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Original Article

Incidence of Impacted Canine in Patients Visiting Tertiary Care Hospital of Peshawar, Pakistan

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ABSTRACT

Among all the dental problems, tooth impaction is one of the leading dental problems these days. It is stated as the improper infusion when the tooth has erupted at the predicted time. Canine impaction is the most egregious imposition and leads to frequent dental complications.

Objective: To estimate the incidence of impacted canine in patients visiting tertiary care hospital of Peshawar, Pakistan **Methods:** This retrospective study was conducted at Peshawar Dental College from 2018 to 2021. A total of 1326 patients visited the dental health care center during this period **Results:** Out of total 1326 patients, only 64 (4.8%) cases of affected canines were found with the orthomograph (OPG). Furthermore, these 64 individuals had affected canines in various sites, including the mandible, maxillary, left side and right side. Among total 64 patients, 153 impacted teeth were found on different locations. In these 153 impacted teeth, 37(24.2%) incidents of affected canines were recorded on the top right, whereas 49(32%) were documented on the other side. However, 58(37.9%) cases of impacted maxillary canine and only 9 cases (5.9%) of mandibular impacted canine were reported. **Conclusion:** Early diagnosis and treatment processes should be required to prevent different problems of canine impaction. Moreover, proper awareness and treatment approaches should be used in order to eradicate the after-effects of canine impaction.

INTRODUCTION

These days' dental issues are spread frequently around the world [1]. Impactions refer to a pathological condition in which the teeth are unable to grow for a certain time [2]. These conditions also disturb the normal process of eruption. Among all the teeth the canines require a longer period to develop. Due to its complex occlusion route, it is now one of the third most common impactions which occur next to maxillary third molars and mandibular teeth [3]. The impaction of canines varies from one population to another. It is also estimated that about 12 to 15% of people

are generally affected by it [2]. The occurrence of tooth impaction in tribal populations was 5.6 to 18.8% [4-6]. In a study conducted in 2019, 1593 patients OPG's were evaluated to estimate the frequencies of canine anomalies. Impacted canines were found in 22 patients and hence the prevalence was 1.38%, maxillary canine had 0.93%, mandibular canine has 0.37%, canine agenesis in 0.06%, transmigration in 0.12%, canine transposition in 0.18% and ectopic canine in 5.5% patients. No gender difference was observed [7]. Shapira Chaushu and Becker



(2000) observed the rate of impaction in the general population which is 1 to 3% [8]. In Budapest Hungary, a ten-year study has been conducted and it was deduced that the impaction of maxillary canines has a prevalence rate of 5.4% [9]. Many theories have been associated with the impact of canines such as genetic theory and guidance theory. The genetic theory describes that the impaction can be occurred by certain anomalies like missing incisors or small size of incisors. The latter one depicted that the lateral incisors serve as a guide which result allows the growth of canines on the lateral roots of incisors [10, 11]. Moreover, the impaction of canines can be diagnosed by radiographic and clinical examinations. That's why the dental experts examine the condition of impaction based on following parameters; 1) absence of pertaining growth of canines towards the lip region 2) occurrence of palatal bulge in the region of canine. 3) slow growth of permanent canines or growth of deciduous canine in the late age of 14-15 years. 4) splaying of permanent incisors of the lateral region, and prolonged erupting time. 5) the increased All the general parameters for impacted teeth can be omitted but due to the vitality of canine teeth in the person's oral cavity, a little omission can't be afforded. However, the improper treatment of impacted canines, leads towards several complications. Some of them are listed below; 1) formation of dentigerous cyst 2) prevalence of infection due to partial erupting of teeth. 3) impacted tooth promotes the resorption of external roots. 4) the neighboring teeth began to migrate and the length of arch is lost 5) resorption towards internal region 6) occurrence of lingual /labial misplacement due to impaction of canines. 7) severe pain and combined symptoms that have been mentioned above [12]. Moreover, as the canine teeth are the longest among all, any kind of impaction in it can affect the other teeth too which in result affecting the person's aesthetic smile [13]. The occurrence of this impaction varies from one population to another. Due to these variations, an appropriate method for early detection should be eagerly needed for delivering the suitable treatment. In order to guide and erupt the canine teeth in a proper position the early diagnosis of proper orthodontic and surgical examination approaches is useful. The immediate intermediation is required that will prevent the certain complications arising from canine impaction including pathological, aesthetic, and functional. The current study aims to find the canine impaction prevalence in the Pakistani Population

METHODS

The retrospective study was conducted at the Peshawar Dental College from 2018 to 2021. In this three-year study, 1326 patients visited the dental health care center. This particular area considers the ideal setting for the study.

Furthermore, records were appraised from the Radiology Department of this hospital. In general, the members in this the research comprised of both genders between the ages of 13 and 50 years. In this study, those patients were included who had missing permanent canines including mandibular and maxillary on side of the right and left. Nevertheless, those patients were excluded from a study that have any abnormality including pathological conditions for example a tumor, palate, cleft on lip, cyst, as well as odontoma respectively. The collection of data was initiated after obtaining approval by the hospital administration's responsible authority. Orthopantomogram is considered the key method for the data collection which is also called orthomograph (OPG) or panotomograph. Furthermore, a panoramic image representation radiograph of the molars and jaw is used in this instrument, as well as a patient's maxilla. In addition, a questionnaire as a guide was also used in the study which has the information on the demographic profile of a patient. All the information was collected by analyzing the 1326 patient record files. This information was obtained with the assistance of the hospital radiology department. Data was coded for analysis and entry using the SPSS "statistical software tool" (version 21). Descriptive statistics were used for data presented in terms of percentages or frequencies. The percentage however was obtained by multiplying by 100 the probabilities (f) for each of the alternatives divided by the population's number(N). $P = f/N \times 100$ where P is the percentage, f is the frequency of each option, and N is the total population.

RESULTS

Out of total 1326 patients, 556 (41.9%) were males and 770 (58.1%) were females, the age ranging from 13 to 50. Only 64 (4.8%) impacted maxillary canines were founded, in which 29 (45.3%) were males and 35 (54.7%) were females. The most cases 40 (62.5%) were present between aged 13-25 years' age as compared to ages between 26 to 50 years. Furthermore, these 64 individuals had affected canines in various sites, including the mandible, maxillary, left side and right side. Among total 64 patients, 153 impacted teeth were found on different locations. In these 153 impacted teeth, 37 (24.2%) incidents of affected canines were recorded on the top right, whereas 49 (32%) were documented on the other side. However, 58 (37.9%) cases of impacted maxillary canine and only 9 cases (5.9%) of mandibular impacted canine were reported.

DISCUSSION

In this current study, 4.8% patients were identified with canine impaction who pursue dental health in Hospital. The incidence rate of impacted canines is about 4.8% in present study. The previous research was carried out in

2019, where 22 impacted canine individuals out of 1593 subjects were therefore identified via OPG with 1.38 % of impacted canines. Similarly, 82 canine impacted patients out of 2200 subjects were then identified in 2015 with a prevalence rate of 3.7%. Furthermore, this retrospective analysis depicted that the canine impaction is prevalent at the rate of 1.7% and out of 1593 patients this rate was 1.38 % [14]. A similar study in 2015 conducted by Abu-Hussein and his colleagues, described that females with canine impaction have a high percentage as compared to men with 55.1% and 43.9% respectively. In addition, there was only a 1.7% prevalence of impacted canines out of 8243 patients reviewed via radiograph [15]. Moreover, another cross-sectional retrospective study explained that 146 cases were affected by impacted canines out of 8243 cases of radiographs [16]. According to a current study, the percentage of gender is almost the same. However, in some rare cases, the percentages of affected men compared to women, canine obstruction is marginally greater. Therefore, the percentage of male affected with canine impaction was 51.1% while the percentage of female affected with canine impaction were 48.9% [17] and another study describes that 77 % of men were affected by canine impaction and 23% were women. However, females with impacted canine teeth had a higher percentage (56.1%) in comparison to males(43.9%) observed in 2014 as well[18]. Moreover, the most impacted teeth are canine in the maxillary as well as the maxillary left molar is more likely to be impacted, and affected teeth in the maxilla occur more than twice as common as impacted teeth in the mandible. Moreover, on the upper edge, impacted canines were found in much more than a half of the cases, but on the other side, more than one among the cases had affected teeth. Between September 2013 and December 2018, a retrospective cross-sectional study was conducted, half of the patients had canine impaction on the other side. But more over a third of individuals experienced a canine effect on their right side [19]. A study conducted in 2019 shows no gender difference was found. Furthermore, the highest recorded cases of maxillary canine impaction were found in the recent study. Moreover, a retrospective and cross-sectional study was done in Saudi Arabia, where researchers concluded that canine obstruction in the maxilla is more frequent than tooth impaction in the mandible. Generally, the clinical study that was accompanied in "2016" described that the percentage of maxillary impacted canines is less than one percent (0.93%)[20]. In the current study, the most severe cases of canine impaction received by Mandibular canine impaction with only 3.7% between the patients. On the contrary, there was only 0.37% of cases were recorded with mandibular impacted canine between 22 patients having canine

impaction.

CONCLUSIONS

Several approaches are needed for considering the complexities the canine teeth. Early detection and early treatment methods play a significant role among affected individuals with impacted canines that prevent different problems. Inside the study limitations, the prevalence of canine impaction in this study was 5.9% among participants. Proper and early diagnostic tests, as well as various treatment methods, are required to avoid sequelae occurring because of canine impaction. Finally, preventive methods should be implemented to inhibit the impaction of canines that is also significant. Orthodontists and dentists must work efficiently with patients for improving dental as well as oral health.

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