of study cast, mock preparations were done in relation to 11 & 21. At the onset of the treatment, thorough scaling and polishing was done.

Before proceeding for tooth preparation, shade was selected using Vitapan Classical shade guide. The veneer preparations started with placement of depth cuts. The veneer margins were then established using long, tapered medium grit diamond to prepare definitive chamfer 0.3-0.4 mm deep at the gingival margin. Tooth contacts were removed and the entire gingivo-proximal definitive chamfer margins were established. The preparation design porcelain should allow a thickness of 0.5mm at the gingival margin, 0.7mm in the midbody and at least 1 mm in the incisal third to prevent dentin shine-through and to conceal the silhouette of the preparation under the porcelain and the same principle was followed in preparation. The incisal edges were reduced 1 mm, in relation to 11 & 21 with slight lingual wrap away from centric contacts (Fig-2). A final impression was made using a 2-step polyvinyl impression technique (Affinis, Coltene Whaledent) and sent to the lab (Fig-3). Pressable ceramic, glass-ceramic lithium disilicate was used (IPSe.maxPress, Ivoclar Vivadent) for fabrication of PLV (Fig. 1D) in the lab. The internal surfaces of the veneers were etched with 9.5% hydrofluoric acid (Ultradent, Germany) for 20 s and the veneers were silanized with a silane coupling agent (Monobond Plus, Ivoclar Vivadent) before luting. The tooth surface was cleaned using slurry of pumice and gingival displacement obtained using retraction cord (#000 Ultradent, Germany). Acid etching was done with 37% phosphoric acid (Total Etch, Ivoclar Vivadent) and the etchant was thoroughly rinsed off after duration of 15 s following manufacturer's recommendations. All the teeth surfaces and inner surface of veneers were coated with bonding agent in thin layer and light polymerized for 25-30s.

Dual cure composite luting agent (Variolink-II, Ivoclar) of appropriate shade was selected and placed in the inner surface of porcelain veneers. Veneers with luting cement were placed on the teeth surfaces, margins were checked for proper seating, pressure was applied and initial polymerization was done for 5 s to remove excess luting agent and cured for 60 s on each tooth. Extra-fine diamond points were used to refine the margins. There was considerable improvement in overall appearance of the patients in terms of aesthetics as seen in post rehabilitation photographs (fig-4,5).



Figure-2



Figure-3



Figure-4



Figure-5

### Discussion:-

The aim of the treatment in this case was to improve the patient's smile and aesthetic rehabilitation of teeth in a short time with long-term aesthetic results. This goal was achieved by closure the diastema using ceramic veneers. Another indications of ceramic veneers in Stained or darkened teeth, Hypocalcification, Peg laterals, Chipped teeth, Rotated teeth & Lingually erupted tooth. These malpositioned teeth are most often corrected orthodontically, but can be treated with porcelain veneers as well. Ceramic veneers are contraindicated in Extreme bruxism, High caries activity, Poor oral hygiene, Chipped anterior, Extreme midline deviation<sup>[1,4,5]</sup>.

The closure of diastema is recognized as one of the most common and challenging tasks in restorative dentistry. Diastema can occur during normal dental development starting from the mixed dentition period. The continuous appearance of diastema between maxillary anterior teeth has been associated with both aesthetic and malocclusion. The first line of treatment for diastema is to recognize the cause. Several aspects such as genetic and physiologic factors, abnormal frenum, abnormal habits, supernumerary teeth, and iatrogenic factors can affect the occurrence and size of an anterior diastema<sup>[1]</sup>.

Proper examination and patient selection, accurate diagnosis and effective oral hygiene using a range of restorative and orthodontic methods are required for the effective treatment of anterior diastemas. Recently, ceramic veneers have been widely and effectively used to treat diastemas, with high esthetic results.

Adult patients may refuse to accept the option for orthodontic treatment because of lengthy procedure and the need for immediate esthetic results. Thus, ceramic veneers were offered as the first treatment option. The non-invasive nature of veneering, and the resistant surface presented after treatment, make porcelain veneers the restoration of choice. Ceramic veneers require minor tooth preparation; the use of these veneers is considered as a conservative treatment option when compared with all-ceramic crowns which also produce high esthetic results, but involve extensive tooth reduction (1.5-2 mm).

Ceramic veneers provide both predictable and long-lasting aesthetic rehabilitation. The durability and clinical success of porcelain veneers have been widely investigated in the literature. It has been reported that ceramic veneers provide durable and successful restoration with an estimated survival probability of 93.5% over 10 years.

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