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Title: **Prevalence Of Premolars With Dens Evaginatus Among Taiwanese Children And Morphometric Analyzing Of Dens Evaginatus By Cone-beam CT Imaging**

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Abstract: Study objectives: The existence of dens evaginatus in premolars is markedly susceptible to pulp exposure and pulp necrosis without noticeable signs among children. The purpose of this study was to determine the prevalence of premolars existing dens evaginatus among Taiwanese children, and morphometric analyze extracted mandibular premolars existing dens evaginatus by using cone-beam computed tomography (CBCT) to provide a preventive treatment protocol for dentists. Materials and Methods: A total of 225 subjects (125 boys and 100 girls; mean [range] age, 10.7 [10.3-11.6] years) at an elementary school in Taiwan were included in this study. The gender, symmetry, and frequencies of occurrence of premolars existing dens evaginatus were recorded and studied. Three extracted mandibular premolars were scanned using CBCT (Planmeca, ProMax). 3D images of three extracted mandibular premolars were reconstructed using Implant Max software (Saturn, Taiwan). The distances from the central cusp, buccal cusp and lingual cusp tips to the chamber roof of the extracted mandibular premolars were morphometrically analyzed and measured. Results: 16.44% (37/225) revealed to have one or more premolars with dens evaginatus among Taiwanese children. The left to right ratio was 1:1.The prevalence of male (17.60%) is higher than female (15.00%). An average distance from pulp chamber roof to central cusp tip was 3.2 mm, to buccal cusp tip was 4.5 mm, and to lingual cusp tip was 4.4 mm respectively using Implant Max software analysis. Conclusion: Clinicians should be aware of the high racial prevalence of dens evaginatus in premolars among the Taiwanese children and morphologic knowledge of the central cusp of such teeth might be helpful for them when encountering dens evaginatus cases.

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