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Mandibular lateral incisor-canine transposition, concomitant dental anomalies, and genetic control

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ABSTRACT

Mandibular lateral incisor-canine (Mn.I2.C) transposition is a rare developmental disturbance of tooth order characterized by positional interchange of the two teeth. In children with Mn.I2.C anomaly, the mandibular lateral incisor shows distal ectopic eruption and the adjacent canine subsequently erupts mesial to it. A sample of 60 orthodontic patients with Mn.I2.C transposition was studied using roentgenograms taken at the time of diagnosis. Two age-related phenotypes of the anomaly were identified: early-stage (median age, 9 years) and mature-stage (median age, 12 years). Mn.I2.C transposition occurred bilaterally in 10 subjects (17%) and favored female expression (sex ratio, M1 :F3) and right-side occurrence (68% of unilateral cases). Statistically significant associations were found between Mn.I2.C transposition and increased frequency of tooth agenesis (M3, $p < 0.01$; MnP2, $p < 0.01$) and peg-shaped maxillary lateral incisors ($p < 0.0001$). The results from this study and the analysis of 50 previously published cases provide evidence that Mn.I2.C transposition is a disturbance of tooth order and eruptive position probably caused by genetic influences. The Mn.I2.C anomaly likely results from genetic mechanisms similar to those responsible for occurrences of its associated dental anomalies, such as tooth agenesis and peg-shaped maxillary lateral incisors. In an appendix, clinical orthodontic management of Mn.I2.C transposition is discussed, based on treatment data derived from the study sample.

KEY WORDS: Tooth transposition, Tooth eruption, ectopic, Tooth abnormalities, Malocclusion, Genetics, clinical.

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