

Original Article

Association of Pulp Stones & Renal Stones- 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 pulp stones and renal stones in study population. **Materials & Methods:** The present study was conducted on 100 patients with diagnosed cases of renal stones of both genders. Patients with USG of kidney depicting renal stones 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 55 and females were 45. The difference was non-significant ($P > 0.05$). 12 males and 8 females had pulp stones. The difference was non-significant ($P < 0.05$). Age group 20-40 years had 7 males and 4 females, age group 40-60 years had 5 males and 4 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 renal stones. The prevalence found to be 20% in renal stones patients. **Key words:** Pulp stone, Radicular, Renal stones

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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. Their locations are more common in the coronal than in the radicular portions of the pulp and they may exist freely within the dental pulp tissue or attached to, or embedded in dentin of healthy, diseased or unerupted teeth. Pulp stones vary in size from small microscopic particles to large masses that almost occlude the pulp chamber and a single tooth may have one to 12 stones or more with different sizes.¹

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.² 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.

Nephrolithiasis is a relatively common disease in Western countries. The lifetime prevalence is between 5% and 10% in the United States of America [USA] (16) and the prevalence is increasing worldwide (17). As a consequence of the polygenic origin and multifactorial character of lithiasis, calculus formation is a complex process. Although important advances have been made during the last decades in describing kidney stone formation, many questions

concerning calculus pathogenesis still remain unanswered. It is becoming apparent that renal stone disease is commonly associated with Type 2 diabetes, obesity, dyslipidaemia, hypertension and cardiovascular diseases.³ The present study was conducted to assess the relation of renal stones with pulp stones in study population.

MATERIALS & METHODS

The present study was conducted on 100 patients with diagnosed cases of renal stones 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 USG of kidney depicting renal stones 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.

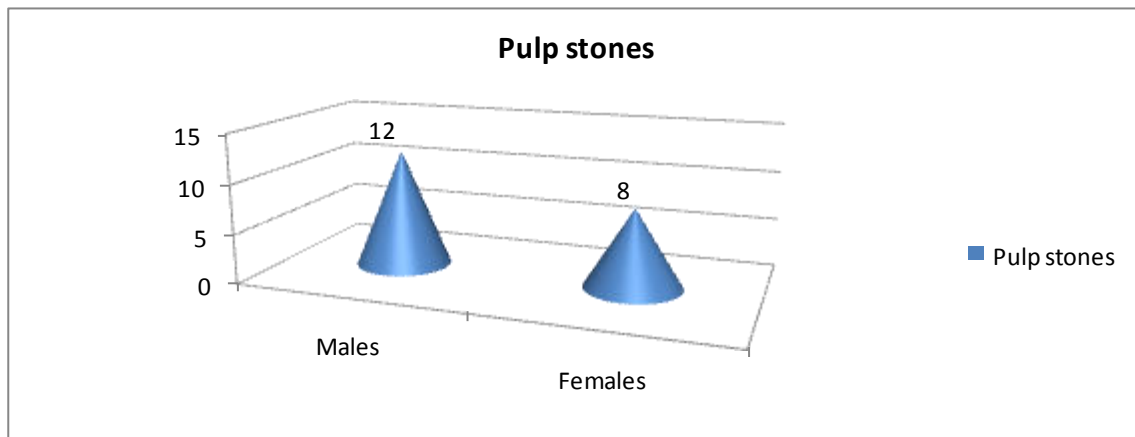
RESULTS

Table I Distribution of patients

Total- 100		
Males	Females	P value
55	45	0.5

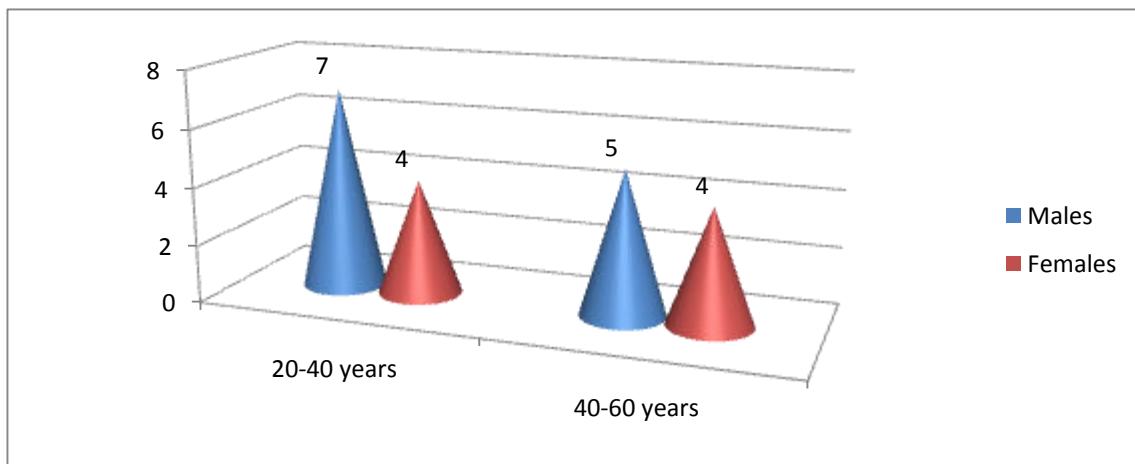
Table I shows that out of 100 patients, males were 55 and females were 45. The difference was non- significant ($P > 0.05$).

Graph I Prevalence of pulp stones



Graph I shows that 12 males and 8 females had pulp stones. The difference was non- significant ($P < 0.05$).

Graph II Age wise distribution of pulp stones



Graph I shows that age group 20-40 years had 7 males and 4 females, age group 40-60 years had 5 males and 4 females. The difference was significant ($P < 0.05$).

DISCUSSION

Pulp stones are often incidental findings on dental radiographs and in the literature the incidence of pulp stones has been investigated in many studies using radiographic criteria or histological sections. The detection of pulp stones can be observed by dental radiograph when their sizes are bigger than 200 μm . Therefore, although the prevalence is likely to be higher when detected from the radiographic studies, radiographs are the only way of evaluating pulp stones non-invasively in clinical research.⁴

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.⁵

In present study, out of 100 patients, males were 55 and females were 45. In our study, 12 males and 8 females had pulp stones. Thus the prevalence was 20%. Amir et al⁶ in their study, 150 dental out patients within age group of 20 to 60 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. Pulp stones were detected in 12 out of 150 patients. Prevalence of pulp stones was 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.

In a study by Tarim et al⁷, pulp chamber opacities were detected in 199 (19.3%) out of the 1031 examined teeth, and in 84 (72.4%) out of the 116 kidney stone patients. There was no statistically significant difference between the study and control group. The occurrence of pulp stones was significantly higher in molars than premolars and similar prevalence was found between dental arches and sides.

We found that age group 20-40 years had 7 males and 4 females, age group 40-60 years had 5 males and 4 females. Bains et al⁸ 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.

Tarun et al⁹ conducted a study in which a total of 240 patients participated in the study. Group A consisted of 120 patients who had renal calculi, and Group B had 120 randomly selected controls for the study. The periapical radiographs for all patients were evaluated for the presence or absence of the narrowing of dental pulp chambers and pulp canals. The radiographs were also evaluated to determine the presence or absence of pulp stones. A total of 163 patients had pulp narrowing, and 112 patients had pulp stones, which included 55 controls and 57 renal calculi patients. There was no statistical correlation between pulp narrowing and renal stones and also between pulp stones and renal stones.

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 renal stones. The prevalence found to be 20% in renal stones patients.

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