

## Prevalence Of Impacted Maxillary Canines And Its Association With Other Dental Anomalies

Research Article

Alagu Rathi Bharathi<sup>1</sup>, Archana Santhanam<sup>2\*</sup>, M. Sivakumar<sup>3</sup><sup>1</sup> Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.<sup>2</sup> Assistant Professor, Department of Oral Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.<sup>3</sup> Assistant Professor, Department of Oral & maxillofacial surgery, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.

### Abstract

The impacted maxillary canines are the second most common of the impacted tooth. Ectopic eruption may lead to impaction. An ectopic maxillary canine is a canine which follows an abnormal path of eruption in the maxilla. The aim of the study is to quantify the prevalence of impacted maxillary canines and its association with other dental anomalies. A retrospective study was done with 13 patients who had impacted maxillary canines. For the data collection we reviewed patient records and analysed the data of 86000 patients between June 2019 and March 2020. The collected data were analysed for further associated dental anomaly. The results were analysed using SPSS version 20 by IBM and association between impacted canine and dental anomaly was determined using Pearson correlation with p value <0.05. From the study it was found that the most common impacted maxillary canine is the left maxillary canine (61.5%). The peg laterals were the most dental anomaly with the impacted maxillary canine (61.8%). Dental anomalies should be used as risk indicators for early diagnosis and appropriate treatment planning.

**Keywords:** Impacted Maxillary Canine; Peg Lateral; Prevalence; Dental Anomaly.

### Introduction

A tooth is considered impacted when its eruption is hampered by other teeth, bone or soft tissues, impacted teeth can be clinically observed and later confirmed radiographically [3, 26]. Impaction is cessation of eruption of a tooth caused by a physical barrier or ectopic positioning of a tooth [12]. The impacted maxillary canines are the second most common of the impacted tooth. Ectopic eruption may lead to impaction. An ectopic maxillary canine is a canine which follows an abnormal path of eruption in the maxilla. The causes of the impacted maxillary canines can be local hard tissue obstruction, local pathology, disturbances of the normal development of the incisors and the genetic or hereditary factors [4]. It may also be due to the lack of space in the alveolar arch [29]. The impaction is a common finding in a dental office [28]. In normal development the maxillary canines should be palpable in the labial sulcus by the age 11 and usually erupt around

11-12 years. The presence of a lateral incisor root with the correct length, formed at the right time is an important variable needed to guide the erupting canine into the favourable direction [2]. There are multiple theories governing the etiology of the maxillary canine impaction. The guidance theory suggests that if the root of the lateral incisors is absent or malformed, the canine will not erupt [28]. The genetic theory points to genetic factors as a primary origin of palatally displaced maxillary canines and includes other possibly associated dental anomalies [21].

Dental anomalies are relatively common changes, influenced by genetic, epigenetic and environmental factors in dental development. The dental anomalies exhibit several degrees of severity from chronological delay in odontogenesis to complete absence of a tooth germ, also comprising deviations in morphology and positions of the teeth in the arch [1].

#### \*Corresponding Author:

Archana Santhanam,  
Assistant Professor, Department of Oral Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.  
Email Id: drarch.s@gmail.com

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Peg Laterals are nothing but the microdontia. Localized microdontia, single tooth is smaller than normal [25]. Lateral incisor, which may also be shaped like an inverted cone is called peg laterals, have short roots [13]. The frequency of microdontia in the upper laterals is just under 1% [18]. Transposition of teeth is a rare dental anomaly of uncertain origin [20]. Dental transposition is the positional interchange of two adjacent teeth [6]. Torsion is the turning of a tooth on its long axis out of normal position. The prime oral and general concern of congenital abnormality is speech (articulation of words), swallowing, suckling (leads to breastfeeding problems) and poor oral hygiene [14].

Photography often represents the best method to collect and preserve evidences [11]. Early detection and prompt diagnosis can lead to better prognosis and help in the implementation of successful clinical treatment [33]. The hallmark of scientific progress is reproducibility of published outcomes which has been difficult because of variation caused by biological and experimental differences [35]. It is still an option in predicting the developmental disturbances at an early stage [10]. Oral related problems are considered to be the major health problem world-wide, especially in the developing countries [15, 30]. Patients have to be followed closely for early detection [36]. It is necessary to evaluate the clinical utility of the individual in preventing complications [32, 9]. The examination may involve IOPA and OPG radiographs to assess the presence of the complication [34, 5]. The patients presenting with the abnormalities are difficult to be diagnosed under routine techniques [19]. As of today, surgery remains the only best possible management for these patients [15]. Impacted teeth are those teeth that fail to erupt into the dental arch within the expected time of eruption [31]. Impacted teeth also showed higher incidence of pericoronitis and dental caries [27]. Unilateral extraction can produce good treatment results of the impacted tooth [7]. Hence, the present study aims to quantify the prevalence of impacted maxillary canines and identify its association with other dental anomalies.

## Materials And Methods

The retrospective cross sectional study was done in a private dental institution, Chennai. This study was approved by the institutional ethical board. Two reviewers were involved in the study. For the data collection we reviewed patient records and analysed the data of 86000 patients between June 2019 and March 2020. A total of 785 patients data were collected for the impacted tooth

and among that only 13 patients had impacted maxillary canines. The case sheets were verified with the help of the photographic examination & radiographic examinations. No patients were unnecessarily exposed to radiographs.

The following parameters like the name, age, gender, impacted tooth and the dental anomaly associated with the impacted maxillary canine were obtained and tabulated. The data was reviewed by the external reviewer. The age, gender were the independent variables and the impacted tooth and the dental anomaly associated with the impacted tooth is a dependent variable. The data was imported to SPSS version 20 by IBM and the variables were defined. Pearson correlation was done to determine the association between the variables.  $P < 0.05$  was considered as statistically significant.

## Results And Discussion

The data collected from the patients management software were tabulated in SPSS and the descriptive method statistics were obtained. From the study it was found that the most common impacted maxillary canine was the left maxillary canine (61.5%) (Figure:1). Huda Abutayem et al., has proved that unilateral left maxillary canines were the most common impacted canine among the maxillary canines (42:38) [1]. Emanuela Mercuri [22] has also proved the same evidence of most prevalent left maxillary canine impactions (51.4:32.5). This may be due to the arch length discrepancy, the primary etiology for the impacted canines.

Peg laterals were the most commonly present anomaly associated with the impacted maxillary canine (61.8%) (Figure 2). Other dental anomalies associated with impacted maxillary canine in the present study are 23% of buccoclusion and 7.6% of torsion. Blaine J Langherg et.al [23] and Emanuele Mercuri et al., [22] have also reported that peg laterals were the most common dental anomaly associated with the impacted maxillary canine. This is mostly because the lateral incisors serve as a guide for the canine to erupt along its root. No positive correlation was identified between the impacted tooth and the type of dental anomaly present  $p = 0.069$  not statistically significant.

From the study it was found that males (53.8%) had been more affected by the impacted maxillary canines than the females (46%). Ranjit Manne et.al [21] in his study stated that the females were commonly affected. Huda Abutayem et al. [1] states that

**Figure 1. Bar chart depicting the frequency distribution of impacted maxillary canines. X axis represents the impacted maxillary canine and Y axis represents the number of teeth affected. 23 was the most commonly impacted tooth (61.5%).**

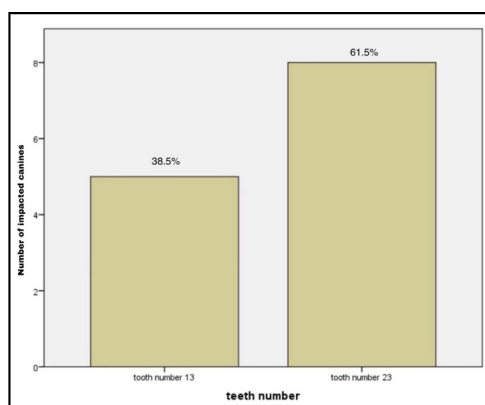


Figure 2. Bar chart depicting the frequency distribution of dental anomaly associated with the impacted maxillary canines. X axis represents the type of dental anomaly and Y axis represents the Number of study population with impacted maxillary canine. 61.5% of the study population had Peg lateral.

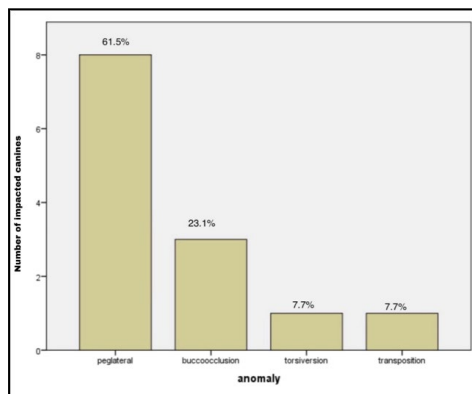


Figure 3. Bar chart depicting gender wise distribution of impacted maxillary canines. X axis represents gender and Y axis represents the number of study population with impacted maxillary canine. Males had higher prevalence of impacted maxillary canine (53.8%).

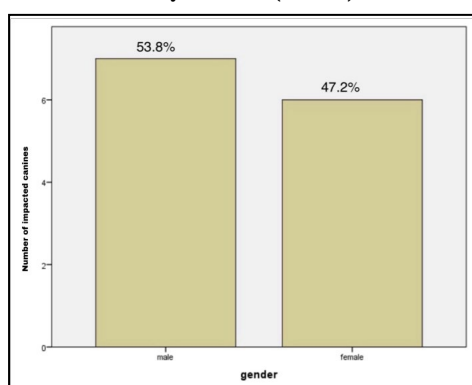
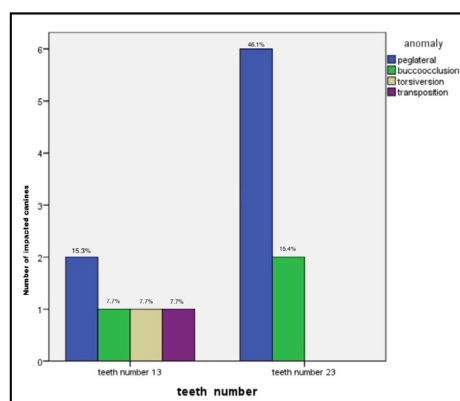


Figure 4. Bar chart depicting association between the frequency of dental anomaly associated with impacted maxillary canine. X axis represents the impacted maxillary canine and Y axis represents the number of study population with dental anomaly where blue indicates peg lateral, green colour indicates bucco - occlusion, brown indicates torsiversion and purple indicates transposition. Peg lateral was the most commonly associated dental anomaly with impacted 23. Chi-square test revealed that the association was not statistically significant. (p = 0.069).



the males were commonly affected (77.23) This result discrepancy may be due to the variation of the data collected from different groups of population. Limitations of the present study include short sample size, single centered study and it doesn't represent ethnic groups or population. The awareness on impacted maxillary canine and its clinical implications and importance of implementing preventive and interceptive procedures should be done.

**Conclusion**

The maxillary left canines were the most commonest impacted

maxillary canine among the study population. The peg laterals were the most common dental anomaly associated with the impacted maxillary canine (61.8%). And it was also found that the males were commonly affected by the impacted maxillary canines than the females. These anomalies should be used as a risk indicator for early diagnosis.

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