

Esthetic Conservative Management of Interdental spaces using Direct Composite Resin Restorations- A Case Report

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Abstract: The presence of a midline diastema in adults is considered as an esthetic or a malocclusion problem. Various treatment modalities are available for diastema closure. One of the options of closing interdental spaces using proximal direct composite resin restorations is considered to be practical and conservative. This case report describes the management of a patient with multiple diastemas, using bonded direct composite resin without any tooth preparation thereby achieving enhanced esthetics conservatively.

Keywords: Diastema closure, Direct resin bonding, Midline diastema, Silicone Putty Index

I. Introduction

The presence of a midline diastema or spaces in between anterior teeth can be a major esthetic concern for patients [1]. The esthetic appearance of teeth forms a part of an overall picture, interacting closely with facial esthetics. Since a pleasant smile is governed largely by symmetry, asymmetry at the midline creates an unacceptable esthetic presentation for both patients and observers.

There are various treatment options available for diastema closure in adults like orthodontic movement, restorative and prosthodontic treatment. Amongst these, the use of direct resin restorations seems to be conservative and more practical [2,3]. This type of treatment has several advantages over the rest such as its overall low cost, no tooth preparation, no need for anaesthesia and reversibility of the procedure [4].

When diastema closure is performed, dental midline as well as occlusal relationship and esthetic proportion of an individual tooth, must be considered and should coincide with the midline of face [5]. This clinical case reports a patient with uneven interdental spaces in maxillary anterior region. The patient's esthetic expectations were successfully met through conservative direct composite resin restorations.

II. Case Report:

A 34-year-old female came with a chief complaint of spaces among maxillary anterior teeth. A thorough clinical examination was then carried out to find uneven spaces between maxillary central incisors and between lateral incisors and canines on both right and left sides. Meanwhile, small spaces were present in between the mandibular anterior teeth which were not appreciable during speech or smiling. The widest interdental space was between two central incisors approximately 1.5 mm in size (Fig. 1, Fig. 2, Fig. 3).

Diagnostic impressions of both the arches were made in irreversible hydrocolloid material to fabricate diagnostic casts (Fig. 4). Overjet and overbite were found to be normal. The dental midline was noted corresponding to the patient's facial midline. A wax mock-up was done and shown to the patient (Fig. 5). Patient was explained about the treatment and her approval was taken for carrying out the treatment. Patient was not willing for restorations on her mandibular anterior teeth. Before beginning with the procedure, a palatal silicone putty index (Aquasil Putty, Dentsply) was made (Fig. 6). It was made to assist in guiding the application of the first palatal composite layer.

For direct resin bonding procedure, tooth surfaces of the maxillary anterior teeth were cleaned with a slurry of fine pumice. Although the space of 1.5 mm or less can be successfully restored using a relatively translucent enamel shade, multiple shades/opacities of resin composites were utilised to accurately match not just single shade, but also the adjacent tooth structure [6]. The enamel on the mesial surfaces of central incisors was etched with 37% phosphoric acid (N-Etch, Ivoclar Vivadent) for 30 seconds. After rinsing and drying, bonding agent (Tetric N-Bond, Ivoclar Vivadent) was applied according to manufacturer's instructions and cured for 10 seconds using a LED curing unit.

The first palatal composite layer was applied using flowable nanohybrid composite with the help of silicone putty index as a guide. The adjacent tooth was separated by using Mylar strips. A nanohybrid resin composite, (Tetric N-Ceram, Ivoclar Vivadent) was used for the composite build-ups due to its good handling property and shade matching. The composite was placed and polymerized using a layering technique to simulate natural tooth colour and translucency (Fig. 7 and Fig. 8). Each layer was light-cured for 40 seconds each from

facial and lingual directions. The facial and incisal contours were then established by using B2, A2 and T shade of resin composites in turn. Care was taken to achieve the desired proximal contour, especially in the gingival embrasure area (Fig. 9). Finishing and polishing of the restoration was done with Polishing Discs (Kit Polident, Microdont) in the sequence recommended by manufacturer (Fig. 10). The other spaces were closed with the same technique (Fig. 11).

Oral hygiene instructions were given. Patient follow-up was done at one week, and then after one month for 3 months.

III. Discussion:

Direct bonded composite resin restorations may be preferable in clinical cases wherein conservative, esthetic correction of the appearance of anterior teeth is indicated. The advantages of this technique far outweigh those of other techniques. However sometimes, for better esthetic results, an interdisciplinary approach is often required. In this case, the use of conservative direct resin bonding provided the symmetrical and harmonious arrangement of the teeth.

IV. Conclusion:

The esthetic problem of spaces in maxillary anterior teeth can be successfully dealt with the use of direct composite resin bonding. This painless conservative approach results in complete patient satisfaction leading to a successful outcome.

V. Figures:



Figure 1: preoperative view



Figure 2: preoperative view



Figure 3: preoperative view



Figure 4: diagnostic cast



Figure 5: wax mock-up



Figure 6: silicone putty index



Figure 7: try-in of putty index in mouth



Figure 8: composite build-up with layering technique



Figure 9: finished restorations



Figure 10: polishing of restorations



Figure 11: postoperative view

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