Prevalence Of Impacted Teeth and Pattern of Third Molar Impaction Among Western Maharashtra Population: A Retrospective Study

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ABSTRACT

Background

Impaction is the commonest condition seen in the oral cavity , mostly third molar impaction is seen. In the rare conditions impacted canine are also seen. Impaction can be be fully impacted or partially impacted it can occur due to the crowding of teeth in oral cavity , any barrier that can be physical or developmental.

Other name for third molar is "wisdom tooth". Impaction of third molar is usually seen between the age group of 17 to 25 years. Impaction is classified as mesioangular, distoangular, vertical, horizontal, buccolingually placed. The most common type of impaction seen is mesioangular.

This study is aimed to evaluate the prevalence of impacted teeth specifically third molar impaction seen in the Western Maharashtra Population based on retrospective study.

Materials and methods

A case-control study was conducted to examine the types of impaction observed among patients who visited the Department of Oral Surgery between 29th August 2024 and 31st December 2024. The study included a total of 221 participants of both genders across all age groups, presenting either for third molar extraction or with pain in the third molar region. All participants underwent dental radiographic evaluation, including panoramic radiographs (OPGs), to assess for impacted teeth. The study aimed to compare the patterns of impaction across different age groups and genders. For analysis, participants were categorized into three age groups: less than 25 years, 25 to 50 years, and more than 50 years.

Results

The study was carried among 221 people in Maharashtra that shows 60% of population atleast shows one impacted teeth in the oral cavity and 40% shows two impacted teeth in the oral cavity. In this 59.9% of population shows mesioangular impaction , 34.5% of the population shows horizontal impaction , 5% of population shows vertical impaction , 0.3% of population shows buccolingual impaction and 0.3% of population shows distoangular impaction. Mostly mesioangular impaction is found in Western Maharashtra population.

Conclusion:

In the studied Maharashtra population, 60% had at least one impacted tooth, while 40% had multiple. Mesioangular impaction was most common (59.9%), followed by horizontal (34.5%), vertical (5%), and distoangular/buccolingual (0.3% each). Impactions were most frequent in the 25–50 age group.

1. INTRODUCTION

The frequency of third molar, specially third molar is commonly found in the dental practices. Third molar impaction is the commonest condition where the third molar fails to erupt fully or is not properly positioned in the oral cavity. This leads to pain, cyst formation, infection, it can cause harm to the adjacent tooth by causing caries, if its horizontal impaction it causes dilacerations of adjacent tooth, caries by food lodgement.

In the Western Maharashtra population impaction of third molar is most commonly observed. The prevalence of third molar impaction varies from region to region. Western Maharashtra, with its unique demography, presents an important region for

investigating the patterns and prevalence of impacted third molars. Impaction of third molar varies from region to region

based on the age , gender and environmental factors. Through the study, will find the incidence of impaction, the spreadof impaction based on age, gender, and tooth position (e.g., mesioangular, distoangular, vertical, or horizontal). The study will help to get information about impacted third molars in this region

Objectives

The objectives of an study was to find the angulation of impaction of third molar in Western Maharashtra population based on OPG of patients.

2. MATERIALS AND METHODS

Study design-

This study was carried out in the oral surgery department of School of Dental Sciences, KVV, Karad, from 29/08/2024 to 31/12/2024.

The study comprised of 221 patients OPG's who visited the department of Oral Surgery for the extraction of third molar and pain in the third molar region. The study comprises of both the gender's they were divided in to three age groups that is below 25 years, 25-50 year and more than 50 years.

Sample size

The factor of interest of participating as sample among the population was considered as 17.5%.

Sample size (by prevalence):

Sample size (n) by prevalence $= Z^2 \, Pq \, / \, L^2$

Z = Standard normal variable at 95% is 1.96

n = Sample size

P = Prevalence (17.5%)

q = 100 – p

= 100 – 17.5

= 82.5

L = Allowable error / margin of error at 95% CI

$$n = (1.960)^2 \, (\, 17.5) \, (82.5) \, / \, 5^2 = 221 \, . \, 8$$

Therefore,

Sample size is 221.8.

Three groups were made based on age groups, group A less than 25 years group B 25-50 years and more than 50 years.

Criteria

OPG's of the patients that have shown impact on who visited the department with the complaint of pain the third molar region, decayed third molar.

Inclusion criteria

☐ All healthy participants

☐ Age less than 25 – more 50 years

☐ All tooth that are indicated for surgical extraction

Exclusion criteria

No such exclusive criteria.

Ethical approval for the study

The research has been approved by the Institutional Ethics Committee to proceed (Protocol Number 127/2024-2025) titled, " PREVALENCE OF IMPACTED TEETH AND PATTERN OF THIRD MOLAR IMPACTION AMONG WESTERN MAHARASHTRA POPULATION : A RETROSPECTIVE STUDY in both maxilla and mandible: A comparative study" by Krishna Vishwa Vidyapeeth, Karad.

3. MATERIALS AND METHODS

People were grouped into three groups based on their ages, participants below the age of 25years patients from age group of 25 to 50 years and participants above the age of 50 years and further they were divided on the basis of their gender.

Further there OPG's were studied and the type of angulation was identified whether they have mesioangular, distoangular, vertical, buccolingual, horizontal impaction based on this angulations they were grouped. In this way the data was collected and analyzed.

Through this study we were able to find most frequent type of impaction seen in Western Maharashtra population.

Evaluation

This study included total 221 interventions and grouped into 3 based on their age and gender amongst 221 population 60% of population shows atleast one impacted tooth and 40% of population shows multiple impacted tooth in there oral cavity.

In these 59.9% of population shows mesioangular impaction, 34.5% of population shows horizontal impaction, 5% population shows vertical impaction, 0.3% population shows vertical imapaction and 0.3% shows distoangular impaction.
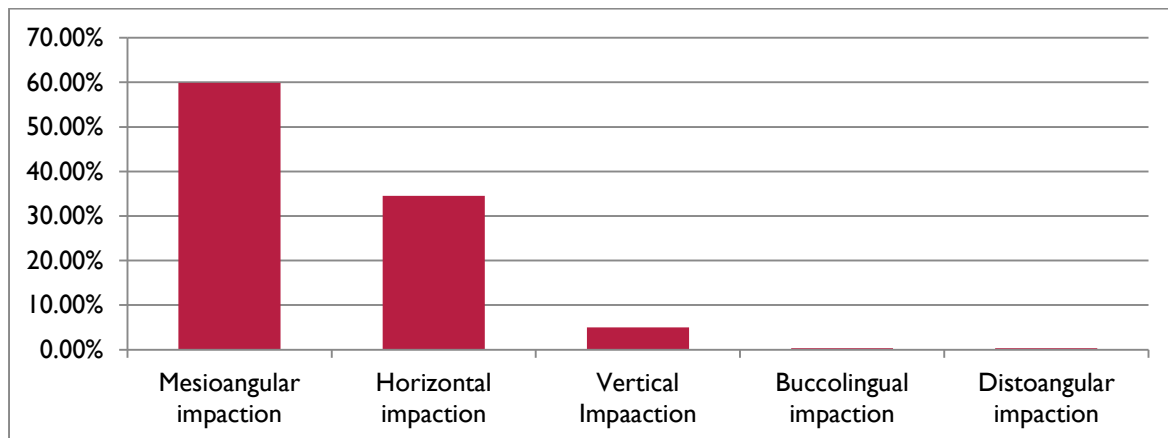
4. DISCUSSION

This study helped us to find of most frequent type of impaction found in the Western Maharashtra Population. Overall 221 patient's OPG's were studied those who visited the department of Oral Surgery from 29/08/2024 to 31/12/2024. Those who had complain of pain seen with molar impaction, caries, etc.

This patients were segregated into three based on their ages, those who are below the age of 25, patients between age group of 25 to 50 and above the age of 50 and they were also grouped base on their gender. The angulations were noted whether they have mesioangular impaction, horizontal impaction, vertical impaction, distoangular impaction, buccolingual impaction. The most commonly found impaction in this population is mesioangular impaction (shown in figure A) and, mostly 25-50 age have seen most number of mesioangular impaction followed by less than 25 years of age group in males mostly mesioangular impaction is found than in male population. Least mesoiangular impaction is seen above the group of 50 years.

The second commonest impaction found is horizontal impaction (shown in figure B) that is 34.5%. Mostly horizontal impaction is found in the ages of 25-50 years followed by less than 25 years least found in above the age group of 50 years. Horizontal impaction is mostly seen in males than females. When horizontally impacted tooth is erupted there is usually complaints of food lodgment and caries formation to the second molar which causes pain to the patient.

Third type of impaction that is vertical impaction (shown in figure C) that is 5% which is mostly seen in the age of 25 tro 25 years followed by less commonly in age of less than 25 years. Vertical impaction is more commonly seen in male than in females.

Distoangular (shown in figure D) and buccolingual (shown in figure D) impaction is the least common type of impaction seen in people that is 0.3%. Buccolingual impaction is rearly found in the people. Both of these impactions are most commonly found in age group of less than 25 years and found more commonly in males than females.

Mesioangular Impaction

Horizontal Impaction
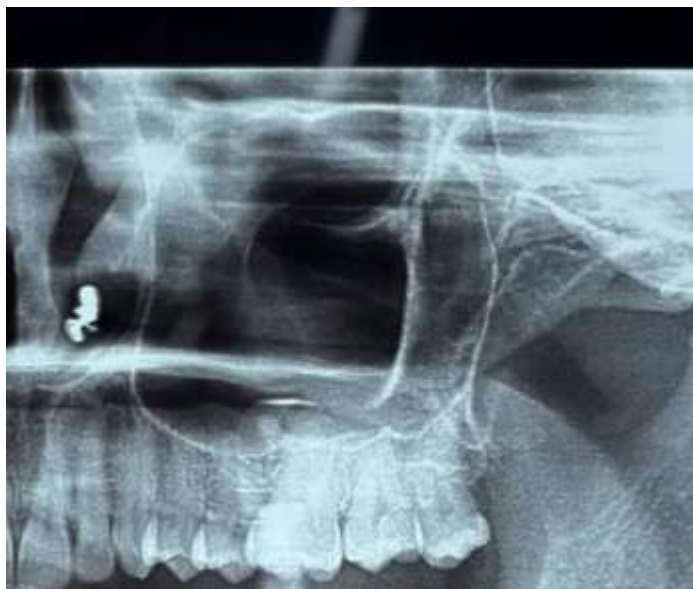
Vertical Impaction

Buccolingual impaction

Distoangular impaction

5. CONCLUSION

In conclusion study shown that, about 60% of population atleast shows single impacted tooth in oral cavity whereas 40% shows multiple impacted teeth in oral cavity. Mostly mesioangular impaction is seen in Maharashtra population that is 59.9%. 34.5% of them have horizontal impaction. 5% of tem have vertical impaction. 0.3% of them have distoangular impaction and 0.3% of them have buccolingual impaction. Mostly 25 to 50 years af age group have any of this angulation found

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