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Radiographic Assessment of the Prevalence of Pulp Stones in the South Indian Population.

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ABSTRACT

The aim of the study is to determine the prevalence of pulp stones in south Indian population using radiograph and assess the association of pulp stones with gender and age. Pulp stones distribution in obtained from the files in Sabetha dental college (from March to June). From 142 dental ways, comprising 95 males and 79 females aged between 20-65 years, 4872 teeth were examined under OPG. Pulp stones were scored as present or absent, and associations with sex, tooth type and age group Of the 174 patients, 95 males and 79 were females. Pulp stones were identified in 121 teeth and of the total 4872 teeth examined .Pulp stones were seen significantly in molars and the teeth were not intact (cariou or restored).there was no correlation with sex,increasingage,dental arches. The prevalence of pulp stones in south Indian population studied about 3.4% in three months. Pulp stones were more often seen in upper permanent first and second molars.

Keyword: Pulp stones, pulp calcification.

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INTRODUCTION

Pulp calcifications are discrete or diffuse calcified structures present in any portion of the pulp tissue, although certain types are more common in the pulp chamber and others in the root canal [1]. These calcifications under the term of 'dental pulp nodules' have been first mentioned by Norman and Johnston in 1921. This term has in time been replaced by the term 'dentils'. In recent literature, the term 'dental nodules' has appeared [2]. KRN field has classified pulp calcifications into discrete (dentils and pulp nodules) and diffuse types based on the morphology. Seltzer has classified pulp stones based on their structure into true and false types, and based on size into fine and diffuse mineralization, and based on location into embedded and free types. Various prevalence studies have been carried out in literature and the reported prevalence rate ranges from 8 to 90%. This depends upon the study type, design, and radiographic technique used. Many prevalence studies have identified pulp calcifications using radiography.

According to MossSalentijn and Culvert, true prevalence is likely to be higher, because pulp calcifications with a diameter smaller than 200 μg cannot be seen on radiographs, and therefore, 15% of the pulp calcifications go undetected or unappreciated [2]. Some researchers have reported the prevalence based on the number of patients, whereas, others represented only the rates based on teeth numbers [3,4]. The aim of this study is to assess the prevalence of idiopathic pulp calcifications in permanent teeth using digital orthopantomographs, and to report any association of the occurrence of pulp stones with gender, tooth type or dental arches and the sides of the dental arch.

MATERIALS AND METHODS

This retrospective study was conducted during a time period of four months, from (Feb 2015 to June 2015). A total of 174 orthopantomographs about number of male and female patients (79 females and 95 males), who reported in the Department of Oral Medicine and Radiology in Sabetha dental College and hospital, Chennai, were examined. Only images of good quality, which had the clearest reproduction of teeth, without any superimposition were included. Orthopantomographs of patients between the age group of 20 and 60 years were included in the study. Previous records of the patients were collected and only OPGs of patients without any systemic diseases and those who were not under any medication were included in the study.

All healthy erupted teeth were examined. Teeth with crowns, bridges, deep restorations, orthodontic bands, and brackets were excluded from this study. A total of 4872 teeth were assessed. Definitely radiopaque bodies were observed inside the pulp chambers and root canals of all the teeth were identified as pulp calcifications and were assessed. The number of calcifications, tooth type, and side of the dental arches were also recorded.

STATISTICAL ANALYSIS

The chi-square analysis was used to compare the frequency of occurrence of the pulp stones between genders, tooth types, dental arches, and sides of the dental arches.

RESULTS

Prevalence and distribution of total pulp calcifications in patients in the present study a total of 4872 teeth were assessed; 2450 teeth in males and 2422 teeth in females. Pulp calcifications were found in 68 teeth in females and 52 teeth in males. Therefore, a total of 120 pulp calcifications were assessed in 4872 teeth.

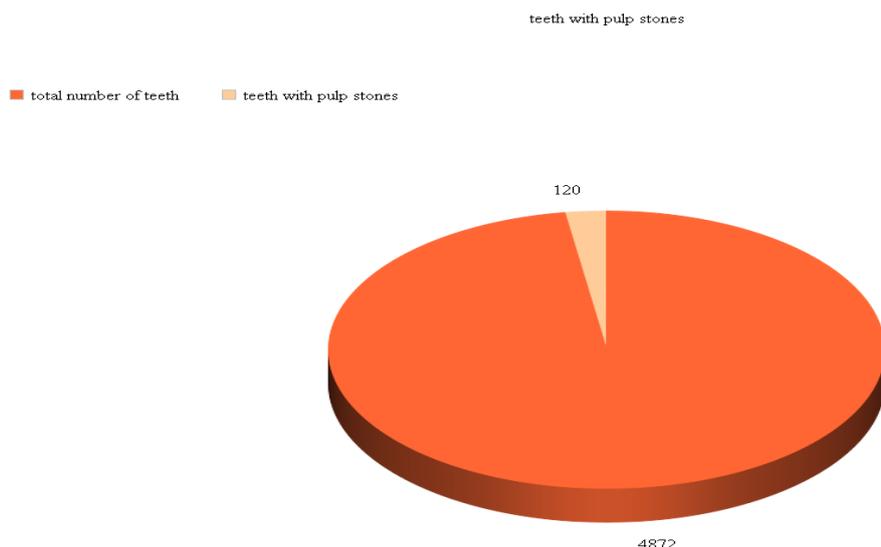


Figure 1: pie chart showing Prevalence and distribution of pulp calcifications based on age

In the present study, patients within the age group of 20-60 years were included, but increased prevalence of pulp calcifications were found in patients within the age of 30-50 years. Out of 174, 42% OF patients with pulp calcifications, 34.8% of the patients were within the age range of 30-50 years. Within this group 30% patients were less than 20 years.

AGE GROUP	TOTAL NUMBER OF TEETH WITHOUT PULP STONES	TOTAL NUMBER OF TEETH WITH PULP STONES	PERCENTAGE
>20	2542	30	1.18%
30-50	1010	52	34.8%
>50	1320	38	2.87%

Table 1: demonstrating Prevalence and distribution of pulp calcifications between genders

In the present study, out of 174 patients assessed for pulp calcification, 79 females (56%) and 95(40%) males had pulp calcifications. Even though the overall distribution was more in females (55.6%) of 2422 teeth compared to males (40% of 2450 teeth), the difference in the distribution between the genders were not statistically significant

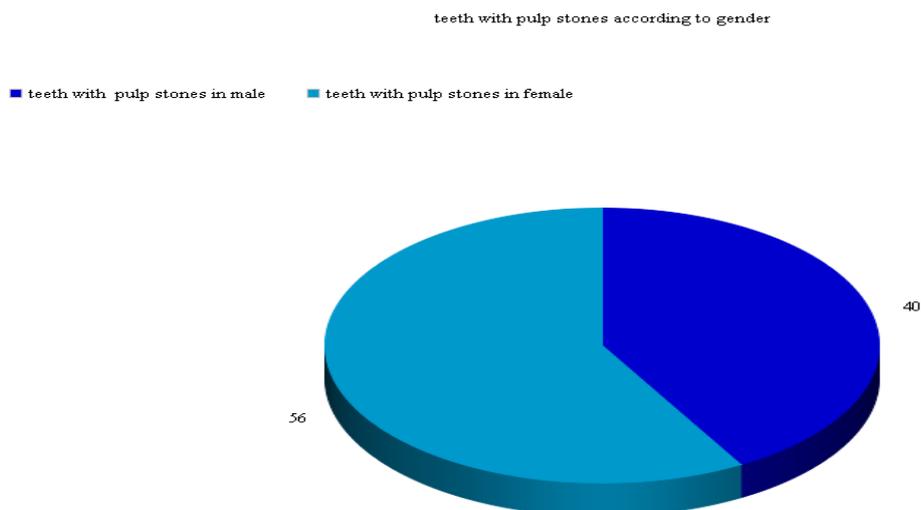


Figure 2: pie chart showing Prevalence and distribution based on tooth type

All the calcifications assessed in this study were found in premolars and molars fig 3 [bar column]. The anterior teeth show minimal calcification. The overall distribution of pulp calcifications were more in the first and second molars (upper) compared to the premolars and other molars in (lowers) and the difference in the distribution was statistically significant.

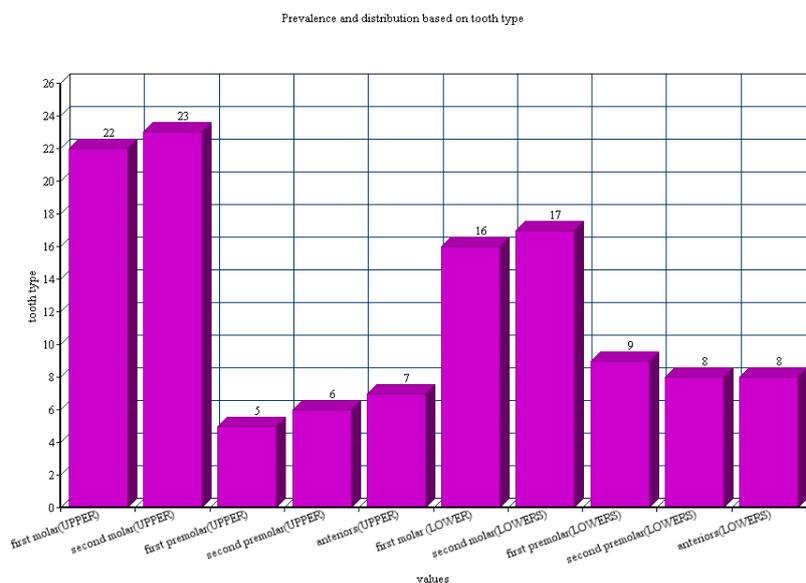


Figure 3: Bar chart demonstrating prevalence and distribution based on tooth type

DISCUSSION

Previous studies have described pulp stones using radiography. However, the true prevalence is likely to be higher because pulp stones with a diameter less than 200 µg cannot appear on radiographs [5,6]. To determine the prevalence of pulp stones, Baghdadi et al [7] bitewing radiographs, al-HadiHamasha and Darwazeh [8] and Satish kumar et al [9] and Cloak et al used periodical and bitewing radiographs, Turkel et al used panoramic radiographs in their Study Panoramic radiographs show the entire mouth area, and panoramic images are excellent for screening for pulp calcifications, as all teeth can be examined using the same image [10].

This study evaluated the pulp stone with digital panoramic radiograph so that posterior teeth involved with calcification in both the maxilla and mandible can be ruled out. Review of the literature revealed a wide discrepancy in the frequency of pulp stones in different populations. Furthermore, the presentations of prevalence were also different in the literature. Some studies presented the prevalence based on diet and dental arches, and the others reported only the prevalence based on teeth number [11-13]. Results of this study showed that the prevalence of total patients with pulp stones was 1.4% (174/4872), and the prevalence of total teeth with pulp stones was 3.4% (120/4872). In this study, females presented a higher prevalence of pulp stones than males, with statistical difference.

This result is in line with other studies previously observed [14] However, some studies have reported that pulp stones were more common in males than in females, and other studies have showed no significant differences between genders [15, 16]. Regarding the prevalence of reported pulp stones in this study, most of the pulp stones were found in have maxillary teeth, found in, especially the first molars, which is consistent with the results of Sis man et al [14]. Turkey teal [16] arch. In this study, the prevalence of teeth with pulp stones in the maxillary and mandibles arch was higher in molars than in premolars. The reason for this is unclear, but Ranjitkar et al. alluded that molars, being the largest in the arch, may have a better blood supply to the pulp tissues, which may not be conducive for precipitation of more calcification-forming factors. The currently held clinical view is that pulp stones have no significance other than possibly causing difficulties during endodontic therapy, such as hindering canal location and negotiation [17].

CONCLUSION

The prevalence of pulp stones was 2% of patients and 3.4% of teeth examined, with significant difference between genders. Pulp stones were most frequently detected in maxillary first molars and least detected in maxillary premolars. Pulp stones were most frequently detected in maxillary first and second molars.

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