

The Prevalence of Impacted Maxillary Canine among Iraqi Patients of Al-Basrah City

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ABSTRACT

Background: Impacted teeth are frequent problem and one of the most affected teeth is the maxillary canine. The early diagnosis of impacted canines by radiographic evaluation is imperative. The aim of this study was to determine the prevalence of impacted maxillary canines in patients attending the Oral diagnosis and Radiology clinic in College of Dentistry, University of Al-Basrah.

Materials and Methods: 1280 patients attending the Oral Diagnosis and Radiology clinic in College of Dentistry University of Al-Basrah, between October 2013 and March 2015 were examined for the study. The age of the patients ranged from 15 to 55 years, with a mean age of 22.2 years.

Results: The prevalence for maxillary impacted canines in all the cases was found to be 2.7%. The prevalence of impacted canines in males was 2.3% and in females was 3.2%. A higher number of impaction was seen on the left side of the maxillary arch; 57.1% compared to 37.2% on the right side. Unilateral impaction was seen in 94.3% whereas the bilateral impaction occurs in only (5.7%) of the patients.

Conclusions: The prevalence of impacted maxillary canine in people attending the College of Dentistry, University of Al-Basrah is 2.7%.

Keywords: Canine, impaction, prevalence. (J Bagh Coll Dentistry 2016; 28(1):73-77).

INTRODUCTION

Impacted teeth are those with delayed eruption time or that are not expected to erupt completely based on clinical and radiographic assessment ⁽¹⁾. The eruption of permanent teeth includes series of events, mostly genetically based, whereby tooth germ eruption taking place at a predetermined time and path enables the tooth to find its antagonist at the occlusal plane. As the eruption is a complex process, it is not uncommon that problems may arise, which lead to failure of eruption. ^(2,3)

Impacted teeth could result in many problems such as compromising tooth movement, esthetics, and function. Maxillary canines are the last teeth to develop in anterior maxilla and have the longest period of development. They also have the longest and most devious path of eruption from the formation point which lies lateral to the pisiform fossa to its final position in the dental arch ^(4,5).

Failure of the eruption of permanent maxillary canine is a common dental anomaly. After the third molars, maxillary canine is the second most commonly impacted tooth. They can be impacted either unilaterally (figure1) or bilaterally (figure 2), facially or palatally and are predominantly seen in females ⁽⁶⁾. The following factors could participate in canine impaction:

- (1) Discrepancies between tooth size and arch length
- (2) Abnormal position of the tooth bud
- (3) The presence of an alveolar cleft
- (4) Ankylosis

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(5) Delayed shedding or early loss of the deciduous canine.

(6) Cysts or tumors in premaxilla

(7) Root dilaceration

(8) Iatrogenic causes.

(9) Idiopathic condition with no apparent etiology. ^(7,8)

Shafer *et al.* ⁽⁹⁾ suggested the following sequelae for canine impaction:

- (1) Malpositioning of the impacted tooth either labially or lingually.
- (2) Migration of the neighboring teeth and loss of arch length.
- (3) Internal resorption.
- (4) Dentigerous cyst formation.
- (5) External resorption of root of the impacted tooth and/or the neighboring teeth.
- (6) Infection particularly with partially erupted canine.
- (7) Referred pain.

The exact position and localization of these teeth are important factors in planning the treatment procedures. Methods of diagnosis that may allow for early detection and prevention of impaction should include a proper family history, clinical examinations including palpation by the age of 9-10 years and a thorough radiographic evaluation, the panoramic radiography is of a great clinical significance, to establish the correct treatment plan ^(10,11).

The objective of the present study was to determine the prevalence of impacted maxillary canine in a sample of patients attending the Oral

Diagnosis and Radiology clinic in College of Dentistry, University of Al-Basrah.

MATERIALS AND METHODS

The sample of the present study was 1280 patients attending the Oral Diagnosis Clinic in College of Dentistry, University of Basrah, between October 2013 and March 2015. Thorough medical history, past dental history, clinical examination and panoramic radiographs for the patients were performed by a specialist dentist. The age of the patients ranged from 15 to 55 years, with a mean of 22.2 years. Any patient with one of the following conditions was excluded from the study:

- 1- Patients under 15 years old (no complete dentition).
- 2- History of extraction of the permanent maxillary canine.
- 3- History of orthodontic treatment.
- 4- Patients with a history of pathological conditions (like cysts and tumors) within premaxilla.
- 5- History of trauma to the anterior teeth, or fracture of the jaw that might have affected the normal growth of permanent dentition
- 6- History of hereditary diseases or syndromes such as Down's syndrome or cleidocranial dysostosis.

After intraoral examination, patients with clinical indication for panoramic radiograph were

referred to radiology unit for panoramic radiographs. The indications included:

1. Crowding of upper and/or lower teeth.
2. Malocclusion.
3. Pain associated with partially erupted lower and/or upper third molar which couldn't be completely depicted by use of introral radiographs.
4. Temporomandibular joint disorders.
5. Recent trauma to one or both jaws (except trauma to premaxilla).

All panoramic radiographs were taken with the Vatech Digital Panoramic X-ray machine (PAX-400C), South Korea. Exposure settings were determined according to patient's age and body size and weight, KvP from 60-68 Kv , mA ranges from 4-8 mA and exposure time was 18 seconds. The magnification factor was 1.2.

The researcher has examined the radiographs at the same time on hp- LCD screen (17 Inches) to determine the impacted tooth. Maxillary canines could be prevented from eruption by an obstruction on its path by an unexfoliated deciduous canine, an erupted permanent tooth, supernumerary tooth, odontome, alveolar bone, or soft tissue (as fibrous ridge mucosa). When the maxillary canine root was completed and it was not reaching its supposed position within the dental arch clinically and radiographically, it was defined as impacted.



Figure 1: Panoramic Image Showing Unilateral Impacted Maxillary Canine



Figure 2: Panoramic Image Showing Bilateral Impacted Maxillary Canine

RESULTS

A total number of 1280 panoramic images was included in the present study (table 1), 585 of them were males (45.7%) and 695 were females (54.3%).

A total no. of 35 impacted maxillary canines were found 19 (54.2%) of which were in 18 females and 16 (45.8%) in males (table 2, figure 3). The prevalence of impacted canines in males was 2.3% and in females was 3.2%. The

prevalence for maxillary impacted canines in all the cases was found to be 2.7%.

A higher number of impaction was seen on the left side of the maxillary arch; 20 impacted canines (57.1%) (9 in males and 11 in females) compared to 13 impacted canines (37.2%) on the right side (6 in males and 7 in females), whereas the bilateral impaction occurred in 2 patients only (5.7%) of the patients, which is less common than the unilateral impactions, which accounted for 94.3% of the total cases (table 3, figure 4).

Table 1: Distribution of Patients According to Gender

Gender	No.	Percentage
Male	585	45.7
Female	695	54.3
Total	1280	100

Table 2: Distribution of Impacted Canines According to Gender

Gender	No.	Percentage	Prevalence%
Male	16	45.8	2.3
Female	19	54.2	3.2
Total	35	100	2.7

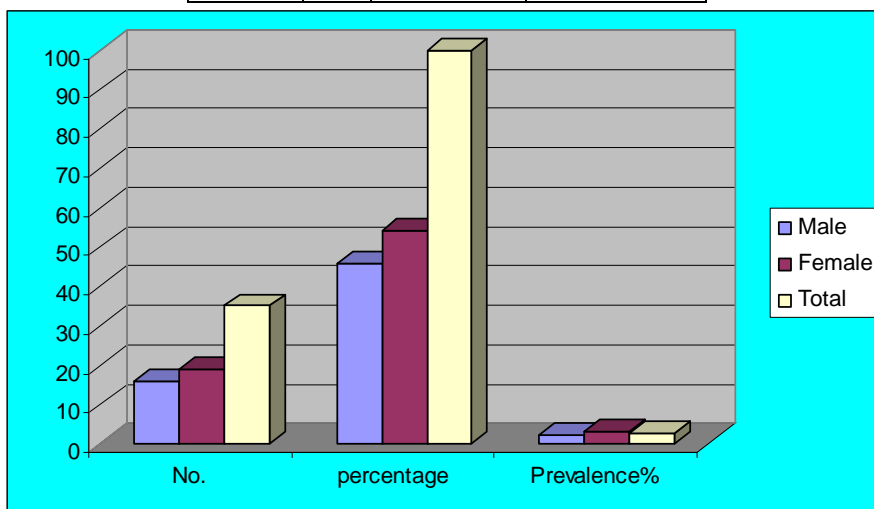
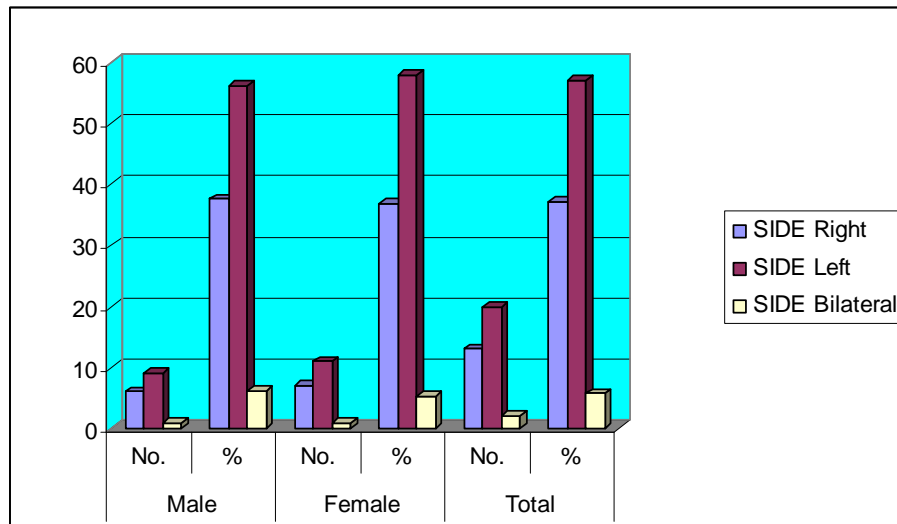


Figure 3: Distribution of Impacted Canines According to Gender

Table 3: Distribution of Patients with Impacted Canines

Gender	Side			
	Right	Left	Bilateral	
Male	No.	6	9	1
	%	37.6	56.2	6.2
Female	No.	7	11	1
	%	36.8	57.9	5.3
Total	No.	13	20	2
	%	37.2	57.1	5.7

**Figure 4: Distribution of Patients with Impacted Canines**

DISCUSSION

The present study indicated that the prevalence for maxillary impacted canines in all the cases was found to be 2.7%, which is near to that reported by Sajnani and King study⁽¹²⁾ who reported a prevalence of 2.1% on a sample of Chinese population, also Ericson and Kuroi⁽¹³⁾ revealed that the rate of impaction of maxillary canines was in the range of 0.9-2%. Patil and his colleagues⁽¹⁴⁾ reported that the prevalence of impacted maxillary canine on a sample of western Indian population was 2.9%, although another Iraqi study by Altaee⁽¹⁵⁾ reported a higher frequency for maxillary canine impaction; 4.6%. Another Indian study made by Sridharan et al.,⁽²⁾ also found a higher prevalence of impacted maxillary canine than what was found in the present study, they reported a prevalence of 3%.

The prevalence of impacted canines as seen in the present study in females was 3.2% which is higher than that found in males (2.3%); this agrees with most of studies about impacted maxillary canine; for example Altaee⁽¹⁵⁾ in her study on patients from Ramadi city in Iraq stated that female: male ratio was 2:1. Sridharan et al.,⁽²⁾ found prevalence of 2.6% in males and 3.6% in females. Topkara and Sari⁽¹⁶⁾ also found that the prevalence ratio in females was higher than that in males (1.3:1). Also it agrees with what was

reported by Kifayatullah et al.,⁽¹⁷⁾ who reported a higher ratio in female as compared to male (1.85:1), also Pati et al.,⁽¹⁴⁾ found that the prevalence of canine impaction was higher in females (3.6%) compared to males (2.3%). On the other hand, it was 2.4:1 in Greek population according to the study of Fardi et al.,⁽¹⁸⁾. Altaee⁽¹⁵⁾ tried to explain the higher female: male ratio for canine impaction by the higher percentage of females who seeks dental treatment, smaller arch width in female in comparison to male could participate in this trend.

Concerning the side distribution in the present study, a higher number of impaction was seen on the left side of the maxillary arch; 57.1% compared to 37.2% on the right side, and this agrees with most of the studies about impacted maxillary canine as the study of Patil et al.,⁽¹⁴⁾ who reported also a higher prevalence on the left side 73% while it was only 20% on the right side. A study on Turkish population carried out by Topkara and Sari⁽¹⁶⁾ found that the left and right distribution of impacted maxillary canine was 52.5% and 47.5% respectively.

In the present study, unilateral impaction was seen in 94.3% whereas the bilateral impaction occurred in only (5.7%) of the patients. Other studies found different ratios for bilateral impaction, Patil et al.,⁽¹⁴⁾ in a study on Indian population established a 6% bilateral impaction

for maxillary canine which is approximating the ratio reported in the present study, whereas other researchers as Sajnani and King⁽¹²⁾ in a study on Chinese children have reported a bilateral impaction ratio of 17.1% which is higher than that reported in present study.

So, in general the results of the current study is matching with what was reported by most of studies researching the impaction of maxillary canine especially the dominance of females and also the left side dominance. Although, there is some difference in ratios in comparison to the ratios reported in different studies which could be related to several factors; one of these factors is the racial difference among samples included in these studies, the other factor is the difference in the size of the sample which could to some extent affect results and also variable methodology and difference in age range could result in this variance in prevalence ratios.

As a conclusion; the prevalence of impacted maxillary canine in people attending the College of Dentistry, University of Al-Basrah is 2.7%. Canine impaction is a common dental disruption; early diagnosis of potential impaction of maxillary canine could reduce the time and expense needed for predictable future orthodontic treatment.

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