

# Incidence and Distribution of Pulp Stones Found in Radiographic Dental Examination of Adult Jammu Dental Patients

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## Abstract

**Aim:** The present study is conducted to evaluate the Incidence and Distribution of Pulp Stones Found in Radiographic Dental Examination of Adult Jammu Dental Patients

**Materials and Methods:** Out of a total sample size of 127 visiting Deptt. of Conservative Dentistry, Indira Gandhi Govt. Dental College, Jammu, a total of 80 subjects were selected based on the inclusion criteria and patients willingness. Radiovisographs (RVG) of premolars and molars using XCP-DS sensor holders for standardized x-rays were taken. The subjects were divided into 2 groups according to different genders with 40 subjects each.

**Results:** A significant gender difference with the incidence of pulp stones among female subjects was observed. Majority of the teeth showed the presence of pulp stones. Majority of the pulp stones in maxilla were found in third molars followed by first molars and first premolars in both the genders. Similar findings were observed in the mandible. A statistically significant presence of pulp stones in both the genders among individually selected teeth.

**Conclusion:** It is concluded that the incidence and distribution of pulp stones were more in females and in maxillary teeth. The incidence was more among the third molars. The data concluded from the present study could serve as a useful aid for endodontist in root canal treatment procedures.

**Key words:** Radiographs, Pulp stones, Incidence, Root canal

## INTRODUCTION

Pulp stones (PS) are discrete calcified masses found in the dental pulp, in the pulp tissue or become attached to or embedded into the dentine. [1] Structurally, pulp stones can be classified as true or false, the former being made of dentine and lined by odontoblasts, whereas false pulp stones are formed from degenerating cells of the pulp that gets mineralized. [2]

Their locations are more common in the coronal than in the radicular portions of the pulp and they can be observed as free, attached, and embedded in the dentinal surface of the pulp chamber. Pulp stones are classified done according to their structure as true, false, and diffuse. They range in size from small microscopic particles to large masses that almost obliterate the pulp chamber. [3]

Although the exact cause of pulp calcification is unknown some factors have been implicated in stone formation such as genetic predisposition [4], orthodontic tooth movement, circulatory disturbance in pulp, age [5], interactions between the epithelium and pulp tissue, idiopathic factors [6], and long-standing irritants like caries, deep restorations, and chronic inflammation. [7]

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The frequency of occurrence of pulp stones has been reported to increase with age. [8,9] Some studies did not find any difference in occurrence between genders, [10,11,12,13] whereas other studies have found females to have more pulp stones than males. [13,14,15]

The present study is conducted to evaluate the Incidence and Distribution of Pulp Stones Found in Radiographic Dental Examination of Adult Jammu Dental Patients.

## MATERIALS AND METHODS

Out of a total sample size of 127 visiting Deptt. of Conservative Dentistry, Indira Gandhi Govt. Dental College, Jammu, a total of 80 subjects were selected based on the inclusion criteria and patients willingness.

Inclusion criteria was the presence of all 32 permanent teeth.

Radiovisiographs (RVG) of premolars and molars using XCP-DS sensor holders for standardized x-rays were taken. The subjects were divided into 2 groups according to different genders with 40 subjects each.

Age of the subjects ranged from 25-45 years. Intra-pulpal dense radio-opaque structures seen in the RVG were considered as pulp stones. The number of pulp stones, tooth type and jaws were recorded with respect to the gender. Chi-square test was used for statistical analysis using SPSS software version 20.

## RESULTS

Table 1 showed a significant gender difference with the incidence of pulp stones among female subjects which was 55.7% (p=0.0704). Table 2 showed that majority of the teeth showed the presence of pulp stones. Table 3 showed that majority of the pulp stones in maxilla were found in third molars followed by first molars and first premolars in both the genders. Table 4 showed similar findings in the mandible.

Table 5 showed a statistically significant presence of pulp stones in both the genders among individually selected teeth.

## DISCUSSION

The present study was conducted in 80 subjects visiting Deptt. of Conservative Dentistry, Indira Gandhi Govt. Dental College, Jammu. Various previous studies used intra oral periapical radiographs, bite wing radiographs and

**Table 1: Gender distribution of subjects with pulp stones**

Incidence of pulp stones	Females (%)	Males (%)	Total (%)	P value
Present	27 (67.5)	19 (47.5)	46 (57.5)	0.0704**
Absent	13 (32.5)	21 (52.5)	34 (42.5)	
Total	40 (100)	40 (100)	80 (100)	

\*\*Statistically significant

**Table 2: Percentage and distribution of number of teeth with pulp stones**

Incidence of pulp stones in teeth	Females (%)	Males (%)	Total (%)	P value
Teeth with pulp stones	540 (67.5)	380 (47.5)	920 (57.5)	0.0000***
Teeth without pulp stones	260 (32.5)	420 (52.5)	680 (42.5)	
Total	800 (100)	800 (100)	1600 (100)	

\*\*\*Highly Significant

**Table 3: Distribution of frequency of pulp stones in maxilla**

Maxilla	Number of teeth	Males (%)	Females (%)	Total (%)
First premolar	160	38 (23.75)	48 (30%)	86 (53.75)
Second premolar	160	25 (15.6)	40 (25%)	65 (40.62)
First molar	160	46 (28.75)	61 (38.12)	107 (66.87)
Second molar	160	37 (23.12)	42 (26.25)	79 (49.37)
Third molar	160	54 (33.75)	79 (49.37)	133 (83.12)
Total	800	200	270	470

**Table 4: Distribution of frequency of pulp stones in mandible**

Mandible	Number of teeth	Males (%)	Females (%)	Total (%)
First premolar	160	37 (23.12)	53 (33.12)	90 (56.25)
Second premolar	160	30 (18.75)	48 (30)	78 (48.75)
First molar	160	39 (24.37)	57 (35.62)	96 (60)
Second molar	160	28 (17.5)	49 (30.62)	77 (48.12)
Third molar	160	46 (28.75)	63 (39.37)	109 (68.12)
Total	800	180	270	450

**Table 5: Level of significance of difference in prevalence of pulp stones in selected teeth**

Teeth	No. of pulp stones		P value
	Males	Females	
First premolar	75	101	0.0628
Second premolar	55	88	0.0082
First molar	85	118	0.0291
Second molar	65	91	0.0469
Third molar	100	142	0.0118
Total	380	540	0.0000***

panoramic radiographs to find the prevalence of pulp stone, however we used RVG to minimize the patient exposure to X Rays. <sup>[9,16-21]</sup>

The findings of our study showed a significantly higher incidence of pulp stones among the female subjects which is in accordance with the results of Jayam R *et al.*, Sreelakshmi *et al.* and Turkal M *et al.* <sup>[19,20,21]</sup> According to their results the higher incidence among females could be related to the presence of the parafunctional habits leading to the degenerative changes in the pulp.

According to the findings of our study 57.5% of the teeth showed presence of pulp stones which were in accordance with the findings of previous studies. <sup>[20]</sup>

The number of teeth showing pulp stones was more in our study as our sample size was limited in comparison to other studies. Our study found that the pulp stones were more prevalent among the third molars followed by first molars in both the arches which is in agreement with the findings of Jayam R *et al.* <sup>[21]</sup>

However, Sisman *et al.* <sup>[15]</sup> found a higher incidence of pulpstones in first molars which can be attributed to their earlier eruption and their ability to bear majority of the occlusal forces.

One of the main limitations would be results from the procedure of radiographic assessment which included only RVG's, which gave a limited clarity of picture of the posterior teeth with pulp stones in comparison to the bitewing projections as they are often selected for determining the presence of pulp stones. They produce more accurate images of the teeth without major distortion or magnification. <sup>[22,23]</sup>

Also, a larger sample size should be considered and the site of the pulp stones in the root canals would have been located for a clear picture of distribution. Also, various associated factors leading to degenerative changes in the pulp should be included in future studies.

## CONCLUSION

It is concluded that the incidence and distribution of pulp stones were more in females and in maxillary teeth. The incidence was more among the third molars. The data

concluded from the present study could serve as a useful aid for endodontist in root canal treatment procedures.

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