

Midline Diastema Closure Using Composite Restoration by Multiapproach Technique -A Case Report

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Abstract:

Midline Diastema is one of the most common forms of malocclusion seen frequently in the midst of the maxillary central incisors. It may or may not be present with generalized anterior spacing. The etiology for the diastema is considered to be multifactorial. Spacings in anterior region lead to an unpleasant smile, impairment of phonetics, and difficulty in maintaining good oral hygiene. These spacings can be managed either by surgical, orthodontic, periodontal, restorative, and prosthodontic procedures or by a combination of procedures to achieve patient's esthetic and functional requirements. Recent advances in direct dental composite resin, give dentist an advantage to perform minimal invasive esthetic dentistry which is conservative and economical. This case report describes direct aesthetic midline diastema closure with direct composite technique.

Keywords: Direct composite resin, Midline diastema, minimal invasive esthetic dentistry

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I. Introduction

Spacing in anterior region is a common aesthetic complaint of patients [1]. Keene described midline diastema as anterior midline spacing greater than 0.5 mm between the proximal surfaces of adjacent teeth [2]. It was reported that maxilla has a higher prevalence of midline diastema than mandible [3] The midline diastema has a multifactorial etiology. In addition to the labial frenulum, microdontia, mesiodens, peg-shaped lateral incisors, absence of lateral incisors, habits such as thumb sucking, tongue thrusting, and/or lip sucking, dental malformations, genetics, maxillary incisor proclination, dental-skeletal discrepancies, and imperfect coalescence of the interdental septum should be considered factors that can cause diastema [4, 5]. Different techniques have been employed to improve the smile by closing diastema. Direct composite resins in diastema closure cases allow dentist and patient complete control in formation of natural smile. Improved materials and techniques are often introduced leading professionals to achieve perfections while fulfilling their patients' aesthetic demands. Recent aesthetic composite resin materials have similar physical and mechanical properties to that of the natural tooth and possess an appearance like natural dentin and enamel [6].

This case report describes direct aesthetic midline diastema closure using composite resin along with multiapproach technique.

II. Case report

21-year-old female patient reported to the Department of Conservative Dentistry and Endodontics with the chief complaint of anterior teeth spacing. History reveals that she had the spacing from the time of permanent dentition and she had problem with smiling because of the same. Patient medical history was noncontributory. It was the first dental visit Patient wanted an esthetic correction for the closure of the multiple spaces because it restrained her from his self-confidence Clinical examination revealed 3-4 mm of midline diastema (Figure1). As a more conservative, economical, aesthetic, and quicker option, a direct composite restoration with multiapproach technique was planned. Treatment procedure was explained to the patient and informed consent was taken.



Figure 1

At the first impression of palatal surfaces of maxillary right and left central incisors was taken with putty impression material to record palatal surfaces (Fig 2). Desired corrections were made on putty impression, which will act as a guide to create palatal reference guide on which layering of composite can be done (Figure 3).



Figure 2



Figure 3



Figure 4

Slight roughening of both mesio-buccal surfaces of both central incisors done in order increase micromechanical retention (Figure 4).

After appropriate shade selection of the direct composite material (DENTSPLY, Spectrum) and After proper isolation, the required facial and lingual surfaces of the affected teeth were etched using 37% phosphoric acid for 15 seconds followed by application of bonding agent (DENTSPLY, Spectrum) (Figure 5,6,7).



Figure 5



Figure 6

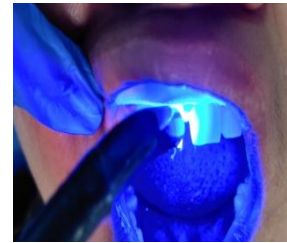


Figure 7

After that putty impression along with composite layer on mesio palatal surface of both central incisors is placed in predetermined position & cured, and here palatal reference guide is obtained on which incremental layering of composite can be easily done (Figure 8 & 9).



Figure 8



Figure 9

Sectional matrix band is used to create proper contacts and contour in between two incisors (Figure 10).



Figure 10



Figure 11



Figure 12



Figure 13

Once composite build up is finished, polishing finishing done with super snap polishing and finishing kit in order to get well polished & finished restoration (Figure 11,12,13). Polishing & finishing strips were used to get well contoured mesial margins as well as line angles. Polishing strips help to place gingival and incisal embrasure proper place (Figure 11).

Labial view



Figure 14

Palatal view



Figure 15

This is the final result after polishing & finishing (Figure 14 & 15).

Comparative photographs



Preoperative



Postoperative

The patient was motivated for oral hygiene and informed for recalls.

III. Discussion

Dental trauma occurs most frequently to the maxillary central incisors, and the fracture zone may involve both enamel and dentin. The present case report offers a conservative, time saving, inexpensive treatment option of a common type of esthetic problem [7,8].

The composite resins provide satisfactory treatments a result for even young and adult patients, but it is indicated to adults when the volume, length or number of composite restorations is limited [9]. This case presented a young patient with good results using only composite resins. [10,11]. Initial planning is essential for the best esthetic and functional results from restorative procedures. The use of some planning strategies enables greater dental structure preservation and result predictability [7,8]. The choice of composite should be focused on aspects related to the strength and aesthetics. Within this context, composite layering is the key to obtaining esthetically successful restorations. [8]. According Nahsan et al. Young teeth show a naturally high value and thus require resins with such characteristics; in consequence, the reproduction of enamel should be done with composite resins that presents transparent characteristics [8,12]. With regard to the restorative procedure, the applied technique has facilitated the obtaining of dental contours and convexities, which would be more labored and lengthier in a direct restorative technique. If handled properly, prognosis of the tooth, after traumatic crown fracture, is satisfactory [12,13].

In this case report, multiapproach technique was used with the help of a putty impression & sectional matrix band. The midline diastema was closed by obtaining first palatal impression using putty impression material. Then after getting palatal reference guide diastema is closed by placing composite layer by layer. Use of both putty impression & sectional matrix band gives excellent result in this case.

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