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Incomplete transposition of a mandibular premolar

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Abstract

A case is presented which demonstrates the incomplete transposition of a posterior tooth. In this case, the path of eruption of an abnormally angulated developing mandibular second premolar was diverted distally following the extraction of the adjacent first permanent molar.

The transposition of teeth is a rare occurrence which has been defined as the interchange of tooth position.[1] Most case reports involve transposition of canines with either lateral incisors or first premolars.[2-6] Transposition may be unilateral or bilateral.

Joshi and Bhatt[5] in their study of 40 cases of maxillary canine transposition observed several cases in which interchange was not complete. They stated that the bodily migration of a tooth suggests a tendency toward transposition and should perhaps be called an "incomplete transposition".

Cases of incomplete transposition have been reported in anterior, but not posterior, segments. Jackson[7] reported a case in which a maxillary right canine was found in the position of the missing maxillary right central incisor. Ackerman[8] described a case of a maxillary right permanent central incisor erupting into the position of the maxillary right lateral incisor while the maxillary right primary central incisor was in its appropriate position. The primary lateral incisor was lost prematurely secondary to trauma and its permanent successor was congenitally absent. Winter[9] reported a case of what appeared clinically to be posterior transposition but on radiographic examination was found to be a supernumerary premolar positioned between the first and second permanent molars.

Case Report

A 13-year-old healthy female presented to the Dental Department of Boston's Children's Hospital Medical Center for a dental evaluation. A clinical examination revealed that both mandibular first permanent molars were absent and the mandibular right second premolar was in the position of the first permanent molar. The mandibular right second primary molar was present, without mobility, between the first and second premolars (Figures 1 and 2). A panoramic radiograph (Figure 3) revealed that the distal root of the primary molar had been resorbed. The patient's past dental history included the extraction of both mandibular first permanent molars at 9½ years of age.

Pre-extraction radiographs (Figures 4a and 4b) were obtained from the dentist who extracted the mandibular first permanent molars. The radiographs indicated a distal inclination of the crowns of the developing second premolars bilaterally. The quality of the radiographs did not permit evaluation of the stage of root development of the second premolars. A

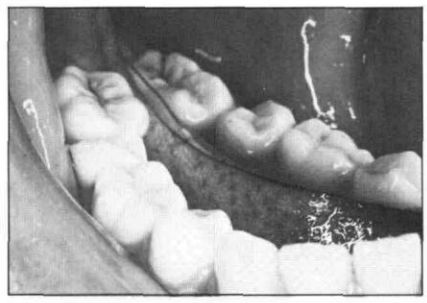

Figure 1. Intraoral photograph of incomplete transposition of mandibular right second premolar (left).

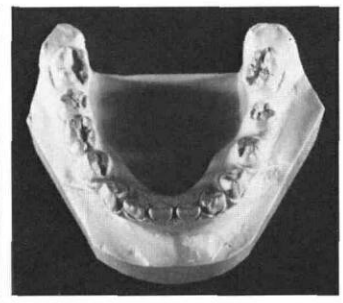

Figure 2. Study model demonstrating incomplete transposition of mandibular right second premolar and spacing of mandibular left posterior teeth (right).

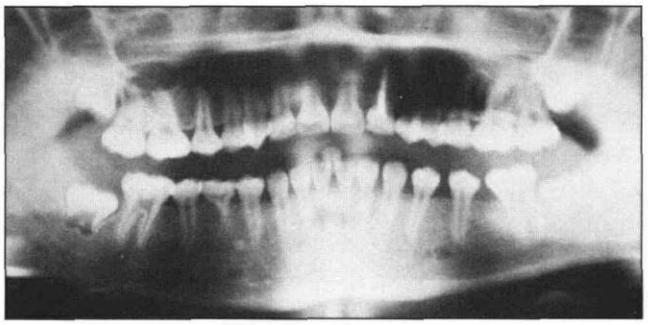

Figure 3. Panoramic radiograph demonstrating incomplete transposition of mandibular right premolar.

radiolucency was evident in the furcation area of the mandibular right first permanent molar.

Discussion

This case demonstrated incomplete transposition of a mandibular second premolar. The etiology of the incomplete transposition was most likely the extraction of the first permanent molar adjacent to the distally-inclined crown of the developing second premolar, thus allowing it to erupt into the position of the first molar. Alveolar bone destruction as evidenced by the furcal radiolucency associated with the mandibular right first permanent molar may explain why the incomplete transposition occurred only in the mandibular right quadrant and not the left.

The ideal treatment for this patient would have involved orthodontics and fixed prosthetics in both mandibular quadrants. Prosthetic treatment of the mandibular right quadrant could have been delayed until the second primary molar exfoliated or became nonfunctional. In this case, however, the patient and her family elected only to continue regular preventive and restorative care.

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Figure 4a and 4b. Pre-extraction radiographs obtained from the patient's previous dentist (Dr. William Robinson, Boston, MA).