

Anterior Midline Diastema Closure with Putty Index - A Case Report

Dr. Pradnya V. Bansode¹, Dr. Seema D. Pathak², Dr M. B. Wavdhane³, Dr. Aarti Pathak⁴

¹Head of Department, professor, Department of Conservative Dentistry & Endodontics, GDC & Hospital Aurangabad/MUHS, India

²Professor, Department of Conservative Dentistry & Endodontics, GDC & Hospital Aurangabad/MUHS, India

³Associate Professor, Department of Conservative Dentistry & Endodontics, GDC & Hospital Aurangabad/MUHS, India

⁴MDS student, Department of Conservative Dentistry & Endodontics, GDC & Hospital Aurangabad/MUHS, India

*Corresponding Author Dr Aarti Pathak

Abstract: Maxillary anterior spacing is a common aesthetic complaint of patients coming to dental clinic. Various treatment modalities are available for diastema closure. However, not all diastemas can be treated the same in terms of modality or timing. While excellent aesthetics are possible with indirect restorations, there may be unnecessary tooth structure removed in order to achieve the desired results. Many innovative therapies have been used, varying from restorative procedures to surgery (frenectomies) and orthodontics for closure of diastema. When a larger space closure is needed, orthodontics may be indicated to allow for a more aesthetic outcome. When a small diastema with teeth in proper orthodontic alignment, no preparation of the tooth structure is necessary and direct composite bonding may yield the desired result. The following case report shows a restorative protocol using direct composite resin build up using a putty index when addressing the midline diastema.

Keywords: Direct composite resin, Midline diastema, Putty index method

1. Introduction

Midline diastema or spacing in anterior teeth is a common aesthetic complaint in the dental clinic¹. Midline diastema is multifactorial in etiology. Some of the causes of mid line diastema are maxillary incisor proclination, labial frenum, incomplete coalescence of the interdental septum, pseudomicrodontia, presence of a mesiodens, peg-shaped lateral incisors, congenital absence of lateral incisors, pathologies (e.g., cysts in the midline region), habits such as finger sucking, tonguethrusting, and/or lip sucking, discrepancy in the dental and skeletal parameters, and also genetics². A protocol should then be made whether to treat the patient by means of direct restorative therapy or with multidisciplinary approach³. A carefully developed differential diagnosis allows the clinician to choose the most effective treatment plan. Diastemas based on tooth-size discrepancy are mostly treated by restorative solutions⁴. The restorative closure of diastemas can be achieved by using any of the techniques like direct composite veneers, indirect composite veneers, porcelain laminate veneers, all ceramic crowns, metal ceramic crowns. However the development of composite resins with superior mechanical properties and excellent polishability allows the clinician to mimic the natural dentition and also render a longlasting restoration to the patient. Composite resins permit conservative treatment and at the same time offers quicker results⁵. Composite resins can duplicate the pellucid and opalescent details of the tooth accurately⁶. They are the foremost material of choice, which give a natural color to teeth undetectable to human vision when applied with correct technique⁷. Another advantage of composites is that they are economical compared to ceramic materials and enables reparability⁸. The use of silicone index is one of the biggest innovatory technique in dentistry for anterior composite build up. Putty index perfectly defines the sagittal dimensions, the

length, and the incisal edge position of the desired final restoration, the incisal thickness, mesial and distal line angles and the labial curvature of the restoration. Hence, the practitioner can easily reproduce details without any hassels. This article depicts a case report of aesthetic management of midline diastema using composite resin utilizing putty index method.

2. Case Report

A 45-year-old female patient reported to the Department of Conservative Dentistry and Endodontics of our institute with the chief complaint of spacing in upper anterior teeth. On clinical examination a diastema of 2mm was revealed in the maxillary arch along with interdental spaces (distal to central incisor and lateral incisor). The oral hygiene of the patient was satisfactory, and no significant hard and soft tissue findings were found. The labial frenum associated with the diastema was normal in size and position. Various treatment modalities (conservative restorative and prosthetic procedures including veneers and crowns) were discussed with the patient, A minimally invasive approach with a direct composite resin restoration was planned to restore the diastema and other interdental spaces.

3. Clinical Procedure

Maxillary and mandibular diagnostic impressions using irreversible hydrocolloid (Tropicalgin, Zermack, India) were made and poured with dental stone. Diagnostic wax-up was done on 11 and 21, and the width of 11 and 21 was increased by 1mm each by adding inlay wax on mesial sides of both the teeth which closed the diastema by 2mm. Waxup was also done between 11 and 21 to close the space between them. Apalatal silicone index using the material vinyl

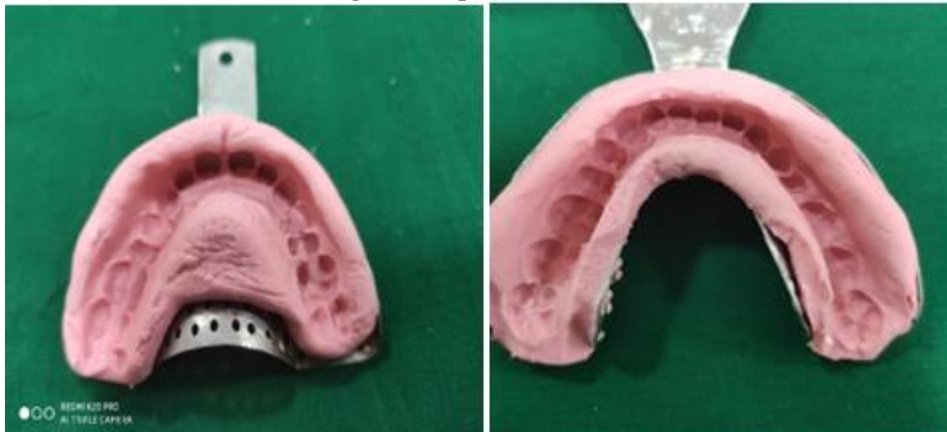
polysiloxane (having the property of high reproduction of details and high final hardness) was fabricated. All the material that was unnecessary for the stability of matrix was removed using the scalpel. The fit of the putty index was checked in the mouth. Shade selection was done using a (VITA Tooth guide 3D Master) under natural daylight. Standard etching and bonding protocol were followed. Palatal putty index was resealed, and incremental layering of direct composite resin restorative material was done with 11,21 and 12. The index was used throughout the composite build-up procedure. Finishing and polishing were done using

the composite polishing kit (Shofu Inc, Kyoto Japan) to achieve esthetically pleasing results. Oral hygiene instructions were given to the patient. Finger massaging of gingival was advised for the mechanical stimulation of interdental papilla in the region of midlinediastema. The patientwas instructed to floss regularly and also to avoid pigmented liquids that may cause staining of restoration. The patient was asked for regular follow-up visits for 6 months.

Preoperative Photographs



Alginate Impressions Made



Maxillary and Mandibular Casts Made



Putty Impression Made



Putty Impression Placed In Mouth Etching Done with 37 % Phosphoric Acid



Standard Bonding Protocollight Curing with Led Light



Finishing and Polishing of the Restoration Completed



Final Restorations

Labial View



Palatalview



4. Discussion

Resin-based composite restorations are single-visit procedures and bypass laboratory work which reduces cost of the treatment. In addition to this, some added advantages of resin restorations over other common treatment modalities are that (a) they are gentle towards the opposing dentition, unlike ceramic materials and (b) they are easy to repair in case of fracture. In this case the predictability of the direct technique was enhanced by producing a lingual incisal silicone index. Also the creation of a stratified restoration in the mouth with the same form as a previous wax-up is possible with the putty index. This technique is easy to perform, with creation of correct midline and optimal contact area but requires experience and skill.

5. Conclusion

The clinical results achieved in this case report shows that palatal putty fabrication for composite restoration can be a reliable method for direct composite veneering.

References

- [1] H. J. Keene, "Distribution of diastemas in the dentition of man," *American Journal of Physical Anthropology*, vol. 21, no. 4, pp. 437–441, 1963
- [2] W. J. Huang and C. J. Creath, "The midline diastema: a review of its etiology and treatment," *Pediatric Dentistry*, vol. 17, no. 3, pp. 171–179, 1995.
- [3] Gkantidis N, Kolokitha OE, Topouzelis N. Management of maxillary midline diastema with emphasis on etiology. *J Clin Pediatr Dent* 2008;32:265-72
- [4] Nahsan FP, Mondelli RF, Franco EB, Naufel FS, Ueda JK, Schmitt VL, Baseggio W. Clinical strategies for esthetic excellence in anterior tooth restorations: understanding color and composite resin selection. *J Appl Oral Sci*. 2012 Mar-Apr;20(2):1
- [5] Kovacs BO, Mehta SB, Banerji S, Millar BJ. Aesthetic smile evaluation – A non-invasive solution. *Dent Update* 2011;38:452-4, 456-8.
- [6] Willhite C. Diastema closure with freehand composite: Controlling emergence contour. *Quintessence Int* 2005;36:138-40:
- [7] M. J. Koczarski, "Achieving natural aesthetics with direct resin composites: predictable clinical protocol," *Practical Procedures & Aesthetic Dentistry*, vol. 17, no. 8, pp. 523–525
- [8] (8) Sangavi, Tamizharasan & Subbiya, Arunajetasan & Geethapriya, Nagarajan & (alias) Malathi Suresh, S. Mitthra & Sangavi, Tamizharasan. (2019). Closure of Midline Diastema by Composite Resin Build-up: A Case Report. *Indian Journal of Public Health Research and Development*. 10. 2845-2847. 10.5958/0976-5506.2019.04056.7.
- [9] Gupta R, Miglani A, Gandhi A, Kapoor N. Esthetic Management of Diastema Closure: An Innovative Technique Utilizing Putty Index Method *Int J Oral Care Res* 2018;6(1):S104-108.
- [10] Management of Midline Diastema by Direct Composite Resin Using Putty Index: A Case Report. (2019). *Indian Journal of Public Health Research & Development*, 10(11), 2810-2813. <https://doi.org/10.37506/ijphrd.v10i11.5857>