

Orthodontic treatment combined with tooth transplantation for an adult patient with a missing mandibular first molar: Long-term follow-up

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A Japanese woman, age 29 years 8 months, had a missing mandibular left first molar, bimaxillary dentoalveolar protrusion, and crowding. She had a skeletal Class II relationship and a long face with a steep mandible. She had previously undergone root canal treatment for the mandibular right second premolar, and the mandibular left third molar was impacted. The maxillary left first premolar was extracted for autotransplantation to the mandibular left first molar region. After confirmation of a favorable prognosis for the transplanted tooth, the maxillary right first premolar, the mandibular right second premolar, and the impacted mandibular left third molar were extracted for orthodontic treatment. The active orthodontic treatment period was 32 months. The patient returned for follow-up records 12 years 7 months after the active treatment, and her facial profile and occlusion were well maintained. At 13 years 9 months after transplantation, no abnormalities were observed with the transplanted tooth in the radiographic and clinical evaluations. (*Am J Orthod Dentofacial Orthop* 2014;145:S114-24)

When formulating an orthodontic treatment plan for an adult patient, several problems might be encountered that require different considerations than when treating younger patients. Problems such as dental caries, periodontal disease, prosthetically restored teeth, or missing teeth might further complicate the treatment plan.¹ The treatment alternatives for missing teeth include fixed bridges, dental implants, orthodontic movement, and tooth transplantation. Tooth transplantation with complete root formation requires more time and effort compared with other treatment alternatives because root canal treatment is required after the surgery.² However, with

regard to maintaining compatibility between the adjacent teeth and maintaining or restoring the alveolar bone volume around the missing tooth, we can consider tooth transplantation when a donor tooth can be supplied.³ Previous reports have demonstrated acceptable survival rates of autotransplanted teeth with complete root formation compared with the prognosis of other treatment alternatives.^{4,5}

This case report describes an adult Japanese patient with a missing mandibular first molar in whom successful long-term occlusal stability was achieved by orthodontic treatment combined with tooth transplantation.

DIAGNOSIS AND ETIOLOGY

The patient was a Japanese woman, age 29 years 8 months, with chief complaints of maxillary protrusion and absence of the mandibular left first molar, which had been extracted approximately 2 years previously because of severe caries. She had a convex facial profile. Vertically, she had a long face with a high gonial angle. No remarkable facial asymmetry was evident. The intraoral molar relationship on the right side was Angle Class I, and the relationship could not be judged for the left side because of the missing mandibular first molar, although we speculated it to be Angle Class II. The canines exhibited a Class I relationship on the right side and a

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Fig 1. Pretreatment facial and intraoral photographs.

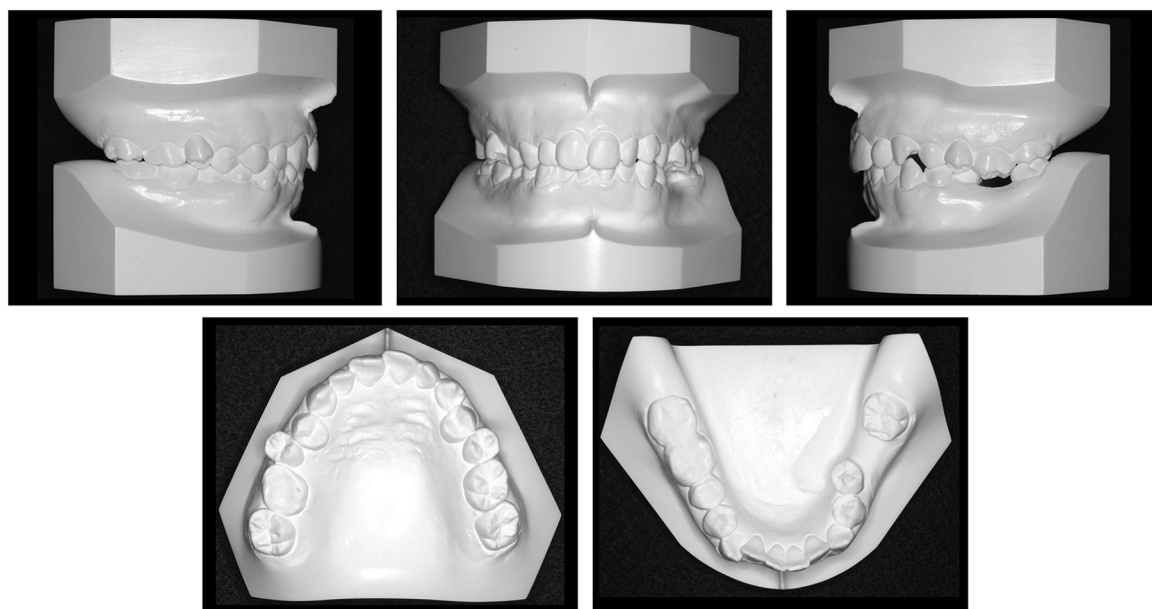


Fig 2. Pretreatment dental casts.

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