

# **Evaluation of the possibility of permanent canine maxillary impaction on panoramic radiography in 7-13 years old patients referred to pediatric dental care centers in Ardabil from April 2021 to September 2022**

## **Abstract**

**Introduction:** After the third molar, the maxillary permanent canine is the most impacted tooth and has special importance in esthetic and function; Therefore, apropos prediction, diagnosis and treatment of this disorder can decrease treatment costs and prevent its subsequent complication which includes root resorbtion of adjacent teeth, ankyloses and etc. The purpose of this study is to determine the possibility of this tooth being impaction on panoramic radiography.

**Materials and Methods:** In this study, in addition to recording information such as age and gender, panoramic radiographs of 7-13-year-old patients were used. 385 radiographs were selected among 847 radiographs witch were include in determined criteria. To evaluate the possibility of permanent maxillary canine impaction, Ericson and Kurol (modified by Lindauer et al) and Power and Short analysis were used. In EK/L the position of impacted canine with lateral tooth was studied, which was placed in one of the sections I and II (low risk of impaction) and sections III and IV (high risk of impaction). In PS, the angel between the longitudinal axis of the canine and the midline was measured, an angle between 0-30 degrees is considered to be a low risk of impaction and angle more than 31 degrees is high risk if impaction. Digimizer v5.4.9 software was used to draw the lines and to achieve the required angles. The data was entered into SPSS v.21 software for analysis.

**Results:** in this study, the total possibility of permanent canine impaction is 2/9 %. The possibility of canine impaction in the EK/L, PS and the possibility of total impaction was higher on the left side than on the right side. There was no relationship between gender and this tooth impaction in rather the right or left side ( $P=0/741$ ) ( $P=0/570$ ). The possibility of latent was high in people whose EK/L was III and IV ( $P<0/001$ ). The average rank of the PS variable (calculated angle) on both the right and the left sides in the group where the possibility of maxillary canine impaction was high was higher than the variable rank in group where the possibility of maxillary canine impaction was low ( $P<0/001$ ).

**Conclusion:** According to the result of the study, the position of the maxillary permanent canine tip relative to the adjacent lateral and angular canine teeth compared to the midline, they are good predictive factors for predicting the possibility of this tooth impaction.

**Keywords:** Permanent maxillary canine, Impacted tooth, Panoramic radiography.