

## Original Article

### Pulp Stones and Hypertension- A Missing Link- A Clinical Study

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#### ABSTRACT:

**Background:** Pulp stones are discrete calcified bodies in the dental pulp of healthy, diseased and unerupted teeth, frequently found on bitewing and periapical radiographs. The present study was conducted to assess the relation of hypertension with pulp stones in study population. **Materials & Methods:** The present study was conducted on 100 patients. Patients with systemic blood pressure above 170 mm of Hg and diastolic pressure above 110 mm of Hg were included in the study. All were subjected to radiograph (OPG) of maxillary and mandibular arches. Presence of calcification within teeth was considered. **Results:** Out of 100 patients, males were 60 and females were 40. The difference was non-significant ( $P > 0.05$ ). 44 males and 24 females had pulp stones. The difference was significant ( $P < 0.05$ ). Age group 30-50 years had 20 males and 8 females, age group 50-70 years had 24 males and 16 females. The difference was significant ( $P < 0.05$ ). **Conclusion:** It is suggested that the routine dental radiography could possibly be used as an available screening method for early detection of patients at risk of cardiovascular diseases.

**Key words:** CVD, Pulp stone, Hypertension

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#### INTRODUCTION

Pulp stones are discrete calcified bodies in the dental pulp of healthy, diseased and unerupted teeth, frequently found on bitewing and periapical radiographs. Stones may be free attached or embedded occurrence of pulp stones is more in molars than followed by premolar. Etiology of pulp stones is not exactly known, several factors have been implicated in pulp stone formation like caries, deep restoration, chronic inflammation, interaction between epithelium and pulp tissue, circulatory disturbance in pulp, age, genetic predisposition, Orthodontic tooth movement & calcifying nanoparticles. Pulp stones obliterate the pulp chamber making it difficult for access during root canal treatment.<sup>1</sup>

Pulpal pain is one of the frequent symptoms associated with pulp stones. The pain may vary from mild to severe. They can cause obstruction of the root canals which leads to endodontic failure. Calcific atheromas and the calcification

of dental pulp may have a similar pathogenesis so the routine dental radiographs may be useful as a rapid screening method for early identification of potential cardiovascular diseases. So, oral and maxillofacial radiology may be helpful in screening for cardiovascular disease.<sup>2</sup>

Some studies have noted the possible correlation of systemic disease and occurrence of pulp calcification. De Paiva<sup>3</sup> confirmed that pulpal calcification has an increased rate in subjects with coronary atherosclerosis. Nayak et al<sup>4</sup> reported that CVD patients had the maximum number of pulp stones compared with other systemic diseases. Eds et al<sup>5</sup> proposed that 74% of the patients with a history of CVD had an evident pulp stone, whilst only 39% of patients without a record of CVD had pulp stones. The present study was conducted to assess the relation of hypertension with pulp stones in study population.

**MATERIALS & METHODS**

The present study was conducted on 100 patients with diagnosed cases of hypertension of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. General information such as name, age, gender etc. was recorded. Patients with systemic blood pressure above 170

mm of Hg and diastolic pressure above 110 mm of Hg were included in the study. All were subjected to radiograph (OPG) of maxillary and mandibular arches. Presence of calcification within teeth was considered. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

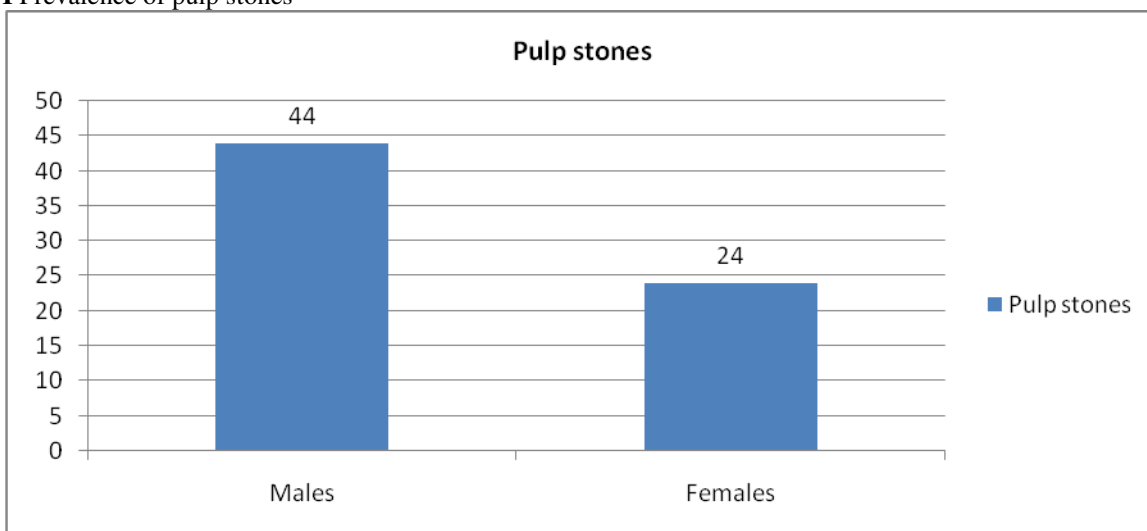
**RESULTS**

**Table I** Distribution of patients

Total- 100		
Males	Females	P value
60	40	0.5

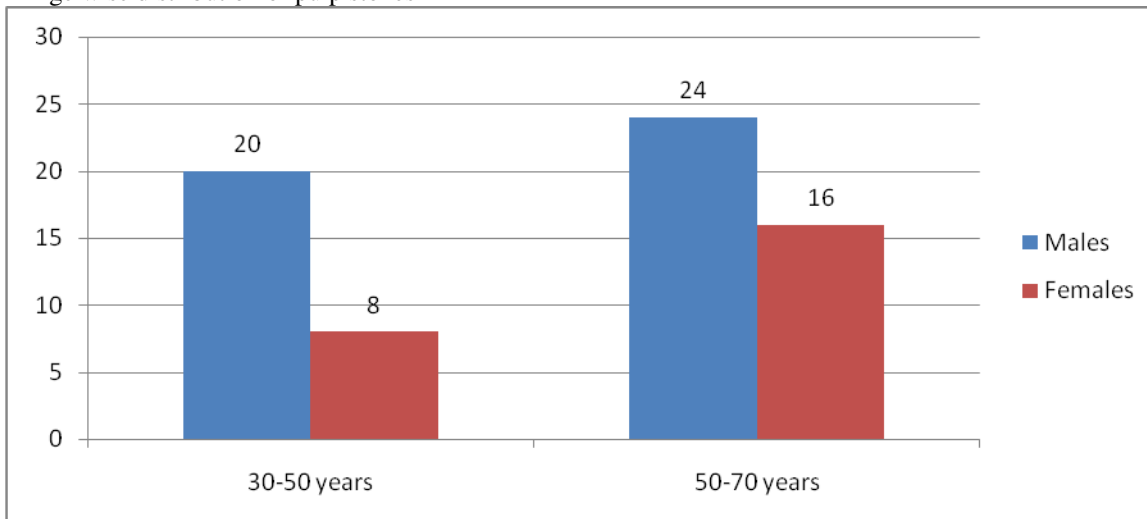
Table I shows that out of 100 patients, males were 60 and females were 40. The difference was non- significant ( $P > 0.05$ ).

**Graph I** Prevalence of pulp stones



Graph I shows that 44 males and 24 females had pulp stones. The difference was significant ( $P < 0.05$ ).

**Graph II** Age wise distribution of pulp stones



Graph I shows that age group 30-50 years had 20 males and 8 females, age group 50-70 years had 24 males and 16 females. The difference was significant ( $P < 0.05$ ).

## DISCUSSION

The formation of pulp stones is still something of an enigma. Studies show that a high frequency of cell islands, considered to be of epithelial origin, were observed together with pulp stone formation in teeth that had been subjected to experimental intrusion. The pathological effect of irritation by the microorganisms of dental caries on the pulpal tissue can cause a vascular wall injury, resulting in the deposition of calcium salts within the tissue. Others are orthodontic tooth movement, idiopathic and genetic predisposing factors.<sup>6</sup>

Leila et al<sup>7</sup> found that out of 122 patients who met the criteria, 68.2% of the patients with CVD had pulp chamber calcifications. Pulp calcification in panoramic radiography had a sensitivity of 68.9% to predict CVD.

In present study, out of 100 patients, males were 60 and females were 40. In our study, 44 males and 24 females had pulp stones. Thus the prevalence was 68%. Gulsahi et al<sup>8</sup> in their study, 250 dental out patients within age group of 18 to 70 years were involved. Bitewing radiographs of right and left side of each patient was taken using intraoral radiographic unit, presence or absence of pulp stones was recorded. Data was analyzed by statistics program for windows version Results: pulp stones were detected in 112 out of 250 patients. Prevalence of pulp stones was 44.8%. Pulp stones occurrence was higher in males than females, higher in mandible 51.4% than maxilla 48.6%, higher on left side than right side, higher in molars than premolars, and higher in first molar than second molar.

Atherosclerosis is a life-threatening disease and it rarely manifests any signs or symptoms; therefore, its early detection is crucial in preventing stroke or heart attack. Panoramic radiographs are relatively inexpensive and are already made routinely in a large part of the adult population. Therefore, these radiographs might represent an enormous potential as a screening tool for many systemic diseases.<sup>9</sup>

Bains et al<sup>10</sup> in their study, 500 routine dental outpatients within age group of 18–67 years were involved in the study. Molar bitewing of left and right side of each patient was taken with XCP bitewing instrument and size 2 film. The presence or absence of pulp stones was recorded. Overall prevalence of pulp stones was 41.8%. Pulp stones were significantly higher in maxilla (11.59%) than mandible (6.54%), left side than right side, and first molar than other molars. Higher numbers of pulp stones were recorded in patients with cardiovascular disease (38.89%) than with cholelithiasis and renal lithiasis.

## CONCLUSION

It is suggested that the routine dental radiography could possibly be used as an available screening method for early detection of patients at risk of cardiovascular diseases.

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