

Incidence and pattern of impacted canine in Zawia: a Libyan radiographic analysis

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Abstract: The aims of the present study was to evaluate the incidence and pattern of canine impaction in a population in Zawia city, using panoramic radiographs. 507 ortho-pantomographs were retrospectively examined from private clinics in Zawia city, Libya, between January 2018 and September 2019 to identify incidence of impacted canines. The radiographs showing canine impaction were further screened for; gender, site (upper and lower) and location (left or right or on both sides of the jaw) to study the effect it had on canine impaction. Out of 507 panoramic radiographs, 38 cases were reported with one or more impacted canines, this study reported an incidence rate of 7.4%, with a male to female ratio of 1:3.1. Maxillary canine impactions (84.2%) were more frequent than mandibular canine impactions (15%), 26% of impactions occurred bilaterally. Maxillary impactions located on the left side were more than on the right side, while mandibular impactions were equally occurred on both sides. In conclusion, the incidence of canine impaction in a population in Zawia city/Libya was found to be 7.4%; this was within the range reported by previous studies among other populations

Keyword: Impaction, Canine, Unerupted teeth, Panoramic radiographs, Libya

Introduction

The permanent Canines are the most important teeth in the dental arches. Canines are the foundation and pillar of an aesthetic smile and functional occlusion. Maxillary permanent canine stands at the corner of the dental arch supporting the alar base and upper lip. Functionally; it supports the dentition contributing to its disarticulation in lateral movements in certain individuals (1).

Tooth impaction is a delayed eruption time or that are not expected to erupt completely based on clinical and radiographic assessment(2). Impacted teeth, especially canines present many problems such as they can compromise tooth movement, aesthetics and functional outcomes (1). Impacted canines are defined as those teeth that do not

Materials and methods

A retrospective study of 507 Panoramic radiographs is carried out to detect the impacted canine in the upper and lower jaw (see figure 1), these radiographs are collected from private dental clinics in Zawia city from January 2018 to September 2019, the inclusion criteria are all patient with 15 years old or older at this age all permanent teeth were erupted. The exclusion criteria study was patient under 14 years old, patient with maxillofacial syndrome or history of trauma,

erupt within 6 months of their completed root formation or when they are not present in the arch during the eruption phase (3, 4). The common causes of canine impaction are tooth size arch length discrepancy, abnormal position of tooth bud, ankylosis, delayed shedding or early loss of deciduous canine, cyst and tumors, dilaceration, iatrogenic and idiopathic (5). Panoramic radiographs are also widely used to locate the position of impacted canines. They are part of the fundamental imaging taken for dental records and treatment planning. The aim of this study to investigate the incidence of impacted canine in a population in Zawia city, Libya.

unclear radiographs and patient with history of orthodontic treatment.



Figure 1: Panoramic radiographs shows us bilateral impacted maxillary canines

Results

A 507 panoramic radiographs are examined, 194 were male (38.2 %) and 313 were female (61.8%), we have excluded 109 patients according to our exclusion criteria. The mean age of patients was 32 years old. A total of 38 impacted canines were

found in our patient (7.5%), 29 patients were female (76.3%) and 9 patients were male (23.7%), here we note the occurrence of the canine impaction more in women than in men (Figure 2).

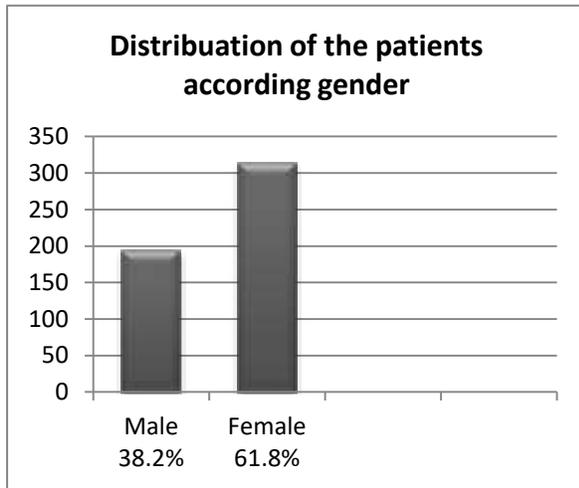


Figure 2: Distribution of patients according gender

Table 1: Relation between gender and Impaction

Gender	Normal Patient	Percent age	Number impact ion	Percent age
Male	194	38.2%	9	4.6%
Female	313	61.8%	29	9.2%
Total	507	100%	38	7.4%

According to location of the impaction 32 were impacted maxillary canines (84.2%) and 6 were impacted mandibular canine (15.7%), we realized the incidence of impaction in the upper jaw is three times greater than the lower jaw. A 10 out 38 cases were bilateral impacted maxillary canines (26.3%), while no case of bilateral impacted mandibular canines were detected (table. 1)

About the occurrence of the canine impaction in the right and left side, the right maxillary canine had 31.25% of all maxillary impacted canine, however, the left side impacted canine has 37.5%, and only 10 patients (31.25%) had bilateral maxillary impacted canine (figure 3). In the mandible the prevalence of impacted canine is less common than maxilla. The prevalence of impacted canines in the Mandible according

of the site of impaction are equal between the right and the left side 7.9%, Bilateral

mandibular impacted canine were not recorded in our patients.

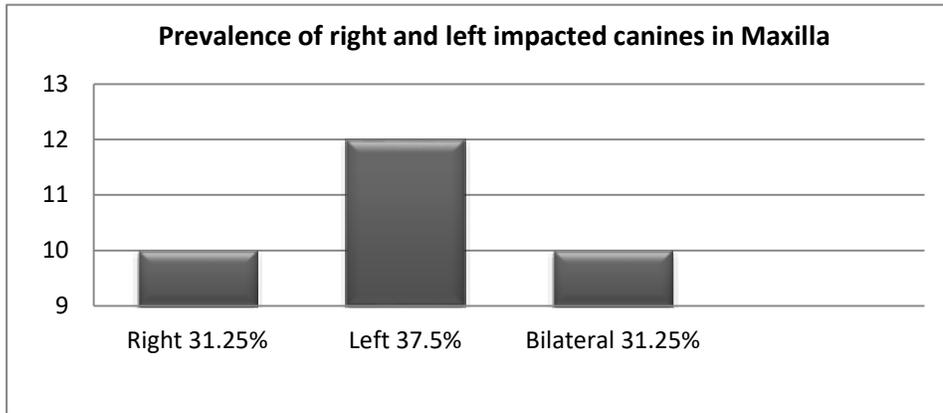


Figure3: prevalence right and left impacted canines in maxilla

Discussion

Dental impaction occurs quite often and is a frequent finding in dental practice, among teenagers and adults (12). According to some studies Canine impaction is the second most frequently dental impaction in the oral cavity after the third molar (4, 8). Other studies reported the maxillary canine as the most frequent occurring impacted tooth (10). Many researchers have studied the incidence of impacted canines among different populations (1, 6, 7, 9, 10 -12). The results revealed variation in incidence ranging from 0.27% to 8.8% from literature review. The present study examined the incidence of impacted canine in a population in Zawia city, reporting a 7.4% incidence

rate, this falls within the range reported by previous studies. A study in North Greek population reported an incidence of 8.8% which is similar to our results. In Saudi Arabia 2000 Panoramic radiographs were studied, 107 cases showing canine impaction, resulting in an incidence of 5.35% (10). Sharmila (1) investigated a total of 406 OPGs in an Indian population, the study reported 17 patients (4.19%) with maxillary impaction and U. Aydin found it to be 3.58% (13). In contrast other studies reported lower incidence as 0.2% (10), 1.8% in Palestine (9), 2.2% in Turkey (7) and 2.9% in western India (12). The variations in incidence reported in the dental literature

may be related to the differences in each selected study sample including; the number, methodology and racial differences (6, 10). A female predominance of canine impaction was revealed by our study were, the male to female ratio was 1 : 3.1, which is nearly three times more in females than in males. This result is similar to other studies (1, 9, 10). On the other hand, Fardiet al (6) reported no gender distribution differences. According to the literature, impacted canines occurred more frequently in the maxilla than in the mandible(1, 6, 8). A study in south India showed a predilection of 82.3% for maxillary canines. In other study, Alyami et al(10) also reported a predilection for maxillary canine, which was 92.5%. This study, also reported that maxillary canine impactions occurred more often than impaction in the mandible (82.2%) and (15%), respectively which is in agreement with other studies.

It is not common for impacted canines to occur on both sides of the jaw. In the present study, ten maxillary canine impactions occurred bilaterally with a prevalence of 26.3%, while no bilateral mandibular impactions were reported. In addition the majority (73.7%)of impacted canines occurred unilaterally, these results are

constant with the findings by other studies , reporting that unilateral impactions are more frequently occurring than bilateral impactions (6,9,12). In relation to maxillary impactions previous reports has revealed that impactions occurred in the left side more than the right side (10, 12). Our study, reported a higher prevalence of impacted maxillary canines on the left side (37.5%)compared to the right side (31.25%), which was in accordance with a study done by Alyami et al (10). However, Arandi et al and Altaee (9, 11)reported with more canine impactions occurring on the right side than that on the left side. Regarding mandibular canine impaction, our findings showed equal distribution between the right and left sides. A study in western India was reported with nearly similar results (12). In conclusion, the incidence of canine impaction in the present study (Zawia city in western Libya) was 7.6% with a high female predominance. Maxillary canines were more frequently impacted than mandibular canines. The majorityof impactions occurred unilaterally, on the left side regarding the maxilla and equally on both sides in relation to the mandible.

References

1. Sharmila RJ. Incidence of Impacted Canine Using Orthopantomogram Pharm. Sci. Res. 2016;8(8): 921-922.
2. Adina-Simona C, Mariana P, Alina O. Clinical and Statistical Study on Canine Impaction. ActaMedicaMarisiensis. 2013;59:191-193.
3. Bedoy, MM, Park JHA. Review of the Diagnosis and Management of Impacted Maxillary Canines. The Journal of the American Dental Association. 2009;140: 1485-1493
4. Bishara SE. Impacted Maxillary Canines: A Review.American Journal of Orthodontics and Dentofacial Orthopedics, 1992; 101: 159-171.
5. Aqeel IL.The Prevalence of Impacted Maxillary Canine among Iraqi Patients of Al-Basrah City J BaghColl Dentistry. 2016;28(1):73-77.
6. Fardi A, Kondilidon-Sidira A, Bachour Z, Parisis N, Tsirlis A. Incidence of impacted and supranumerary teeth-a radiographic study in a North Greek population. Med Oral Patol Oral CirBucal. 2011;16(1):55-61.
7. Aktan AM, Kara S, Akgünlü F, Malkoç S. The incidence of canine transmigration and tooth impaction in a Turkish subpopulationEuropean Journal of Orthodontics, 2010;32(5): 575-581.
8. Litsas G, AcarAA. Review of early displaced maxillary canines: etiology, diagnosis and interceptive treatment. The Open Dentistry Journal.2011; 5: 39-47.
9. Arandi N, Rabi T, Mustafa S. the prevalence of impacted maxillary canines in a palestinian population: a retrospective study. Open Journal of Stomatology. 2017.
10. Alyami B, et al. Prevalence and pattern of impacted canines in Najran, South Western Saudi Arabian population.SaudiDental Journal. 2019; 10: 002
11. Altaee, Zena. Incidence of impacted maxillary canine and associated with maxillary lateral incisor anomalies in ramadi city. Asian Journal of Science and Technology. 5(3): 2014; 226-229.
12. Patil S, Maheshwari S, Santosh BS, Khandelwal S. Prevalence of impacted canines in population of western part of India. Univ Res J Dent 2014;4:148-152.
13. Aydin U, Yilmaz HH, Yildirim D.Incidence of canine impaction and transmigration in a patient population Dentomaxillofacial Radiology 2004; 33(3): 164-

