INTERNATIONAL JOURNAL OF CURRENT ADVANCED RESEARCH
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 11; Issue 09(A); September 2022; Page No. 1533-1535
DOI: http://dx.doi.org/10.24327/ijcar.2022.1535.0341

Case Report

AESTHETIC, CONSERVATIVE, AND IMPERATIVE REHABILITATION OF MIDLINE DIASTEMA-A CASE REPORT

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A R T I C L E I N F O

Article History:

Received 9th August, 2022
Received in revised form 21st August, 2022
Accepted 18th September, 2022
Published online 28th September, 2022

Keywords:

Maxillary midline diastema, Diagnostic mock-ups, Smile designing.

A B S T R A C T

Aesthetic restorative procedures have gained immense popularity in the recent years. Midline diastemas have been commonly reported by a majority of patients due to poor aesthetic appeal. Various treatment modalities are available and cases have to be managed differently depending on the etiological factors. Also, the selection of an appropriate restorative option is imperative to providing a pleasing smile. Conservative treatments that provide a solution to aesthetic problems and fulfil the patient's expectations should always be the first therapeutic option. Management of large anterior interdental spaces requires a comprehensive treatment planning and often a multidisciplinary approach is essential from a team of restorative dentists and periodontists to focus on the etiological factors, patient needs, aesthetics and achieve stable long term clinical results.

INTRODUCTION

Beautification of one's smile is a fine artistic piece of work, a cosmetic dentist can deliver[1, 2]. Confidence is important aspect of one's personality and confident smile makes the picture complete. Hence, smile is considered as God gifted and purely cosmetic standpoint which develop most desirable self-confidence and also represent self-perceived appearance in the society as well. Importance of healthy teeth, healthy periodontium and attractive smile should be maintained with advancement in the area of cosmetic dentistry, the dental professional have been offered new opportunities in the conservative and esthetic restorative procedures.

Anterior Maxillary Spacing has shown to be one of the most negative influence while results in compromised smile. Specially, when it is present in female patients because of unesthetic smile and on the other hand maxillary midline diastema (MMD) is commonly cited by the patient as a primary concern during dental consultations. So, there it is considered as a commonpatients complain[3].

People commonly avoid smiling if their teeth are irregular malformed or discolored by covering up their mouth with hands or manipulating, lips thereby restricting their unesthetic appearance[4]. Overcoming the problems faced by youngsters by smile designing may produce a drastic change in their life.

This article illustrates a clinical situation in which an MMD was addressed by first completing a comprehensive smile analysis, followed by closure using fabrication of "Zirconia Crown" from11, 12 to21, 22.

Clinical Case Report

A caries-free, 28-year old young girl reported to the Department of Periodontology at King George's Medical University (U.P) expressing unhappiness with her smile because of the spaces between her anterior teeth **(Figure1).**

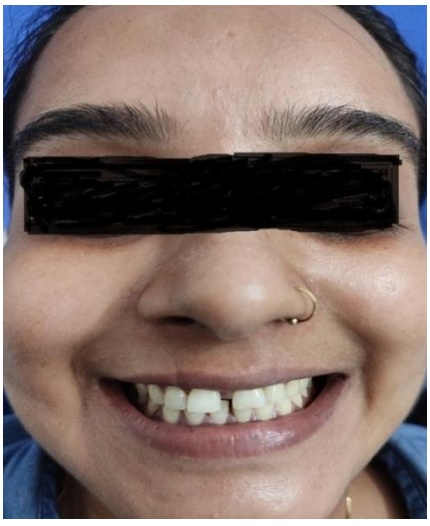

Figure 1 Preoperative view. Note 3-4mm maxillary midline diastema

The smile analysis revealed a 3-4mm diastema between the maxillary central incisors, 0.5-mm diastemas between the maxillary lateral incisors, an average smile line with 75% to

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100% of the clinical crown height of the maxillary incisors displayed[5], scalloped periodontal tissue with long thin interdental papillae except for the blunted area between the central incisors, disharmony in the shape of the central incisors (square) compared with the other maxillary anterior teeth (triangular), and an appropriate axial inclination of all 6 maxillary anterior teeth **(Figure 2)**

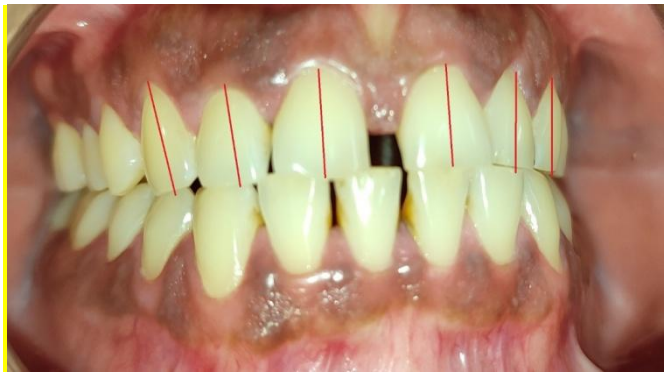

Figure 2 Preoperative smile view illustrating correct axial angulation but disharmonic shape of maxillary anterior teeth

Patient doesn't want to undergo any orthodontic treatment because it is very long term follow up process, also very cost effective and she wants immediate response.

So, diagnostic impression of wax patternwas done to decide the proper width, and occlusion of incisors **(Figure 3)** wax mock-up also denoting the position of the tooth in the arch to avoid incorrect placement and inadvertent breakage. Firstlywe planned for Laminate veneer's preparation in relation to central incisors and its adjacent teeth's as well but when we started with crown preparation, the patient started feeling sensitivity in her tooth so we decided to do the root canal treatment of the respective teeth and after completing RCT we performed crown preparation procedure in all the 4 anterior teeth**.**

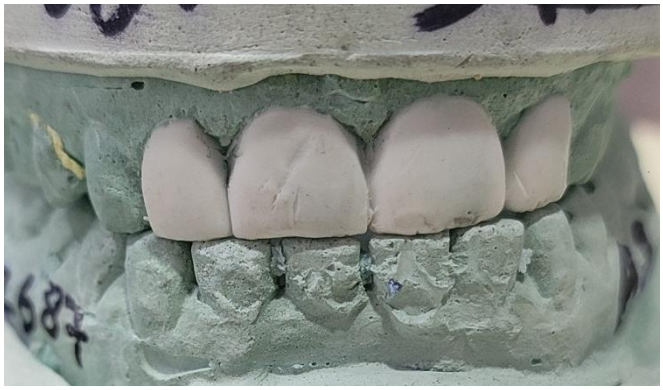

Figure 3 Diagnostic wax-up prior to treatment

Tooth preparation: Depth orientation grooves (gingival half) were prepared with three-wheel diamond depth cutter (0.3 mm) labial surface. Depth-orientation grooves (incisal half) were prepared with three wheel diamond depth cutter (0.5mm) labially. The incisal wraparound preparation was done for several reasons as it can be used in most patients, easily fabricated by the technician and easily handled by the dentist due to positive seating on delivery.

0.5 mm depth cuts were prepared in the incisal surface of tooth [6, 7]. The incisal surface was reduced in a manner similar to incisal butt-joint preparation. The lingual finish line was reduced with the round-end tapered diamond **(Figure 4).**

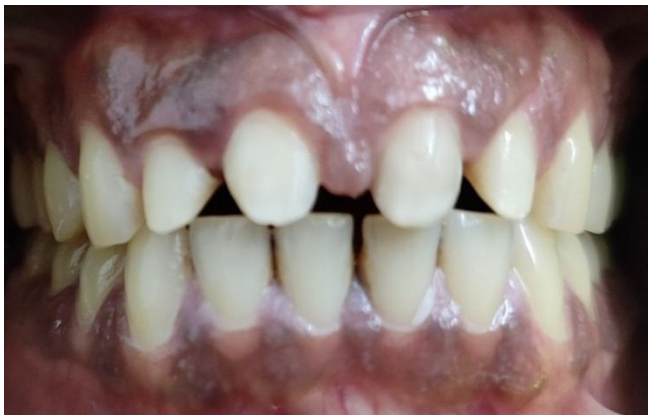

Figure 4 Intraoral Clinical View After Crown preparation

After crown preparationthe impression was taken with silicon based putty material ,and also shade selection was also done at the same time **(Figure 5).** It was also preferred as the preparation is minimal, limited to enamel but sufficient to provide correct contour of restoration. A main objective of any restorative case involving these restorations is to keep the preparation simple and be conservative in reduction of sound tooth structure.

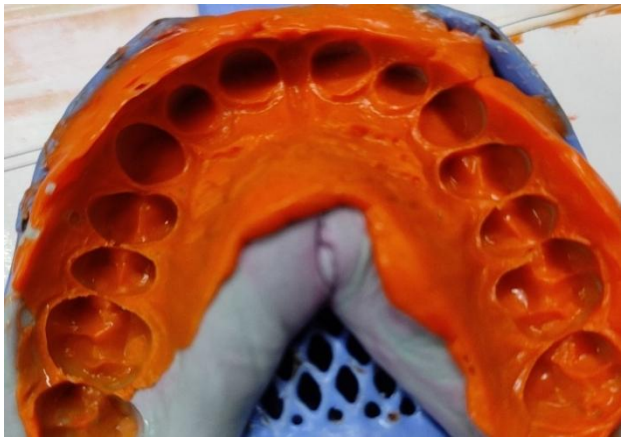

Figure 5 Photograph showing impression made in addition silicon impression material

By finishing this whole procedure, the impression was send to Dental Laboratory, and putty impression was poured by dental stone material **(Figure 6).**

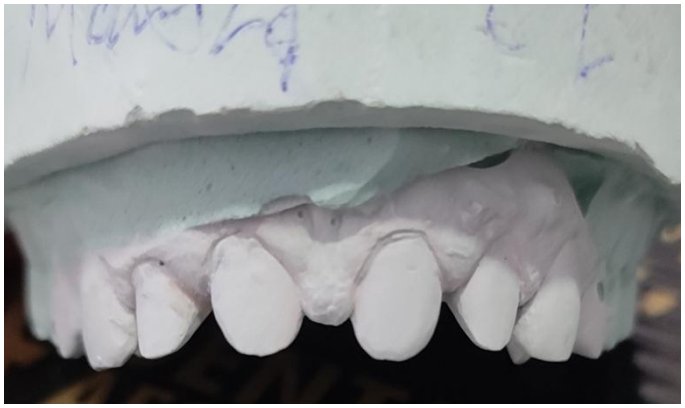

Figure 6 Poured Impression After Crown preparation

On completion of the cementation procedure, the occlusion was checked in centric and eccentric positions for

interferences. The high points were removed and polished **(Figure 7& Figure 8).**

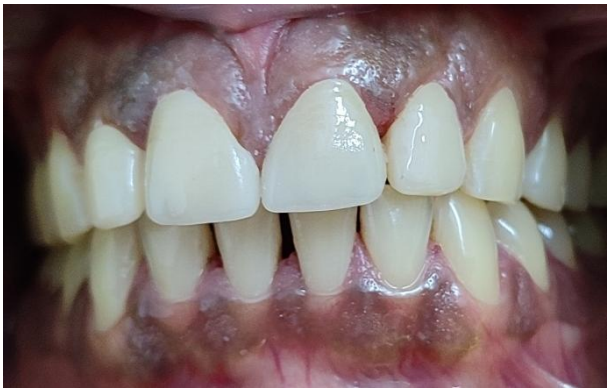

Figure 7 Post treatment left side view in occlusion

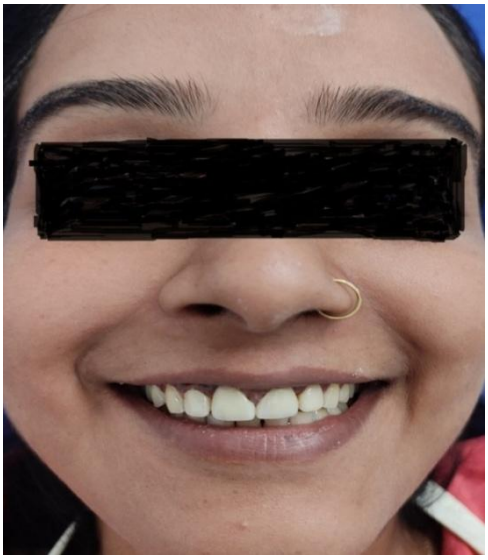

Figure 8 Patient's satisfaction after treatment with crown prosthesis

DISCUSSION

The etiology of diastema may be attributed to the following factors: (a) Hereditary- congenitally missing teeth, tooth and jaw size discrepancy, supernumerary teeth & frenum attachments; (b) Developmental problems- habits, periodontal disease, tooth loss, posterior bite collapse (Oesterle &Shellhart, 1999). Treatments planning for diastema correction include orthodontic closure, restorative therapy, surgical correction or multidisciplinary approach depending upon the cause of diastema (Dlugokinski *et al*, 2002). The restorative closure of diastema can be achieved by using any of the techniques mentioned ; direct composite veneers, indirect composite veneers, porcelain laminate veneers, all ceramic crowns, metal ceramic crowns and composite crowns ((Dlugokinski *et al*, 2002; Rammelsberg *et al*, 2005).

A multidisciplinary approach with the inclusion of orthodontic, endodontic, periodontal, surgical and restorative treatment modalities is a must to achieve an adequate occlusion of teeth, a proper gingival architecture, and an esthetic restoration for a patient. At the same time these kinds of interdisciplinary approaches require long multiple appointments [8].

Shade selection being a vital part of our treatment protocol should be done at the beginning of appointment before tooth preparation using shade tabs, reference photography and technology-based systems [9].3-dimensional (3D) intraoral scanning apart from 2D digital photography is currently being used for designing esthetic treatment. It can also be used to make digital impression of the prepared teeth, thereby processing the restorations in a computer-aided design and computer aided manufacturing (CAD-CAM) system, hence opening the path to a new era of complete digital workflow [10].So enlighten the smile by beautifying your teeth and let the world smile back to you.

CONCLUSION

Aesthetics is the subject that is objective and necessitates excellent communication among the dentists, patient and ceramist. Always the case should be selected carefully according to the need and compliance of the patient. The use of mock-ups, followed by a wax mock-up and silicone index not only let us to get the best aesthetic, phonetic, and functional outcome but also allows for better communication with the patient and laboratory.

Best of all, however is that it allows for minimal preparation on the recipient tooth. The last but not the least the treatment which you are doing is patient should be fully satisfied with results and the final aesthetics appearance.

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