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Preservation of the ectopically-erupted maxillary lateral incisor

KEYWORDS

Ectopic eruption;
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Force direction

Ectopic tooth eruption, characterized by a deviation from the normal eruption path, can be attributed to genetic, pathologic, or traumatic factors. The consequences of ectopic eruption include crowding dentition, loss of arch perimeter, tooth impaction, and root resorption. Among ectopic cases, maxillary first permanent molars and canines are the most commonly affected, followed by mandibular canines, second premolars, and rarely maxillary lateral incisors.¹ Ectopic eruption of maxillary lateral incisors is particularly rare unless in cleft lip and palate patients.

Early detection of ectopic eruption during the early mixed dentition phase emphasizes the need for early orthodontic intervention to prevent root resorption. The decision for early orthodontic treatment remains a subject of debate. However, ectopic tooth eruption provides an illustrative case with a brief treatment duration and well-defined outcomes.

Here, we presented a case of a 9-year-old child with a chief complaint of an unerupted right maxillary lateral incisor (tooth 12), without a history of dental trauma. The child exhibited a deviated chin to the left side with a normal incisor show (Fig. 1A). Frontal views revealed minor incisor crowding, shallow overbite, and an unerupted tooth

12 (Fig. 1C and D). Panoramic X-ray confirmed the inversion of tooth 12 with the crown facing upward to nose (Fig. 1I), and with no evidence of root resorption.

Two treatment options were considered: pulling the tooth 12 into normal dentition or extracting the ectopically-erupted tooth 12. After discussions with the parents, the decision was made to pull the tooth 12 into the dentition. The treatment commenced with a maxilla 2 × 4 fixed appliance, incorporating a transpalatal arch (TPA) with a hook for pulling the tooth 12 (Fig. 1E and F). Following periodontal close type flap surgery, the tooth 12 was exposed, and a lingual button was bonded to its surface. A power chain served as a force generator for traction. After one year of treatment, the tooth 12 aligned with the archform, and the maxillary incisors achieved a proper alignment (Fig. 1G, H, and J), resulting in a pleasing smile arc appearance (Fig. 1B).

The lateral incisors, comprising a significant percentage of the ectopically-erupted teeth, necessitate careful management, especially in children.² In cases like the tooth 12, without ankylosis, attempts to pull it to a normal position are recommended. In the present case, utilizing the TPA as anchorage combined with a hook was proved to be a convenient and effective method for pulling the ectopic tooth 12 (Fig. 1K and J). This approach eliminates the need for auxiliary devices like temporary anchorage devices, with the orthodontist providing corrective force direction. Considering the treatment timing, neglecting treatment for the tooth 12 would impede its automatic correction in growth direction. Extracting the tooth 12 would require substantial orthodontic modifications for its replacement with a maxillary canine, addressing esthetics, tooth morphology, and occlusion.^{3,4} Orthodontists should strive to offer a chance of preservation to teeth that appear to be without hope.

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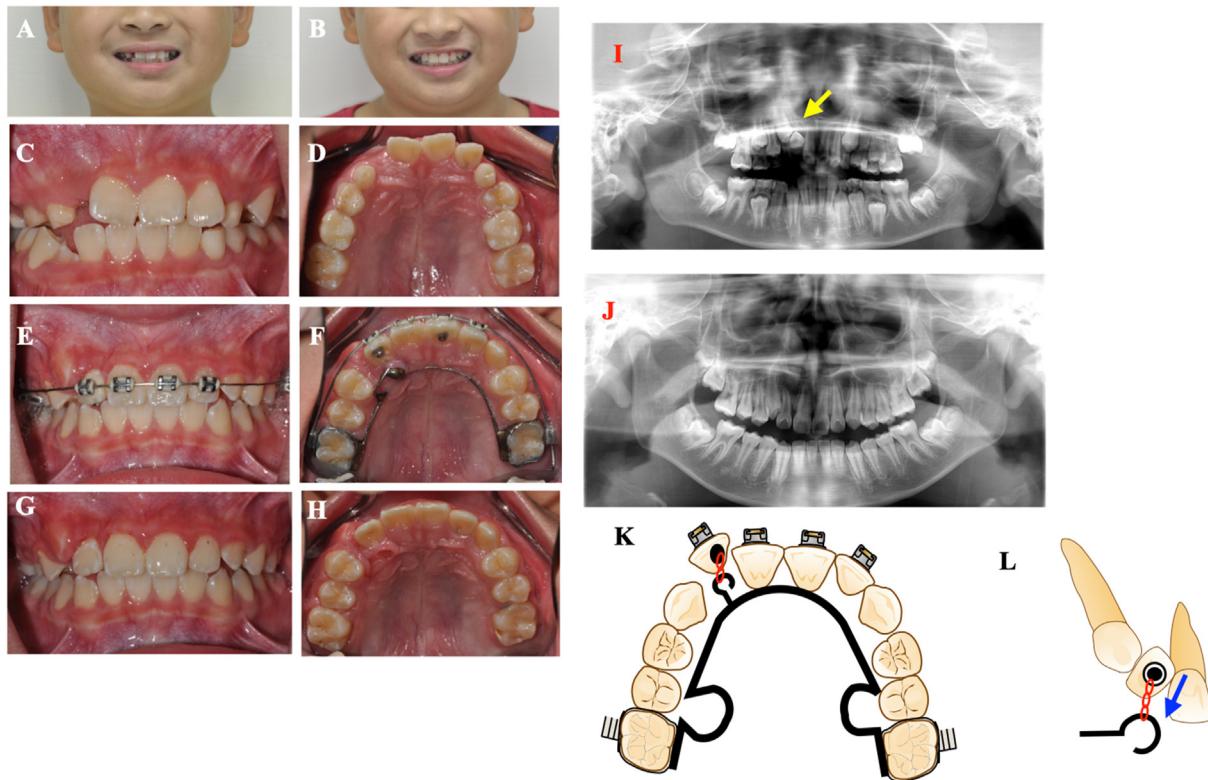


Figure 1 Management of ectopic eruption of the right maxillary lateral incisor. (A) Initial smile view. (B) Post-treatment smile view. (C) Initial oral frontal view, revealing an unerupted right maxillary lateral incisor. (D) Initial occlusal view showing crowded anterior teeth. (E) 2 × 4 fixed appliance used for leveling dentition, post flap surgery, and extraction of the right maxillary lateral incisor. (F) Occlusal view, displaying the transpalatal arch for the tooth traction. (G) Post-treatment frontal view. (H) Post-treatment occlusal view. (I) Initial panoramic radiograph, highlighting the inverted position of the right maxillary lateral incisor toward the nose (yellow arrowhead). (J) Post-treatment panoramic radiograph, indicating the intact root and well-aligned the right maxillary lateral incisor. (K) Transpalatal arch design. (L) Force direction (blue arrowhead), with the right maxillary lateral incisor crown initially moving downward to the occlusal plane. The second step involved the ligating the labial bracket with a labial arch wire.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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