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Direct diastema closure: a case report

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Abstract:
The maxillary diastema is a common asthetic problem in patients. Assess and diagnose may be challenging due to the many factors that influences the alteration of tooth eruption process and tooth shape. Appropriate technique and material for effective treatment are based on time, physical, psychological, and economical limitations. Direct composite resins in diastema cases allow dentist and patient complete control of these limitations and formation of natural smile. In this case report multiple maxillary diastemas were closed with direct composite resin restorations in without any preparation.

Keywords: Maxillary multiple diastemas; Diastema closure; Composite resin.

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INTRODUCTION

Direct resin-based composite restorations are a reasonable treatment option for aesthetic problems in anterior maxilla because they are minimally invasive or even non-invasive methods [1,2]. The presence of diastemata in the upper central incisors is one of the main aesthetic concerns of patients during dental visits [3]. A midline maxillary diastema is defined as a space of more than 0.5 mm between both mesial surfaces of the two central incisors [4]. It has a multifactorial etiology and can result from both hereditary and developmentally related factors and abnormalities.

Direct composite materials in cases of diastema closure allow the dentist and the patient complete control over the formation of a natural smile [5]. Improved materials and techniques are often introduced by leading professionals to endlessly improve the aesthetic requirements of their patients [6]. Modern aesthetic composite materials have physical and mechanical properties similar to those of a natural tooth and look like natural dentin and enamel [7]. They offer an extended range of shades and varying degrees of hiding power designed specifically for layering techniques, whereas earlier composite brands offered only "body" shades and appeared dull and dense [8,9].

The following case report demonstrates steps for treating a diastema using stratified direct composite resins.

CASE REPORT

A 35-year-old male patient was directed to the author's private practices presenting with multiple diastemas (Figure 1).

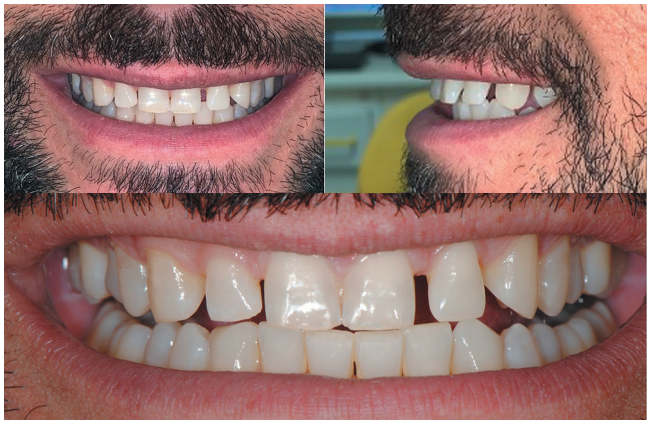

Fig. 1. **Pre-treatment photographs**

Upon clinical examination, maxillary diastema of 2 mm was observed between the maxillary incisors #21 and lateral maxillary incisors #22 and #12 and maxillary canines #13 and #23. Patient presents healthy gingiva and no abnormalities in adjacent structures. With his radiographic and clinical examinations there were no dental caries observed. At the start we would propose indirect veneers but studying the case we understood that the arch was too large and with classical indirect veneers the arch would come larger resulting with too big anterior teeth.

The first step was the creation of wax-up on the cast model (Figure 2a). Silicone index was created using presented wax-up (Figure 2b).

The second step was the isolation of all anterior maxillary teeth (Figure 3). The amount of composite material to add in order to modify correctly every single tooth shape was driven by the silicon index previously created. Where the amount of material was more than 0,8 – 1,0mm in the mesio – distal direction both dentin and enamel shades were used in order to avoid a " grey effect" on the restoration area; Where the volumes to add were smaller only enamel shades were used.

In order to have a more natural diastema closure is very important to start with the composite restoration from the base of the tooth. With this purpose the best retracting action of dental rubber dam in soft tissues must be perform with dental floss ligatures or with the use of some additional clamp. In this case, the canines isolation due to #212 clamp and their restorations were performed separately with this aim (Figure 4).

The final intra-oral result, after a fast finishing, compared with the initial situation is presented in figure 5, to note the good aspect of the interproximal papillae in the restoration areas and the complete diastemas closure starting from the base of the tooth (figure 5c) .

The final extra-oral result of the restoration is presented in Figure 6.

DISCUSSION

Diastema closure is often a difficult restorative procedure. A vision of the intended goal and good treatment planning are essential to success. Composite resins were used in order to achieve harmony, proportionality, and aesthetics in the anterior tooth.

One therapeutic restorative approach reported in the literature could be achieved using ceramic veneers or ceramic fragments [10]. These cases can be executed when there is vestibular enamel compromised tissue. Furthermore, this approach has the advantage that the mesial contact

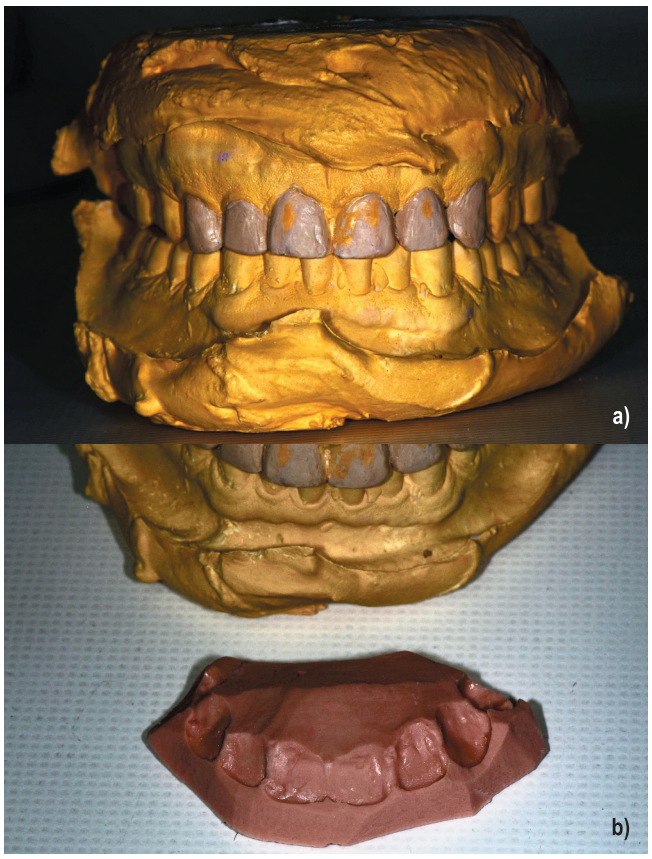

Fig. 2. **a) Wax-up; b) silicon index**

Fig. 3. **Anterior teeth isolation**

Fig. 4. **Canine isolation.**

Fig. 5. **Pre and Post-treatment photograph compared**

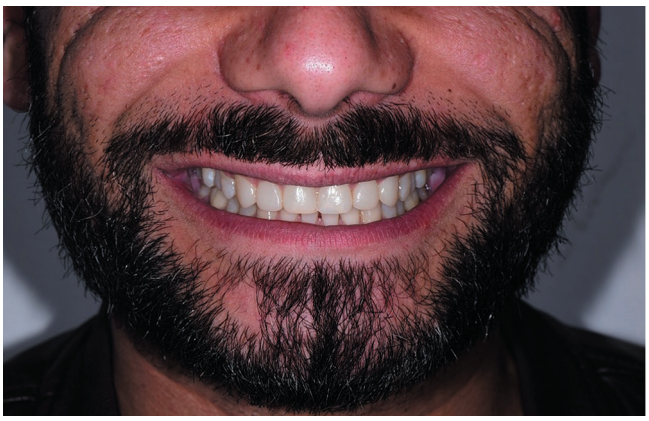

Fig. 6. **Extra-oral final result**

point can be controlled during the indirect method outside of the mouth before cementation. Optimal contact points can be obtained in the working model when compare with direct composite resins.

There are also some disadvantages of direct composite resin restorations compared to some indirect porcelain alternatives. Most composite materials possess less fractural toughness, shear, and compressive strength and are not ideally suited for ultra-high-stress areas found in certain clinical situations [11].

CONCLUSIONS

The simplest method for closing a diastema is direct composite repair, which can be done in just a single appointment at a lower cost. In this case, we were able to produce the desired aesthetic outcome; to create a natural smile that can boost the self- confidence of the patient. The symmetrical and aesthetic alignment of the teeth, in this case, was made possible by the conservative direct resin bonding technique.

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Giovanni Dolce – has made a substantial contribution to the concept or design of the article; the acquisition, analysis, or interpretation of data for the article; drafted the article or revised it critically for important intellectual content; approved the version to be published.

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