



## STUDYING THE PREVELANCE OF PULP STONE IN VARIOUS AGE GROUP IN LUCKNOW U.P INDIA

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### ABSTRACT

The study was designed to determine pulp stone in grounded section using BX 51 pentahead. The study was performed in Career Post Graduate institute dental sciences Lucknow and the sample for the study consisted of 4000 subjects between 30-70 years of age. Pulp stones are discrete calcifications and are amongst changes that include more diffuse pulp calcifications such as dystrophic calcification. With age the pulp spaces of teeth decrease in size through the deposition of secondary and tertiary dentine. As part of the pulp ageing process there is also a considerable decrease in the number of cells (fibroblasts, odontoblasts and mesenchymal cells), with the cell density decreasing by half from 20 to 70 years This study was aimed in determining pulp stones ( true and false). The microscopically examined tooth showed pulp stone are extremely common, occurring in many as 90% of the people between the ages of 50 to 70. Pulp stone seems to increase with age. True pulp stone are rare.

### INTRODUCTION

Pulp stone are nodular, calcified masses appearing in either or both in coronal and root portion of the pulp. They are usually detected on x ray examination or under a microscope after the tooth were extracted. They may exist as solitary or multiple bony formations within the pulp tissue or may be attached to the wall of pulp chamber. Being a degenerative disorder, pulp stone is more prevalent in old age. Occasionally they are seen in younger age. Dental caries, operative procedures, periodontal diseases, orthodontic tooth movement including genetic predisposition and idiopathic factors are the proposed etiologies of its occurrence in the early age. With age the pulp spaces of teeth decrease in size through the deposition of secondary and tertiary dentine. When tooth wear, caries or operative intervention is a feature this process becomes more evident. In most pulps, dystrophic calcification is found to be of a variable degree, and even in teeth without caries or restorations scattered calcification occurs,

unrelated to disease. A study of teeth obtained from individuals ranging from 50 to 70years found not only a decrease in the size of the pulp chamber due to deposition of secondary dentine with increasing age, but also a progressive deposition of calcified masses that originated in the root pulp [1] . This confirmed the earlier work that registered calcification in 90% of teeth from people more than 40 years, mainly involving apically located blood vessels [2].

At no age were thick collagen fibers seen independent of the connective tissue sheaths. Furthermore, the collagen bundles of vascular and neural sheaths of old pulps were the loci for calcification. As a result of calcification of the blood vessels and nerves in the pulp, their numbers decrease. The persistence of the connective tissue sheaths of nerves and blood vessels gives the pulp a histologically fibrotic appearance. As part of the pulp ageing process there is also a considerable decrease in the



number of cells (fibroblasts, odontoblasts and mesenchymal cells), with the cell density decreasing by half from 20 to 70 years [3]. At the same time, fibrous tissue accumulation occurs to the point where almost nothing exists except the fibrous tissue. This is termed fibrous degeneration or pulp atrophy. It is different from fibrous replacement (such as the replacement of infarcted heart muscle tissue) where the fibrous connective tissue contains viable fibroblasts [4]. Some authors also believe that fat deposits occur in the pulp with age, and that calcification commonly occurs within these deposits [5], but this may be a tissue-processing artifact [6].

**MATERIAL AND METHOD**

4000 patients (EXTRACTED TOOTH) in the age range of 30-70 years who were observed. Subjects having full complement of non - carious molars and anterior teeth and healthy periodontium or with minimal caries and / or restoration were included under the study. Restorations, if any were limited to enamel or shallow dentin. Subjects with class V restorations or those who have undergone previous radiographic survey and subjects with history of traumatic injuries to teeth, systemic diseases, tooth extraction due to pulpo-periapical lesions were excluded from the study. The study was performed with Carborundum stone. It has two surfaces-rough and smooth. The tooth was rubbed on the rough surface to form a thin section and then smoothened using smooth end. Section was mounted using DPX as mounting agent using cover

slip and slide. Microscopic examination of the prepared section was done.

**RESULTS**

The microscopically examined tooth showed pulp stone are extremely common with advancing age. Occurring in many as 90% of the people between the age of 50 to 70 from which True pulp stones are rare.

- In 30-40 age group it was found that only 4.4% individuals had pulp stone from which 100% was false pulp stone.
- In 40-50 age group it was found that only 17.2% individuals had pulp stone from which 10% were true pulp stone and 90% were false pulp stone.
- In 50-60 age group it was found that only 71.2% individuals had pulp stone from which 10% were true pulp stone and 90% were false pulp stone.
- In 60-70 age group it was found that only 82.1% individuals had pulp stone from which 10% were true pulp stone and 90% were false pulp stone.

For p-value, we will use chi-square method of calculation. The table showing observed and expected value is shown below:

Based on the above results, we can see that the observed values are comparable to expected values, and hence giving an overview of how pulp stone varies with age. The p-value is much more than the significance level, thereby validating the experimental observations. While the probability of having pulp stone is very less at an age below 40, people with age greater than 50 years of age much more prone to it.

**Table 1. Shows Patient Age Group and Percentage of Pulp Stone in that Group**

Age(years)	Total number of individuals	percent of pulpstone	Number of Individual with pulp Stone
30-40	1000	4.4%	44
40-50	1000	17.2%	172
50-60	1000	71.2%	712
60-70	1000	82.1%	821

**Table 2. Shows percentage of true and false pulp stone in the Patients of different age groups**

Age (years)	Total Number of Individuals With true pulp stone	Percentage of True pulp stone	Total Number of Individuals With false pulp stone	Percentage of False pulp stone
30-40	-	-	50	100%
40-50	50	10%	200	90%
50-60	75	10%	675	90%
60-70	80	10%	720	90%

**Table 3. The table showing observed, expected value and p-value**

Parameters	30-40	40-50	50-60	60-70	
Observed – o	4.45	17.23	71.2	82.1	
Expected – e	3	15	66	66	
ABS(o-e)-0.05	1.4	2.18	5.15	16.05	
(ABS(o-e)-0.05)^2	1.96	4.7524	26.5225	257.6025	
((ABS(o-e)-0.05)^2)/e	0.653333	0.316827	0.401856	3.903068	
SUM(((ABS(o-e)-0.05)^2)/e)					5.275084

Degree of freedom= n-1 (where n=4 in our case)= 3, Significance level=0.05, P-value=0.1527



## DISCUSSION

Pulp stones have been described as symptoms of changes in the pulp tissue, rather than their cause. The clinical relevance of pulp stones in terms of their effect upon root canal treatment. Their large size in the pulp chamber may block access to canal orifices and alter the internal anatomy. Attached stones may deflect or engage the tip of exploring instruments, preventing their easy passage down the canal [7]. Sometimes large pulp stone can be dissected out of an access cavity using burs, but ultrasonic instrumentation with the use of special tips makes their removal far easier [8].

The reported ranges in the prevalence of pulp stones are quite broad. This difference results from the variation in sample and sample size in previous studies. Furthermore, the presentations of prevalence were also different in the literature. Some investigations presented the prevalence based on person and teeth numbers, and the others reported only the prevalence based on teeth number. In the present study, the prevalence based on person number is within the reported range.. We examined both anterior and posterior teeth, whereas only posterior teeth were evaluated and the teeth number is significantly lower

in persons examined in other studies .Many prevalence studies have identified pulp stones using radiographic criteria. The true prevalence is likely to be higher than figures from these studies, because pulp stones with a diameter smaller than 200  $\mu$ m cannot be seen on radiographs [9]. Furthermore, in histological observations the limited number of sections through each tooth may result in underreporting [10].

## CONCLUSION

The study group included 4000 patients (extracted tooth) between the age of 30 and 70 years. Even though the etiology of pulp stones is not well understood, it is considered by many authors as a degenerative disorder since the probability increases as the age advances. Degenerative changes are less likely in the second decade of life. Patients with large carious lesions or restorations and periodontal diseases were excluded because these factors can normally induce pulp stones. Patients with class V restorations are also excluded from the study. Patients with missing posterior teeth were excluded from the study.

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