

ORIGINAL ARTICLE**Evaluation of Canine Impaction with Panoramic Radiographs- An Original Research**

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ABSTRACT:

Background: Maxillary canine palatal impaction occurs in 1of 100 people. The present study was conducted to evaluate canine impaction using panoramic radiographs. **Materials & Methods:** The present study was conducted on 52 patients with impacted canines. Angulation as a predictor of eruption after extraction of the deciduous canine was measured previously via a midline constructed from the perpendicular to the central incisors, and to a midline constructed from the mandibular central incisor interproximal contact to the maxillary incisor interproximal contact. **Results:** Out of 52 patients, males were 32 and females were 20. The mean angle was 62.00, median was 62.05, S.D was 11.67, minimum value was 42.01 and maximum was 88.12. 5 impactions were seen in sector I, 14 in sector II, 16 in sector III and 15 in sector IV. The difference was significant ($P < 0.05$). **Conclusion:** Panoramic radiographs are useful in predicting the impaction of maxillary canine. Canine impaction is a common pathology encountered in routine basis.

Key words: Canine, Impaction, Panoramic radiographs.

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This article may be cited as: Kaur N. Evaluation of Canine Impaction with Panoramic Radiographs- An Original Research. Int J Res Health Allied Sci 2016;2(4):82-84.

INTRODUCTION

Maxillary canine impaction is complex in its etiology, localization, response to preventive treatments, and prediction. It is a dilemma for many orthodontists. Determining whether impaction will occur and timing the treatment modalities that are affected by impacted canine(s) are paramount for a successful outcome.¹ Maxillary canine palatal impaction occurs in 1of 100 people. Although this might seem to be a relatively small number of affected people, it is speculated that in an individual orthodontic practice, the incidence may be higher, with a report of 23.5% in 1 population. Although the canine develops high near the orbit and sinus, and buccal to adjacent tooth roots, 85% of impacted canines are relocated palatally.²

If, in these cases, orthodontic treatment is not initiated at a nearly age, ankylosis of the canine and detrimental effects on incisor roots are possibilities. Patients with canine impactions experience longer treatment times than those without impactions, depending on displacement of the tooth from the occlusal plane.³

An additional complication with regard to location of the impaction is the preponderance of palatal impactions over

buccal impactions. Panoramic radiography (OPG) is widely used radiographic technique for the assessment of impacted canine. The present study was conducted to evaluate canine impaction using panoramic radiographs.

MATERIALS & METHODS

The present study was conducted in the department of Orthodontics. It consisted of 52 patients with impacted canines of both genders. All were informed regarding the study and written consent was obtained.

General information such as name, age, gender etc. was recorded. Patients were subjected to OPG taken with Planmeca machine following standardized radiographic procedure. To determine the angular measurements, a reference line was needed. Angulation as a predictor of eruption after extraction of the deciduous canine was measured previously via a midline constructed from the perpendicular to the central incisors, and to a midline constructed from the mandibular central incisor interproximal contact to the maxillary incisor interproximal contact. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS**Table I Distribution of patients**

Total- 52		
Gender	Males	Females
Number	32	20

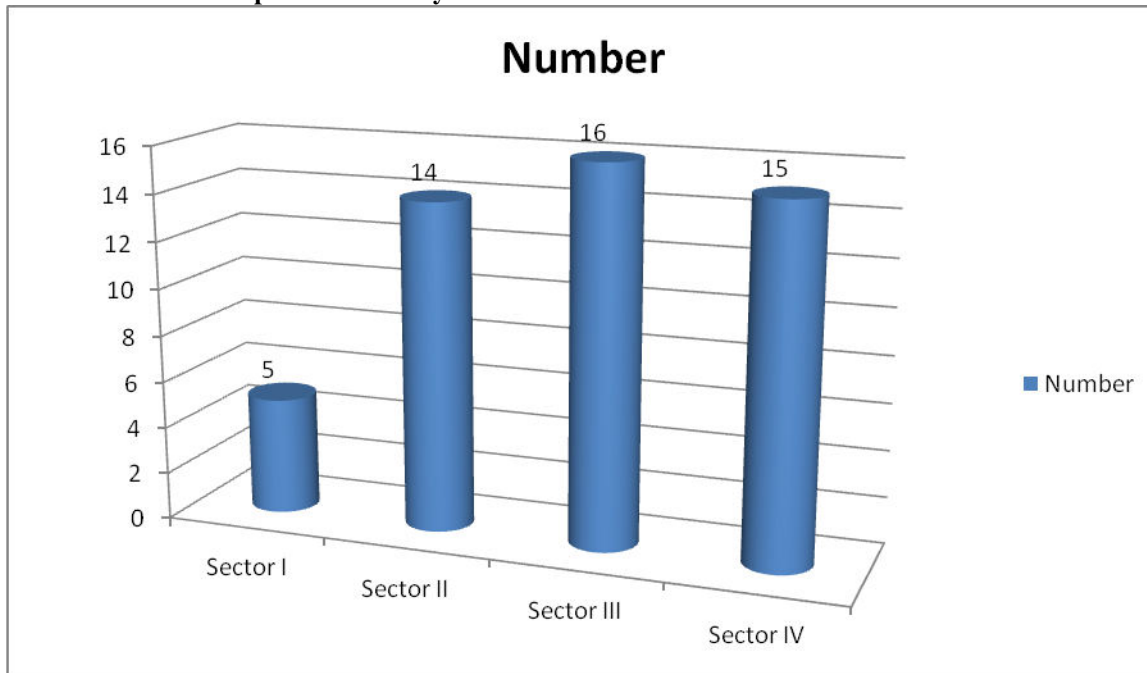
Table I shows that out of 52 patients, males were 32 and females were 20.

Table II Assessment of angle measured on panoramic radiograph

	Mean	SD	Median	Minimum	Maximum
Values	62	11.67	62.05	44.01	4

Table II shows that as measured on panoramic radiograph, the mean angle was 62.00, median was 62.05, S.D was 11.67, minimum value was 42.01 and maximum was 88.12.

Graph I Sector location of impacted maxillary canine



Graph I shows that 5 impactions were seen in sector I, 14 in sector II, 16 in sector III and 15 in sector IV. The difference was significant ($P < 0.05$).

DISCUSSION

Early localization of the impacted maxillary canine is important as interceptive treatment, so that extraction of the deciduous predecessor can allow spontaneous correction in many cases. Such localization is done by a combination of clinical and radiographic finding. Previous studies attempted to localize impacted maxillary canine teeth from OPGs alone, based on magnification index i.e., mesio-distal dimension of impacted maxillary canine and vertical restriction criteria concluding OPG as a reliable indicator when compared with surgical exposure as a standard guide.⁴ Maxillary canines are the second most frequently impacted teeth after the third molars, with prevalence from 1% to 3%. Impacted canines can lead to varying degrees of resorption of the adjacent teeth, particularly of the lateral incisor. Canines play a vital role in facial appearance, dental aesthetics, arch development and functional occlusion. Root resorption can be difficult to diagnose with traditional two-dimensional (2D) radiography, particularly if the canine is in direct palatal or facial position to the lateral incisor roots.⁵

We involved 52 patients, males were 32 and females were 20. In present study we observed that the mean angle was 62.00, median was 62.05, S.D was 11.67, minimum value was 42.01 and maximum was 88.12. This is similar to Hitchen.⁶

The study Bokkasam⁷ comprised 40 subjects in the age group of 18- 45 years of both the genders with 55 impacted canines. Panoramic radiographs (OPGs) and intraoral periapical radiographs (IOPARs) of the subjects were made and the accuracy of the above two radiographic techniques were compared with computed tomography (CT) axial sections or with surgical exposure, which was considered as the standard guide for localization of impacted maxillary permanent canine. Localization of impacted maxillary permanent canine tooth done with SLOB (Same Lingual Opposite Buccal) technique could predict the bucco-palatal canine impactions in 96% of cases. OPG using differential magnification index could predict location only in 70% of bucco- palatal canine impactions and in 76% based on vertical position. Proper treatment requires accurate diagnosis of the localization of impacted maxillary permanent canine tooth in relation to

adjacent structures, assessment of root resorption and change in root morphology. Early methods for localization of impacted maxillary canines involved the use of intraoral radiographs.

We observed that 5 impactions were seen in sector I, 14 in sector II, 16 in sector III and 15 in sector IV. This is in agreement with Harris et al.⁸ Angulation does not add significantly to the predictive value of sector location. In sector I, most teeth will not become impacted, so the role of angle in predicting impaction is not clinically significant. Likewise, in sectors III and IV, where most teeth will become impacted, the small increase that angle contributes to probability is not clinically significant. Only in sector II would angulation have potential significance in predicting impaction.

CONCLUSION

Panoramic radiographs are useful in predicting the impaction of maxillary canine. Canine impaction is a common pathology encountered on a routine basis.

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