

A Retrospective Study on the Prevalence of Periodontal Abscess and Its Incidence in Diabetes Mellitus Patients amongst the Population of Tirupur - Tamilnadu – India

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Abstract

The present retrospective study is undertaken to analyze the prevalence of periodontal abscess and its incidence in Diabetic mellitus patients of various age groups in Tirupur population from the data available from the records of Department of Dental surgery, Government Headquarters Hospital, Tirupur during the period from January 2019 to December 2019. In total, 353 patients with periodontal abscess were analysed. Among them, 225 patients (63.74%) had Diabetic mellitus, who were mostly male patients in their fifth decade followed by sixth and fourth-decade patients. Multiple periodontal abscess formation was frequently encountered in Diabetes mellitus patients (71.12 %). Periodontal abscess was commonly found affecting the Molar teeth (62.88%) region, followed by incisor teeth region (21.81%) and the least affected area was the canine region (5.94%). This article revealed considerable incidence of periodontal abscess in Diabetes mellitus patients, especially multiple in number. These multiple periodontal abscess provoked early tooth loss. Prompt preventive and treatment measures are to be adopted for both Diabetes mellitus and periodontal abscess so that the general wellbeing and oral health status of the individual will be upgraded.

Keywords: Diabetes mellitus, periodontal abscess, Oral hygiene, tooth loss.

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I. Introduction

The retrospective study is aimed to examine the prevalence of periodontal abscess and its incidence in Diabetes mellitus patients in the population of Tirupur in south India. A periodontal abscess is pus collected within the periodontal tissues⁷. It is an acute bacterial infection initially involves the gingiva and later spreads to the periodontal tissues. If left untreated, the microbes enter the blood stream causing bacteremia, Ludwig's Angina and Orofacial Actinomycosis. Periodontal abscess is characterized by deep throbbing pain where the involved tooth is mostly raised with mobility, due to the destruction of periodontal ligament and alveolar bone resulting in tooth loss. Systemic diseases like Diabetes mellitus mainly predispose the individual to the formation of single or multiple periodontal abscesses.

II. Materials And Methods

The collection of data for the study was obtained from the dental records of the patients who underwent treatment for periodontal abscess in Dental Out-patient Department (OPD) of Tirupur Government Headquarters Hospital in India from January 2019 till December 2019. Altogether 353 patients with periodontal abscess were analyzed for the percentage distribution of age, gender, presence of Diabetes mellitus, presence of single or multiple abscess and site of tooth involvement.

III. Results

In our retrospective analysis, periodontal abscess was found to be the highest in fifth decade of patients (116 cases,32.86%) followed by sixth- and fourth-decade patients [(89 cases,25.21%) (78 cases,22.10%) respectively] Fig 1.

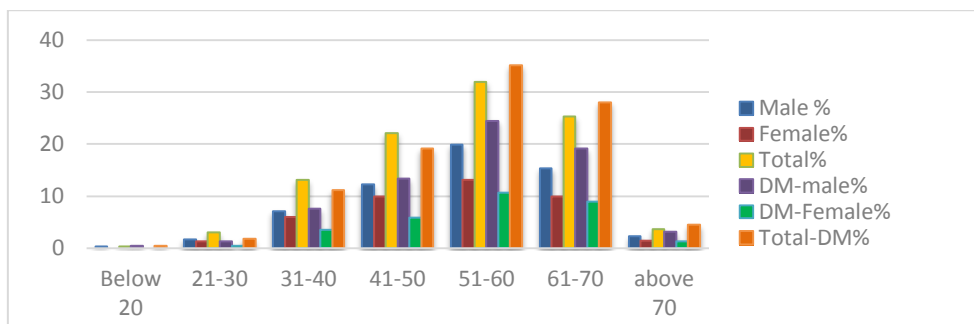


Figure 1 Percentage Distribution of Periodontal Abscess in various age groups

In Particular, 41.36% (146 cases) of female patients were affected while 58.64% (207 cases) of male patients were predominantly affected. Out of 353 patients with periodontal abscess, 225 patients were diabetics with percentage distribution of 63.74% in which 156 were male patients (69.33%) and 69 were female patients (30.66%). Diabetes mellitus patients with periodontal abscess were found to be more in fifth decade patients (79 cases,35.11%) followed by sixth- and fourth-decade patients (63 cases,28% and 43 cases,19.11% respectively). Fig 2

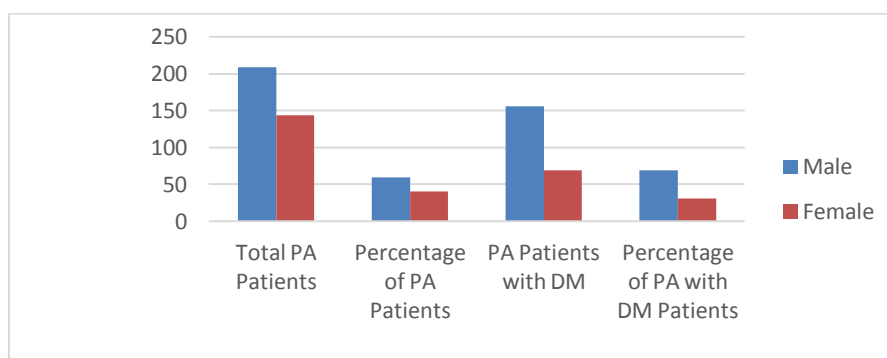


Figure 2 Gender Distribution of Periodontal Abscess

Multiple periodontal abscesses were found in 187 patients with percentage distribution of 52.97%, in which 117 were males with percentage distribution of 62.57% and 70 were female with percentage distribution of 37.43%. Among 187 patients with multiple periodontal abscesses, 133 patients were diabetics with percentage distribution of 71.12% in which 87 were males (65.41%) and 46 were females (34.59%). Fig 3

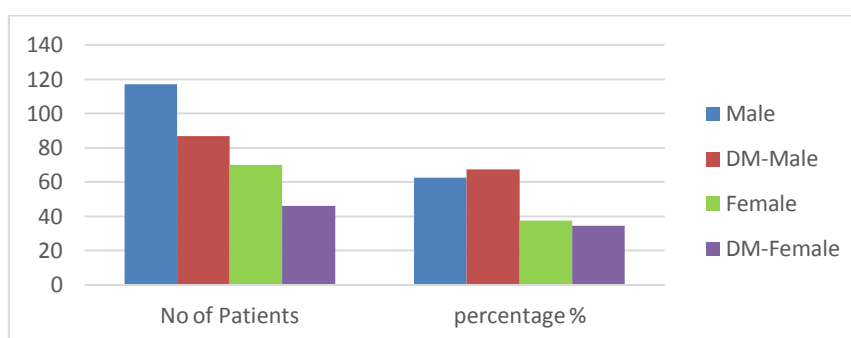


Figure 3 Multiple periodontal Abscess Distribution

Periodontal abscess was found to be more common in molar regions with percentage distribution of 62.88% (222 cases), followed by incisor region with percentage distribution of 21.81% (77 cases) and the least affected area was the canine region with percentage distribution of 5.94% (21 cases). Fig 4

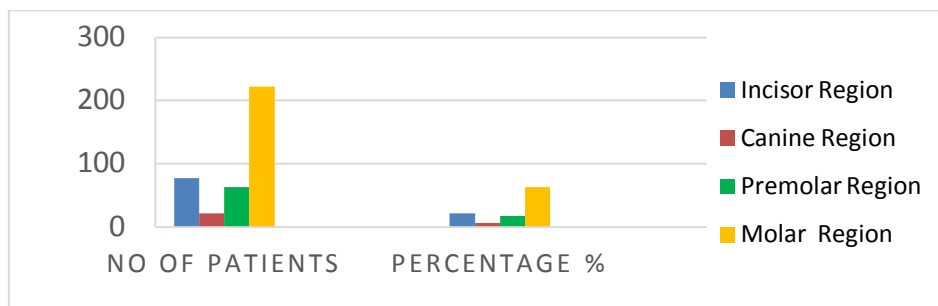


Figure 4 Site of Tooth Involvement

IV. Discussion

Periodontal disease is the most common cause of tooth loss among older adults¹² (<55 years) and it is stated to be the sixth² complication of Diabetes mellitus. Periodontal abscess also serves as a clinical diagnostic sign of undiagnosed Diabetes mellitus^{15,11}.



Figure 5 Periodontal Abscess in 65/M DM patient

The incidence of periodontal abscess varies with geographic region, socio-economic status, culture and dietary habits. Therefore, the distribution pattern and prevalence of periodontal abscess in Diabetes mellitus patients in Tirupur were examined for the study. Tirupur city is an established knit-wear hub which employs millions of laborers from all over India. The migrant workers have diverse lifestyles, cultures, and dietary habits. As they have a strenuous working schedule, most of them wake up late, skip their breakfast regularly and get addicted to pan chewing and smoking. Breakfast skippers develop Type 2 Diabetes at an early middle age due to chronic insulin resistance¹⁴.

In our study, various age groups were analyzed for prevalence of periodontal abscess in association with and without Diabetes mellitus and in that fifth decade patients (32.86 %) were most affected. Diabetes mellitus patients developing periodontal abscess were also encountered more in their fifth decade (35.11 %) followed by sixth decade patient (28 %). The fourth decade patients also had a considerable association of Diabetes mellitus with periodontal abscess (19.11 %) which is quite alarming and demands immediate lifestyle modifications. In all decades, males were more affected (59.21 %) which may be due to the fact that they are chronic smokers with improper oral hygiene. Chronic smokers had low levels of pro-inflammatory cytokines and T-cell and NK cell regulators. This immunosuppressant effect of smoking makes them more susceptible to periodontal abscess. Smoking is probably the single significant, modifiable risk factor for periodontal abscess.

In this present study, commonest site of occurrence of periodontal abscess was in the molar region (68.88 %), which correlated with other studies^{9,17} and least affected area was the canine region. Higher rate of incidence of periodontal abscess were found in Diabetics (63.74 %)¹⁰ which also correlated with another study. Multiple periodontal abscesses developed more frequently in Diabetes mellitus patients (71.12 %)¹³ thereby coinciding with another study.

The striking influence of Diabetes mellitus seems to be a reduction in defense mechanisms³ and the reduced healing capacities leads to the formation of multiple periodontal abscesses. Decreased levels of cAMP⁷ in gingival fluid of Diabetes mellitus patients could be another potential factor in modifying the severity of the periodontal disease. The individuals seeking dental treatment for periodontal abscess must be evaluated thoroughly for Diabetes mellitus. Prompt treatment and continuous monitoring should be executed for both Diabetes mellitus and periodontal abscess in order to avoid further systemic complications and tooth loss.

V. Conclusion

This retrospective study in our district revealed higher incidence of periodontal abscess in Diabetes mellitus patients. The middle-aged males were commonly affected, and molar teeth were predominantly involved. It also highlights that Diabetic cases developed multiple periodontal abscesses which in turn will enhance early multiple tooth loss. Public health awareness programs with Dietary and Oral hygiene instructions shall be implemented along with the existing Non-communicable Disease (NCD) programs so that the individual's general wellbeing and oral health status will be upgraded. The motive behind this article is to further elaborate the preventive measures for Diabetes mellitus and periodontal lesions thereby leading to the preservation of natural dentition. This study will also pave way for conducting new research.

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