

# Management of Midline Diastma : A Case Report

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## Introduction

There are many etiological factors in the development of a median diastema and most have been investigated to some degree. Midline diastemata (or diastemas) occur in approximately 98% of 6 year olds, 49% of 11 year olds and 7% of 12–18 year olds.

There are many possible causes of midline diastemata—physiological, dentoalveolar disproportion, missing teeth, midline supernumerary teeth, proclination of the upper labial segment and a prominent fraenum. There have also recently been reports of self-inflicted pathological cases of diastemata caused by tongue piercing. In many of these cases, orthodontic treatment alone can help close a diastema. Combined treatment with orthodontic, restorative and oral surgery techniques may be advocated when, for example, tooth size discrepancies exist or supernumerary teeth are present.

## Case Report

A 23 year old female presented with the complain of a large unesthetic space between her upper front teeth. complete clinical examination was performed, including intraoral and extraoral photographs and a review of periodontal status. There was a spacing of 3–4 m.m between maxillary central incisors. After explaining all treatment options (Direct composite restorations, All ceramic crowns and fix orthodontic treatment ) patient opted for fix orthodontic treatment.

Following placement of full bonded appliance (.022 preadjusted brackets) and initial levelling and alignment the diastema was closed using medium elastic power chain on .016 round stainless steel archwire. The orthodontic treatment was progressed as anticipated.

The resulting final occlusion was retained with palatally bonded multistranded stainless steel wire retainer.



fig 1- pre treatment intraoral photograph



Fig 2- mid treatment with bonded appliance in place



Fig 3- post treatment photograph



Fig 4- palatal bonded retainer in place

## Discussion

When a treatment approach of a maxillary midline diastema is to be implemented, the first and probably most important stage of treatment is the diagnosis of the cause of the problem. The dentist should evaluate several parameters to reach a sound diagnosis. These are the patient's age and normal development, any malocclusion present, teeth size, relations with adjacent teeth, antagonist teeth and their osseous base, the presence of diastemas in other arch segments and, finally, the presence of a concomitant pathology.

When the diagnosis is established, the appropriate therapy should include management of the causative factors, along with the diastema correction and the permanent retention of the result. This is the only way to fully satisfy the patient's needs and maintain long-term stable results.

As a general guideline, only maxillary midline diastemas exceeding 2 mm are unlikely to close spontaneously following the eruption of permanent lateral incisors and canines, while an initial diastema less than 2 mm hardly ever remains. Therefore, the treatment of the maxillary midline diastema is usually postponed until the eruption of the permanent canines, but it may start earlier, depending on the cause of the diastema or in cases with a relatively large diastema. The treatment of the maxillary midline diastema may start before the eruption of permanent canines in cases where the diastema is due to congenitally missing lateral incisors, the presence of a mesiodens, odontoma or other pathology in the midline, or small teeth. Main indications for early closure of a maxillary midline diastema, i.e. during the stage of

mixed dentition, are: a) an urgent aesthetic demand by the patient and b) a central incisor position that inhibits the eruption of the lateral incisors or canines, since the lateral incisors might have been displaced into the space where canines normally erupts.

Retaining the result of treatment is a particularly difficult issue, especially if lateral incisors and canines have not yet erupted.

Usually, in cases with a diastema that exceeds 2 mm, tipping movements are not sufficient and it is necessary to move teeth bodily and treat by using fixed orthodontic appliances. Prognosis in such cases is better when only mesiodistal and not palatal repositioning is required. It should always be kept in mind that when tipping takes place, it usually results in diastema relapse and, therefore, it is indispensable to apply permanent retention.

In some cases, closure of a maxillary midline diastema or other diastemas in the maxillary anterior region may be achieved with minimal preparation veneers or through teeth restorations with composite resin. However, the long-term prognosis of these therapeutic approaches must be further investigated. In particular, the cases where these options can be performed are when:

- a) the patient does not want to undergo orthodontic treatment,
- b) there are other aesthetic problems present as well (e.g. amelogenesis imperfecta or discoloration), and
- c) treatment requires combined orthodontic and restorative treatment, in cases with a very large diastema.

## Retention of The Result

The reason for relapse in patients with midline diastema is the placement of teeth in a position where no equilibrium exists with their functional environment. In most of these cases, the factor disturbing this equilibrium is still present after treatment.

Sashua and Artun (1999) concluded that the most important risk factors for relapse are the increased pretreatment width of the midline diastema, the presence of a family member with a similar condition, and the presence of more than one diastemas in the maxillary anterior region.

As a general rule, treatment is unlikely to produce assured and stable results, thus the use of permanent retention for a considerable period of time or even for life, is essential in almost every case.

The most appropriate method for achieving long-term retention after orthodontic treatment is through the use of palatally bonded multistranded stainless steel wire retainers, which allow teeth to maintain their physiologic mobility and are easy to fabricate.

## References

Reference are available on request at  
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