

Frequency of Dental Caries in Patients Undergoing Orthodontic Treatment

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ABSTRACT

Aim: To determine the frequency of dental caries in patients undergoing orthodontic treatment.

Study design: Descriptive cross sectional study.

Duration: The study was conducted from June 2011 to June 2012.

Settings: Department of Orthodontics, Nishter Institute of Dentistry, Multan.

Methods: A total of one hundred (100) patients with either gender between 10-30 years of age with fixed appliances were included in the study.

Results: Out of 100 cases, 52(52%) cases were between 10-20 years and 48(48%) were between 21-30 years of age, mean±sd was calculated as 18.28±4.71 years, 37(37%) were male and 63(63%) were females, frequency of dental caries reveals in 71(71%) cases while 29(29%) had no findings.

Conclusion: The frequency of dental caries among patients undergoing orthodontic treatment is high. However, following proper guidelines for prevention of the morbidity may decrease its frequency.

Keywords: Orthodontic treatment, dental caries, frequency

INTRODUCTION

Dental caries is a common complication of orthodontic treatment with fixed orthodontic appliances¹. The orthodontic treatment can ascribe to inadequate removal or elimination of plaque and food debris from the restricted areas for clearance due to the appliance².

Previous studies are of the view that high prevalence of caries in patients receiving fixed orthodontic treatment, with the cause being difficulty and negligence in oral hygiene maintenance³. In orthodontics caries usually occurs on smooth surfaces, affecting 2 to 96% of all orthodontic patients⁴. Increase in caries risk during such treatment is due to several factors, lesions are difficult to locate, lowering of resting pH, increased volume of dental plaque and rapid shift in bacterial flora³.

Majority of the patients involved in orthodontic treatment are adolescents and young adults, which is the generation having food pattern/habit comprising mostly of junk food and consume more sweets and chocolates. These types of food habits serve as a major factor to cause multifactorial disease of tooth i.e., dental caries^{5,6}.

MATERIAL AND METHODS

A total of 100 subjects with both gender and 10-30 years of age with at least six month to one year duration of fixed appliances coming to Orthodontic Department of Nishter Institute of Dentistry during

June 2011 to June 2012 were included in the study. Patients already having dental caries before Orthodontic treatment were excluded from the study.

Radiographic examination was not done to evaluate dental caries. After the informed verbal consent, the examination was done using mouth mirror and WHO probe under sterilized condition in a dental chair with sufficient light, WHO criteria was used to assess DMFT index. For the reliability of data, all patients were examined by a single qualified dental professional. The collected data was entered in SPSS version 16.0, quantitative variable i.e., age and duration of treatment was computed as mean±sd while qualitative variables i.e. gender and dental was calculated and presented as frequency and percentages in tabulated form.

RESULTS

Age distribution of the patients was done which shows that 52(52%) cases were between 10-20 years and 48(48%) were between 21-30 years of age, mean±sd was calculated as 18.28±4.71 years (Table 1). Gender distribution of the patients was done which shows that 37(37%) were male and 63(63%) were females (Table 2). Frequency of dental caries reveals in 71(71%) cases while 29(29%) had no findings of this morbidity (Table 3). Frequency of dental caries according to gender was recorded among 71 cases of dental caries, which shows that 22(30.99%) were male and 49(69.01%) were females (Table 4). Frequency of dental caries according to duration of treatment was recorded among 71 cases of dental caries, which shows that 27(38.03%) were having 6 months of duration while remaining

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44(61.97%) had 12 months of duration of treatment (Table 5).

Table 1: Age distribution (n=100)

Age (in years)	n	%
10-20	52	52
21-30	48	48

Mean±SD: 18.28±4.71

Table 2: Gender distribution (n=100)

Gender	n	%
Male	37	37
Female	63	63

Table 3: Frequency of dental caries (n=100)

Dental caries	n	%
Yes	71	71
No	29	29

Table 4: Frequency of dental caries according to gender (n=71)

Gender	n	%
Male	22	30.99
Female	49	69.01

Table 5: Frequency of dental caries according to duration of treatment (n=71)

Duration of treatment	n	%
6 months	27	38.03
12 months	44	61.97

DISCUSSION

In concurrence with the other studies, this study clearly indicates that fixed orthodontic appliances have a significant role in the formation of white spot lesions on banded first molar teeth.¹

Various studies^{5,8} report high prevalence of dental caries in orthodontic patients which is also reflected in the present study. The prevalence of dental caries according to Nepal National Oral Health Pathfinder Survey⁴ was 25.6% in 12-13 year, 26.3% in 15-16 year and 57.5% in 35-45 year cohorts.

Richter et al⁹ reported the incidence of white-spot lesions during orthodontic treatment in 72.9% subjects, which was later developed to cavitated lesions in 2.3%. This report necessitates the determination of white-spot lesions as well in orthodontic patients. Change in oral environment that favours plaque accumulation and retention increase the risk of developing caries. Orthodontic treatment is implicated for altering the oral environment by providing retention sites for dental plaque¹⁰. The present study showed lesser prevalence of caries in the initial stage compared to later stages of orthodontic treatment. Ahmed et al¹¹ found increased prevalence of caries with the time period of orthodontic treatment. According to their report, the prevalence of caries was 33% in 6 months and 61% in 12 months duration of treatment. These findings

are in agreement with the findings of the current study. Richter et al found that longer treatment duration was not significantly related to increased cavitated lesions⁹.

The relation between new carious lesions and many other variables were evaluated in other studies. For example, Boersma et al found a clear difference between the percentage of caries-affected surfaces in boys (40%) and girls (22%)¹². Haugejordan et al found the opposite regarding gender-specific distribution with higher prevalence in females than in male patients¹³.

CONCLUSION

Maintaining of proper oral hygiene decreases the occurrence of dental caries. Patient should be motivated to maintain oral hygiene with the use of orthodontic brush, interdental cleaning aids and fluoride mouthwash/tooth mousse to help in reducing carious lesions.

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