

Pulp therapies in mandibular primary molars with distal caries

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Abstract: The aim of this study is to assess the prevalence of pulp therapies in primary molars with distal caries. Exposure of pulp due to various reasons results in inflammation of the pulp which can lead to pulpal necrosis if left untreated. The study includes patients visiting the OP of University in Chennai who are diagnosed with distal caries in the primary molars. The number of pulp therapy procedures done among the study population were assessed and the results were statistically analysed and graphs were tabulated. Among the total patients, It was found that a significantly high frequency (90%) of pulp therapy procedures were pulpectomies; and 68% of cases were done in the mandibular primary molar. This study shows that pulpectomy was highly performed over pulpotomy, although many researches state that pulpotomy is preferred for immature permanent teeth. This may be due to the extent of caries.

INTRODUCTION

The most wide spread oral disease as per WHO, is dental caries. Dental caries can be defined as irreversible microbial disease causing demineralisation of organic portion leading to destruction of organic substance of tooth. Anatomical features and post-eruptive enamel maturation differ among different teeth, which determine their susceptibility to caries. As dentist it is important to note the presence and severity of all carious lesions, the tooth surface cavitation status, the caries risk and also the outcome probabilities for treatment regimens.

Due to high prevalence of dental caries, various treatment options have already been brought to known such as pulptherapy. Pulp therapy can be classified as vital & non vital pulp therapy. If it's a young permanent teeth, a vital pulp therapy can be performed. Vital pulp therapy treatment includes protective liner, direct pulp cap, indirect pulp treatment, apexogenesis, partial pulpotomy. Whereas a non vital pulp therapy treatment includes options such as pulpectomy and apexification. The main objective is to maintain integrity & health of teeth & supporting tissues, significance of deciduous dentition, pulp preservation and significance of primary molars. (1)

There are few similar researches conducted, such as one by G G Craig et al on "caries progression in primary molars: 24-month results from a minimal treatment programme" [2]. Similarly, Vineet Dhar et al researched on Use of Vital Pulp Therapies in Primary Teeth with Deep Caries Lesions [3]. In addition to this, Murray J J et al studied "The prevalence and progression of approximal caries in the deciduous dentition in British children" [4]

Importance of this study is the preservation of primary molar to avoid extraction, space loss or medical conditions such as bleeding disorder, oligodontia by providing interim treatment. The purpose of the study was to assess the pulp therapies in mandibular primary molars with distal caries.

MATERIALS AND METHODS

A retrospective study was carried out in patients between the age of 6-11 years who visited University in Chennai who have undergone pulp therapy in primary molars. Data from 1st June 2018 to 30th March 2019 was collected from patient records which includes details of patients, intraoral photographs and treatment being done. Inclusion criteria: Patients between the age of 6-11 years, both males and females are included, patients with distal caries (Class II) on primary molars. Exclusion criteria: Tooth with caries on surfaces other than the distal surface.

Sample size [N=80] is the total number of patients who visited University in Chennai with occlusal caries on young permanent mandibular molars and underwent pulp therapy. Sample distribution according to age, gender and teeth number were recorded. Ethical clearance was obtained from the Institutional Ethical Committee and Scientific Review Board [SRB] of University in Chennai.

The data collected was entered in an Excel sheet and subjected to statistical analyses using SPSS software. Descriptive statistics were done i.e frequency and cross tabulation. A chi square test was done between age and tooth affected. Independent variables are age and gender, while dependent variables are teeth number and surface affected. The level of significance was $p < 0.05$.

RESULTS AND DISCUSSION

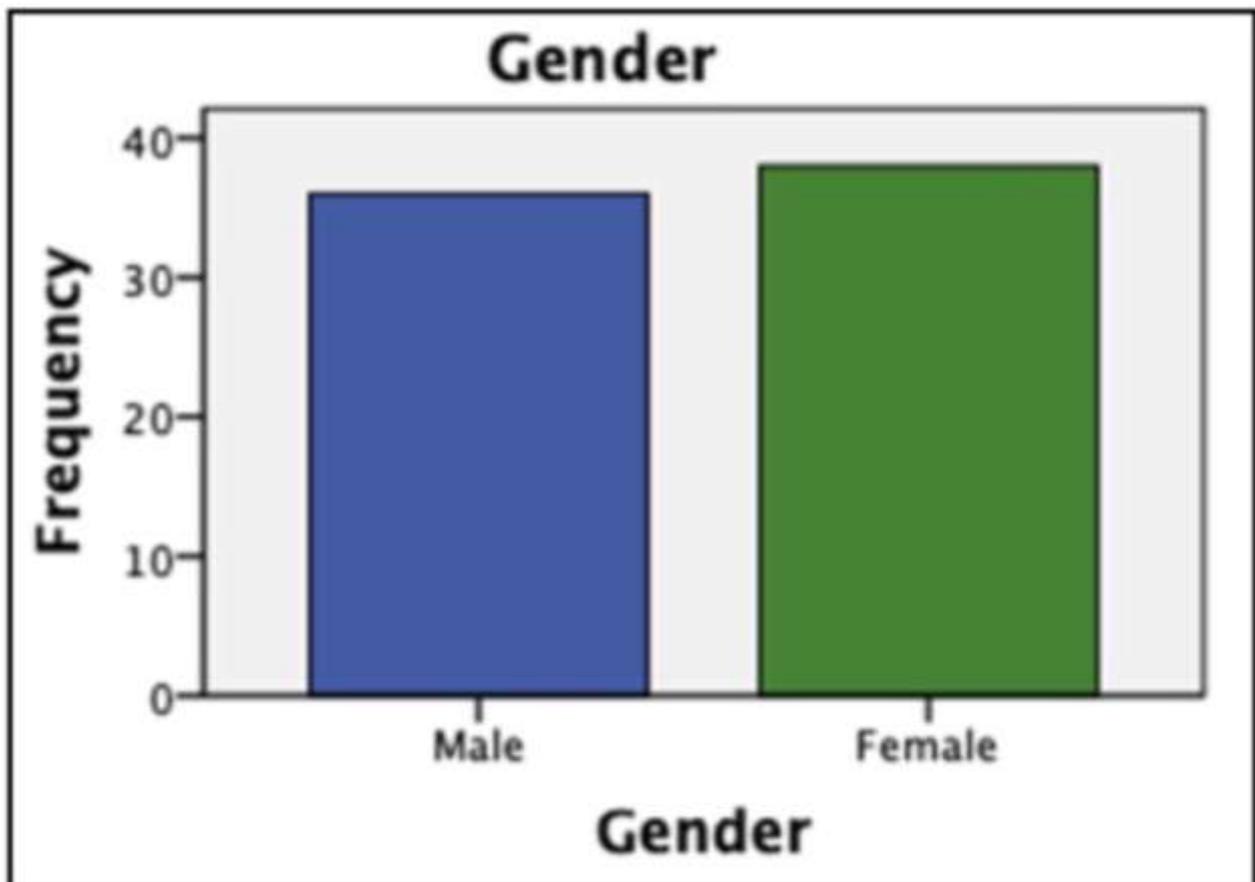


Figure 1 shows the gender distribution of patients underwent pulp therapy in teeth affected with distal caries

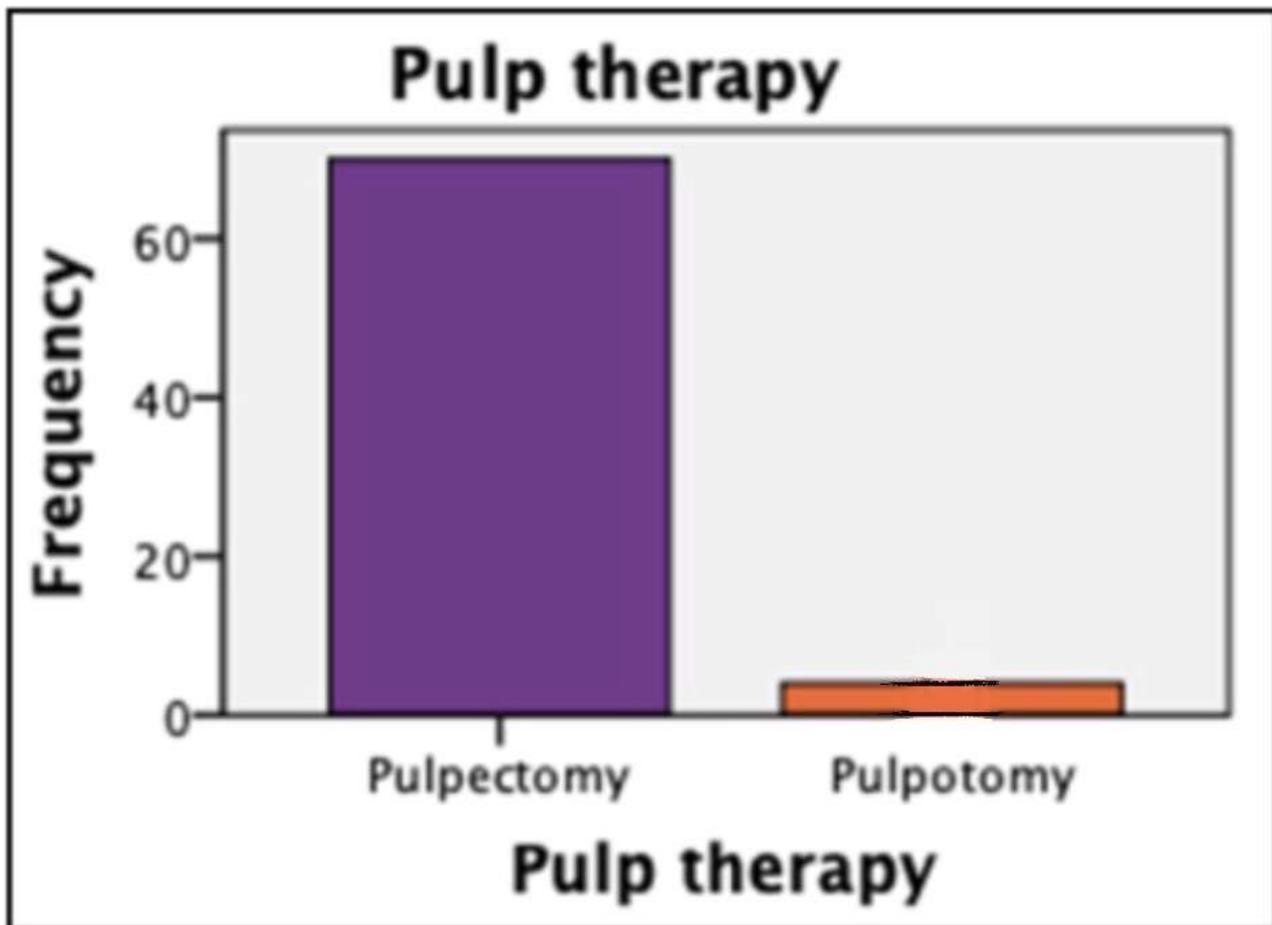


Figure 2 shows the number pulp therapy was done in distal caries teeth

A total of 80 patients were seen during the study period. The most predominant pulp therapy procedure done was found to be the pulpectomy with a percentage of 90%. Pulpotomy on the other hand was only found to be 8%. It was found that the most commonly affected and treated teeth were the left mandibular primary molar with a percentage of 68% and right mandibular primary molar were about 12%. It was found the female distribution was higher with a percentage of 51% whereas males were about 48%. The statistical analysis Chi-square test shows p-value (0.069) more than the limit of significance $p < 0.05$, a negative correlation between the age of the patients and the pulp therapy procedures.

Pulpectomy procedures were most commonly performed for immature primary molars in this study. According to a study by Raji Viola Solomon et al, 4 out of 5 cases of pulpotomy was successful and coronal pulpotomy was considered an alternative to pulpectomy procedures [16]. In a systematic review by Gunnar Bergenholtz et al, it is stated that it is not possible to determine whether an injured pulp by deep caries can be maintained or whether it should be removed and replaced with a root filling material [17].

George Bogen et al., in his study states that new treatment strategies for direct pulp capping and pulpotomy have shown promising potentials for improved outcomes in immature teeth with extensive caries [18]. Similarly, a study by Jekaterina Gudkind et al, also states vital pulp therapy has been proven to be repeatedly successful and be recommended routinely for pulp exposure of immature permanent teeth. A study by Imad Hassan et al shows that pulpotomy using MTA could be a good alternative for root canal therapy. Considerable research has been conducted in the field of pedodontics with relevance to the current population under study. This study helps to identify the prevalence of pulp therapies done in young permanent mandibular molars with Class I caries among the study population. Further studies with a larger population and considering the extent of caries is advised.

CONCLUSION

Root formation is not complete in primary molar teeth. Hence, preserving the pulp is necessary to help in the completion of the root ends. Adequate knowledge on the root anatomical variations and absolute awareness of the radiographic limitations, instrumentation procedures, chemical interactions among different endodontic irrigants and root canal filling techniques are essential prior to commencing pulpectomy procedures. The future scope of this study is to consider the caries extent and to conduct the study among a larger population.

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