



### TOOTH TRANSPOSITION BETWEEN UPPER MOLAR AND PREMOLAR: A CASE REPORT

F. d'Apuzzo<sup>1</sup>, G. Isola<sup>2</sup>, A. Monsurrò<sup>1</sup>, D. Giugliano<sup>1</sup>, G. Matarese<sup>2</sup>, L. Perillo<sup>1</sup>

<sup>1</sup>Department of Orthodontics, Second University of Naples, Naples, Italy

<sup>2</sup>Department of Specialist Medical-Surgical Experimental Sciences and Odontostomatology, University of Messina, Messina, Italy

**Aim.** Tooth transposition is defined as a type of ectopic eruption with a permanent tooth developing and erupting in the position normally occupied by another permanent tooth. Although transpositions can appear in both the maxilla and the mandible, the maxillary canine is the most frequently involved tooth, followed by the first premolar, and less often by the lateral incisor. The aim of this work was to show an unusual tooth transposition between a molar and a premolar.

**Materials and methods.** A 10-year-old girl showed a Class I dental relationship in early mixed dentition: the maxillary arch was slightly constricted with no crossbite. Mild crowding in both arches and a tendency to open bite with tongue thrust were observed. The facial profile was slightly convex. The panoramic radiograph showed a developing ectopic premolar. The treatment had two phases. The first phase, lasting 1 year, was interceptive with a transpalatal bar in the maxillary arch and a lip bumper in the mandibular arch. The second phase of the treatment began with the placement of 0.022 x 0.028 standard edgewise appliances associated with high-pull headgear to supplement the anchorage and achieve vertical control. Initial leveling was accomplished with 0.016 and 0.018 Australian round wires and an open-coil springs to gain the space for the unerupted bicuspid. Then, the left second premolar was surgically exposed from the palatal side and showed an enamel hypoplasia of the crown. During the surgery a button for orthodontic traction was bonded and an elastomeric chain was applied. The tooth erupted palatally close to the distal cusp of the first molar. Once the premolar tooth was in the buccal position, rectangular archwires were used to move the roots progressively buccally and to complete the leveling of the arch. The fixed phase lasted 18 months. After active orthodontic treatment, maxillary and mandibular Hawley retainers were used for retention.

**Results.** The panoramic radiograph during treatment showed that the crown and the root of the maxillary left second premolar were into the correct position. The final occlusion was good, although the ectopic maxillary left second premolars had an ovoid shape and required reshaping with composite materials. However, the gingival height at the buccal side of the left premolar was satisfactory. Facial esthetics was preserved. The total treatment time was 3 years 6 months. Bilateral Class I molar and canine relationships and ideal overjet and overbite were achieved.

**Conclusions.** The tooth transposition is among the most difficult challenges for orthodontists. As shown by the occlusal and esthetic outcome of this clinical case, early diagnosis and treatment are suggested, albeit the complexity and the length of the treatment protocol. Moreover, a cost-benefit evaluation is always to be considered. Light forces and extra care, however, are required to prevent any possible damage to the teeth and the supporting structures. Therefore, early treatment of an unusual tooth transposition, even if carefully, should be considered.