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Agenesis of mandibular second premolars. Spontaneous space closure after extraction therapy: a 4-year follow-up

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ABSTRACT

The aim of this study was to investigate the space closure and occlusal changes in 11 subjects (mean age 11.8 years) with normal occlusion and agenesis of the mandibular second premolar, after extraction of the mandibular second primary molar and the maxillary second premolar on the side of the agenesis. The treatment started when the first premolars came into occlusion and the subjects were followed for 4 years. Dental casts were taken at the start of treatment and after 2 and 4 years. Space closure, sagittal movements, rotational movements, and tipping of the first molars and first premolars and dental midline shift were measured on photographs of dental casts. Sagittal movement of the incisors was measured on lateral cephalograms. The results showed that most of the extraction space closed during the first year (55 per cent in the maxilla, 46 per cent in the mandible) and at the end of the follow-up period 89 per cent of the extraction space closed in the maxilla and 80 per cent in the mandible, leaving a mean residual extraction space of 0.9 and 2 mm respectively. In the maxilla, 70 per cent of the extraction space of 0.9 and 2 mm respectively. In the maxilla, 70 per cent of the extraction space closed by mesial and rotational movements of the first molars. Maxillary premolars moved distally, rotated and tipped only during the first year of observation. In the mandible, the space closure occurred by mesial/rotational movements and tipping of first molars and distal movement and tipping of the first premolars. Unilateral extraction had no influence on the maxillary midline while it caused a statistically significant mandibular dental shift to the extraction side. Extraction therapy had no impact on the overjet, overbite or incisor inclination.

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