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TRADITIONAL SMILE DESIGN WITH DIRECT COMPOSITE RESIN MATERIAL- A CASE REPORT

Dental Science

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ABSTRACT

Objective: To describe a traditional technique that helps the clinician on designing spacing closure with ideal width proportions, dimension of both the side of the arch kept in balance to avoid undue Unesthetic zone at cervical to contact point.
Materials and Methods: The dimensions of the each tooth measured snd the spacing present in the area between upper incisors measured using digital calliper, to perform and achieve ideal dimensions of teeth maintaining the proportions.
Results: The use artistic work and direct manipulation of composite on teeth give the clinician sufficiently save the time and achieve adequate smile within single visit.
Conclusions: The use of a traditional and more artistic method of direct manipulation of composites on the teeth helps in achieving the successful smile and adequate aesthetic appearance of patient. Can bee achieved desired aesthetic with single visit without much consuming time of patient and operators. The most in important aspect is you should have sufficient knowledge of smile design and proportion of teeth. The challenges lies in the technique of shade selection and manipulation of composite on to the tooth surface. novel silicone index technique allowed for ensuring the same width for both upper central incisors in a midline diastema closure, improving gingival tissue's health.
Clinical Significance: The main difficulties regarding diastema closure are related to reaching an appropriate width proportion of the incisors and avoiding a ledge at the gingival aspect of the contact area.

KEYWORDS

Diastema, Spacing between Incisors, Diastema closure, Direct Composite Restorations, Traditional Smile Design.

INTRODUCTION:

The most important concern with patient is the appearance of spacing between the maxillary incisors, nowadays Midline diastemas are commonly cited by patients as a primary aesthetic concern, and are defined as an interdental space greater than 0.5 mm within the maxillary central incisors.Also, diastemas can often be considered as unpleasant, thus closing them is common place in aesthetic dentistry. Once defined their etiology, different treatments can be performed, such as restorative work, orthodontic treatment. In restorative work the most important is to define the present dimensions of teeth and evaluate the spacing which is present around incisors.(1) Orthodontic treatment however, for some patients, diastemas remain even after the treatment is finished due to alterations in the dental proportions. Moreover, orthodontic treatments are expensive, time-consuming. Faster treatments are related to restorative procedures; with the increase in technology and success rate of adhesive dentistry, treatments such as ceramic veneers and composite resins can be successfully performed.(2)

Given the numerous treatment options, diastema closures decisions are based on factors such as etiology, economics, time availability, and the patients desires. Although ceramics are highly esthetic materials, their treatment needs to be performed in multiple sessions and their cost is significantly superior when compared with composite resin due to the laboratory phase involved; moreover, it often needs intact enamel preparation.8In the counterpart, with the fast development of adhesive technology, it became possible to add composites to tooth structures with little-to-no cavity preparation, in a minimally or non-invasive. In addition, composite resins are materials that can be used for restorations in a single session. However, the major drawback relates to its colour stability and possible resin chipping, although different studies have demonstrated a high success rate up to 5-10 years.(3) Closing a large diastema is reported to have two major difficulties to close it without making the width of the central incisors out of proportion; and to avoid a ledge at the gingival aspect of the contact area that would be a plaque and food trap.8Knowing these two reported major difficulties, the present clinical case describes a traditional technique that helps the clinician to promote a diastema closure with appropriate width proportions.(4-5)

Case Report.

A 35-year-old female patient reported to the Department of Conservative Dentistry, School of Dental Sciences, KIMSDU, Karad, with the chief complaint of spacing in the upper front teeth region. Patient's medical history did not reveal any systemic diseases and intraoral examination revealed presence of spacing between maxillary incisors (1.5-2 mm) due to tongue thrust parafunction (Figure 1). No dental caries were observed in both clinical and radiographical examinations (Figure 2). As a more conservative, economical, aesthetic, and quicker option, direct aesthetic partial composite laminate veneers as build-ups for both maxillary central incisors were considered.

Firstly, shade selection was considered A2 shade of Vita guide for the teeth to be restored. No preparations were performed before the restoration procedure. The adjacent central incisor was covered with Teflon band while the other was restored. 37% phosphoric acid (Etching Gel, Kerr, USA) was applied on the mesial surface to be restored for 15 seconds, rinsed for 20 seconds, and dried with air slightly (fig 2). Check for frosted appearance of enamel to confirm the sufficient etching. Then a single bottle bonding agent (Adper Single Bond, 3M ESPE, USA) was applied and polymerized for 20 seconds with a LED light generator (Led Light Curing System, 3M Espe Elipar,USA). A thin layer of JE shade transparent composite resin was used palatally as enamel. A thin layer of A3 shade composite resin was placed roughly as second layer. A2 shade composite resin was used as dentin layer, enamel layer. Labial surfaces of the restorations were flattened by using a red banded knife-edge tip diamond bur. Polishing discs (Sof-Lex disks (3M ESPE)) were used for detailed polishing from rough to fine grains by using a low speed handpiece (NSK slow speed hand piece). (Fig 3 and Fig 4)

Fig 1- Preoperative Image Showing Spacing and Proclination.

Fig 2- Lateral View.

Fig 3- Post Operative Frontal View

Fig 4- Post Operative Lateral View

DISCUSSION.

The current trends in the diastema closure is the use of veneers to close it with appropriate dimensions, anyhow the composite can be used to close the diastema and spacing of upper incisors. These restorations are economical as well but appropriate shade selection and technique is of prime importance.

Step 1: Shade and Opacity Selection

Tooth shade should be obtained by comparing the center middle-third of the tooth against the middle of the shade tab. An enamel-like opacity material is usually selected when closing diastemas up to 2 mm.

Step 2: Isolation

Rubber dam isolation with ligatures is recommended. The rubber dam keeps the operatory field dry and free of contaminants. The ligatures help the rubber dam push the gingiva apically, to allow access to the proximal gingival areas for ideal contouring and polishing of the restorations.

Step 3: Tooth Preparation

Although, tooth preparation is not required when closing a diastema there may be situations where the teeth are slightly misaligned and a minor recontouring may be necessary when the teeth are positioned facially. On the other hand, no preparation is necessary when the teeth are lingually positioned. Roughening of the enamel is recommended only when self-etch adhesives are to be used. Following tooth preparation, the enamel surface of both teeth is etched for at least 30 seconds, after which the adhesive bonding agent is placed and cured.

Step 4: Material Selection

Composite resin materials for this technique must demonstrate handling characteristics that enable placement without slumping or sticking to placement instruments. Few commercially available resin composites (3M ESPE [St. Paul, MN]; Premise) demonstrate the handling characteristics for this particular diastema closure technique.

Step 5: Material Placement

A small increment of the appropriately shaded composite resin that corresponds to the facial half of each diastema is placed over the mesio-facial aspect of each tooth. These increments are placed simultaneously and contoured to ensure optimal contour and identical width for both central incisors. Attention should be given to blending the increments over the facial surface.

Step 6: Finishing and Polishing Using a #12 blade, remove any excess material gingivally to the contact point. Sof-Lex disks (3M ESPE) and a coarse polishing cup were used to contour the facial surface of the restorations. In this case, the patient was scheduled a week later to evaluate her satisfaction, gingival healing, and marginal adaptation.

Another technique described on the literature relies on using a Teflon band to isolate the adjacent tooth, which has the single benefit of preventing the adhesion of proximal walls of the adjacent teeth. In this case report we utilised the direct technique separating with Teflon sheet such that to achieve successful result and separation from adjacent tooth. It requires anyhow the great skills and experience. Also the use of a mylar strip and flowable composite has been used to obtain emergence profile,7which advantages regard creating an anatomically correct interproximal emergence profile, and avoiding black triangles, although those two cited techniques do not ensure width central proportioning the different diastema closure techniques, the most typical one relies on creating a wax-up restoration, in order to simulate the diastema closure, and building a silicone index to guide the final composite resin restoration.14This technique is extremely use ful because it makes it easy to reproduce the previously created anatomy of the teeth by the wax up.(6-8)

However, a modification was applied in order to promote a better guidance for the teeth to be restored. But having a experience and skillful work will limit of all the extra wastage of time and material. Hence decided to achieve desired shape and proportions of the teeth using all the skills and artistic work to complete the treatment.(9) In patients with large midline diastemas, it is frequently observed an absence of interdental papilla, as the distance between the inter-dental contact point of these teeth and the alveolar bone crest has significant influence in interdental papilla presence. A previous study concluded that when the measurement from the contact point to the crest of bone is 5 mm or less, the papilla was present almost in100% of the cases, however, when this distance increases, chances of the presence of papilla decreases. A rubber dam was used as previously reported,5 in order to obtain enough gingival retraction and help on building the restoration.(10-11)

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