



# A “midline dilemma” in an adult mutilated dentition

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Orthodontic treatment for adult patients who have mutilated dentitions can be clinically challenging. A 58-year-old man with several occlusally abraded teeth, a congenitally missing maxillary lateral incisor, and prior implant placement sought orthodontic treatment and restoration. Prosthetic restoration would not be possible. The “dilemma” for this patient was whether to trephine and remove an existing implant and make space for a new lateral incisor implant, or to restore the maxillary canine as a lateral incisor. (*Am J Orthod Dentofacial Orthop* 2014;146:364-70)

Dentists “restore” patients who have mutilated dentitions every day. Many of these patients would benefit from orthodontic treatment before prosthetic restoration, but some decline orthodontic treatment because of finances or inconvenience. Some, however, have no choice because their dentitions are not restorable without orthodontic or surgical intervention or both. The patient whose records are presented here had a dentition that was complicated by prior implant placement. He was referred because the general dentist could not restore his mouth to an acceptable esthetic and functional level unless he had orthodontic treatment before restorative dentistry.

## HISTORY AND ETIOLOGY

The patient was a white man, age 58 years 8 months, who had an unremarkable medical history. He had a Class I malocclusion with a slightly prognathic profile. His dental history showed prior extraction of the mandibular right first premolar and the maxillary right first and second premolars with implant and crown replacements of these teeth. The maxillary left lateral incisor was missing. The maxillary right canine was in the lateral’s position and functioned as a lateral incisor. The patient’s chief concerns were his worn-down teeth and dental esthetic appearance. He desired a better esthetic appearance and restoration of his abraded teeth. The primary etiology

was believed to be heredity and lack of adequate planning for dental restorations over the years.

## DIAGNOSIS

The facial photographs (Fig 1) demonstrated a slight mandibular prognathic facial profile with the maxillary midline off to his left. The patient’s teeth were stained and dark.

The dental casts (Fig 2) showed an Angle Class I occlusion. The maxillary left lateral incisor and mandibular right first premolar were missing. The maxillary right first premolar and second premolar were implant crowns. The maxillary left third molar was present, as were the mandibular third molars. There was mandibular crowding of 6 mm. There was a 3-mm space between the maxillary left canine (it functioned as a lateral incisor) and the first premolar crown. The mandibular left central incisor and left first premolar were in buccal crossbite. The dental midlines were coincident. There was extensive wear on the maxillary and mandibular incisors.

The panoramic radiograph (Fig 3) showed that the maxillary left lateral incisor was missing, and the maxillary left canine was in its place. The maxillary right first and second premolars were osseointegrated implants with crowns. The mandibular right first premolar was missing. The mandibular third molars and the maxillary left third molar were present.

The cephalogram and its tracing (Fig 4) show an ANB angle of 0.5°. The FMA was 24°. A facial height index of 0.82 was confirmation of a balanced anterior and posterior facial height.<sup>1</sup> The IMPA angle of 94° reflected slightly procumbent mandibular incisors. The Z-angle of 80° confirmed a straight soft-tissue overlay.<sup>2</sup> A Wits appraisal measurement of –1.1 mm confirmed a slight Class III alveolar imbalance.<sup>3,4</sup> There was a minimal overbite.

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The author has completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest, and none were reported.

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**Fig 1.** Pretreatment facial and intraoral photographs.

### TREATMENT OBJECTIVES

1. Maintain the profile line to nose relationship and the Z-angle.
2. Obtain normal canine and incisal guidance.
3. Resolve the crowding.
4. Close the maxillary spaces.
5. Prepare the dentition to be prosthetically restored.

### TREATMENT ALTERNATIVES

1. Use a trephine to remove the maxillary right first premolar implant. Move the maxillary right canine and central incisors to the right and open space between the maxillary left central incisor and maxillary left canine to create room for an osseointegrated implant for a maxillary lateral incisor and crown. Close the space mesial to the maxillary first premolar. Close the mandibular right first premolar space and move the mandibular midline to the right to resolve the mandibular anterior crowding. Interproximal reproximation could be used as necessary.

2. Prosthetically restore all maxillary and mandibular teeth to create anterior and canine guidance.
2. Extract the mandibular left central incisor. Accept the maxillary midline position. Use the maxillary right implant crowns as anchorage to move the left buccal segments forward. Maintain the mandibular right first premolar space for an osseointegrated implant and crown. Restore all the maxillary and mandibular teeth. The maxillary left canine would be restored as a lateral incisor, but it would still function as a canine with the mandibular left canine to provide disocclusion of the left buccal segments in lateral excursions.

### TREATMENT PLAN

Merrifield's total space analysis<sup>5,6</sup> was used to determine space requirements. A decision was made to extract the mandibular left central incisor and maintain the midline as described in option 2. This extraction pattern would provide room to resolve the mandibular anterior crowding. The mandibular first

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