

Current Trends in Impaction in a Hospital Based Population- A Radiographic Retrospective Study

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Abstract

Aim: To study the prevalence of impacted third molar teeth in a hospital population.

Background: A tooth is impacted if it fails to erupt or emerges partially. Impaction is commonly seen in third molars. Impaction could be because of lack of space or an altered path of eruption. They may be asymptomatic or cause symptoms. Rarely can they give rise to odontogenic cysts or tumors.

Materials and methods: The study was conducted among 100 subjects in the age group of 19-75 years of age. OPG was used to identify type of impaction in all the four quadrants.

Result: 58% of the population had impacted teeth. Impaction was most common in the mandible and horizontal impaction was the most common type of impaction.

Conclusion: The present study revealed that impaction is a common finding in a dental office. The progressive stage of evolutionary agenesis is yet to set in. The importance of this finding is the early diagnosis and prompt prophylactic or therapeutic treatment that would benefit the patient community.

Keywords: Impaction, prevalence, horizontal, maxilla.

INTRODUCTION:

An impacted tooth is any tooth that is prevented from reaching its normal position in the mouth by tissue, bone, or another tooth. Impaction occurs where there is prevention of complete eruption into a normal functional position of one tooth by another, due to lack of space (in the dental arch) obstruction by another tooth or development in an abnormal position^[1]. An impacted tooth maybe completely impacted, partially erupted or Ankylosed.^[2] Impaction is commonly seen in the third molars. Following the maxillary and mandibular third molars canines are the most commonly impacted^[3, 4]. All the permanent teeth except for the mandibular incisors and first molars are capable of being impacted.^[5] The third molars are chronologically the last tooth to erupt with the eruption age of 17-21. They are usually impacted owing to the lack of space and inability of the jaws to accommodate them as the jaw growth is completed by then. It is reported that 1 in 10 individuals have impacted third molars.^[6]

Asymptomatic impacted tooth are usually left in-situ, while those associated with pathologies require prompt removal. Impacted teeth have been classified varyingly to assess the best possible method of removal and minimise post operative complications. Based on the nature of the overlying tissue the third molar impaction is classified as soft tissue impaction and hard tissue impaction. Hard tissue impaction is further divided into partially bone and complete bony. Based on the inclination of the impacted tooth to the long axis of the second molar it is classified as mesioangular, distoangular, horizontal, vertical, Buccal or lingual obliquity, transverse and inverse. According to the Pell and Gregory classification which is based on the relationship between the impacted lower wisdom tooth to the ramus of the mandible and second molar it is classified as class A, class B, class C, Class 2, Class 3. The

classification of impacted maxillary 3rd molars is similar to those used for mandibular 3rd molars except it does not have class1-class3 in Pell-Gregory classification.^[7]

Symptomatic patients present problems such as difficulty in mouth opening, pericoronitis, pains, radiating to the head and mobility of the adjacent tooth^[8]. An impacted tooth that is left untreated may lead to complications like abscess formation, cyst formation, and malocclusion of the teeth.^[9]

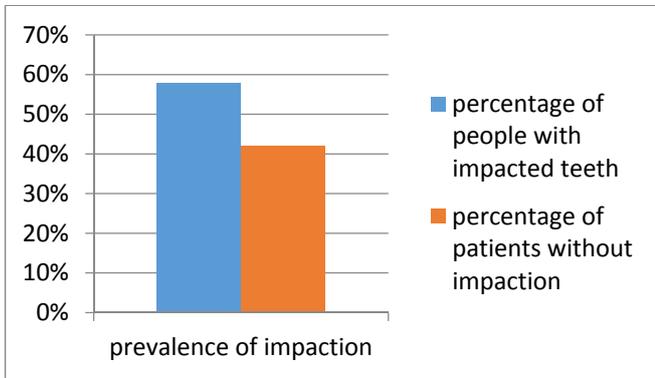
The jaw size, tooth size and the ability of the tooth to erupt is determined to some extent by the genes. But the role of genes in this process is unpredictable.^[7] In the current days, there is a progressive decrease in jaw size, this accompanied by either an impacted teeth, most commonly the third molar or it's complete agenesis. The current study would help in better understanding of this process and also provide clinical information in relation to the same.

MATERIALS AND METHODS:

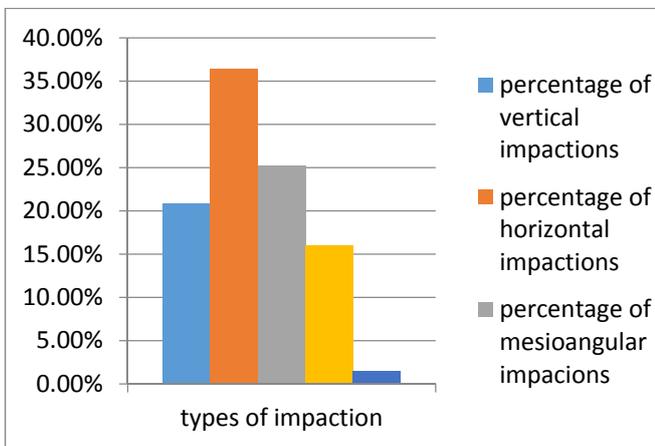
In this retrospective study panoramic radiographs of 198 patients were collected randomly from the Department of Oral and Maxillofacial Radiology, Saveetha Dental College and Hospitals; between the time periods of October 2014 to April 2015. The minimal age for inclusion of the study was 19 years. The selected radiographs were then examined for the presence and absence of impacted tooth. A tooth was considered to be impacted when the tooth was obstructed on its path of eruption by adjacent tooth, bone, or soft tissue. Angulation of the impacted tooth was measured using the long axis of the impacted and adjacent tooth as described in winter's classification. Following radiographic evaluation, patient's records were studied, and symptoms related to the impacted tooth or teeth were recorded. Data collected were entered into a excel spreadsheet and statistics was done.

RESULT:

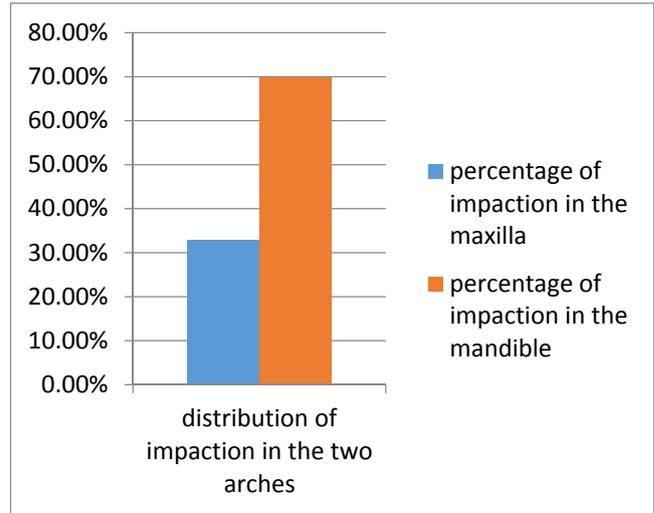
In the present study out of 198 patients 58% (115) had impacted third molars. The ratio of the patients with impacted teeth: patients without impacted teeth, was found to be 1.3:1. Out of which 29.29% (58) of the patients were females and 28.78% (57) of the patients were males. The total number of impacted teeth in these patients was found to be 206. The male:female ratio was found to be 1:1. Amongst these patients, mandibular impactions comprise 69.90% (114) of the impaction with 35.92% (75) impactions in the third quadrant and 33.98% (70) impactions in the fourth quadrant. Maxillary impactions comprise 32.90% (68) of the impactions with 18.44% (38) impactions in the first quadrant and 14.56% (30) impactions in the second quadrant. The maxillary impaction: mandibular impaction was found to be 1:1.7. Horizontal impaction was found to be the most common type with 36.40% (75) occurrences (Fig: 2). This was followed by mesioangular impaction (Fig 1) with 25.24% (52) occurrences. 20.87% (43) of the impactions were vertical (Fig: 3), 16% (33) of the impactions were distoangular and 1.45% (3) of the impactions were transverse type (Fig: 1). Out of the 58% patients with impacted teeth 1.73% (2) of the patients have both impacted third molar and impacted canines 4.81% (4) of the patients without an impacted third molar have impacted canines. Amongst the patients with third molar impactions 20% (23) present with associated bone loss and 6.08% (7) presented with root resorption of the second molar tooth.



Graph 1: Prevalence of impacted teeth



Graph 2: Distribution of different types of impaction



Graph 3: Distribution of impaction in the two arches



Fig 1: OPG shows transverse impaction of 18 and mesioangular impaction of 38 and 48.



Fig 2: OPG shows horizontal impaction in 38 and 48



Fig 3: OPG shows vertical impaction in 18

DISCUSSION:

Impacted tooth is one of the most common clinical complaints in routine dental practice. Periodic studies are required in this area to have an updated knowledge of the prevalence, pattern of impaction and the sequelae of symptoms that follow impaction ranging from simple pericoronitis to odontogenic cysts and tumours. This present study was planned as a pilot study to study the prevalence of impacted teeth in a hospital going population with a larger sample size over the following years. There are different methods by which the prevalence of impacted teeth is studied, radio graphical study is the most common amongst them. This study was done in a hospital as the population is usually diverse and is representative of the population in that area.

In the present study the prevalence of impacted third molar was found to be (58%) which is higher as compared to other studies. This high prevalence rate may be due to the age group of the patients in the present study that range from 19 years to 75 years compared to other studies that involved a wider age group of patients. Third molars was found to be the most common impacted teeth in accordance with those that are previously reported in literature^(3,4,10) This may be because of evolutionary decrease in the size of the jaws owing to lack of space and causing the impaction of the third molar teeth which are chronologically the last teeth to erupt. Maxillary canine (3.03%) was found to be second most commonly seen impaction in accordance with that are previously reported in literature^(3,11). This may be due to the long eruption path of the maxillary canine. Impaction of the canine causes over eruption of the mandibular teeth and causes malocclusion of the maxillary arch. The relation of the impacted maxillary canine by virtue of its long root and the floor of the maxillary sinus is a critical feature considering the possibility of creating an oro-antral fistula during its removal.

Our study revealed that impaction is more common in the mandible(69.90%) which is similar to the results obtained by Saglam et al, FCS Chu et al, Dhuha Al Feeli et al.

^(4,10,11) The discrepancy in impaction between the jaws is important, as presence of impaction only in one arch would leave an unopposed tooth. This could cause over eruption, periodontal problems and temporo-mandibular joint problems. In the mandible, impaction was more common in the third quadrant (35.92%) which is similar to the findings of the study done by Dhuha Al Feeli et al⁽¹¹⁾.

The present study did not show any significant gender predilections. The ratio of occurrence of impacted teeth in males and females was 1:1 which is in agreement with the study done by Aitasalo et al⁽¹²⁾. This implies that the jaw length tooth size discrepancy is common to both the genders. In the mandible, among the type of impaction, Horizontal impactions (36.40%) were the most common

type of impaction. This could lead to the difficulty of removal of the impacted tooth, bone loss and root resorption of the adjacent teeth. It could also represent a change in the orientation of the developing tooth germ brought about by forces generated either during jaw growth or from the other developing teeth in the vicinity.

In the maxilla distoangular type of impaction is most common (70.58%) which is in agreement with the study done by Mohammad Mehdizadeh et al.⁽³⁾

In the present study 20% of the population presented with associated bone loss and 6.08% had root resorption in the second molar. Root resorption was rarely seen but when present was mostly associated with horizontal impaction of the third molar.

CONCLUSION:

The present study revealed that impaction is a common finding in a dental office. The progressive stage of evolutionary agenesis is yet to set in. The importance of this finding is the early diagnosis and prompt prophylactic or therapeutic treatment that would benefit the patient community.

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