

## Original Article

### Evaluation of Tonsilloliths in adults with the help of Computed Tomography scan

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#### ABSTRACT:

**Background:** Tonsilloliths are relatively uncommon calcified structures of lymphoid tissue. The present study was conducted to assess tonsilloliths in adults with the help of CT scan. **Materials & Methods:** The present study was conducted on 86 cases of tonsilloliths of both genders. A thorough clinical examination was done in all patients. Patients underwent CT scan with the help of Toshiba CT scan machine. **Results:** Out of 86 patients, males were 52 and females were 34. 1 tonsillolith was seen in 32 patients, 2 in 39 and 3 in 15 patients. The difference was significant ( $P < 0.05$ ).  $<1$  mm tonsilloliths was seen in 52 patients, 1-2 mm in 20 patients and 2-3 mm in 14 patients. The difference was significant ( $P < 0.05$ ). **Conclusion:** Authors found that maximum number of tonsilloliths was seen in males and size less than 1mm was seen in majority cases.

**Key words:** Tonsilloliths, tonsillar abscess.

Received: 12 July, 2018

Revised: 16 August, 2019

Accepted: 18 August, 2019

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**This article may be cited as:** Sood A, Tiwari S. Evaluation of Tonsilloliths in adults with the help of Computed Tomography scan. J Adv Med Dent Scie Res 2019;7(9): 51-54.

#### INTRODUCTION

There are three major groups of tonsils that include palatine tonsils, pharyngeal tonsils (the adenoids) and lingual tonsils that are disposed in a discontinuous ring to form Waldeyer's ring.<sup>1</sup> Lymphoid tissue located between the palatoglossal fold (anterior tonsillar pillar) and the palatopharyngeal fold (posterior tonsillar pillar) forms the palatine tonsil and is separated from the surrounding pharyngeal musculature by a thick fibrous capsule.<sup>2</sup> The adenoid is a single aggregation of lymphoid tissue that occupies the superior and posterior pharyngeal wall. Tonsilloliths are relatively uncommon calcified structures of lymphoid tissue.<sup>3</sup> The mechanism, by which these calcifications form, is still unclear. Although it seems that they result from organic debris, bacteria, and fungus that accumulate within the tonsillar crypts following chronic inflammation. Frequently, tonsilloliths have a hard consistency in different shapes and colors.<sup>4</sup>

Tonsilloliths are oropharyngeal concretions stemming from a reactive foreign nidus such as bacteria and organic debris

within a palatine tonsillar crypt. Based on empirical knowledge, tonsilloliths are reported to be relatively commonly encountered in daily clinical practice, but patients rarely have complaints related to them.<sup>5</sup> It has been reported that the detection rate of tonsilloliths was under 25%, although experience suggests otherwise. Furthermore, recent studies suggest that tonsilloliths are clinically related to halitosis and tonsillar abscess. Therefore, the detection rate, number, size, location, calcification level, and other characteristics of tonsilloliths should be precisely understood.<sup>6</sup> The present study was conducted to assess tonsilloliths in adults with the help of CT scan.

#### MATERIALS & METHODS

The present study was conducted in the department of ENT. It comprised of 86 cases of tonsilloliths of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was done in all patients. Patients underwent CT scan with the help of Toshiba CT scan machine. Images were obtained in all planes and were

read by an expert Radiologist. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Total- 86		
Gender	Males	Females
Number	52	34

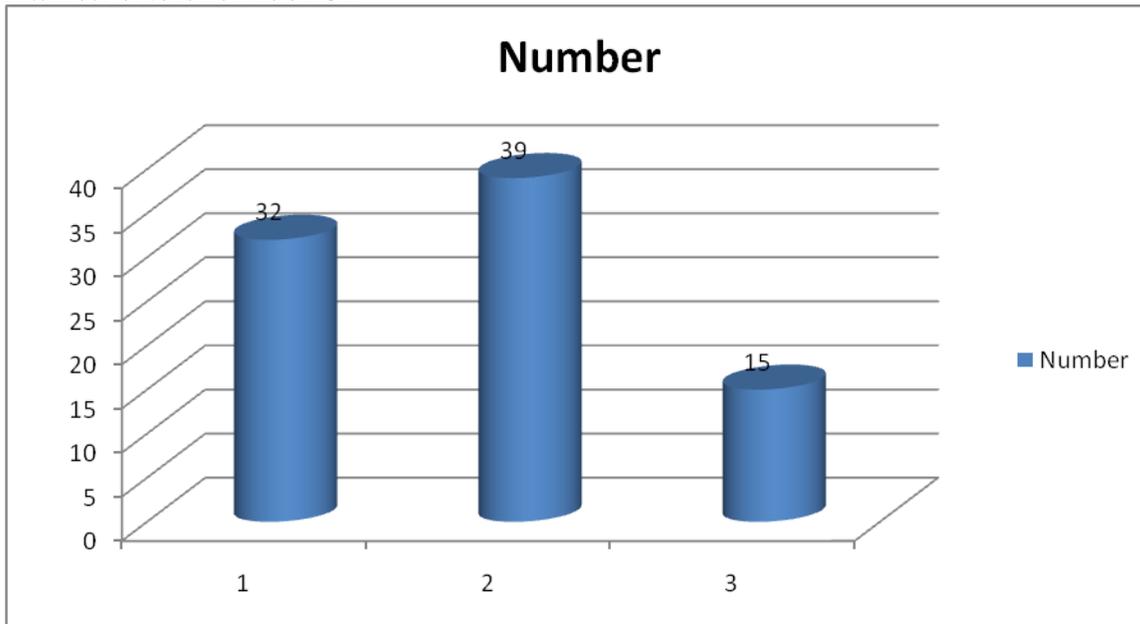
Table I shows that out of 86 patients, males were 52 and females were 34.

**Table II Number of tonsilloliths on CT**

Number of tonsilloliths	Number	P value
1	32	0.05
2	39	
3	15	
Total	86	

Table II, graph I shows that 1 tonsilloliths was seen in 32 patients, 2 in 39 and 3 in 15 patients. The difference was significant (P< 0.05).

**Graph I Number of tonsilloliths on CT**

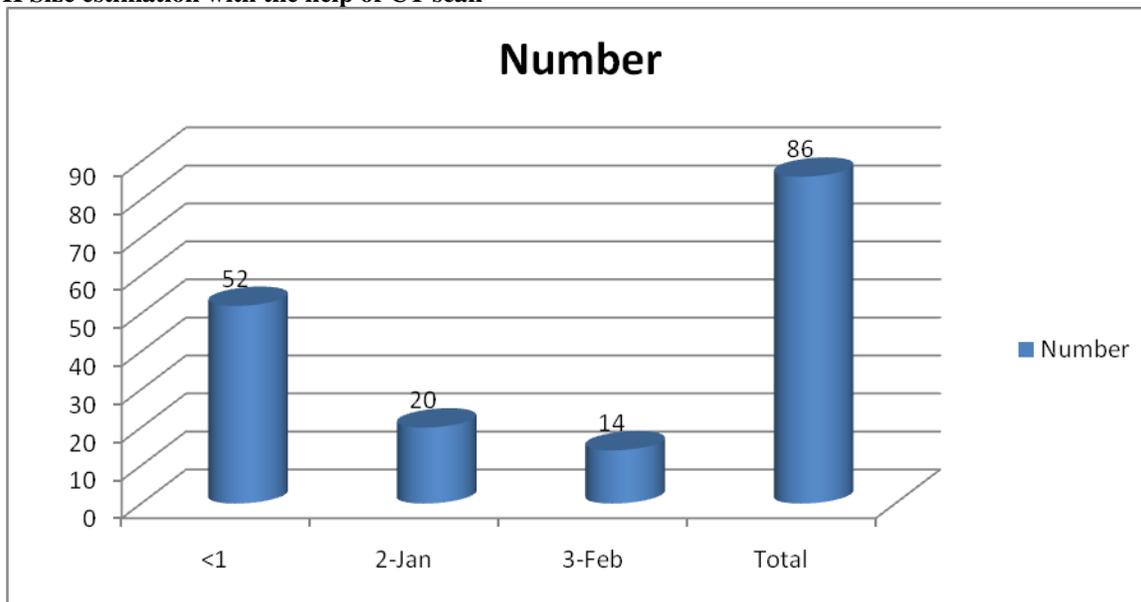


**Table III Size estimation with the help of CT scan**

Size of tonsilloliths (mm)	Number	P value
<1	52	0.01
1-2	20	
2-3	14	
Total	86	

Table III, graph II shows that <1 mm was seen in 52 patients, 1-2 mm in 20 patients and 2-3 mm in 14 patients. The difference was significant (P< 0.05).

**Graph II Size estimation with the help of CT scan**



**DISCUSSION**

Patients with tonsilloliths may also be asymptomatic, with the liths discovered incidentally on pantomographic or lateral cephalometric radiographs.<sup>7</sup> Superimposition of hard and soft tissue structures on such radiographic images is common, creating a diagnostic challenge.<sup>8</sup> This necessitates the consideration of several interpretations of radiopacity in the mandibular molar-ramus region including sialolith, tonsillolith, phlebolith, calcified lymph node, carotid artery arteriosclerosis, stylohyoid ligament ossification, and dystrophic calcification in acne scars. These entities can be differentiated by the radiographic features and locations.<sup>9</sup> The present study was conducted to assess tonsilloliths in adults with the help of CT scan.

In this study, out of 86 patients, males were 52 and females were 34. 1 tonsillolith was seen in 32 patients, 2 in 39 and 3 in 15 patients. Scarfe et al<sup>10</sup> conducted a study in which 482 pairs of CT images and panoramic radiographs were retrospectively assessed with respect to the presence and characteristics of tonsilloliths. In addition, the causes in cases of disagreement between the two modalities were analyzed. The detection rate of tonsilloliths was 46.1% using CT scans, unlike previous reports. The characteristics of tonsillolith were dot-like figures with about 300-500 Hounsfield units within the palatine tonsil under the soft palate. The most common length of tonsilloliths was about 3 or 4 mm. As the subjects aged, the detection rate increased gradually. A significant difference in the tonsillolith detection rate was found between the over and under 40-year-old groups. However, the detection rate of tonsilloliths was only 7.3% on panoramic radiographs. A significant correlation was observed between the detection rate of tonsilloliths on panoramic radiographs and CT number, size and number of tonsilloliths.

We found that <1 mm was seen in 52 patients, 1-2 mm in 20 patients and 2-3 mm in 14 patients. Ram et al<sup>11</sup> in their cross-sectional study, 0.5-mm axial and coronal slices of 134 CBCT images were evaluated to determine the presence of palatine and adenoid calcifications. Their patterns such as being unilateral or bilateral as well as single or multiple and their largest linear sizes were reported. Fifty-four (40.3%) patients with palatine tonsilloliths and 17 (12.7%) with adenoid calcifications were found. Thirty (55.6%) palatine tonsilloliths were unilateral, 19 (35.2%) were detected in the left tonsils. Approximately, 54 cases of 78 palatine calcifications were multiple. Seventeen patients had adenoid calcifications that 41.1% of them were unilateral. Fourteen adenoid calcifications were single. The mean ages of patients with palatine tonsilloliths and adenoid calcifications were 45.59 years and 46.53 years, respectively. The range of linear measurements of palatine tonsil calcifications was 0.9–4.2 mm (2.47-mm mean size) while adenoid calcifications ranged from 0.5 to 2.2 mm (0.95-mm mean size).

Oda et al<sup>12</sup> showed the relation between the detection of tonsilloliths and the over and under 40-year-old groups. The average age of was 42.2 years for nasopharyngeal tonsilloliths. A total of 24 had the bilateral form of palatine tonsil calcification. Overall, 43 calcifications occurred in the left palatine tonsils and 35 on right tonsils. Overall, the statistical analysis showed that there was a statistically significant difference affecting the prevalence of calcifications detected in the right and left palatine tonsils. The only study that reported the same finding did not reveal any statistically significant difference between the prevalence of calcifications in right and left palatine tonsils.

## CONCLUSION

Authors found that maximum number of tonsilloliths was seen in males and size less than 1mm was seen in majority cases.

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