Original Article

Prevalence of Tooth Mobility in Periodontitis Patients

Tooth Mobility in Periodontitis Patients

Syed Kashif Abrar[1], Saaduddin Siddiqui[2], Kashif Aslam[3], Nabeel Hafeez[5], Hoshang R Sukhia[6] and Muhtada Ahmed[4]

ABSTRACT

Objective: The rationale of this research was to evaluate the degree of tooth mobility present in patients those who were suffering from periodontitis. Periodontitis is classified as mild periodontitis, moderate periodontitis and sever periodontitis. Tooth mobility is one finding which is commonly used to analyzeperiodontal status and the tooth involved.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Dow Dental College, Dow University of Health Sciences, Karachi from July 2022 to November 2022.

Materials and Methods: In this study 1000 patients were examined and treated by completing periodontal evaluation forms and measuring tooth mobility by Nyman's tooth mobility index.

Results: The results found from the data gathered shown that participants with grade I mobility were 71%. But we can see 23% of patients were having grade II mobility and only 6% of patients were having grade III mobility. Which led us to a conclusion that patients those who were suffering from mild periodontitis showed grade I mobility when compared to moderate periodontitis which showed grade II mobility and patients those suffering from sever form of periodontitis showed grade III mobility.

Conclusion: As the severity of the periodontitis increases the degree of bone loss and tooth mobility increases simultaneously. Studies in which patients with presence of various systemic diseases and smoking habits can be done in future to find out the correlation with tooth mobility. Maintenance of proper oral hygiene is mandatory for the interception of periodontal diseases.

Key Words: Mobility, Mild Periodontitis, Moderate Periodontitis, Severe Periodontitis

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INTRODUCTION

Tooth mobility is a clinical expression of periodontitis and most common parameter used to evaluate the status of periodontium. Tooth mobility is one of the vital signs to be noted to establish a proper diagnosis, prognosis and treatment plan.

However physiological mobility, which differs in between teeth and hours[1]. It is highest on arising in the morning and slowly declines. The enhanced movement early morning contributed increased and decreased contact in sleep. During the awake hours, mobility is decreased by chewing and swallowing forces, which intrude the teeth in the socket.

1. Department of Periodontology / Oral Medicine[2] / Prosthodontics[3] /Oral Surgery[4], Dow Dental College, Karachi.
5. PNS, Shifa Hospital, Karachi.
6. Department of Orthodontics, Sir Syed Dental College, Karachi.

Correspondence: Dr. Syed Kashif Abrar, Lecturer of Periodontology, Dow Dental College, Karachi.
Contact No: 0321-8221070
Email: doc_kash@hotmail.com

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This daily variation is decreased in persons with a healthy periodontium as compared to patients with occlusal habits such as Bruxism and clenching.

Dentist and dental students usually get baffled when it comes to diagnose weather the patient condition is mild, moderate or server periodontitis in regards to the mobility of the teeth.

As a basic principal, mobility is measured clinically with a basic method which is the tooth is held dynamically between the handles of two metallic equipments or with one metallic equipment and manual finger (figure 1) and an endevour is made to migrate it in all the possible directions. Mobility is graded according to the ease and extent of tooth movement.

Patients suffering from periodontitis develop bone loss which results in mobility of teeth. Patients always complains of having loose teeth or mobile teeth when the destruction is gone beyond prevention. Clinically when viewed it is noted that tooth either move in mesiodistal, faciolingually or vertical direction. When this is viewed in radiograph it is noted that sufficient bone loss is present where the mobility has taken place.

Various tooth mobility indices are used to evaluate tooth mobility.

a. Miller's index[2-3]
b. Modified Miller's index
c. Prichard's index

d. Wasserman's index
e. Nyman's index
f. Flezar's index.
g. Glickmans index
h. Lovdal's index

Measurement of Tooth Mobility[4]: Measurement of tooth mobility is paramount to find out the status of periodontium in research finding studies and for finding treatment and for execution of tailored treatment. There are multiple Mobilometers, to such as, Elbrechts indicator (1939), Werners oscillograph (1949), Dreyfus vibrator (1947), Znirners oscillograph (1949), Manlys device (1951), Muhlemanns macroperiodontometer and microperiodontometer, Pictons Gauge (1957).

Perio test[7] is one of the current assays, which uses dynamic forces of less and low millisecond range. It evaluates the damping characteristics of teeth. The apparatus compromises of a hand piece connected by a cable to a unit, which measures functions and analyzes computation. Interior of the hand piece is a metal rod which is accelerated until it achieves its nominal speed and touches the tooth. The tooth is slightly averted and rod is slow down. Using the measured contact period in millisecond the periotest measurements are calculated. The following ranges are seen.

-8 to + 9 – Sound teeth
10 to 19 – Mobility by Physical touching through instruments.
20 to 29 – Visible mobility
30 to 50 – Mobility in response to lip and tongue pressure.

Errors in mobility measurement may be due to variation in direction, point of application, mode of application, manner of application, duration and time of forces, or due to instability variation, non-linearity and slippage of device.

Radiographic Images : Figures presented above shows different levels of bone loss. Figure 1 shows patients with mild periodontitis in which grade 1 mobility was found. From figure 2 shows patients with moderate tooth mobility in which grade 2 mobility was noted, and from figure 4 which shows sever periodontitis with grade 3 mobility.

MATERIALS AND METHODS

Data were gathered from July 2022 to November2022 and the findings have been divided into three groups i.e. Mild Periodontitis, Moderate Periodontitis and Sever Periodontitis.

A total of 1000 patients were included at the periodontal outpatient section. A tailor made questionnaire was implemented which find out patients medical history, dental history, clinical findings along with full periodontal health status. Out of 1000 patients 656 patients were suffering from periodontitis but within these patients 344 patients were having tooth mobility which were either Grade I, Grade II and Grade III tooth mobility. Ny man's index was used in noting down tooth mobility.

Periodontal finding questionarre was used in this research which find outs patients oral health index. Mouth mirror was used in this study with its opposing side as a tool to measure tooth mobility along with index finger. Participants were included randomly and the research was based on quantitative analysis.

Peri apical Xray were done for every participant.

Inclusive criteria for the study were patients attending Periodontology outpatient section those suffering from periodontitis. Exclusive criteria were patients below the age of 12 years as not to misguide diagnosis with exfoliation of primary dentition, patients with oral submucous fibrosis as they had decreased mouth opening so complicated to find mobility in posterior teeth. Female patients who were pregnant as not to expose them to x-rays radiation and patients who were undergoing orthodontic treatment.

Ethics: The research was done in accordance with declaration on the basic ethical rights of the participants, Dow Dental College and Sir Syed College of Medical Sciences for Girls.

RESULTS

The results were evaluated and calculated by Survey Crafter Marketing and Research software with Microsoft Excel. The research is fully focused on quantitative analysis.

The results obtained from the data collected shown in the bar graph Figure 5 is that patients with grade I mobility were 71%. But we can see 23% of patients were having grade II mobility and only 6% of patients were having grade III mobility.

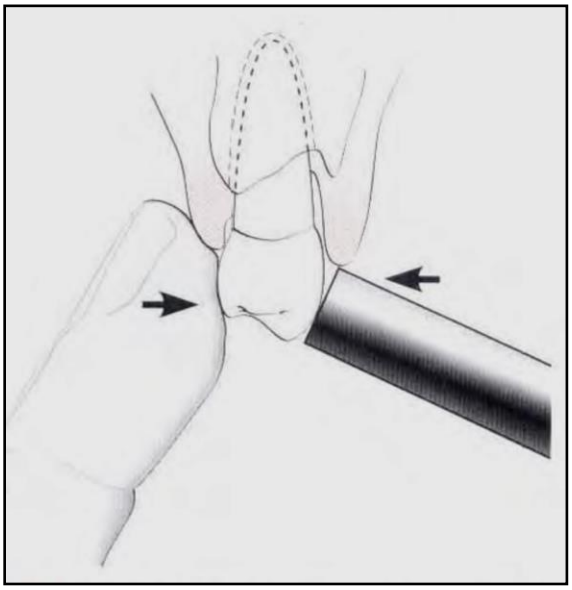

Figure No.1: Shows measuring mobility clinically between handles.

Radiographic Images:

Figure No.2: Shows patients with mild periodontitis in which grade 1 mobility was found.

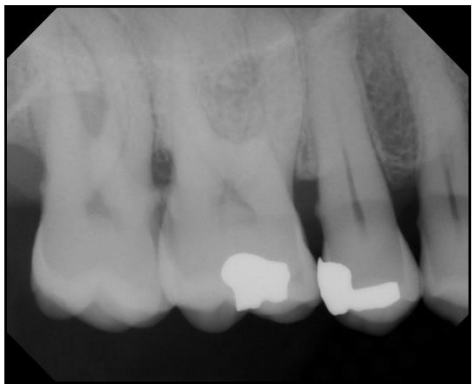

Figure No.3: Shows patients with moderate tooth mobility in which grade 2 mobility was noted.

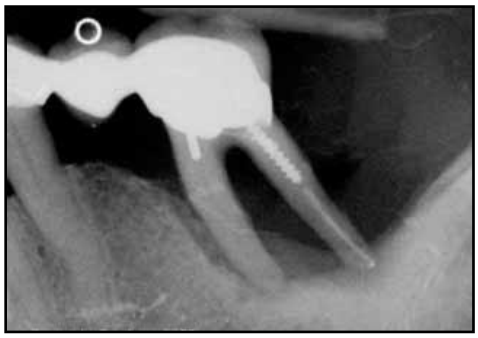

Figure No.4: Shows sever periodontitis with grade 3 mobility.

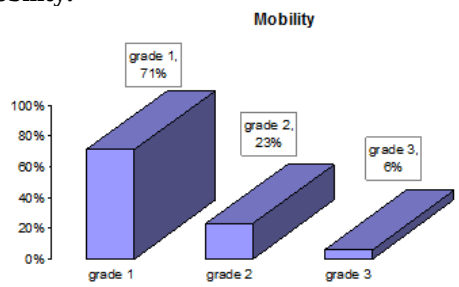

Figure No.5: Mobility

DISCUSSION

Tooth mobility is on a higher risk with people suffering from periodontitis. Many different methods are now used in dentistry to note down the degree at which the tooth is moving. When considering periodontitis it's divided into mild periodontitis, moderate periodontitis and sever periodontitis. It is seen that the degree of tooth mobility changes with the severity of the condition. At the Dow Dental College patient when they present to the Periodontology department usually complained of having loose or mobile teeth. And on thorough examination with taking peri apical radiographs we noted bone loss. During the course of our examination which included the eating and brushing habits of patients, it was found that patients with grade 1 tooth mobility were patients who usually brushed their teeth once a day and were frequent chewers of betel nut. Patients those who were having grade 2 tooth mobility also brushed their teeth once a day but were diabetic, using betel nut along with smoking and snuff. And patients those who were having grade 3 mobility were patients who never or brushed their teeth occasionally and where diabetic, smokers, eating betel nut, snuff, and they had a habit of using tooth picks very occasionally. Previously, similar results published in different journals by different authors. Self-reported tooth movement was substantially related finding hence might be a useful indicator predictor of periodontitis with increase specificity but with decrease sensitivity [5-8].

The result related to present study conducted when comparing the relationship of periodontitis with tooth mobility, it is seen that patients showing grade 1 tooth mobility were suffering from mild periodontitis. Patients those who were having grade 2 tooth mobility were having moderate periodontitis and patients those who were having grade 3 tooth mobility were patients having sever periodontitis.

This current study has several limitations. The grade of tooth movement was determined in current study by migration of each tooth between the handles of two solid dental equipments, which is definately more subjective than standardized methods, e.g. the use of a measuring electronic equipment[9], especially when slight differences of half a grade (0.5 mm) must be distinguished. To address this restriction, all tooth movement grade measures were conducted thrice for each tooth by the same investigator. Another procedural restriction is related to traditional radiography techniques only give two-dimensional information and scan only the proximal alveolar bone deficit or presence pretty accurately[10]. To address it correctly correspond with the grade of tooth movement, finding quantity of lost or existent supporting bone should ideally be in 3D view. On the other hand, the clinical finding and radiology procedures utilized in this research have been

used in regular procrdural clinical practice and so related to benefit of replicating, matching of the clinical circumstances that are commonly encountered. Because of that traditional methods of tooth movement evaluation are still utilized by a variety of research in the literature [11-16].

CONCLUSION

As the severity of the periodontitis increases the degree of bone loss and tooth mobility increases simultaneously. Studies in which patients with presence of various systemic diseases and smoking habits can be done in future to find out the correlation with tooth mobility. Maintenance of proper oral hygiene is mandatory for the interception of periodontal diseases.

Author's Contribution:

Concept & Design of Study:	Syed Kashif Abrar
Drafting:	Saaduddin Siddiqui, Kashif Aslam
Data Analysis:	Nabeel Hafeez,.Hoshang R Sukhia, Muhtada Ahmed
Revisiting Critically:	Syed Kashif Abrar, Saaduddin Siddiqui
Final Approval of version:	Syed Kashif Abrar

Conflict of Interest: The study has no conflict of interest to declare by any author.

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