Original Article

Frequency of Impacted Canines in Orthodontic Patients Visiting KMDC

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ABSTRACT

Objective: To determine the frequency of impacted canines in orthodontics patients visiting KMDC.
Study Design: Cross-sectional study
Place and Duration of Study: This study was carried out at Dental OPD of Karachi Medical Dental College, Karachi from July 2015 to December 2015.
Materials and Methods: A sample size of 262 patients was taken. All the patients were 16 years or above. Diagnosis of canine impaction was made on clinical examination and OPG. Patients with history of extractions and trauma, cleft lip and palate and patients with syndrome were excluded from the study. Blurred OPG and inappropriate taken OPG of patients were also excluded. All the clinical examination and OPG analysis was done by same person.
Results: Out of 262 patients 66 (25.1%) were male and 196 (74.9%) were female. Mean age of the patients were 19.6 years. Canine impaction was found to be 3.8% i.e. 10 patients have canine impactions. 3.04% patients have maxillary canine impactions and 0.76% patients have mandibular canine impactions. Male to female ratio was 1:4.
Conclusion: A much higher frequency of impacted maxillary and mandibular canines was observed in our study. Male to female ratio is 1:4. Maxillary canines were impacted more frequently than mandibular. Left sides were most affected in the maxilla and mandible.
Key Words: Impacted Canines, Orthodontic, KMDC

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INTRODUCTION

Maxillary canine impaction is a well known dental anomaly to orthodontists and the incidence is 0.8–2.8% in different studies.[1-3] Mandibular canine impaction occur less than maxillary canine impaction and mandibular canine impaction is 20 times lower than that of maxillary canines.[4]

Several studies foreign and local found out prevalence of canine impaction from 1% to 3.8%. Reviewing several data canine impaction frequency found out to be 1 to 2.5%. Canine can be impacted on buccal or lingual side. Canine impaction is more common in female as compare to male. One study found prevalence of canine impaction 3.33%[5].

Impacted teeth are defined as those teeth that are prevented from eruption into their normal functional positions because of some physical barrier or loss of eruptive forces[6]. The last teeth to erupt in arch in chronological order has more chances of impaction.[7]

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The maxillary canines have the most longest and most tortuous development path in all teeth[8,9]. Mineralization process of Maxillary canine starts before the maxillary incisors and molars, although it takes twice as long to complete their eruption, maxillary canine become more susceptible to changes in their trajectory path[10].

The exact etiology for the impaction of maxillary canines is still not clear. local causes are more related to factors associated with canine impaction. Some of the local causes are: failure in the root reabsorption of the deciduous canine; early loss of the deciduous canine or prolonged retention of it; less space due to insufficient length or girth of the arc;[11-13] excess width of the palate[12]; pathological lesions in the canine area and ankylosis of canine; anomalies in size and shape of neighboring lateral incisors;[14] dilacerated root; supernumerary teeth; cleft lip and/or palate, early closure of the root apex, rotation of the permanent tooth germ, transverse maxillary deficiency and trauma in canine area.

Complications of Canine impaction are following root resorption to adjacent teeth, can cause cyst formation, poor esthetics & compromise occlusion. Early diagnosis is very important to prevent damage cause by canine impaction. Position of impacted canine in arch and its relationship to adjacent important structures influence treatment plan and outcome.

Delayed eruption and canine impaction is commonly seen in orthodontics patients. It is important to

determine if canine is impacted or will erupt in future. X-rays including OPG and periapical are very useful tool to diagnose canine impaction. Further canine can be located buccally or lingually by occlusal view and CBCT etc. Early diagnosis is very important for treatment planning in canine impaction.

Canine is cornerstone of the mouth. Canine has esthetic value in smile and provide canine guidance in occlusion. Prevalence and frequency of canine impaction is different in different races. Since dealing with canine impaction is difficult for practitioner it is important to know the extent of this condition and to find solution for it in our subset of population.

MATERIALS AND METHODS

A cross sectional study was conducted at dental OPD of KMDC from July 2015 to December 2015. A sample size of 262 patients was taken. All the patients were 16 years or above. Diagnosis of canine impaction was made on clinical examination and OPG. Patients with history of extractions and trauma, cleft lip and palate and patients with syndrome were excluded from the study. Blurred OPG and inappropriate taken OPG of patients were also excluded. All the clinical examination and OPG analysis was done by same person.

RESULTS

Out of 262 patients 66 (25.1%) were male and 196 (74.9%) were female. Mean age of the patients were 19.6 years. Canine impaction was found to be 3.8% i.e. 10 patients have canine impactions. 3.04% patients have maxillary canine impactions and 0.76% patients have mandibular canine impactions. Male to female ratio was 1:4.

80% patient have single canine impaction and 20% have two canine impaction. Commonest canine impaction is upper left canine i.e. 41.6%. Table 1 & 2. Figure 1.

Table No.1:Commonest impacted canine teeth

Teeth (FDI No)	Impacted canine in number of patients
13	4 (33.3 %)
23	5 (41.6 %)
33	3 (25 %)
43	0

Table No.2: Type of impaction according to number of impactions in a patient

Type of impaction	Percentage of cases
Single tooth impaction	80 %
Two canine impaction	20 %
Three canine impaction	0 %
Four canine impaction	0 %

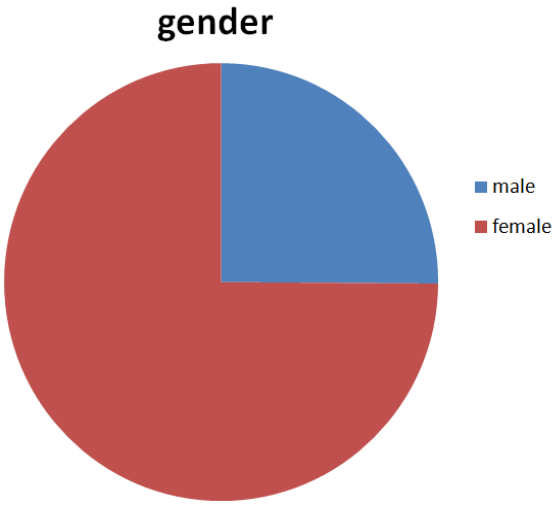

Figure No.1: Pie chart showing male to female ratio.

DISCUSSION

The frequency of impacted canines in our study comes out to be 3.8% which is higher than majority of other studies done till now. One of the reasons for A higher ratio could be attributed to the fact that our study sample consisted of orthodontic patients only rather than general population. Secondly racial factors and familial trends also influence the prevalence of canine impaction and can play important role in difference between results.[15-16]

Tito et al.[11] observed different studies held and found out that finding canine impaction in dental clinic is not rare. Further found out canine impactions are more common in palatal side, in maxillary arch, and have a more common unilateral tendency on the left side, especially in females.

The gender ratio of our study is also different from most of the other studies.[17-18] where females were found twice as much affected then as males. The male to female ratio of our study is 1:4.

Toledo et al.[19] studied 3,152 radiographs from the digital archives of the All Doc Radiology Clinic, in which 503 showed impacted teeth, and 40 were canines out of these. Canine impaction is more common in female, with 63.8% (23 women). Ages of the patients ranged from 15 to 65 years. Unilateral impactions (80%) was significantly predominant over the bilateral (20%) in this study.

Cury[14] studied 5,400 panoramic radiographs obtained from January 2008 to July 2009 in the city of Volta Redonda, Rio de Janeiro, and found that 81 images which showed impacted canines (1.5%), which is more common in females (62.9 %), with the greatest occurrence in the age group between 10 to 19 years old (51.86 %), and right side is more affected than left side (51.85%).

Presence of bilateral canine impactions is variable but most of the studies have showed that maxillary canines

are affected bilaterally in 8-10% of impactions.[20] according to our study 25% of maxillary canine impactions were bilateral. Frequency of individual canine impactions in our study determine that the left maxillary cuspid was impacted the most common followed by the right maxillary cuspid.

Maxillary canine impactions are believed to occur 10-20 times more common than mandibular canine impaction. In our subset of population maxillary canine impactions were 3 times more common than mandibular canine impaction. This is because mandibular canine impactions occurred in our study with a frequency of 0.76% where as in other studies it varies from 0.07-1.29%.[15]

Mandibular canine impaction is very much rarer anomaly and there is only few number of studies revealing its frequency of occurrence. In one study, only 8 impacted mandibular canines were found in 7886 radiographs, and in another study only 11 impacted mandibular canines were found in 5000 radiographs, which result in an incidence of 0.10% .[1,21]

A study conducted on Turkish population with sample size 1000 showed incidence of maxillary canine impaction to be 2.9% and 0.3% incidence of mandibular canine impaction.[22]

Another study conducted on Saudi population with sample size of 4898 patients aged 13 years or older. The result showed that 3.6% had impacted canine.[23]

Another study conducted on 1858 patients of 11 to 18 year old needing orthodontic treatment and the results showed 101 cases of impacted cuspids that is 5.43%.[24] from above studies we can conclude that different populations have different incidence of canine impaction some have high and some have low.

Although we have not notice position of impacted maxillary canine whether it is palatal or labial but it varied much. When European population was compare to Asian population then it was found out that palatal impaction is 5 times common in Europeans.[25] A study conducted by Kim et al.[26] found out that there is 3 times greater chances of labial impaction in Korean population. Another study by Zhong et al.[27] found out that Chinese population also showed greater incidence of labial impaction then palatal which is 2.1 times more common.

If canine Impactions are left untreated then it increases the chances of infection and may develop cystic lesion. Impacted canine also may cause root resorption of lateral incisors. The incidence of root resorption due to impacted canine is 12% and the prevalence of lateral incisor root resorption in 10-13 year olds is 0.7%.[28]

CONCLUSION

1. A much higher frequency of impacted maxillary and mandibular canines was observed in our study.
2. Male to female ratio is 1:4.
3. Maxillary canines were impacted more frequently than mandibular.
4. Left sides were most affected in the maxilla and mandible.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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