

Prevalence And Gender Distribution of Abnormalities in Canine Position Among Out Patients in Private Dental Clinic

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ABSTRACT

AIM: The present article aimed to determine the prevalence and gender distribution of abnormalities of canine position among out patients in a private dental clinic.

MATERIALS AND METHODS: This was a retrospective study done under a university setting. Data collection was done from the patient archives of saveetha dental college from the period of June 2019 to March 2021. From among them, records of patients with abnormalities of canine position were segregated. Clinical pictures and radiographs that were previously taken and present in the archives were used for this purpose. Data were then tabulated and statistically analysed in the SPSS software. Gender association was analysed using chi square test.

RESULT: In the maxillary arch, of the various canine anomalies that are present, prevalence of buccally placed canine in the male population(35%) is higher compared to the female(29%) and presence of palatally placed canine is more common in females (29%) compared to the males(32%). In both male(45%) and female(46%) population, presence of lingually placed canine in the mandibular arch was relatively common than any other anomalies.

CONCLUSION: The prevalence of canine anomalies in general was most prevalent in males in this study. Buccally placed canines was the most common in the upper arch and lingually placed canines was most common in lower arch.

KEYWORDS: Canine, impaction, ectopic, retained, innovative diagnostics

INTRODUCTION:

A tooth is impacted when the eruption is hindered by other teeth, bone or soft tissues (1). Diagnosis is generally based on clinical analysis and x-ray interpretation (2). In a study (3), it was reported that 13.58% of teeth were impacted, including canine which is the most common anomaly (4,5). If third molars are excluded, maxillary canines are the most common teeth to experience impaction and patients with impacted maxillary canine also happen to exhibit other dental anomalies (6). The frequent association of these anomalies has

led to their use to indicate the need for further clinical and x-ray analysis to create early diagnosis (7,8). When diagnosed at an early age, the canine is extracted as a preventive measure (9). Rapid maxillary expansion and cervical traction using headgear help with spontaneous eruption of these teeth (10). A lack of treatment can lead to a number of risks including resorption of roots, cysts and malocclusion (11).

In a study (12), palatal displacement of canines have been reported affecting 1-3% of the population. In 70-85% of the canine was located palatally while 15-30% were labially impacted (13). Palatal and labial impactions of canines are considered as two different anomalies. Labial impaction is thought to be a type of crowding (14). Etiology of palatal impaction of canine is unknown. Jacoby H (15) reported that 85% of the palatal impacted canines have sufficient space for eruption. Others are due to congenital absence. The most common preventive treatment is to extract the deciduous canine following which the permanent canine will adjust its position by itself (16). The mesiodistal crown width of maxillary and mandibular incisors have reported to be significantly smaller in patients with palatal canine impaction (17). Our team has extensive knowledge and research experience that has translated into high quality publications (18–30).

The present article aimed to determine the prevalence and gender distribution of abnormalities of canine position among out patients in a private dental clinic.

MATERIALS AND METHOD :

This was a retrospective study conducted in a university setting. It has certain advantages like flexibility in the data collection and that the study is also inexpensive. Records of patients who reported to the clinic from June 2019 to March 2021 were retrieved. From among them, those cases(566) with canine in abnormal position and inclination were segregated. All the case sheets were double checked and verified by 2 reviewers. Patient records with abnormalities in canine position like impaction, rotation, buccal or labial, palatal or lingual position and transposition were noted and segregated. The necessary data such as age, gender and canine various abnormalities in canine position were collected and tabulated in excel. The tabulated data was then exported from excel to SPSS and the data was represented the form of in bar graphs.Inferential statistics were found using Pearson's chi-square test to find the association between the abnormalities in canine position among various genders.



Figure 1 : Error bar graph showing the association between gender and canine anomalies of the upper arch. The x-axis indicates gender and y-axis indicates the frequency of canine anomalies in the upper arch.The blue colour indicates buccally placed canines, green colour indicates lingually placed canines, grey colour indicates rotated canines, purple indicates transposed canines and yellow indicates impacted canines. 18.66% of buccally placed canines were most common in males and 15.47% of palatally placed canines were most common in females. The prevalence of buccally placed canines were the most common type of canine anomaly. This was more prevalent in males. On chisquare test, p value = 0.001 which is statistically significant.



Figure 2 : Error bar graph showing the association between gender and canine anomalies of the lower arch. The x-axis indicates gender and y-axis indicates the frequency of canine anomalies in the lower arch. The blue colour indicates buccally placed canines, green colour indicates lingually placed canines, grey colour indicates rotated canines, purple indicates transposed canines and yellow indicates impacted canines. The prevalence of lingually placed canine was the most common type of canine anomaly in the lower arch. In males, it is seen that 21.66% of rotated canines was the most

common canine anomaly. In females, 21.20% lingually placed canines were the most common type of anomaly. On chi-square test, p value = 0.008 which is statistically significant.

RESULTS:

It is evident that buccally placed canines were the most common type of anomaly in the upper arch whereas in the lower arch, lingually placed canines was the most common type of anomaly. The prevalence of canine anomalies in general was most prevalent in males in this study. In the maxillary arch, of the various canine anomalies that are present, prevalence of buccally placed canine in the male population(35%) is higher compared to the female(29%) and presence of palatally placed canine is more common in females (29%) compared to the males(32%). Among the samples examined, prevalence of transposed teeth is comparatively less in both male (0.054%) and female population (0.042%). The difference was found to be statistically significant between both genders. In the mandibular arch, prevalence of various anomalies in the male population is comparatively higher than the females.

DISCUSSION:

Among the outpatient records, those with abnormalities in the canine position were segregated. Frequency distribution in occurrence of various abnormalities and the gender association was found. It was observed that buccally placed canines were the most common type of anomaly in the upper arch whereas lingually placed canines was most common in lower arch. 18.66% of buccally placed canines were most common in males and 15.47% of palatally placed canines were most common in females. 21.66% of rotated canines was the most common canine anomaly. In females, 21.20% lingually placed canines were the most common type of anomaly. The prevalence of canine anomalies in general was most prevalent in males in this study.

When it comes to gender distribution of the prevalence of impacted canine according to gender, majority of the studies found high prevalence in females (31). Equal impaction of canines were found in both males and females in a few studies (32). The tooth transposition occurs most frequently in the left side on the maxillary

arch, unilateral more than bilateral. Various studies show that the most common transposition occurrence to be between the canine and first premolar and less frequent with lateral incisor (33). Canine teeth are the most important teeth in the oral cavity as they contribute to esthetic smile and canine guidance. Knowledge of canine anomalies is important to diagnose these anomalies at an early stage in order to treat efficiently.

As the prevalence of canine impaction varies from one population to another, it is of paramount importance that there should be data from various population groups. According to Takahama and Aiyama (34) the unilateral impaction was the most common finding, and according to Harzer (35) the side mostly affected was the left one. Other studies had different views, the higher incidence side being the right side (36). In our study the most common impaction found was the unilateral canine impaction, which was observed in 14 subjects and the most common side affected was the right side in both genders, similar to the studies by Takahama and Aiyama (34), while Bass (37) found that the bilateral impaction was the most common finding.

The present study found the prevalence of canine transmigration in the mandibular arch 0.12% and in the maxillary arch none. This study result shows less incidence compared to the study done by Sharma G, Nagpal A (38), where they did the study among 3000 panoramic radiographs of north Indian population. The study by Aktan et al. (39) among the Turkish subpopulation also shows a higher prevalence of 0.34% among 5000 subjects. Microdontia and barrel shape in the upper lateral incisors were associated with impacted maxillary canine. Previous reports showed associations between microdontia and peg-shaped teeth with impacted maxillary canine(10). This study coincided with the association between microdontia and impacted maxillary canine, but barrel-shaped rather than pegincisors were the second shaped association. This could be an artifact of the higher prevalence of microdontia and barrel-shaped teeth in Mexico compared to peg-shaped teeth in other populations (40). Upper lateral incisor anomalies (e.g., agenesis, microdontia, and peg shape) should be seen as markers for impacted maxillary canine(41). Our data suggests that the barrel shape should be included in this group of markers for a Mexican population.

The prevalence of impacted maxillary canine was also associated with the presence of other impacted teeth, which agrees with data from a Chinese population (10). Associations between anomalies can often explained genetically(42)be especially when the impacted tooth is far from the IMC in question. However, environmental factors can also cause this anomaly, for example, an impacted central incisor on the same side as an impacted maxillary canine. In this case, canine impaction can be the consequence of the impacted incisor, which would explain the rarity of these events occurring together (43). Further research is needed to determine whether the cause of association between these anomalies is primarily genetic or environmental.

On the other hand, the risk of tooth transposition was extremely high in

patients with impacted maxillary canine. This can easily be explained because the maxillary canines are the teeth that most frequently experience transposition.

The most desirable approach for managing impacted maxillary canines is early diagnosis and interception of potential impaction. However, in the absence of prevention, clinicians should consider orthodontic treatment followed by surgical exposure of the canine to bring it into occlusion. In such a case. open communication between the orthodontist and oral surgeon is essential, as it will allow for the appropriate surgical and orthodontic techniques to be used.

The most common methods used to bring palatally impacted canines into occlusion are surgically exposing the teeth and allowing them to erupt naturally during early or late mixed dentition and surgically exposing the teeth and placing a bonded attachment to and using orthodontic forces to move the tooth. Kokich (44) reported three methods for uncovering a labially impacted maxillary canine: gingivectomy, creating an apically positioned flap, and using closed eruption techniques.

Orthodontists have recommended that other clinicians first create adequate space in the dental arch to accommodate the impacted canine and then surgically expose the tooth to give them access so that they can apply mechanical force to erupt the tooth. Although various methods work, an efficient way to make impacted canines erupt is to use closed-coil springs with eyelets, as long as no obstacles impede the path of the canine.

If the canine is in close proximity to the incisor roots and a buccally directed force is applied, it will contact the roots and may cause damage. In addition, the canine position may not improve due to the root obstacle. Consequently, various techniques have been proposed that involve moving the impacted tooth in an occlusal and posterior direction first and then moving it buccally into the desired position. When using a bonded attachment and orthodontic forces to bring the impacted canines into occlusion, it is important to remember that first premolars should not be extracted until a successful attempt is made to move the canines. If the attempt is unsuccessful, the permanent canines should be extracted.

LIMITATIONS:

The study is limited by a few factors. Not much quantitative data is obtained as the sample size is small and there is geographic limitation.

FUTURE SCOPE:

The study can be multi centred and with a large population for a longer duration. Further research should be done to improve the drawbacks of the study.

CONCLUSION:

Within the limits of this study, it is observed that buccally placed canines were the most common type of anomaly in the upper arch whereas lingually placed was the most common in lower arch. The prevalence of canine anomalies in general was most prevalent in males in this study.

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Conflict of interest

Authors of this study declare no conflict of interest

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