

ESTHETIC BUTTONS FOR MIDLINE DIASTEMA CLOSURE

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Abstract

Purpose: To evaluate the clinical outcome of the esthetic buttons for midline diastema space closure rather than full conventional fixed appliance therapy. **Method:** Four esthetic buttons were placed on the central incisors (2 on each tooth) for complete translatable movement of the teeth followed by traction. **Results:** Space closure achieved by a 1month time interval followed by buildup of lateral incisors **Conclusion:** This approach can be followed in patients with compromised financial support and with compromised periodontal support as this delivers less force with great comfort. Patients who are hesitant to begin treatment owing to financial obstacles with fixed appliance therapy may find this helpful.

Key Words: Esthetic buttons, Space closure, Midline diastema

INTRODUCTION

The maxillary central incisors are separated by a space/gap called the midline diastema. Diastema means "interval" in Greek, and it is a space or gap between two or more adjacent teeth. Midline diastema refers to the space or gap between two central incisors. Midline diastema may be considered normal for many children during the eruption of the permanent maxillary central incisors. When the incisors first erupt, they may be separated by bone and the crowns incline distally because of the crowding of the roots. With the eruption of the lateral incisors and permanent canines, the midline diastema reduces or even closes. In some individuals, however, the diastema does not close spontaneously. Midline diastemata (or diastemas) occur in approximately 98% of 6-year-olds, 49% of 11-year-olds and 7% of 12–18-year-olds.² The presence of a midline diastema represents an esthetic and psychological impairment and distress for patients seeking orthodontic treatment¹

ETIOLOGY

Frenum

Clinicians have long been very interested in the potential impact of the superior labial frenum on midline diastema and how to treat it. The alveolar ridge's two lateral portions join together prior to

birth, completely enclosing the continuous strip of tissue in bone³. This closure separates it into a palatal component (the palatine papilla) and a labial portion (the superior labial frenum). This high frenal attachment or high frenal pull may result in midline diastema between the central incisors.

Pernicious Habits

Long-term negative habits can alter the balance of pressures between the lips, cheeks, and tongue and result in undesirable dentofacial alterations. The maxillary incisors may flare out as a result of prolonged oral habits (mild continuous force over 6 hours) with an inadequate lips seal, which results in midline diastema. Biting one's lower lip and sucking one's fingers are two examples.

Dental anomalies and other malocclusions

Adjacent teeth may have spaces between them that are not the consequence of external forces if they are abnormal in size, form, or placement (e.g., muscular imbalances, excessive frenum tissue, etc.) Among these etiologies are:

1. Disparities in tooth and/or arch size, including peg laterals
2. Missing teeth
3. Occlusal abnormalities such as rotated incisors and class II division 1 malocclusion⁴.

CASE REPORT

(Received 17th November 2024; Accepted 24th January 2025; Published 28th March 2025)



Figure 1. Pre-operative. Midline Diastema in relation to 11 and 21

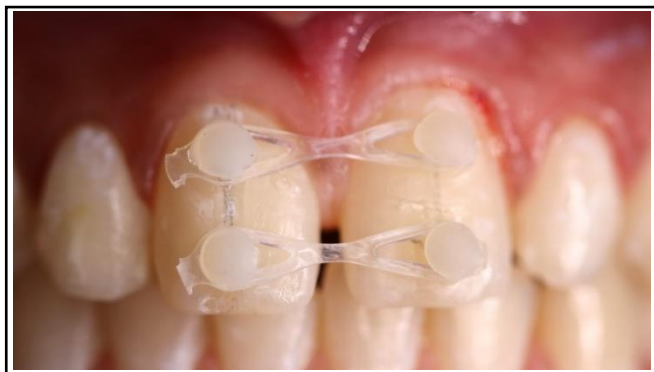


Figure 2. Marking the long axis of the teeth

A 16-year-old female patient reported to our department with the chief complaint of spacing in the upper front teeth region. All the dental findings were negative except with midline diastema with a minor Bolton discrepancy (Fig.1). The patient was given the standard corrective measures. The patient had a positive attribute towards the treatment but had financial limitations. Therefore, esthetic buttons were selected since they were both aesthetically pleasing and reasonably priced followed by a composite buildup of 12 and 22.

TOOTH PREPARATION

The anterior teeth that needed treatment had their labial and palatal surfaces adequately prophylaxed, etched with 37% phosphoric acid for 10-15 seconds, and dried. The long axis of the tooth was marked with a graphite pencil (Fig.2) for the orientation of the buttons. A bonding agent was then applied and allowed to cure. Precision-cut Radio Opaque Separators manufactured of latex-free elastomeric material were used to give the template shape of the buttons⁵⁻⁹. Over the treated two central incisors, four separators (two on each tooth – cervical and incisal) were placed provided with a cut. The flowable composite was filled inside the separators and cured for 10s (Fig.3 and 4). Following this, the separator was readily removed owing to the precut that was made on it (Fig. 5 and 6).

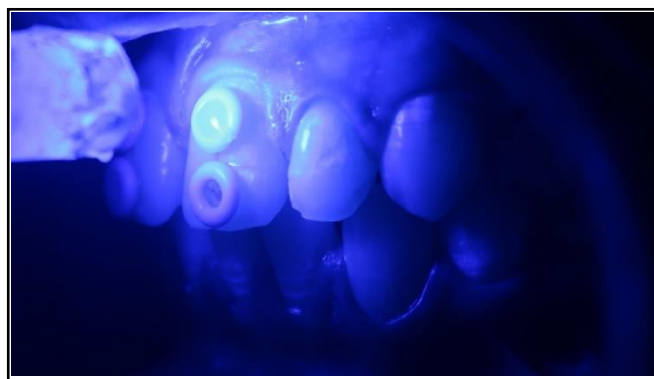


Figure 3. Flowable composite were placed in the separators and cured



Figure 4. Cured flowable composites with separators in place



Figure 5. Esthetic buttons



Figure 6. Esthetic buttons - lateral view

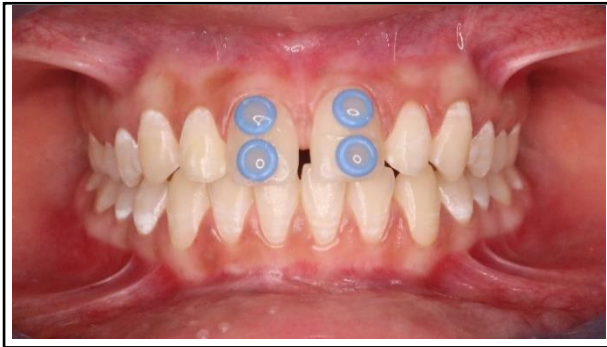


Figure 7. Elastomeric chains placed



Figure 8. Esthetic button with E chain-lateral view



Figure 9. A four-week post-Operative.

The short Elastomeric chains were placed in the space created by the separators connecting the cervical and the incisal areas of 11 and 21 (Fig. 7 and 8). In two weeks intervals, the patient was reevaluated. The E-chain was changed. At 4

weeks, the midline diastema closed without flaring the incisors. No black triangles or contact point irregularities have been noted.

The esthetic buttons were removed and a fixed lingual retainer has been placed between 11 and 21 followed by a composite buildup of 12 and 22 (Fig.10-13). Esthetic buttons can be replaced with prefabricated Invisalign buttons. Using the same approach, cases with mild to moderate anterior spacing may be handled.



Figure 10. Corrected Midline Diastema with composite buildup - frontal view



Figure 11. Fixed Lingual retainer in 11 and 21 - Occlusal view



Figure 12. Corrected Midline Diastema - lateral view



Figure 13. Corrected Midline Diastema - lateral view

DISCUSSION

Orthodontists should be prepared to decide on various treatment modalities with respect to the patient's dental condition and economic status. The anterior space or the midline diastema can be properly closed with this quick, attractive, and inexpensive treatment within 1 month. The idea of using two esthetic buttons in one tooth is to achieve a bodily movement of the tooth rather than tipping of the crown. By using this technique, iatrogenic possibilities such as the formation of black triangle, tipping of the crowns, and irregular contact points can be avoided. The esthetic buttons can be replaced easily with prefabricated invisible buttons.

CONCLUSION

This straightforward and economical technique can be taken into consideration in the contemporary era of advanced orthodontic treatments. Patients who are hesitant to begin treatment owing to financial obstacles with fixed appliance therapy may find this helpful.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

CONFLICT OF INTEREST

There are no conflicts of interest.

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