



Pulpectomy in Maxillary First Molars With Distal Caries

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ABSTRACT

Dental caries is having the most prevalence of the chronic disease in pediatric patients. It is considered as the most unmet health care for society with the lowest socioeconomic status. If dental caries is not treated with proper treatment, it may develop more complicated consequences in various aspects such as dental, medical, social, and life quality. The aim of this present study was to evaluate the pulpectomy procedure in maxillary first primary molars with distal caries in the Chennai population visiting the Outpatient Department of Saveetha Dental College and Hospital, Chennai based on their gender and age. A total of 199 patients details aged between 4 and 11 years old obtained from patients records to assess pulpectomy treatment done with distal caries involved, with their gender and age. Data analysis was done with the Statistical Package for Social Sciences (SPSS) for Windows (version 20). Chi-square test was used to determine the association of occurrence pulpectomy with distal caries involvement in a maxillary first primary molar, gender, and age. In this present study, the prevalence of male patients was 56.8% and for females was 43.2% with $p > 0.05$ (statistically insignificant). Males patients more prevalent for pulpectomy due to distal caries. Patients in the age group between 4 and 5 years old have a higher prevalence (55.7%) with $p > 0.05$. The most prominent teeth number affected by distal caries was left maxillary first primary molar-64, with 52.8% prevalence. Within this limit of this study, this study showed that the prevalence of pulpectomy in maxillary first primary molars due to distal caries was more in males than females, and higher incidence for age between 4 and 5 years old, with the most affected tooth was left side, 64.



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INTRODUCTION

Dental caries is the most prevalent chronic disease in pediatric patients (Chen *et al.*, 2017; Subramanyam, 2018). It is considered as the most unmet health care for society with the lowest socioeconomic status (Christabel, 2015; Brustolin, 2017). If dental caries is not treated with proper treatment, it may develop more complicated consequences in various aspects such as dental, medical, social, and life quality (Ranly and Garcia-Godoy, 2000; Gurunathan and Shanmugaavel, 2016). The most common consequences are pain, infection, premature missing teeth, low self-confidence, loss of arch

length, decrease in masticatory function, and tooth impaction in permanent dentition (Farooq *et al.*, 2000; Packiri, 2017).

A pulpectomy is a conservative treatment approach to prevent the premature loss of deciduous teeth in pediatric patients (Jeevanandan, 2017). The loss of deciduous teeth in pediatric patients may result in various implications that had been mentioned earlier (Govindaraju *et al.*, 2017c,b). In addition, pulpectomy is more advantageous for retained the primary molar teeth in the arch (Fuks and Eidelman, 1991; Gruythuysen *et al.*, 2010). The retained primary molars can be functional components in the arch until the permanent tooth erupts (Govindaraju, 2017; Jeevanandan and Govindaraju, 2018). Missing of primary molars can lead to the severe progression of root resorption or severe alignment of infra-occlusion (Kurol, 1981; Somasundaram, 2015).

Pulpectomy will retain primary molars until the patients' permanent teeth fully erupt or until reaching the maturation phase (17-21 years old). This is to ensure the complete facial growth without any complication. This will preserve a sufficient alveolar ridge width and height for future treatment (Shapira, 1995; Kokich, 2002; Kennedy, 2009).

The tooth with pulp involved in dental caries invasion, whenever possible, the practitioner should maintain it within the arch space in the functional and disease-free conditions (Franzon, 2007; Nair, 2018; Ramakrishnan and Shukri, 2018). It is the practitioner's responsibility to ensure the proper case selection by acting wisely and provide endodontic treatment when necessary for pulpal involving primary teeth instead of proceeding with extraction (Govindaraju *et al.*, 2017a; Ravikumar *et al.*, 2017; Panchal *et al.*, 2019). In a previous study by Hany Mohamed *et al.*, the author explained the importance of pulpectomy and a thorough explanation of the procedures (Ahmed, 2014).

Therefore, an appropriate pulpectomy for primary teeth needs to be done rather than extraction to ensure either normal eruption of the successor or a long period of retention survival (Waterhouse *et al.*, 2011). Hence, the purpose of this study was to evaluate the occurrence of pulpectomy in maxillary first primary molars with distal caries in the Chennai population visiting the Outpatient Department of Saveetha Dental Hospital, Chennai, based on their gender and age.

MATERIALS AND METHODS

This was a retrospective study involving 199 patients aged between 4 and 11 years old visiting

Saveetha Dental College and Hospital, Chennai from June 2019 till April 2020. Ethical approval for the study was granted by the Institutional Ethics Committee of Saveetha Dental College.

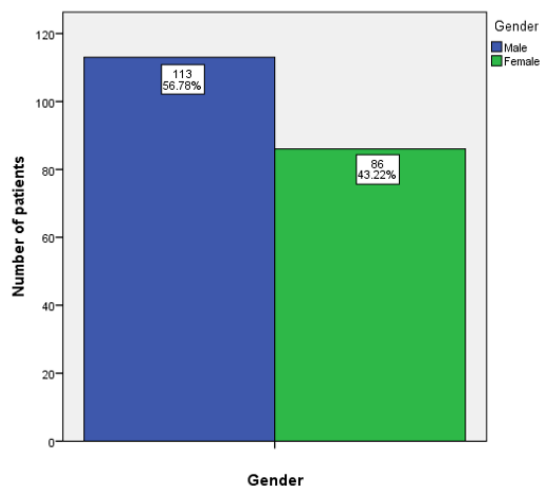


Figure 1: Barchart showing the gender distribution in pulpectomy in maxillary first primary molars with distal caries

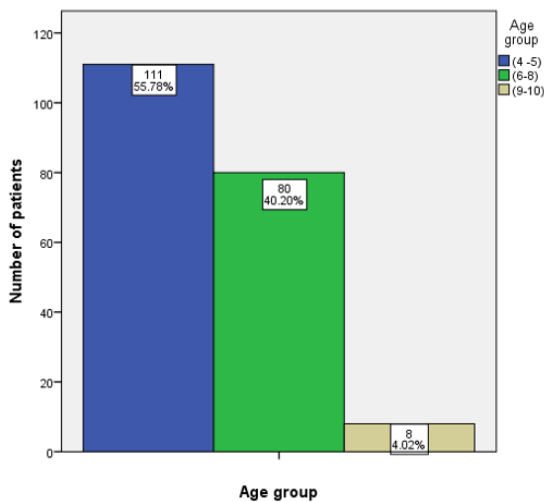


Figure 2: Barchart showing the age distribution in pulpectomy in maxillary first primary molars with distal caries

Data were collected based on the data availability from patients records, including patients who underwent pulpectomy with distal caries in a maxillary first primary molar, their age, and gender. All the data were based on clinical examination photos and radiographic imaging in the system.

Data validation was verified by 2 reviewers. All incomplete or censored data were excluded from the study. Data analysis was done with the Statistical Package for Social Sciences (SPSS) for Windows

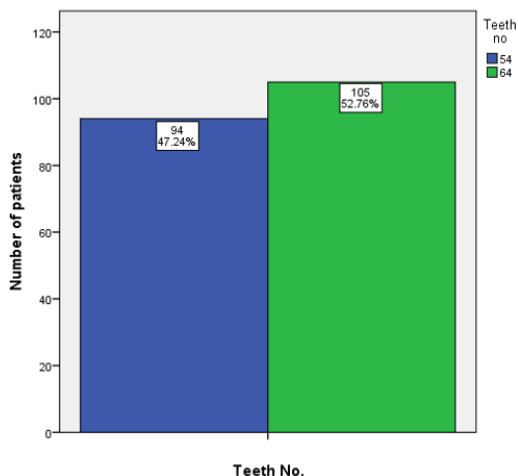


Figure 3: Barchart showing the pulpectomies done in the right and left maxillary primary molar with distal caries

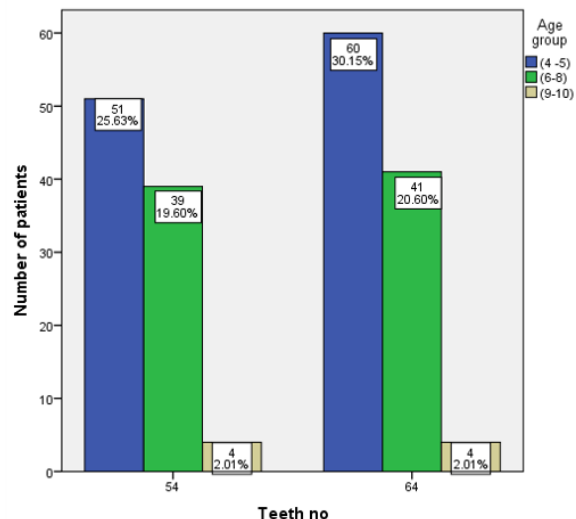


Figure 5: Barchart showing the association between the teeth number and age group

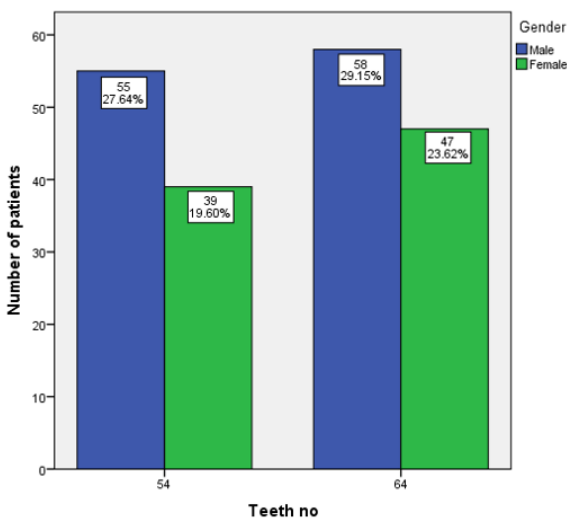


Figure 4: Barchart showing the association between teeth number and gender

(version 20). Chi-square test was used to determine the association of occurrence pulpectomy with distal caries involvement in a maxillary first primary molar, gender, and age. When necessary, the level of statistical significance was set at $p < 0.05$. All results are represented as bar graphs.

RESULTS AND DISCUSSION

A total of 199 patients were seen during the study period. The prevalence of gender for pulpectomy in maxillary first primary molars with distal caries is higher in males patients with 56.8% and $p > 0.05$ showed statistically insignificant. (Figure 4), axis represents the tooth number with the gender and

Y-axis represents the number of reported patients and 113 of 199 patients were male patients. From Figure 1, we can understand that the most common gender that is affected by distal caries in the first primary molars is male patients, with 56.78% compared to the female patients who are 43.22%. The result Figure 2 depicted that the age group between 4 and 5 years old has a higher prevalence of cases with 55.78% cases. The least prevalent age group was age between 9 and 10 years old with only 4.1%. The result also showed that left maxillary first primary molars (64) have higher in percentage in the occurrence of cases with 105 cases out of 199 with 52.78% (Figure 3). The statistical analysis Chi-square Test showing p-value is more than the limit of significance, $p > 0.05$, a negative correlation between teeth number and an occurrence of distal caries in maxillary first primary molars as depicted in Figure 4 and Figure 5. X-axis represents the tooth number with the age group and Y-axis represents the number of reported patients.

In this present study, pulpectomy in maxillary first primary molar in distal caries was analyzed and correlated with gender, age group, and site of occurrence. All the pulpectomy cases with distal caries in tooth number 54, 64 were segregated based on gender, age group, and their occurrence of site. Out of the total sample size, 199 patients, 113 patients were male, and 86 patients were female. The chi-square test shows insignificant value $p > 0.05$ between the occurrence of pulpectomy in maxillary first primary molar in distal caries, gender prevalence, age group, and teeth number as depicted in Figure 4 and Figure 5.

In this present study, 3 variables were assessed,

which were gender, age group, and site of occurrence. The results show males have a higher prevalence (56.78%), (Figure 1) compared to females, the age group between 4 and 5 is more prevalent (55.78%), (Figure 2) and tooth number 64 was the most common site of occurrence (52.78%), (Figure 3).

In comparison with other studies, there was no study done specifically to show the correlation of pulpectomy with specific teeth number with a distinct site of caries occurrence.

A study done by Hany Mohamed et al. explained the importance of pulpectomy and a thorough explanation of the procedures. There was no specific finding on pulpectomy, specific surface of caries occurrence not included in the study, and no statistical evidence on gender and age prevalence (Ahmed, 2014).

In another study done in 60 patients between 4-8 years old, Rahul Mohankar et al. only shows radiographic characteristics for the primary teeth indicated for pulpectomy without specializing to molars or any specific tooth surfaces (Morankar and Goyal, 2018).

Rawson (2019) in their study for primary molars in Alaska Native children, with 830 samples, show that 52.6% of pulpectomy cases were males. Out of that 66.7% was the first molars pulpectomy. However, there was no specific indication for maxillary first primary molars and site of dental caries infection.

The limitation of this present study can be improved by increasing the sample size. In the future, the present study can be a plan in better scope with a larger sample size, and a randomized clinical trial can be done for an adequate sample size.

This present study has better future scope in the estimation of possible treatment, determination of diagnosis, targeting excellent prognosis, and estimation of dental age.

CONCLUSION

There is no significant evidence that can correlate between gender and the occurrence of distal caries. However, patients between 9 and 10 years old have high tendencies to develop deep distal caries which may lead to the pulpectomy treatment. The result of the current study depicted can be used as an estimation for early treatment diagnosis in pediatric practice and ensure the excellent treatment prognosis. Early detection of caries in a specific age group can be done.

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Authors contribution

All the authors have equal contribution in bringing out this research work.

Conflict of interest

The authors declare that they have no conflict of interest for this study.

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