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ORIGINAL ARTICLE

Prevalence of Distal Cervical Caries in Mandibular Second Molar caused by impacted third molar

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ABSTRACT

Aim: To analyse early recognition of the distal cervical caries of mandibular second molar caused by impacted mandibular third molar, to correlate oral health and caries status and to find out the average age groups and gender affected by impacted third molar

Methods: A cross-sectional survey of 300 participants was conducted over a 15-month period at Rehmat Memorial Hospital, Abbottabad. 300 participants having impacted third molar having distal cervical caries in mandibular second molar were analyzed clinically and radiographically. Data was analyzed using SPSS version 23.0

Results: the demographic data of 300 patients with impacted mandibular third molars were analyzed. 64% were male and 36% female that have extractions due to impaction. Caries caused in more than half of participants by mesioangular impaction, which was 52%, 3% due to distoangular, 26% due to distal, and 18% due to horizontal impaction. In 63.25% of cases, teeth were lost due to caries, periodontitis caused 20.25% of tooth loss, pericoronitis 7.75%, orthodontics 3.75%, prosthodontics 1.2%, trauma 1%, and other factors were 2.5%. study reveals that 30.5 % of the extractions were done from 21 and 30 years and 23 %of extractions were performed. 40% of those who took part in the study did not brush their teeth. Socioeconomic status also has a great impact on tooth extractions.

Conclusion: After conducting this study, it was concluded that there was a relationship between the prevalence of distal cervical caries in mandibular second molars and the placement of neighbouring impacted mandibular third molars. As a result, the extraction of mandibular third molars should be done to avoid cavities and premature tooth loss in the neighboring molar.

Key words: Third molar impaction, distoangular, distal cervical caries, extraction, 2nd molar caries

INTRODUCTION

An impacted tooth is one that is failed to come in occlusion or develop into a functional position in the dental arch, and hence becomes damaged. As a result, impacted teeth mostly are non-functional, aberrant, or pathogenic[1].

Third molars generally emerge in the oral cavity at the age of 15 to 25 years. Some erupt in the late thirties, while others stay unerupted.[2] The timing of the eruption, position in the arch, and size of the crown differ across people[3].

Impaction rates in mandibular third molars are significant, ranging from 9.5 to 50% [4]. Third molar impaction is influenced by a variety of variables, including genetic factors, limited space in the dental arch, delayed growth, a misdirected growth pattern, and the impact of an external oblique line. Impacted mandibular third molars may lead to pain which can radiate to the ear, periodontitis, pericoronitis, carious lesions, malignancies, mandible angle fracture, crowding of teeth and cysts. [5].

These impactions are defined by the degree of angulation in the arch, the location of the mandible, and the pattern of the crown.3 Pell GJ and Gregory GT conceived a method for organising impacted wisdom teeth that is complete.[6] Winters classified impacted third molars into mesioangular, distoangular, horizontal, and vertical impactions, which are defined by the angulation of the tooth in the oral cavity.[7]

There has been extensive research on the complications of mandibular third molars. However, numerous studies have focused on the pathosis of the tooth rather than the structures around it. Distal caries in the mandibular second molars have lately piqued the interest of academics and doctors, although there haven't been many studies on the condition. In the context of all issues relating to third molars, mandibular second molar distal caries is one of the most prevalent (0.5-20%)[8]. According to a prior study, the prevalence of distal caries in mandibular second molars induced by third molars might reach up to 32% in some cases[9].

Third molar impaction in the mandible was much more prevalent than in the maxilla. When comparing the mandible to the maxilla, mesioangular is more prevalent in the mandible, and vertical impaction is more frequent in the maxilla. In addition, a considerably reduced percentage of pathosis associated with the impacted third molar was found.[10] Impacted third molars are linked to cysts[11], pericoronitis[12], periodontal disorders[13], and cavities[14].

Multiple studies have shown that teeth adjacent to impacted third molars develop dental caries. Caries affects the distocervical region of the second molar, particularly in situations of mandibular third molar mesioangular impaction.[15] When there are impacted third molars present, visual inspection of the distal aspect of the second molar's surface is difficult. This makes it harder to detect dental decay on the neighbouring second molars[14].

Saudi research found 39% distal cervical caries in second molars with impacted mandibular third molars. However, no previous research has considered impacted maxillary third molars and caries on neighbouring distal second molars. Numerous studies assessed dental caries on the distal surface of the lower second molars in the presence of impacted third molars[15].

The purpose of this study was to determine the relationship between the patient's age and gender, the eruption angle, and the amount of impaction of mandibular third molars, and the frequency of distal caries in mandibular second molars.

Objectives of the study were to recognize the Distal cervical caries of Mandibular Second Molar caused by Mandibular Third Molar and the likewise management to preserve Mandibular Second Molar inspite of being extracted with Mandibular Third Molar, to correlate oral health and caries status and to find out the average age groups and gender affected by Impacted third molar.

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MATERIALS AND METHOD

A cross-sectional survey of 300 participants was conducted over a 15-month period at Rehmat Memorial Hospital, Abbottabad. The study was approved by an ethical review committee (Ref. WMC/21/R123). All participants provided written consent. They were verbally informed of the purpose and objective of the research. The outpatient department referred all patients to the department of maxillofacial surgery for pain and caries management, as well as anticipated third molar impaction. All participants completed a history form that included demographic information. A clinical examination was performed, and a radiograph was recommended. This study enrolled participants of all ages. Patients who were medically compromised or who had maxillary impaction were excluded from the study. SPSS version 23 was used to analyse the patient's demographic and clinical history and radiographic data. Graphs were used to display all the data.

RESULTS

In this study, the demographic data of 300 patients with impacted mandibular third molars were analyzed. Amongst them, 64% were male and 36% female that have extractions due to impaction as illustrated in fig. 1. 84 participants were spotted with distal caries in their mandibular second molars. The major cause of caries in second molar was mesioangular impactions. These participants were then categorised according to the type of impaction that was cause of caries. Fig 2 shows caries caused in more than half of participants by mesioangular impaction, which was 52%, 3% due to distoangular, 26% due to distal, and 18% due to horizontal impaction. Srivastava N et al. published a study with nearly identical findings. According to their findings, the incidence of caries was 55 percent in cases of mesioangular impaction. In the mandibular arch, radiographic evidence of second molar distal caries was found in 37.5 percent of the cases. When only mesioangular third molars were considered, the incidence rose to 55%.[16]

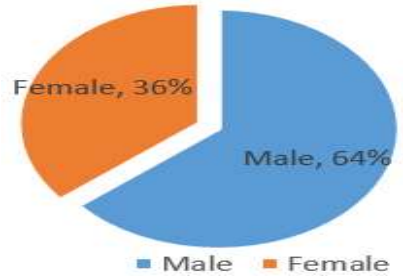


Figure 1 male female ration

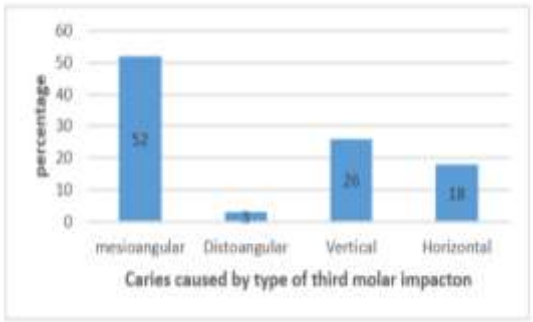


Figure 2: Caries caused by type of impaction found in participants

Data from this study showed that the common reason for tooth loss was caries. Fig 3 demonstrates that in 63.25% of cases, teeth were lost due to caries, periodontitis caused 20.25% of tooth loss, pericoronitis 7.75%, orthodontics 3.75%, prosthodontics 1.2%, trauma 1%, and other factors were 2.5%.

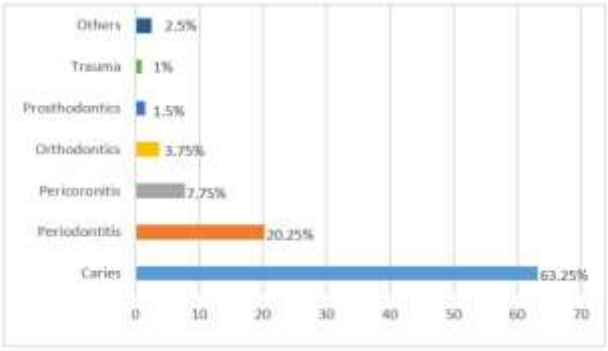


Figure 4. Cause of Tooth Loss

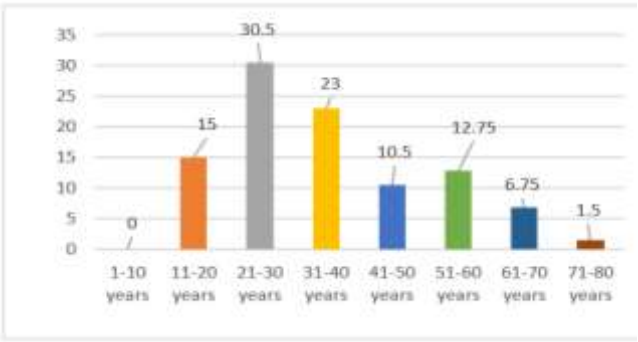


Figure 3. Age Distribution

While the most extractions were done in the third decade of life. Between the ages of 30 and 40, the second-highest extraction rate was seen. Figure 4 reveals that 30.5 percent of the extractions were done between the ages of 21 and 30. In the third decade of life, 23% of extractions were performed.

Caries prevalence is also linked to tooth brushing habits. Figure 5 shows 40% of those who took part in the study did not brush their teeth. Many people brush their teeth at least once a day, with 34.25% of all participants doing so. Furthermore, 22.7 percent of people brush their teeth twice a day. Only 2.25% of people brush their teeth three times as frequently as the average person. Figure 6 shows association of bad oral hygiene, caries and eventually tooth loss, it concluded that 57.5% of participants doesn't have any bad oral habit which effect oral hygiene. About 14.5% use naswar while 20% eat sweets. Pan usage is .25% among participants.

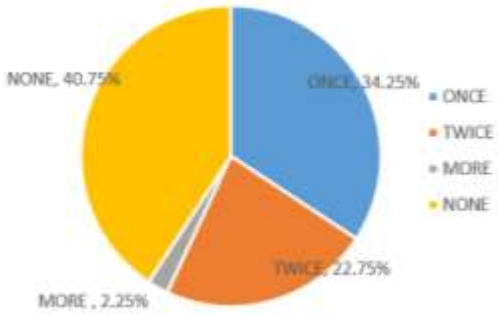


Fig. 5: Tooth brushing frequency

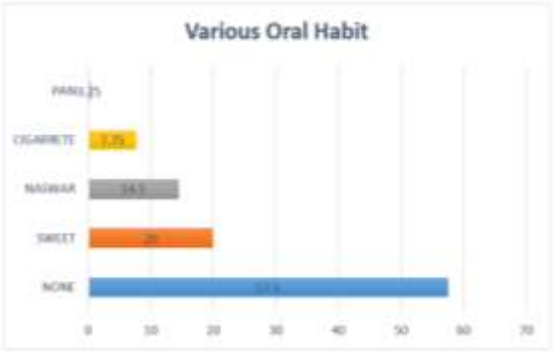
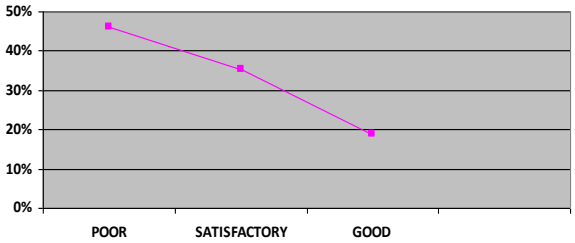


Figure 5. Oral Habits.

Socioeconomic status also has a great impact on tooth extractions. Data in Fig 7. Shows that poor people who doesn't afford dental treatment tends to have more extractions.

Fig. 7. Socioeconomics



DISCUSSION

When compared to other impactions, third molar impaction is more common. Impactions are induced by a variety of causes such as eruption direction, jaw size, lack of space, delayed eruption due to lower eruption force, and irregular facial growth[17].

Both males and females have felt the effects. According to the findings, 64 percent of men and 36 percent of women have had their teeth extracted owing to impaction. In comparison to this investigation, Talha Asher et al. found practically the exact opposite results. They discovered that 54 percent of females had impacted molars, while 46 percent of males had them. Their research found that both genders were almost equally involved. This is due to variances in growth patterns between men and women. During the root development of mandibular third molars, males' mandibles continue to grow, permitting these teeth to erupt into the oral cavity[18].

The angle of impaction has a significant impact on caries frequency. In this study, mesioangular impaction caused most of the caries. Caries was caused by mesioangular impaction in 52% of cases, distoangular impaction in 3% of cases, distal impactions in 26% of cases, and horizontal impaction in 18% of cases, as illustrated in fig 2.

Srivastava et al. published a paper with the same results. Caries was discovered in 55% of patients with mesioangular impaction.Radiographic evidence of second molar distal caries was found in 37.5 percent of cases in the mandibular arch.When mesioangular third molars were taken out of the equation, the incidence rose to 55%[16].

All types of impactions, not simply convergent angle impactions, cause distal caries in second molars. According to a study by Knutsson et al., third molars that are mesioangular and horizontally placed are more prone to developing caries in adjacent second teeth. According to our research, 85 percent of all carious second molars are impounded in this manner.All forms of impactions, not simply convergent angle impactions, cause distal caries in second molars[19].

Third molar impactions are associated with several pathological diseases. Caries, pocket formation, pericoronitis, periodontal bone loss, root resorption, and the creation of cysts and tumours are all examples. [20] Dental caries rates in teeth next to impacted third molars ranged from 1 to 4.7 percent to 15 to 51 percent in previous studies.[21]

In this study, caries resulted in the loss of 63.25 percent of the teeth.A previous study on the Pakistani population found that when there was an impacted third molar, 42.5 percent of second molars developed distal caries.[22] In the youthful population, tooth loss is occurring at an alarming pace. The fundamental reason for this is that socioeconomic considerations have a large influence on therapy selection. Patients in our study exhibited poor oral hygiene, with 40.75 percent not cleaning their teeth at all. Utilization of sweets was also seen (20%), as illustrated in Fig.6.

If left untreated, cervical caries will eventually lead to extraction. According to this study, most of the extractions were carried out within the second decade of life. Due to distal cervical caries, 30.5 percent of all participants had their teeth pulled between the ages of 20 and 30, and 23% had them extracted between the ages of 30 and 40. W.L Adeyemo et al. conducted a similar study in Nigeria, with similar results. They discovered that caries was responsible for 63 percent of the extractions and that the average age was 20–29 years.[23] Another study by Gbotolorun et al. found that the majority of surgical third molar extractions were performed between the ages of 20 and 40[24].

The health of your teeth is also influenced by your brushing habits. According to the findings of this study, most participants don't brush their teeth at all on a daily basis. 40% of the participants had no understanding of what brushing meant. For a community, that must be a significant proportion. 34.5% of the other people cleaned their teeth once a day, or seven times per week. Similar study by Abed Al Hadi et al., concluded that the re irregular toothbrush users, as well as irregular dental appointments, were studied. When compared to persons who brush their teeth regularly (seven or more times per week), those with irregular tooth brushing habits (less than one visit per year) had more caries and had teeth pulled more frequently. Caries was identified in 47% of respondents and resulted in tooth loss[25].

CONCLUSION

Due to poor oral health, young people are more likely to lose teeth because of caries. According to the current study's findings, mandibular distal caries, and the position of adjacent impacted third molars in the dental arch are related. Caries is the leading cause of tooth extraction, and it is influenced by poor oral hygiene, poor oral habits, an insufficient brushing routine, and even social standing. This link can cause and progress distal caries in mandibular second teeth. Bacteria thrive in mesioangular third-molar impactions, leading to distal caries in adjacent second molar teeth.

Recommendations: Educational awareness must be created to emphasis about the good oral hygiene maintenance and preservation of dentition. Patients should be educated about restoration of teeth rather than removal as a treatment option.

Conflict of interest: no conflict of interest

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