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PREVALENCE OF THIRD MOLARS WITH CARIES & PERIODONTAL PATHOLOGY: SURVEY IN STUDENT POPULATION

Dental Science

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ABSTRACT

Objective: To assess the prevalence of caries and periodontal pathology in asymptomatic third molar in student population

Materials and methods: The data for this survey will be selected from 30 random students with asymptomatic third molar. Demographic data and data assessing oral health will be collected from each subject in single appointment. Periodontal probing depth of maxillary and mandibular second and third molars will be conducted by trained examiners as a measure of clinical periodontal status. A IOPA radiograph will be taken. Clinical data on caries experience will be collected for all patients using visual-tactile caries examination using explorer.Radiographic evaluation of caries will be done by single radiologist

Results: The data was analyzed from 30 subjects who were students. The findings suggested that more subjects had at least one probing site of 4mm or deeper in third molars as compared to second molars. The subjects had more caries experience in second molars compared to third molars (75% vs. 25%). 40% of subjects had caries experience only in second molars while 13% of subjects had caries experience only in third molars. About 24% of subjects had caries experience in both second as well as third molars while 23% of subjects were caries free.

Conclusion: In this analysis periodontal pocket depth in third molar is high and significant than periodontal pocket depth in second molar and caries experience was detected more frequently on second molars than third molars.

KEYWORDS:

periodontal pocket, caries, third molar, second molar

INTRODUCTION:

Periodontal pocket is defined as "Pathologically deepened gingival sulcus[1]". Periodontal pockets are many times associated with pain. They are usually present due to inflammation of gingival in that region. The probing depth is the distance to which an instrument penetrates the pocket. The normal probing depth is about 2-3mm. Anything above this range is considered abnormal. According to Shafer (1993) caries is defined as "Infectious microbial disease of the calcified tissues of the teeth, characterized by demineralization of inorganic portion and destruction of organic substance of the tooth, which often leads to cavitation[2]"

To our knowledge there are few studies on prevalence of caries or periodontal pathology on asymptomatic third molars. Data related to this topic is rarely reported in standard textbooks. Hence this will be a starting step in imparting proper knowledge to young patients about possible complications of retaining their asymptomatic third molars. This study will enlighten the student population who are unaware about periodontal and endodontic problems associated with asymptomatic third molars. Results of this study will certainly guide the community and dental practioners to understand the periodontal diseases and prevalence of caries associated with asymptomatic third molars.

MATERIALS AND METHODS:

The present study was undertaken at exodontia clinics of department of oral and maxillofacial surgery, School of Dental Sciences, Karad, Maharashtra after due approval of institutional ethical committee. All the subjects included in this study were willing for this study and duely filled informed consent was signed by every subject. The data for this survey will be selected from 30 random students with asymptomatic third molar. Healthy subjects, having asymptomatic third molars with adjacent second molars will be included in this study. Those who had taken antibiotics within past 3 months, pregnant, or with most severe form of periodontal disease will be excluded.

Demographic data and data assessing oral health will be collected from each subject in single appointment. Periodontal probing depth of maxillary and mandibular second and third molars was conducted by trained examiners as a measure of clinical periodontal status. A pre-operative IOPA radiograph will be taken. Clinical data on caries experience will be collected for all patients using visual-tactile caries examination using explorer.Radiographic evaluation of caries will be done by single radiologist.

The data collected was subjected to statistical analysis. All the values were analyzed for mean, standard deviation, standard error of mean (M [SD]). Paired t test was used for evaluation of statistical significance between the second molar and third molar. Also correlation coefficient was calculated for functional relationship between the second molar and third molar.

RESULT:

Mean, Standard deviation (SD), Standard Error of Mean (SEM) of periodontal pocket depth of 2nd molar and 3rdmolar respectively were calculated (Table 1).

Periodontal Pocket Depth	Mean	N	Std. Deviation	Std. Error Mean
Periodontal Pocket Depth 2nd Molar	10.6	30	1.2758	0.23292
Periodontal Pocket Depth 3rd Molar	14.6333	30	2.7478	0.50168

Table1: Shows Mean, Standard Deviation and Standard Error of Mean of Periodontal Pocket Depth of 2nd and 3rd molar

In periodontal pocket depth of 2nd molar Mean was 10.6, SD was1.275 and SEM was 0.23292 whereas in periodontal pocket depth of 3rd molar Mean was 14.633, SD was 2.74 and SEM was 0.50168 (Figure 1).

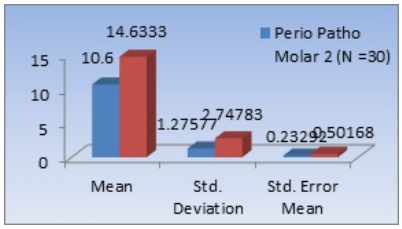

Figure 1: Shows Mean, Standard Deviation and Standard Error of Mean of Periodontal Pocket Depth of 2nd and 3rd molar

When correlation between periodontal pocket depth of 2nd molar and 3rd molar was done correlation coefficient r = 0.488 and p- value = 0.006 (Table 2). It seems there is a significant association between molar 2 and molar 3.

Periodontal Pocket Depth	N	Correlation	Sig.	Inference
Correlation of periodontal pocket depth of 2nd molar and 3rd molar	30	0.488	0.006	Significant

Table 2: Correlation of periodontal pocket depth of 2nd molar and 3rd molar

Hypothesis:
H0: No significant difference between molar 2 and molar 3 in periodontal pathology at 95% Level of Significance.

H1: Significant difference between molar 2 and molar 3 in periodontal pathology at 95% Level Of Significance.

By applying paired t-test, t-value was 9.207 with 29 d.f. and p-value was 0.000 < 0.05 (Table 3) hence we can conclude that there was significant difference between periodontal pocket depth of 2nd molar and 3rd molar.

Paired Differences								
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	d.f	Sig. (2tailed)	Inference
			Lower	Upper				
4.033	2.3995	0.43808	3.13736	4.92931	9.207	29	0.000 <0.05	Significant

Table 3: Shows Paired t-test of Periodontal Pathology of Molar 3 and Molar 2 patients

It seems that periodontal pocket depth of 3rd molar is high and significant than periodontal pocket depth of 2nd molar.

Mean, Standard deviation (SD), Standard Error of Mean (SEM) of dental caries with 2nd molar and 3rd molar respectively were calculated (Table 4).

Caries	Mean	N	Std. Deviation	Standard Error Mean
2nd Molar	0.866667	30	0.8996	0.1642
3rd Molar	0.433333	30	0.5683	0.1038

Table 4: Shows Mean, Standard Deviation and Standard Error of Mean of dental caries with 2nd molar and 3rd molar

In caries experience of 2nd molar Mean was 0.8666, SD was 0.8996 and SEM was 0.1642 while in caries experience of 3rd molar Mean was 0.5683, SD was 0.5683 and SEM was 0.1038 (Figure2)

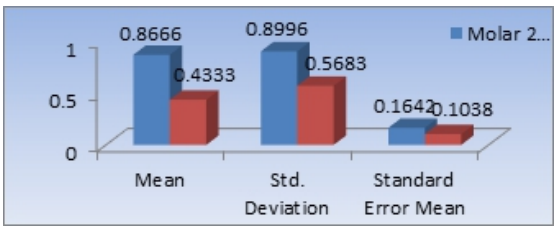

Figure 2: Shows that Mean, Standard Deviation and Standard Error of Mean of Caries with 2nd molar and 3rd molar

When correlation between caries incidence of 2nd molar and 3rd molar was done,correlation coefficient r = 0.04946 and p- value = 0.7952(Table5).

Caries	N	Correlation	Sig.
2nd Molar & 3rd Molar	30	0.04946	0.7952

Table 5: Shows Correlation between molar 2 and molar 3 in caries experience.

It seems that there was a significant association between molar 2 and molar 3 and also there was positive correlation between molar 2 and molar 3.

Hypothesis:
H0: No significant difference between molar 2 and molar 3 in caries at 95% level of Significance. Vs.

H1: Significant difference between molar 2 and molar 3 in caries at 95% level Of Significance.

By applying paired t-test t-value was 2.2822 with 29 d.f. and p-value was 0.03 <0.05(Table 6)hence we can conclude that there was significant difference between caries experience of 2nd molar and 3rd molar.

Paired Differences								
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	d.f	Sig. (2tailed)	Inference
			Lower	Upper				
0.4333	1.0400	0.1899	0.04498	0.8216	2.2822	29	0.03< 0.05	Significant

Table 6: Shows Paired t-test of caries incidence of 2nd Molar and 3rd Molar

It seems that caries experience of 2nd molar is high and significant than caries experience of 3rd molar.

DISCUSSION:
According to this study, periodontal pathology of at least one probing site of 4mm was found in 3rd molars as compared with the 2nd molar. Conversely caries experience was more in 2nd molars than the 3rd molars.

The possible explanation for difference in prevalence of periodontal outcomes in 2nd and 3rd molar could be the eruption pattern of the 3rd molars[3]. In most of the individuals the peak eruption of third molar occurs after completion of jaw growth, predisposing, on exposure, the 3rd molar region to an anaerobic environment. This environment is conducive to colonization of microorganisms. The presence of microorganisms then causes pocket formation. The other reason for prevalence of pocket formation in third molar reason could be improper oral habits. Due to improper brushing technique the bristles of the brush may not reach the third molars. This leads to accumulation of plaque and finally leads to pocket formation.

Young adults worried about their asymptomatic third molars want to know if these teeth will remain free of symptoms or pathology if retained for a lifetime. However still the epidemiological data about this topic is very limited." Rachel et al suggested that young adults seeking advice about their asymptomatic third molars want to know the likelihood of these teeth remaining free of symptoms or pathology if retained for a lifetime[3]. Blakey et al reported that two thirds of 254 young adult subjects with asymptomatic third molars had evidence of periodontal pathology including at least 1 periodontal probing depth of at least 4mm at a third molar probing site or the adjacent distal second molar probing sites[4], which was similar to our study.

Shugars et al reported data that the caries experience in third molars is less compared with first and second molars[5]. These findings were same as the findings in our study.

According to Kelvin et al periodontal pocket depth was more in second molars when third molars were present, but it reduced when third

molars were absent[6]. This suggested that third molars were more or less responsible for the pathology.

Nazir et al conducted a study to document the prevalence of occlusal caries experience and periodontal pathology for erupting third molars in young adults.At baseline, none of the subjects had occlusal caries experience in a third molar; 51% of subjects had at least 1 PD ≥4 mm in a third molar region. At follow-up, 27% of the subjects had occlusal caries experience in at least 1 third molar that erupted to the occlusal plane; 61% had at least 1 PD ≥4 mm in a third molar region. Twenty-nine percent had occlusal caries in at least 1 third molar at the occlusal plane and at least 1 PD ≥4 mm in a third molar region. Thirty-seven percent had no third molar occlusal caries experience and all third molar region PD <4 mm[7]. This supported our study that periodontal pocket depth is more in third molars and caries experience is more in second molars compared with the third molars.

Raymond et al conducted a study to analyze the clinical impact of risk markers for third molar and non–third molar periodontal pathology over time.A significant association was found between baseline and follow-up third molar region and non–third molar region periodontal pathology indicators (P < .01). Subjects who had incipient or early disease in the third molar region at baseline were significantly more likely to have an indication of periodontal pathology at follow-up in the third molar region and in the non–third molar region compared with those in whom no disease was detected at baseline[8].

Robert et al conducted a study to estimate the proportion of patients with asymptomatic third molars and evidence of disease at baseline and to measure the health risks of retained third molars in the long term.Periodontal pathology was associated with asymptomatic third molars. At baseline, 25% of 329 asymptomatic subjects enrolled in studies had at least 1 probing depth (PD) of at least 5 mm in the third molar region, distal of the second molars, or around the thirdmolars, with at least 1-mm attachment lost in each patient. PDs deeper than 5 mm were associated with an attachment loss of at least 2 mm in 80 of 82 subjects. The clinical findings of increased periodontal PDs and periodontal attachment loss coupled with the colonization of periodontal pathogens supported the concept that clinical and microbial changes associated with the initiation of periodontitis may present first in thethirdmolarregion in young adults. For subjects with a baseline PD of at least 4 mm in the thirdmolar baseline “orange and red” complex periodontal bacteria of at least 105, the odds were significantly increased for the progression of periodontal disease in thethirdmolar region. The visible presence of thirdmolars in young adults was significantly associated with periodontal inflammatory disease in non-third molars[9]. Ash et al suggested the presence of third molars affected the periodontal status of distal of second molars and that third molar removal improved the periodontal status of second molars[10.]

The studies by Raymond et al, Robert et al and Ash et al suggested that periodontal pocket depth is more in third molars compared with other molars, which is same result that we got in our study.

CONCLUSION:

The results of this study will be helpful to the clinicians when advising young adult patients about retaining or removing third molars.The patients must understand that symptoms are not sole indicator of pathology, thus having no symptoms does mean that the disease is absent. A probing depth of about 4mm or more around the 3rd molar should not be ignored even though symptoms are not present. As for risk of caries is concerned, it is rare in the 3rd molars if 1st and 2nd molars not affected. Hence presence of caries in 1st and 2nd molar should be used as predictor for future third molar caries.

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