

Pervasiveness of Distal Caries in Mandibular Second Molar in Sequence of Affected of Impacted Third Molar in Hail, Saudi Arabia

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Abstract

Background: An impacted tooth is one that fails to erupt into the dental arch within the foreseeable time. Mandibular third molars are the most frequently impacted teeth because they are the last teeth erupting into dental arch. Pressure exerted by impacted third molar and accumulation of plaque under the soft tissue leading to development of the distal caries in mandibular second molar. This is most commonly seen in partially erupted mesioangular and horizontal impacted teeth against the distal surface of second molar predisposing to distal caries. This can be prevented if it is diagnosed early and provide the appropriate management. The aim of this study is to assess the prevalence of distal caries in second molars due to impacted third molar among the people of Hail, Saudi Arabia.

Methods: This is a descriptive cross sectional study conducted on 500 patients, including males and females; age range between 18 to 35 years. The study include patients who have impacted lower third molar visiting the dental clinic of College of dentistry, University of Hail, and as well as private and government dental clinic in Hail city. For the convenient of the study clinical examination, and periapical radiographs or Pre-op OPG will be taken.

Result: The results will give us information about the prevalence of impacted third molars causing distal caries in second molar among the general people of different age groups of Hail city. This study was applied on 500 Patients including males and females. The prevalence was (68.70%) having distal caries in second molar due to impacted third molar and (31.30%) did not have. Most of them were females (65.20%) and (43.80%) were males, The diagnosis was highly in mesioangular (70.70%) then vertical (10.40%). This will be useful for the dentist and dental surgeons to raise awareness among general people for the importance for preserving second molars.

Keywords: *Distal Caries; Impacted Third Molar; Mandibular Teeth; Second Molar; Saudi Arabia*

Introduction

An impacted tooth is one that fails to erupt into the dental arch within the foreseeable time [1].

Mandibular third molars are the most frequently impacted teeth because they are the last teeth erupting into dental arch. Hence more chance of lack of space for their eruption [2]. The tooth may become impacted because of the following factors: adjacent teeth, dense overlying bone, excessive soft tissue, or a genetic abnormality prevents eruption [1].

Impacted teeth may stay asymptomatic or may be related with various pathologies such as caries, pericoronitis, cysts, tumors, and also root resorption of the adjacent tooth [3].

Also, around 10% of the mandibular third molars extracted with acute pericoronitis [4,5].

In addition to external root resorption is almost asymptomatic, unless the pulp cavity has been connected or the lesion has been infected [6].

All impacted teeth should be removed unless contradicted. Extraction should be performed as soon as the dentist determines that the tooth is impacted. Removal of impacted teeth becomes more difficult with advancing age. The dentist should typically not recommend that impacted teeth be left in place until they cause difficulty. If the tooth is left in place until problem arise, the patient may experience an increase incidence of local tissue morbidity, loss of damage to adjacent teeth and bone and potential injury to adjacent vital structures [1].

The problem associated with impacted teeth include trismus, infection, cervical caries of second molars [7].

Moreover, when the second molars adjacent to absent third molars were at the lowest risk for developing pathology; whereas, second molars adjacent to soft tissue impacted third molars were at greatest risk [8].

In addition to this, the distal caries in mandibular second molar is more common due to the pressure by the impacted third molar. The accumulation of plaque in partially erupted mesioangular and horizontal impacted teeth against the distal surface of second molar cause distal caries [7].

Mesioangular or horizontally partial impacted mandibular third molars that reach the amelocemental junction of the second molar put this tooth at risk of developing caries in the distal cervical region [9-11].

The third molar impaction is taking place in about 73% of the young adults in Europe [12], these teeth commonly erupt between the ages of 17 and 21 years [13]. It has also been reported that the third molar eruption varies with races, such as in Nigeria [14] mandibular third molars may erupt before the usual time thereof 14 years and in Europe [15,16] it may erupt up to the age of 26 years [17].

Most of the researchers found that the females have a higher occurrence of mandibular third molar impaction when compared to males [18,19].

The prevalence of dental caries in second molar has been observed in several epidemiology and the results with almost near 37 to 39% [7,20].

Study was done in 2017 in Ranchi, India on 200 patients with age group 17 - 45 years. It was based on the clinical findings related to impaction and its association angular position and depth of impacted third molar were evaluated. It was found that the majority of the patients reported to the hospital with complaints of carious tooth (66%) and pain (59%) [2].

In 2017, the study was done by Nikhil Srivastava, *et al.* on 150 patients with impacted third molar presenting to the Department of Oral and Maxillofacial Surgery, Sri Rajiv Gandhi College of Dental Sciences and Hospital, were assessed retrospectively. It was found 37.5% cases showed caries on the distal aspect of mandibular second molars and caries with mesioangular impacted third molars was 55%. Most of them have mesioangular cases (Level B and Class I) as per the Pell and Gregory classification [20].

Study done in 2009 to 2014 in Abha city, Kingdom of Saudi Arabia. They were assessed 6000 OPGs of patients reporting to College of Dentistry, King Khalid University. It was found that 39% patient's with impacted third molars had distal cervical caries in second molar [7].

There are some studies, but still there is not enough literature in Hail, Saudi Arabia.

Aims and Objective

The present study is aimed to assess prevalence of distal caries in second molar due to impacted third molar in Hail, Saudi Arabia. The objectives of the study were:

- This study aim to evaluate the prevalence of distal caries in mandibular second molar by impacted third molar teeth.
- To assess the gender variation in the prevalence of distal caries of second molar.
- To assess distal caries related to different types of third molar impaction.
- To assess the most prevalence age group of distal caries in mandibular second molar.

Materials and Methods

This is a descriptive cross sectional design follows which involved 500 Patients included males and females who visiting College of Dentistry University of Hail, private and government dental clinic in Hail, Kingdom of Saudi Arabia. The study done on males and females' age range 18 to 35 years who have impacted lower third molar in University of Hail, private and government dental clinic in Hail as well.

The data was done by the diagnosis of caries in second molar and position of mandibular third molar and evaluated through examination sheet, mirror, explorer, tweezers, OPG, I.O.P.R and bitewings radiograph. Descriptive analysis of the data was done by SPSS version 22 and results were displayed as frequency table and graphs. An excel spread was designed to enter the data. Prevalence of distal cervical caries in mandibular second molars was analyzed in relation to age, gender, specific type of impacted third molar causing distal caries in second molar was identified and recorded. Impacted mandibular third molar were classified as per the standard Pell GJ and Gregory GT classification as vertical, mesioangular, distoangular, Buccoangular, Lingoangular and horizontal [3].

Result

In this study, we aimed to assess prevalence of distal caries in second molar due to impacted third molar in Hail, Saudi Arabia. This study was applied on 500 Patients including males and females. The prevalence was (68.70%) having distal caries in second molar due to impacted third molar and (31.30%) did not have (Figure 1).

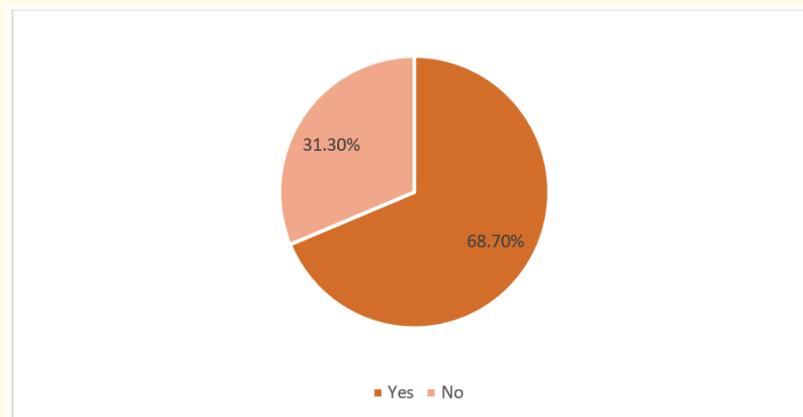


Figure 1: Is there distal caries in the second molar related with third molar.

Most of them were females (65.20%) and (43.80%) were males (Figure 2), the diagnosis was highly in mesioangular (70.70%) then vertical (10.40%), destoangular (9.60%), horizontal (7.5%), buccoangular (1.70%) and Lingoangular (1.20%) (Figure 3 and Table 1). Finally, we observed there was a pain related with who have distal caries in second molar (83.80%) most of them have pericoronitis (62%) (Figure 4 and 5). The (P-value = 0.000).

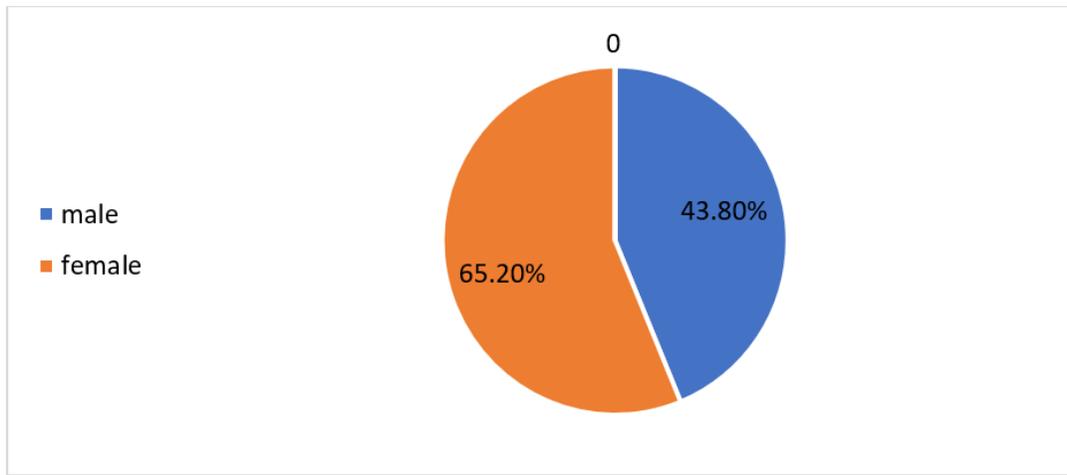


Figure 2: Assess the most prevalence gander group of distal caries in mandibular second molar.

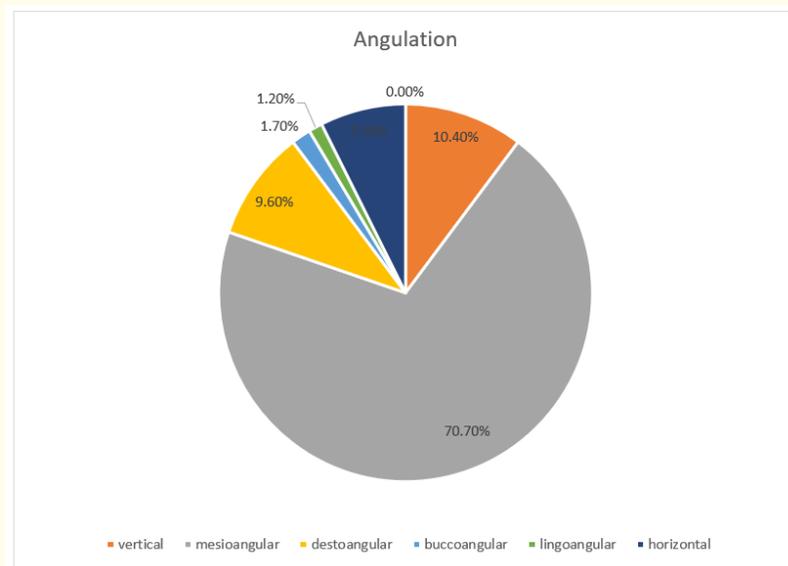


Figure 3: Distal caries related to different types of third molar impaction.

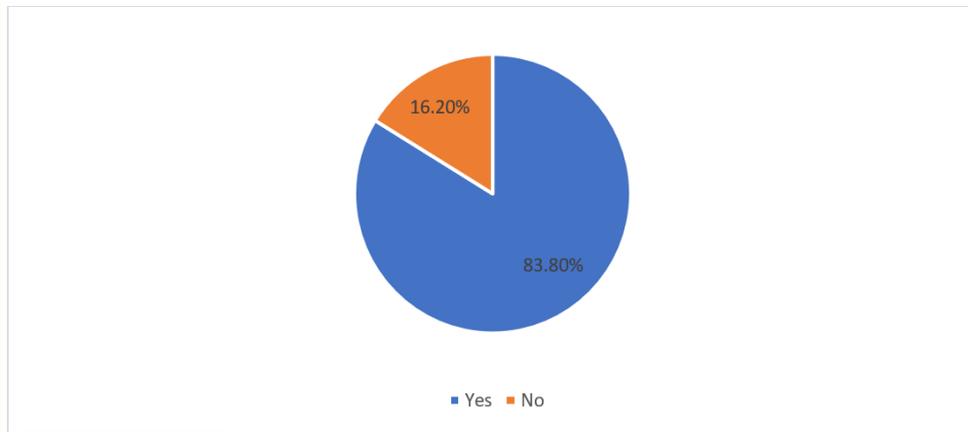


Figure 4: Pain related with who have distal caries in second molar.

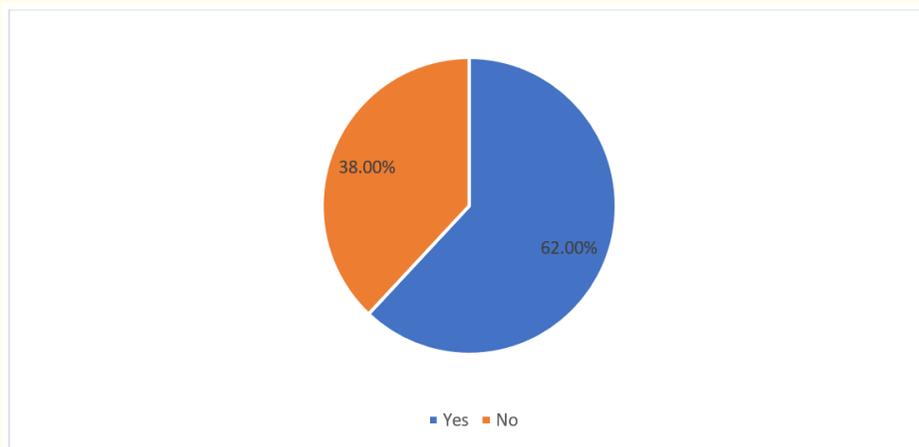
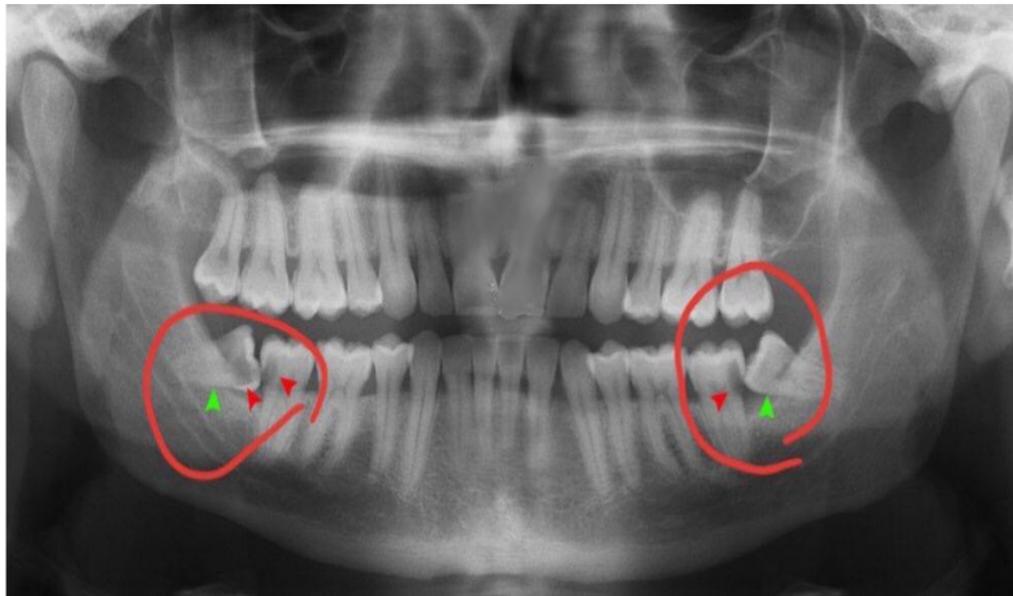


Figure 5: Pericoronitis related with distal caries.

Angulation	Related to distal caries (%)
Vertical	10.40%
Mesioangular	70.7%
Destoangular	9.60%
Buccoangular	1.70%
Horizontal	7.5%
Lingoangular	1.20%

Table 1

Effect of distal caries in mandibular second molar due to impacted third



Figure

Discussion

Mandibular third molars are the most frequently impacted teeth. However more chance of lack of space for their eruption [2].

Mead' explained an impacted tooth is one that precluded from erupting into position because of malposition, lack of space, or other hindrances [21].

Haidar Z, Shalhoub SY conducted a study among 1000 panoramic radiographs of consecutive Saudi patients attended the College of Dentistry in Riyadh during the period January 1981-December 1983. In their series, (31.9%) were impacted of third molar. The majority was 53.9%, mesioangular impacted third molar and there not much difference in impacted wisdom teeth between male (34%) and female (29%) Saudi patients [22].

Ozec I, et al. showed a study that assessed the prevalence and factors affecting the formation of second molar distal caries in a Turkish population. the recorded of 485 patients with 585 partially erupted mandibular third molars were examined using panoramic radiographs and they found the prevalence was 20% [23].

In Sri Rajiv Gandhi College of Dental Sciences and Hospital, conducted a study involving 150 patients with impact third molar. They recorded 37.5% cases showed caries on the distal aspect of mandibular second molars and caries with mesioangular impacted third molars was 55% [20].

Jose Marques., et al. conducted a study involving 203 patients, 94 males (46.3%) and 109 females (53.7%), with a mean age of 26,8 years and 327 lower third molars.

The prevalence of second molar distal caries was 25.4% (95% CI = 20.6% to 30.2%) [24].

From 2009 to 2014 in dental care at College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia. conducted a study to analyze dental caries on the distal surface of mandibular second molar included of 6000 Orthopantomograms (OPGs). They were found that 39% patient's with impacted third molars had distal cervical caries in the second molar [7].

In this study, we aimed to assess the prevalence of distal caries in second molar due to impacted third molar in Hail, Saudi Arabia. This study we found (68.70%) having distal caries in the second molar due to impacted third molar and (31.30%) did not have.

Most of them were mesioangular (70.70%).

This study has several strong and weakness points, strong points are, this is the first Saudi and Arabian study to investigate prevalence of distal caries in second molar due to impacted third molar which including examination and radiographs taken to people visiting dental clinics and this study was of larger sample size than previous studies, whereas the limitations of this study include the few correlations performed among different variables, family and social factors should be investigated in further researches and the limited comparison of results as there are limited number of studies conducted on this subject.

Conclusion

In this study, we aimed to assess prevalence of distal caries in second molar due to impacted third molar in Hail, Saudi Arabia. We found that a 68.70% of the patients impacted mandibular third molars caused distal caries in second molars with mesioangular impaction and the majority in the females (65.20%) who are presented in Hail, Saudi Arabia.

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