

### **P33 The study of eruption pattern of the mandibular first molar using the cone beam CT**

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#### **Introduction and Objectives**

Cone Beam CT allows the creation in “real time” of images not only in the axial plane but also 2-dimensional(2D) images in the coronal, sagittal and even oblique or curved images plane. the purpose of this study was to investigate the eruption pattern of the mandibular first molar in sagittal, frontal and horizontal views.

#### **Materials and Methods**

CT images were obtained from healthy 84 children between 3 to 10 years of age (44 boys, 40 girls) with a normal dentition. CT images (Implagraphy, vatech co., korea ) were classified into seven groups according to Nolla stage; initial root formation(stage 4), Root 1/4 complete(stage 5), Root 1/2 complete(stage 6), Root 3/4 complete(stage 7), Root length complete(stage 8), Apex 1/2 closed(stage 9), Apex closure complete(stage 10). Mandibular first molar position and molar axis were measured from the midsagittal plane, occlusal plane and primary 2nd molar distal plane, and calculated the position index of mandibular first molar to evaluate the movement of mandibular first molar with developmental stage.

#### **Results and Conclusion**

The results were as follows :

1. In the frontal view, the intermolar width decreased continuously with stage and slightly increased at the last stage. The largest increase was observed between stage 6 and 8.
2. In the sagittal view, average distances from occlusal plane to midpoint of mandibular first molar were observed the largest change between stage 5 and 8.
3. In the horizontal view, mandibular first molar from distal surface of primary second molar moved distally between stage 4 and 7, and from midsagittal line moved to lingual direction between stage 5 and 8.
4. In the sagittal view, average angle from occlusal plane to mesio-distal axis of mandibular first molar increased with stage. Average angle from occlusal plane to axis of mandibular first molar increased between stage 4 and 8.
5. In the horizontal view, average angle from midsagittal plane to axis of mandibular first molar increased between stage 5 and 8, and slightly decreased after stage 8.
6. In the frontal view, average angles from midsagittal plane to bucco-lingual axis mandibular first molar slightly increased during all stage. The largest increase was observed between stage 4 and 5.