

Single Visit Vs Multi Visit Pulpectomy In 10 To 12 Year Old Children

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ABSTRACT

Background - Pulpectomy is the removal of the roof of the pulp chamber to gain access to the root canals, which are biomechanically treated and obturated with a resorbable material subsequently. It is usually performed in the primary teeth. It can be performed either in single visit or multi visit appointment depending on operator convenience, patient cooperation, pain, periapical status. Predicting the preferences could lead to better coping tactics and assist dentists in making suitable treatment selections. Aim - The aim of this study is to assess the single visit and multi visit pulpectomy preference by dentists in 10 to 12 year old. Materials and method - Cases reported from the month of September 2020 to February 2021 for pulpectomy treatment in the age group of 10 to 12 year were taken as the study population. The information was gathered through the dental hospital's computer system. The data from the results was entered in Excel and then imported into SPSS for statistical analysis. For statistical analysis, the Chi square test was used. In this investigation, the level of statistical significance was set at $P < 0.05$. Results - The current study showed that the single visit pulpectomy was highly preferred in the age group of 10 to 12 year old (71%) with high male preference. Both single and multi visit pulpectomy was preferred highly in 10 years of age and in 4th quadrant. Conclusion - The clinician will be able to prevent any future issues before the specialised procedure if they are aware of the patient's preferences.

Key words

Innovative; Multi visit; Primary teeth; Pulpectomy; Single visit;

INTRODUCTION

Dental caries is one of the most prevalent diseases that affects people of all ages.(1). Pulpectomy is a common clinical procedure in pediatric dentistry, which involves removal of infected pulp and filling the canals with suitable medication. Apical periodontitis is caused by bacterial inflammation and periradicular tissue degradation, resulting in periapical tissue destruction and hard tissue resorption, resulting in periapical lesions(2). The indications for pulpectomy are irreversible pulpitis and necrosis of the pulp. It helps to retain teeth in arch till their natural exfoliation time. Premature exfoliation of teeth can lead to phenotypic, esthetic, functional or malocclusion problems(3). The absence of clinical and radiographic signs and symptoms is crucial for a favourable outcome for the endodontic therapy in primary teeth. Furthermore, the success of pulpectomy in deciduous teeth is influenced by tooth condition, pathological status, and operator expertise(4,5).

One debatable issue in pediatric endodontics is whether to do pulpectomy in single or multiple visits with each having its own advantages and disadvantages(6). Previously, root canal therapy was done over several visits to assure sterility of the root canal system before obturation(7). Multiple visit pulpectomy involves removal of the pulp tissue and placement of intracanal medicament in the first visit followed by obturation in the next visit, additional visits may be required if the periapical pathology persists(8,9). Complete sterilisation of the root canal with biomechanical preparation and irrigation is not possible in a single visit and hence complete removal of bacteria can be achieved using intracanal medicament(10). Overzealous use of these medications led to postoperative complications. This has led to treating the root canal in a single visit(11).

Single visit pulpectomy entails removing the pulp and cleaning the canals all the way to the apex, then irrigation and placement of obturating material all in one visit(12). Single-visit pulpectomy procedures take less time, less expensive, eliminates root canal contamination and bacterial regrowth, are less traumatic for patients(13). This reduces the number of operating procedures required such as additional anaesthesia, gingival stress from the use of a rubber dam, and the possibility of inter-appointment leaking due to temporary restoration(14,15). Our team has extensive knowledge and research exposure which has resulted in high quality publications(16–28)(29–35).

Furthermore, neither single-visit nor multiple-visit endodontic therapy has showed a significant improvement in healing or success rate. Earlier studies have compared single visit and multi visit. Here, in our study we have specifically limited it to 10 to 12 year old age groups. This study will create awareness of the preference of the dentist in performing pulpectomy procedures thereby future patient management will be more efficient. The study is aimed to assess the preference of dentists in single visit and multi visit pulpectomy in 10 to 12 year old children.

MATERIALS AND METHOD

Study setting

The current study was a cross-sectional retrospective investigation to assess preference of single visit and multi visit pulpectomy by dentists in the 10 to 12 year old patients. The study was carried out at a university affiliated private college hospital. The ethical approval of the retrospective data received from the institution.

Sampling

All the cases referred for pulpectomy in the age group of 10 to 12 years within the time period of September 2020 to February 2021 were included for the study. The sample size of the study is 63 patients. The data collected includes the demographic details, treatment undertaken for the patient. Another examiner read and validated all of the treatment report data. Simple random sampling was used to minimise sampling bias.

Criteria

The study includes healthy co-operative children in the age group of 10 to 12 years, who had at least one primary tooth indicated for pulpectomy with enough coronal tooth structure irrespective of sex and absence of pathologic root resorption. Patients with underlying systemic conditions and special health-care needs were excluded from the study.

Data analysis

The collected data includes patients who reported for pulpectomy in the age group of 10 to 12 year. Gross incomplete data was eliminated. All the data was tabulated in Excel before being imported into IBM Corp.'s Statistical Package for Social Sciences (SPSS) software, version 1.0.0.1327 64 bit edition (IBM corp., NY, USA) for statistical testing. The data was analysed using descriptive statistics in the form of crosstabs and subjected to descriptive analysis using frequencies and percentages. The data were correlated and analysed using non parametric Chi square statistical test.

RESULTS:

The study evaluated the preference of single visit and multi visit pulpectomy by patients among the pediatric 10 to 12 year old patients visiting a private dental institute. Sample size of the study is 63. The descriptive and inferential analysis were carried out using the statistical software SPSS. The percentages were used to represent the results of categorical measurement. The probability value of $P = 0.05$ was chosen as the level of significance, and any value 0.05 was regarded statistically significant.

The prevalence of pulpectomy in the age group of 10 to 12 years shows that single visit was done in 71% of cases and 28% in multiple visit pulpectomy(Figure 1). P value is 0.004 and this finding is significant. The age prevalence shows that 42% in the age group of 10 years have undergone single visit pulpectomy, 25% in 11 years and 3% in 12 years have undergone treatment in single visit(Figure 2). Similarly in multiple visit pulpectomy, 23% have undergone in the age group of 10 years, 3% in 11 years and 1% in 12 years. P value is 0.002 and hence it is statistically significant.

The gender prevalence in patients undergoing single visit pulpectomy is 39% males and 31% females whereas in multiple visit pulpectomy it is 7% males and 20% females(Figure 3). P value is 0.001 and hence it is statistically significant. The preference of single visit pulpectomy in 1 st quadrant is 12%, 9% in the second quadrant, 19% in third quadrant and 30% in the fourth quadrant. In multi visit pulpectomy it is 4% in 1 st quadrant, 6% in second quadrant, 7% in third quadrant and 9% in fourth quadrant(Figure 4). The p value is $p=0.003$ for the study hence it is significant.

DISCUSSION

Pulpectomy is the biomechanical removal of all necrotic pulpal tissue debris from a primary tooth's root canal, followed by cleaning and irrigation with disinfectants, and filling the canal with a suitable obturating material(36,37). Pulpectomy is done in cases where there is irreversibly inflamed or necrotic pulpal tissue due to caries or trauma(38). As a result, the tooth can be kept in the arch without the need for critical pulp tissue while still performing its function. The goal of pulpectomy is to reduce the bacterial count and promote healing of periradicular tissue(39).

Tooth type, vital or nonvital, and existing periapical diseases are all factors that influence therapeutic outcome. It also depends on clinical approaches, skill and experience of operators and follow up period(40). Besides that, complications can arise due to the procedure's effectiveness also. Conventionally, pulpectomy is completed in multiple visits for necrotic teeth, but in recent times, single visit therapies are also gaining popularity due to various advantages. Both modalities are practiced clinically and the rationale for the same remains debatable. This study was done to evaluate the preference of dentists in single visit and multi visit pulpectomy within the age range of 10 to 12 years.

The present study has shown that the total number of patients undergoing pulpectomy in the age range of 10 to 12 years is statistically higher in single visits compared to multi visits(Fig 1)($p < 0.05$). This observation is in accordance with few earlier studies who have also shown that single visit pulpectomy is preferred than multi visit pulpectomy(41–43). The rationale behind immediate root filling is to prevent bacterial growth and it also avoids coronal leakage if adhesive obturating materials are used(44). It prevents reinfection due to leakage from the previous restorations and prevents physical

stimulation to periapical tissues from instrumentation and medication(45). Based on patient acceptance, the lack of substantial flare-ups, and practice management considerations, many practitioners have reported a high success rate with this strategy. Some studies have shown that postoperative pain is reduced in the case of single visit pulpectomy(46–48). There are other studies which have shown that there is no difference in radiographic and clinical outcomes between multi and single visit pulpectomy(49,50).

The age distribution pattern in the preference of single visit and multi visit pulpectomy shows that both the therapies were highly preferred at the age range of 10 years(Fig 2)(p <0.05). One possible explanation for this observation can be due to the highest number of patients reporting for pulp therapy at the age. Due to improper oral hygiene measures the patients might report with high susceptible caries(51). Caries prevalence rates vary by age group and demographically, measurements of these rates may give a helpful descriptive measure of caries susceptibility in tooth surfaces(52). From the current study we can infer that, males more often undergo single visit pulp therapy and female patients undergo multi visit pulp therapy(Fig 3)(p <0.05). This can be attributed to the fact that females have more fear of dentists, pain intolerance, dental anxiety and past experiences(53). To overcome this and gain confidence dentists prefer multi visit pulp therapy in female children when compared to male.

The present study has also shown that single visit and multi visit pulpectomies are more often done in the fourth quadrant when compared to other sites(Fig 4)(p <0.05). The most common sites of caries attack are the occlusal surfaces of the first and second permanent molars(54). It is important to remember that mandibular molars are the first teeth to erupt and are highly involved in the masticatory processes(55). Due to this factor it can be suggested that the fourth quadrant is highly involved in pulp therapies.

By identifying dentists' preferences for single-visit and multi-visit pulpectomy among different gender and age groups, this study will have a substantial impact on public health and will aid in public awareness. By knowing the prevalence of that age group and gender, the findings of this study will aid clinicians in planning therapy for those individuals. There is a geographical limitation to the study. The sample size was limited, and there was no follow-up on the results. These limited study sizes and brief observation periods may not accurately reflect long-term results. This can be changed by performing longitudinal and periodic studies to evaluate the possible advantages and disadvantages of single and many pulpectomy visits, as well as their clinical use.

CONCLUSION

The preference of single visit pulpectomy in 10 to 12 year olds is higher when compared to multi visit pulpectomy with a higher male preponderance in the age group of 10 years. A well planned single visit pulpectomy can be chosen as a suitable option in treating 10 to 12 year old children. The number of appointments is not the only significant factor but the other factors like instrumentation, obturation have to be done properly for long term success.

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CONFLICT OF INTEREST

Authors declare no potential conflict of interest.

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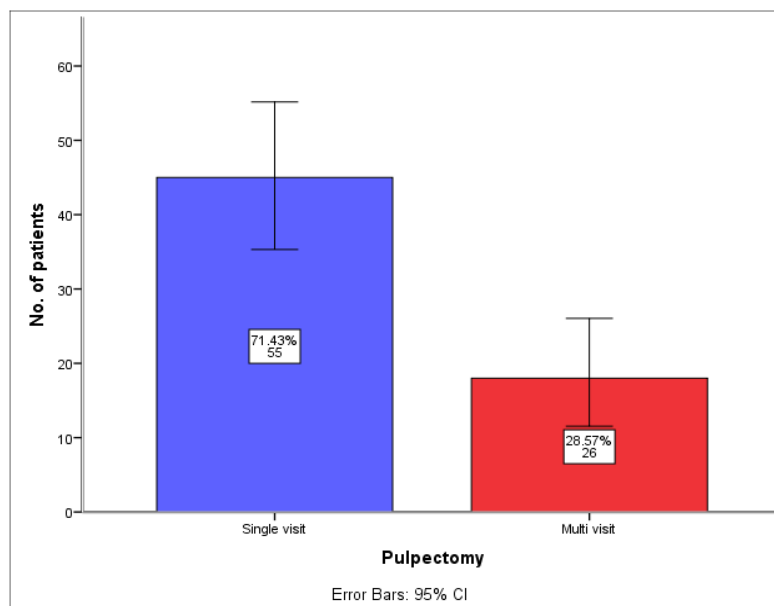


Figure 1. Bar graph showing the prevalence of single visit and multi visit pulpectomy. The single and multiple visit prevalence in pulpectomy patients is represented on the x axis, while the number of patients is represented on the y axis. Single visit pulpectomy is represented in blue colour and multi visit pulpectomy is represented in red colour. There is a significantly higher incidence of patients who had undergone single visit pulpectomy when compared to multi visit pulpectomy.

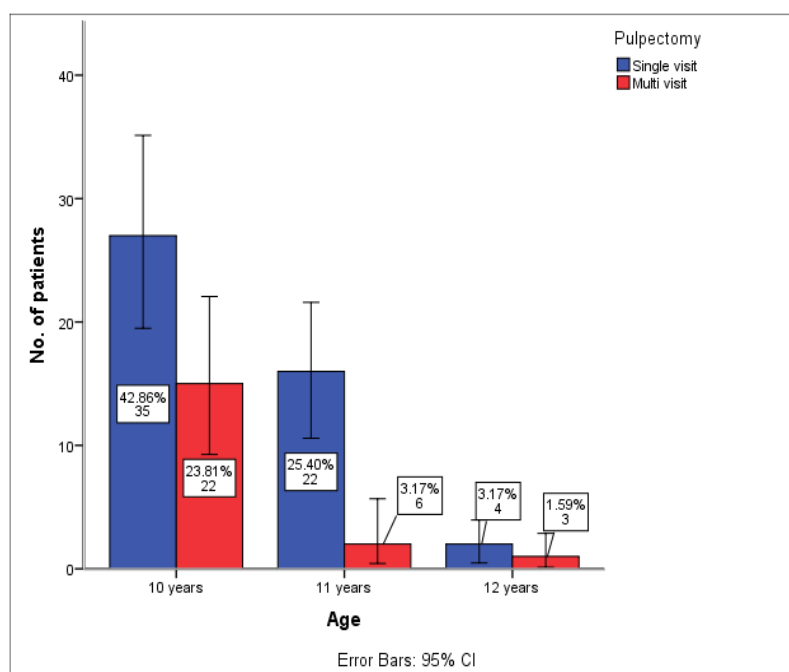


Figure 2. Bar graph showing the age distribution in single visit and multi visit patients. X axis represents the age prevalence in single visit and multi visit pulpectomy patients and the y axis represents the number of patients. There is a significantly higher incidence of single visit and multi visit pulpectomy done in the age group of 10 years when compared to other age groups. Chi square statistical test was done and the p value was found to be 0.02(p value ≤ 0.05 , statistically significant).

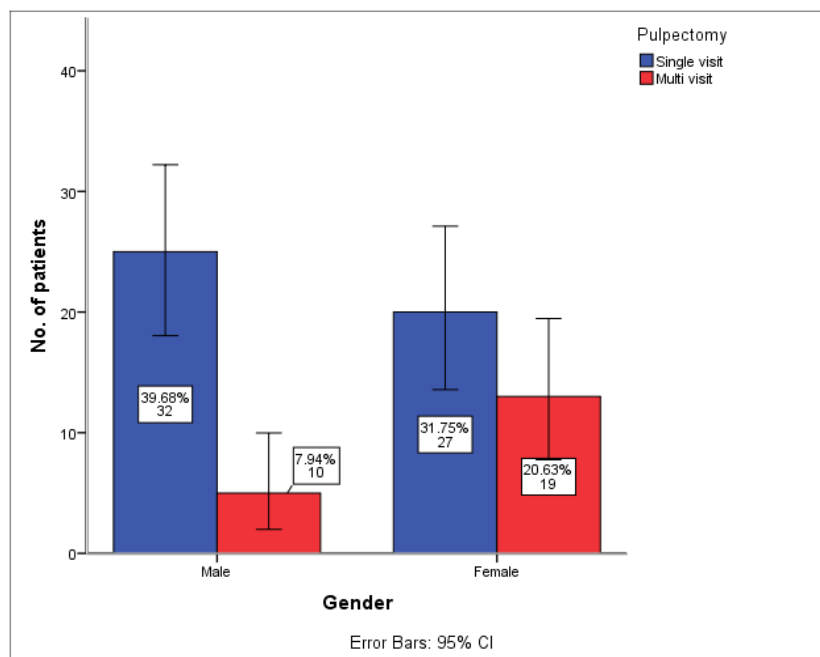


Figure 3. Bar graph showing the gender distribution in single visit and multi visit patients. The gender prevalence in single and multi visit patients is represented in x axis and y axis represents the number of patients. There is a significantly higher incidence of male patients undergoing treatment in single visit and female patients in multi visit pulpectomy. Chi square statistical test was done and the p value was found to be 0.01(p value ≤ 0.05 , statistically significant).

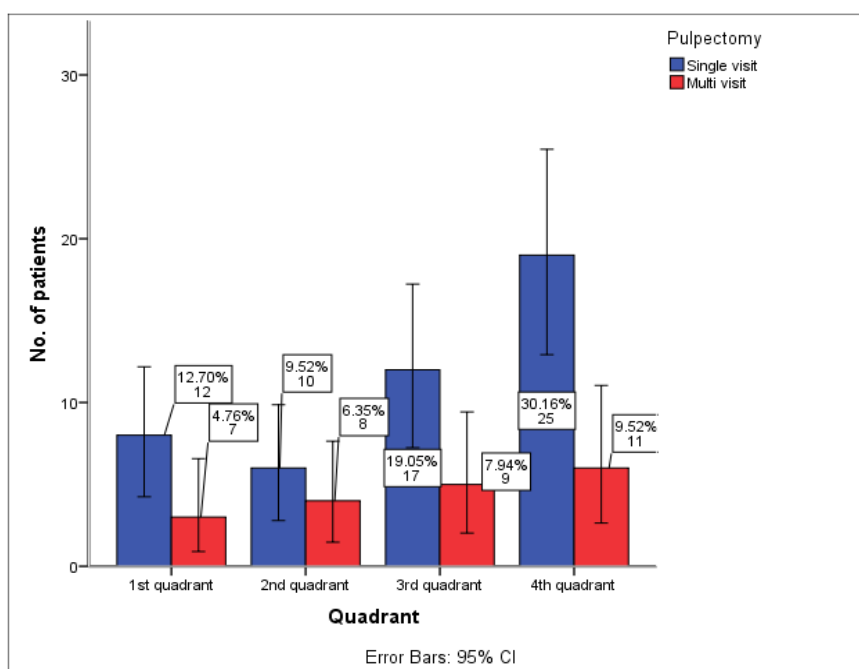


Figure 4. Bar graph showing the teeth quadrant distribution in single visit and multi visit patients. The prevalence of teeth quadrants in single visit and multi visit pulpectomy patients is plotted in x axis and the y axis represents the number of patients. There is a significantly higher incidence of treatment undergone in the 4th quadrant in single visit and multi visit pulpectomy when compared to other quadrants. Chi square statistical test was done and the p value was found to be 0.03(p value ≤ 0.05 , statistically significant).