

Prevalence and Position of Impacted Canine (Clinical and Radiological Study)

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Abstract: Background: Canine is the cornerstone of the dental arch. It plays a vital role in facial appearance, dental esthetics, arch development and functional occlusion. Canines can be impacted facially or palatally, it considered to be the third most common tooth to be impacted next to mandibular and maxillary third molars. Diagnosis of impacted canine is achieved by clinical and radiographic examination and treatment planning is based upon diagnostic finding. Early detection of impacted maxillary canines may reduce treatment time, complexity, complications and cost. Aim of study: this study was done to evaluate the prevalence and position of impacted canine radiographically and clinically. Materials and method: Out of 300 patients were collected only 19 subjects (10 males and 9 females) had impacted canine and examined clinically and radiographically. Result: There were 19 patients had impacted canine, the main of them was male (52.63%) and (47.36%) females, (89.47%) had upper impacted canine and (10.52%) had lower impacted canine. The percentage of unilateral left side canine impaction was (10.52%) while unilateral right-side canine impaction (63.15%) and bilateral canine impaction (26.31%). Conclusion: The prevalence of canine impaction is higher in upper arch than in lower arch and occur mostly unilaterally, and occur predominantly in females.

Keywords: Canine, Impaction, Prevalence, Radiograph

1. Introduction

Canine contribute significantly to the esthetic and chewing function. Orthodontists should diagnose canine ectopic eruption early, trying to prevent retention of these teeth. Its multifactorial etiology involves local and general factors and the correct diagnosis depends on clinic, radiographic and/or tomographic exams, the early diagnosis can minimize the problems caused by impaction, such as root resorption of canine and lateral incisors, ankylosis or infections resulted from impaction [1].

Impaction is defined as a cessation of eruption of a tooth caused by physical barrier path or by eruption path and a clinically or radiographically detectable. The usual origin of barrier appears to be lack of space which results in follicular collision between developing teeth, supernumerary teeth, odontoma, cysts, crowded tooth germs or erupted teeth [2].

Impacted canines are those with a delayed time of eruption or that are partially erupted based on clinical and radiographic evaluation [3]. Failure of eruption of permanent maxillary canine is common dental anomaly, it is the second most commonly impacted tooth after the third molars with an incidence (0.2% -2.5%). They can be impacted facially or palatally and predominantly seen in females [4]. The frequency of maxillary canine impaction is significantly higher than of mandibular canine [5].

The most common cause of canine impactions is usually localized and are the result of anyone or combination of the following factors:

- Tooth size arch length discrepancies.
- Prolonged retention or early loss of deciduous canine.
- Abnormal position of tooth bud.
- The presence of an alveolar cleft.

- Ankylosis.
- Cystic or neoplastic formation.
- Dilaceration of the root.
- Iatrogenic origin.
- Idiopathic condition with no apparent cause [6].

The exact position and localization of these teeth are essential factors in planning the treatment procedures. Methods of diagnosis that may allow for early detection and prevention should include a proper family history, visual, clinical examination and palpation, by the age of 9-10 years and through radiographic evaluation, in this regard the panoramic radiograph is of a great clinical significance to establish a correct surgical procedure [6].

Early detection of impacted maxillary canines may reduce treatment time, complexity, complications and cost [7].

2. Materials and method

2.1 The Sample

The sample was patients attending the diagnosis of institute of medical technology of Baghdad, College of Dentistry\ Baghdad university and Al- Karkh General Hospital. Out of 300 patients were collected from November 2014 to March 2015 only 19 subjects (10 males and 9 females) had impacted canine and examined clinically and radiographically.

The sample fulfilled the following selection criteria:

- The subjects were Iraqi in origin
- No apparent facial disharmony or cleft lip and palate.
- No history of previous surgical extractions.

New participants were carefully informed about the aim and the method of investigation and they were free to accept or refuse.

2.2 The Equipment (X- ray machine):

All the radiographs were taken in the diagnosis of institute of medical technology of Baghdad, College of Dentistry\ Baghdad university and Al- Karkh General Hospital, using planmeca (periapical X-ray machine) and panoramic machine (Philips- ortho oralix) and CT scan machine (Philips).

2.3 The Methods

A. Clinical examination

Each patient was seated on the dental chair and with dental mirror and probe an intraoral examination was done for each patient to detect the presence of bulge (buccally or palatally). Only the patient with missing permanent maxillary canine were referred to dental radiology clinic for further investigation by using the previous X- ray machines to detect the presence and position of impacted canine.

B. Radiographic Assessment of The Subjects

Periapical, computed tomography scan (CT scan) with orthopantomography (OPG) images was done for the patients.

3. Results

Description of the sample subject

Table 1: Sample distribution according to gender

Gender	Number	Percentage
Male	10	52.63%
Female	9	36.47%
Total	19	100%

In this study out of 300 patients were examined clinically and radiographically there were 19 patients had impacted canine, the main of them was male (52.63%) and 9 females (47.36%).

Table 2: Sample distribution according to arch

Arch	Number	Percentage
Upper	17	89.47%
Lower	2	10.52%
Total	19	100%

In this study out of 300 patients were examined clinically and radiographically there were 19 patients had impacted canine with (89.47%) had upper impacted canine and (10.52%) had lower impacted canine.

Table 3: Sample distribution according to side

Side	Number	Percentage
Unilateral	Left	2
	Right	12
Bilateral	5	26.3%
Total	19	100%

In this study out of 300 patients were examined clinically and radiographically there were 19 patients had impacted canine with 2 patients had unilateral left side impacted canine (10.52%) and 12 patients had unilateral right-side impacted canine (63.15%) and 5 patients had bilateral impacted canine (26.31%).

4. Discussion

in the present study 300 patient attend to our department (College of Dentistry), Al- Karkh General Hospital and Institute of medical technology of Baghdad, 19 Of them had impacted canine and examined clinically and radiographically, in the description we found the prevalence of impacted canine according to gender (52.63%) in male and (17.36%) in female, (89.47%) were in upper arch, (10.52%) of patients had unilateral left side impacted canine and (63.15%) right side, (26.31%) bilateral impacted canine and that is lower than the prevalence unilateral impacted canine.

In Nezar et al study 46 female (56.1%) and 36 male (43.9%), (86.3%) upper impacted canine and (13.7%) lower canine, left side (1.6%) while right side (0.01%), bilateral (1.18%) less than unilateral impacted canine[8], the present study agreed with the prevalence of the arch but not with the prevalence of the side and nearly agreed with the prevalence in gender.

Cernochova et al study found the prevalence of impacted canine in male in left side (35%), (44%) in right side, 21% bilateral while in female 46% left side, 37% right, 17% bilateral[9], the present study doesn't agree.

In Yavus et al study, from a total of 65 patient had impacted canine there were 33 females and 32 males, 6 patient have bilateral canine impaction and the others have unilateral impaction, 33 patient had left side and 32 right side[10], the present study agreed with prevalence of gender but not with the prevalence of the side.

In Rohere study there was 62 patient (2.66%) had maxillary impacted canine while 2 patient (0.1%) mandibular impaction, present study nearly agreed with it [11].

To compare the prevalence founded in this study with the different frequencies reported from other studied population, one should consider the methodology used for the detection of impacted canines as well as the clinical differences of the epidemiological studies, including sample selection, definition of impacted tooth and the age range of subjects taking into account the source of analyzed data which we derived for our study. The result of this study are not representative and different results from other studies may arise from racial differences and difference in the methodology of the study.

5. Conclusion

Canine has the longest period of development and the most tortuous route to full occlusion and for that reason it is considered to be the third most common tooth to be impacted next to mandibular and maxillary third molars. In

this study the prevalence of canine impaction was higher in upper arch than in lower arch and occurs mostly unilaterally in right side, and predominantly in males.

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