

Estimation of Mandibular Premolar Teeth Length and Mesiodistal Width Based on Panoramic Radiograph

Haghanifar S.^{*}, Arash V.^{**}, Nemati R.^{***}, Bijani A.^{****}

^{*} Dept. of Oral & Maxillofacial Radiology, School of Dentistry, Babol University of Medical Sciences, Babol, Iran

^{**} Dept. of Orthodontics, School of Dentistry, Babol University of Medical Sciences, Babol, Iran

^{***} Dentist

^{****} General Physician

Abstract

Statement of Problem: In diagnostic studies of dentistry, estimation of the mesiodistal width of the unerupted teeth and the required space for their eruption in relation to the space analysis and evaluation of the root-crow ratio is of great importance.

Purpose: This study aimed to evaluate the ratio between the real and radiographic length and mesiodistal width of mandibular premolars and provide a formula for prediction of the teeth length and mesiodistal width.

Materials and Method: Fifty six extracted teeth of mandibular first and second premolars of patients and their panoramic radiographs with good quality were collected. The extracted teeth were divided into four groups: T34 (lower left first premolar), T44 (lower right first premolar), T35 (lower left second premolar), and T45 (lower right second premolar). Then the length and mesiodistal width of both the panoramic images and the extracted teeth were measured. All of the obtained data were analyzed through t-test, two tailed student and linear regression model.

Results: It was shown that the vertical magnification of the mandibular first premolars was almost 11.4%-12.1% and that of the mandibular second premolar was almost 16%. The horizontal magnification of the mandibular first premolar was almost 15% and that of the mandibular second premolar was almost 26%. No statistically significant differences were found between the true and radiographic length and mesiodistal width and the magnifications of the left side premolars compared with right side premolars. To determine the real mesiodistal width and length size, some equations are introduced.

Conclusion: The panoramic radiographs taken in this research by X-ray imaging machine are feasible and reliable for estimating the actual premolar teeth length and mesiodistal width using specific equations for each teeth in the lower jaw.

Key words: Panoramic, Premolar, Tooth length, Mesiodistal width

Shiraz Univ Dent J 2011; 12(2): 108-113

Manuscript Submitted Nov. 2010 ; Revised and Accepted May. 2011

Corresponding Author: Haghanifar S. Dept. Oral & Maxillofacial Radiology, School of Dentistry, Babol University of Medical Sciences, Babol, Iran Tel: 0111-2291408 Email: dr_haghanifar@yahoo.com