

Management of Anterior Multiple Diastema in Young Female Patient Using All Ceramic Restorations: A Case Report

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ABSTRACT

Background: Diastema is a common esthetic problem in both mixed and permanent dentition. Many innovative therapies vary from restorative procedures such as composite build up to surgery (frenectomy), crown and bridge and orthodontic corrections are also available. Presented here with is a case report of a 24 year young female patient with a maxillary and mandibular anterior teeth spacing. The need for treatment in this case is mainly attributed to esthetic and psychological reasons, rather than functional one. This case report shows the closure of spacing in maxillary anteriors by tooth preparation and all ceramic bridge cementation.

Keywords: All ceramic, Multiple diastema, Microdontia, Elastomeric impression material.

INTRODUCTION

Midline diastema of varying dimensions is a very common occurrence in day to day clinical practice. Some consider it as a good, where as some others find it unacceptable esthetically. Etiologies of the diastema are many and varied. It may be due to a variety of factors such as: tooth size-arch length discrepancy, microdontia, habits like thumb sucking, tongue thrusting, midline pathologies, etc. Cases with a midline diastema may or may not be associated with other malocclusions like generalized spacing or proclinations.¹ Presence of a gap or space between the adjacent anterior teeth with black areas is called diastema. This unpleasant problem of the teeth commonly occurring in adult dentition negatively affects the patients smile and can be a major esthetic concern for both patients and observers. However, in some situation, especially in small midline diastemas, these spaces do not adversely affect the patient's image and, hence, may not require a treatment². These problems can cause the formation of single or polydiastema, when seen between a group of teeth in the dental arch in the arch.^{3, 4} This case is mainly

attributed to esthetic and psychological reasons, rather than functional ones. Here, the authors have attempted to close the spacing in maxillary anteriors by tooth preparation and all ceramic bridge cementation.⁵

CASE REPORT

A 26 year old female patient reported to the Department of Prosthodontic Including Crown & Bridge and Implantology, Rama Dental College-Hospital & Research Centre, Kanpur, with the chief complaints of a gap in her upper and lower anterior teeth which gave her a poor esthetic appearance. Clinical examination revealed maxillary and mandibular anterior teeth spacing (Figure-1). Patient's medical history did not reveal any systemic diseases. Radiographic examination showed no pathological condition. Intraoral clinical examination revealed irregular spaces between the maxillary central incisor, lateral incisor, canine and premolar (right) on both sides, as well as between the mandibular central, lateral incisor and canine on

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both sides. Presence of 5 mm spacing between 11 & 21 anterior teeth, Spacing between 11 & 12 spacing 1 mm, between 12 & 13 spacing is 2 mm, between 13 & 14 spacing 1.5 mm spacing (Figure-2). Between 21 & 22 spacing 1.5 mm, between 22 & 23 spacing 2 mm (Figure -3) and midline diastema not associated with frenum attachment. Intraoral clinical examination also revealed rotated maxillary 1st pre molar on both side and ulcer on lower lip on buccal mucosa left side. The patient was noticed to be in good oral health (caries and restoration free) and no pathologies or interferences were found that would conflict with the treatment.



Fig 1: Pre-Operative: frontal view showing the diastema.



Fig 2: Pre-operative Right lateral side



Fig 3: Pre-operative Left lateral side

Impressions were made using elastomeric impression materials for making diagnostic wax-up model. The mesiodistal width of 11, 12, 13 and 21, 22, 23 was measured using a vernier caliper scale and smile design was carried out on diagnostic model to satisfy the patient before treatment started, and the space was closed by adding wax on the mesial and distal sides of 11, 12, 13 and 21, 22, 23 in such a way that mesial line angles of both 11 and 21 did not further shift toward the midline, which would otherwise affect the anterior esthetic zone by changing the proportionality. The expected outcome of the treatment was clearly explained to the patient before starting treatment. Once the patient got satisfied, signed informed consent was obtained and the treatment procedures were initiated. Tooth preparation done with respect to 11, 12, 13, 21, 22, & 23. It was planned to go for all ceramic full coverage treatment, hence preparation done 1.5 to 2 mm for ceramic restoration (Figure -4). Care taken to maintain the sufficient crown length to help in retention form. Poured impression was send to the laboratory for bridge fabrication and shade selection was done wherein A2 shade was finalized. Cementation was completed with GIC luting cement (GC luting and lining cement). (Figure -5, 6 & 7)



Fig 5: Tooth Preparation done for all Ceramic restoration



Fig 6: Post-Operative Frontal view showing closed spaces



Fig 7: Post-Operative: Frontal view showing closed spaces (Left)

DISCUSSION

Esthetics is adversely affected by diastema.⁷ Esthetic treatment of diastema closure is one of the biggest challenges practitioners face to in esthetic dentistry. The restorative closure of diastema are often achieved by using any of the techniques mentioned direct composite, composite veneers, indirect composite veneers, porcelain laminate veneers, all ceramic crowns, metal ceramic crowns⁸. composite materials possess less fractural toughness, shear, and compressive strength and are not ideally suited for ultra-high-stress areas found in certain clinical situations.^{9, 10} Meijering, et al. applied direct composite veneers, and stated that the failure rate of direct composite veneers was so high in a 2.5 years follow-up.¹¹ Porcelain laminate veneers offer a predictable and successful treatment modality that preserves a maximum of sound tooth structure. An increased risk of failure is present only veneers are partially bonded to dentin. The estimated survival probability of porcelain laminate veneers over a period of 10 years is 91% (Dumfahrt & Schäffer).¹² Highly glazed surface of the porcelain laminates veneers prevents plaque accumulation, considered important to attain a healthy periodontal response. Darkly stained teeth are not optimally restored with veneers. The prognosis for veneers in bruxing is doubtful. Certainly, such patients should be instructed to use a night guard after final restoration (Sheets & Taniguchi, 1990).¹³ Biological compatibility of zirconia ceramics is better than porcelain fused to metal restorations. Zirconia does not generate any allergic reaction like other type of metals. It has similar thermal expansion coefficient and thermal conductivity to natural tooth structure. They are resistant to shearing forces.

CONCLUSION

Aesthetic insufficiencies like gaps and spaces in the maxillary anterior dentition can be successfully treated with all ceramic bridge. This treatment creates a correct balance to restore the form, function, esthetics which varies among each individual and this helps in redefining smiles in the patient. In the present case report authors have shown successful management of anterior multiple diastemas in young female patient using all ceramic restoration.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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