

Treating a maxillary midline diastema in adult patients

A general dentist's perspective

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The presence of a space between the two maxillary central incisors—a maxillary midline diastema (MMD)—is considered a normal developmental phenomenon in children and requires no treatment. Lindsey¹ conducted a study, the results of which showed that about two-thirds of children in whom only central incisors had erupted exhibited an MMD. An MMD of greater than 2 millimeters in the mixed dentition is unlikely to close spontaneously² and may persist in the permanent dentition. An MMD can be inherited and is more prevalent in certain ethnic groups.² Gass and colleagues³ reviewed the literature and reported a prevalence of MMD that ranged from 1.6 to 25.4 percent of adults from various populations and age groups. They also reported that MMDs are more common among African Americans than they are among whites, Asians or Hispanics.³

Keene⁴ defined an MMD as a space greater than 0.5 mm between the proximal surfaces of the two central incisors because such a gap is noticeable. McKnight and colleagues⁵ reported that patients consider MMDs to be less esthetic than mild fluorosis or isolated opacity. An MMD also can adversely affect body image and self-esteem, and it can be one of the most negative factors in self-perceived dental appearance.⁶ Kerosuo and colleagues⁷ con-

ABSTRACT

Background. A maxillary midline diastema (MMD) often is a primary concern of patients during a dental consultation. Although an MMD can be transient owing to the developing dentition and, thus, requires no active treatment, management of MMDs in the permanent dentition requires a detailed examination and appropriate care.

Case Descriptions. The authors present five cases of MMDs in adults to illustrate a range of restorative and orthodontic options. In the first case, the clinician used resin-based composite buildup to close an MMD resulting from small teeth and generalized spacing in the dental arch. In the second case, the clinician placed porcelain veneers to treat an MMD in a patient with discolored dentition. In the third case, the clinician fitted a removable appliance to close an MMD by tipping the incisors palatally. In the fourth case, the clinician fitted a sectional fixed appliance to promote mesial bodily movement of the incisors. In the fifth case, the clinician placed a full-arch fixed appliance to treat an MMD caused by tilted incisors.

Conclusions and Clinical Implications. Effective treatment requires an accurate diagnosis and appropriate intervention. General dentists can perform a range of restorative and orthodontic treatments in appropriate clinical situations to address patients' concerns.

Key Words. Diastema; esthetic dentistry; orthodontic space closure; orthodontic appliances; veneers; resin-based composites; dental restorations; orthodontics; restorative dentistry; fixed prostheses; restorative dentistry.

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ducted a study in which they showed Finnish students photographs of faces modified according to one of four dental arrangements. The authors reported that the participants ranked faces exhibiting a median diastema as less intelligent, beautiful and sexually attractive than faces with an ideal occlusion; they also judged them as belonging to a lower social class. In addition to poor esthetics, patients who request closure of an MMD also may complain of impaired speech, lip biting and adverse psychological effects.⁷

Before formulating a definitive treatment plan for a patient with an MMD, the clinician needs to understand the etiology of the condition. It can be an anomaly in the number of teeth (such as mesiodens or hypodontia) or the size of teeth (such as microdontia), an enlarged labial frenum, abnormal oral habits (such as tongue thrusting or finger biting) or advanced periodontitis. Clinicians must obtain a comprehensive medical history, including the duration of the diastema, any changes in size and any previous orthodontic treatment, as well as a comprehensive family history.

The clinical examination should include inspection of the dentition and occlusion, labial frenum and lips and an assessment of periodontal condition. Full-mouth periapical radiography is necessary to assess periodontal support. The clinician also should make study models, and he or she can use a diagnostic wax-up to illustrate the possible results of treatment. In general, the dentist can use the “golden proportion” (8:5)—the ratio of the mesiodistal crown width of the central incisor to that of the lateral incisor—as a guideline for esthetic evaluation. Last, but not least, the patient’s preferences, which are affected by psychological, physical, financial and time factors, are key to performing successful dental treatment.

We present five cases to illustrate the management of MMDs in general dental practices.

REPORT OF CASES

Case 1. Description. A 20-year-old woman visited her dentist (C.H.C.) because she was unhappy with her smile and the spacing in her maxillary teeth, particularly between the two central incisors (Figure 1). The clinical examination revealed generalized spacing in the maxillary and mandibular teeth due to a discrepancy in the size of her teeth and dental arches. The



Figure 1. Frontal view of a maxillary midline diastema.



Figure 2. Palatal view of resin-based composite buildup.



Figure 3. Frontal view of resin-based composite buildup.



Figure 4. Smile profile after placement of resin-based composite buildup.

dentist took impressions to prepare a study cast and diagnostic wax-up. After discussing treatment options with the patient, the dentist placed resin-based composite buildups on her four maxillary incisors to close the spacing. He cleaned the incisors with pumice but did not prepare the teeth. The clinician added resin-based composite (A2 shade, Vita Classical Shade Guide, Vident, Brea, Calif.) to the proximal surfaces of the incisors to close the space between the central and lateral incisors. The clinician followed the emergence profile of the incisors in the cervical regions during buildup of the resin-based composite to ensure a smooth lingual-to-buccal finish (Figure 2). He thinned the lingual and merged its margin with the enamel surface. The patient was satisfied with this simple noninvasive treatment (Figure 3) even though the spacing between her mandibular teeth persisted (Figure 4).

Discussion. Making a diagnostic wax-up and study cast requires an extra appointment, but they serve as a record, aid in communication and allow ample time for the patient to evaluate the intended treatment outcome outside the dental office. Moreover, the clinician can fabricate a silicon index from the study cast to aid in buildup of the resin-based composite. Dalvit and colleagues⁸ advocated a simple chairside try-in

ABBREVIATION KEY. MMD: Maxillary midline diastema. NiTi: Nickel-titanium. SNA: Sella, nasion, A point. SNB: Sella, nasion, B point.

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