



## Prevalence of Impacted Lower Canines and Lower Second Premolars among Dental Students

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### Abstract

**Introduction:** Mandibular second premolar came in the third grade after third permanent molars and maxillary permanent canines in frequency of impaction. They are found impacted at different angulation and positions and should be carefully evaluated radiographically during treatment planning. The incidence of impacted mandibular canines in the mandible is low as that in the maxilla, few sound studies based on large patient samples found.

**Aim of this Study:** The aim of this study was to evaluate the prevalence of impacted lower canines and lower premolars among Iraqi students in the dental colleges.

**Materials and Methods:** This study involved 147 dental students, and these cases had presented to college of dentistry in Ibn sina University for medical and pharmacological sciences, Iraq. Duration of the study from February 2021 to June 2021.

**Results:** Total case examined 146, 24 case excluded because of age range. The Results of 122 cases showed a total of 7 impacted mandibular canine teeth were found in 7 of the 122 patients (5.73%) with 5 being in females (ages 18 - 25) and 2 in males (ages 18 - 25). In two patients Impacted lower canines were bilateral and the other cases were unilateral. A total of 5 impacted lower premolars were found in 5 of 122 patients (4.09%) with 3 being in females (age 18 - 25) and 2 being in males (age 18 - 25), this impaction was bilateral in 1 case and unilateral in the other one.

**Conclusion:** Within the limitations of this study, the following was drawn: The prevalence of impacted lower canines and lower second premolars among age group 18 - 25 is 4 - 8%. The increase in accidental findings of impacted mandibular canine and second premolars should encourage the community to raise awareness and educate the population about the clinical implications and the importance of implementing preventive and interceptive procedures.

**Keywords:** Impacted Lower Canines; Lower Second Premolars; Dental Students

### Introduction

Impaction may be defined as the failure of a tooth to erupt, usually caused by crowding or an obstruction. A failure of tooth to erupt due to in the eruptive mechanism (primary failure of eruption) is rare. Some medical conditions (e.g. cleidocranial dysplasia) can be associated with multiple impactions [1].

The etiology of impaction of teeth other than the third molars is not well defined. Intrusive trauma to the periodontal ligaments which are extensively damaged may cause impaction that is common in the anterior segment. Adjacent tooth, dense bone or soft tissue may obstructed the eruption of a tooth and may cause impaction. The early loss of deciduous 2<sup>nd</sup> molars without managed by

placing of space maintainer, tooth/arch size discrepancy may cause crowding in the buccal segment, this leads to insufficient space for the 2<sup>nd</sup> premolar to erupt, so the premolar may either erupt ectopically or become impacted. Periodontal disease, dental caries, odontogenic cyst and tumors, pain of unexplained origin, jaw fracture and resorption of the root of the adjacent tooth Impacted teeth are possible factors in the etiology of partially or completely impacted teeth [2]. Genetic and environmental factors may affect the multifactorial nature of tooth eruption, at any stage of tooth development [3]. Impaction of tooth is a common problem in clinical orthodontics. It is considered when the tooth is an intraosseous position and no clinical signs of its eruption after expected time, when root of impacted teeth is fully formed with at least after six months of contralateral tooth eruption and one year after expected chronological age [4]. Most impaction remain asymptomatic but, risk remains of follicular enlargement, root resorption of adjacent teeth and infection [5]. The early detection of impacted canine is of great importance.

Impacted canines may worsen dental health and could cause resorption roots of neighboring teeth, their strategic position at the angle of arch is significant in maintenance of the harmony and symmetry of occlusal relationship, in determining the contours of the mouth [6]. There are many reasons for canines impaction, an ectopic eruption, inadequate space, supernumerary teeth, premature loss of the deciduous canine, excessive crown length, hereditary factors, a suspected pathological condition, infection, functional disturbances of the endocrine glands, tumors, cysts and trauma.

Impacted mandibular canines are located on the labial aspect of the dental arch also more likely to be than that in impacted maxillary canines. The mandibular canines are affected by pathological condition in a lower ratio than that in third molars and premolars [7].

**Mandibular second premolars impaction:** Mandibular second premolars came in the third grade third after third permanent molars and maxillary permanent canines in frequency of impaction. The mandibular second premolar is highly variable developmentally. Among the reported developmental anomalies are agenesis, abnormal tooth germ position, pathology such as inflammatory or dentigerous cyst, an ankylosed primary molar, presence of supernumerary teeth, odontomas and distal inclination of the developing tooth. Local factors like mesial drift of teeth arising from the

premature loss of the primary molars; ectopic positioning of the developing premolar tooth buds; or the second most frequently impacted tooth was found to be the mandibular second premolar, excluding third molars. Some systemic factors involved cleidocranial dysplasia, osteoporosis, hypothyroidism, hypopituitarism and Down's syndrome. The mandibular premolars erupt after the mandibular first molar and mandibular canines so if the space for eruption of premolars is inadequate, one of them usually the second premolar remains unerupted and chances of being impacted are high. The prevalence for mandibular premolars impaction in adults has the range be 0.2% to 0.3% [8].

### Aim of the Study

The aim of this study was to evaluate the prevalence of impaction of lower canine and lower second premolars, among Iraqi Students in the dental colleges, of Ibn sina University for medical and pharmacological sciences, Iraq, Baghdad.

### Materials and Methods

This study involved 147 students, only 122 from them for age 18 - 25 years old only for dental students and these cases had presented to college of dentistry in Ibn sina University for medical and pharmacological sciences, Iraq. Study started from February ended in June 2021. The 25 cases were excluded because of the age of students. Tooth was considered impacted when it was not aligned with the rest of the teeth in either of the lower dental arch. Data regarding age, sex, stage of studying, number of impacted teeth, arch involved, and type of impaction were obtained from patient's clinical examination and recorded in special case sheet prepared for this study, the examine done on Dental chair, using disposable mirror. The prevalence of impacted lower canine and premolars in relation to age and gender, was assessed by incidence and percentage.

### Results

Total case examined 146, 24 case excluded because of age range. The results of 122 cases showed a total of 7 impacted mandibular canine teeth were found in 7 of the 122 patients (5.73%) with 5 being in females (ages 18 - 25) and 2 in males (ages 18 - 25). In two patients impacted lower canines were bilateral and the other cases were unilateral. A total of 5 impacted lower premolars were found in 5 of 122 patients (4.09%) with 3 being in females (age 18 - 25) and 2 being in males (age 18 - 25), this impaction was bilateral in 1 case and unilateral in the other (Table 1-3).

Type of tooth impaction	Total cases	Incidence	Bilaterally	Males	Females	Mean age	Age range years
Impacted lower canine	122	7	2	52	70	21.5	18 - 25
Impacted lower premolar	122	5	1	52	70	21.5	18 - 25

**Table 1:** Incidence gender, age ration for impacted lower canine, lower premolar.

Gender	Impacted lower canine	Impacted lower premolar
Males	2	2
Females	5	3
Total	7	5

**Table 2:** Incidence gender ration for impacted lower canine, lower premolar.

Type of tooth impaction	Total cases	Incidence	Prevalence %
Impacted lower canine	122	7	5.7
Impacted lower premolar	122	5	4.1

**Table 3:** Prevalence of teeth impaction in the study.

**Discussion**

In our study teeth were found that prevalence of impacted mandibular canine (5.73%) with (ages 18 - 25) and we found prevalence of impacted lower premolars of (4.09%) with in (age 18 - 25), numbers of studies demonstrated the prevalence of impacted permanent canine, in the maxilla it reported between 0.8% and 5.4%. Canine impaction is relatively common and has been reported extensively in different populations, ranging from 0.8 - 3.6% [4].

The impaction of the canine had the greatest occurrence, 28.10% of all impacted teeth [9]. Results in the mandible less percentage had been reported 0.3% and 0.44%. The impacted canine in the Sudanese sample were similar to the finding by Ericson and Kuroi among Swedish sample (2.05%). However, it was less than the finding among Saudi sample (3.6%) and Turkish (3.73%) [10]. In studies prevalence of impacted premolars has been reported to be 0.5%, with a range of 0.1% to 0.3% for maxillary premolars and 0.2% to 0.3% for mandibular premolars [11].

The prevalence of impacted premolars in one Iraqi study has been reported as be for maxillary premolars (8.91%), while for mandibular premolars (91.08%). The prevalence of impacted

maxillary first and second premolars (2.97%) and (5.94%), respectively and the prevalence of impacted mandibular first and second premolars was (11.88%) and (79.20%), respectively [13]. Our study has some limitations, the sample size was small and the sample population was only representative of the patient pool at the Faculty of Dentistry. Wider population groups should be studied in our country. However, some believe that the prevalence rates of teeth impaction may reflect the prevalence rates of these dental anomalies and help in the future planning for general health care.

**Conclusion**

Within the limitations of this study, the following was drawn: The prevalence of impacted lower canines and lower second premolars among age group 18 - 25 is 4 - 8%. [impacted mandibular canine teeth were found in prevalence of (5.73%) with (ages 18 - 25) impacted lower premolars were found in prevalence of (4.09%) with in (age 18 - 25)]. The increase in accidental findings of impacted mandibular canine and second premolars should encourage the community to raise awareness and educate the population about the clinical implications and the importance of implementing preventive and interceptive procedures.

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