



RESEARCH ARTICLE

EVALUATION OF ORAL HYGIENE MAINTENANCE IN PATIENTS WITH FIXED ORTHODONTIC APPLIANCES

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ABSTRACT

The aim of this study is to evaluate the oral hygiene maintenance in patients undergoing orthodontic treatment. This will help the patients to maintain the oral hygiene in an effective way in terms of aesthetic as well as the success of orthodontic treatment. For evaluating the oral hygiene 150 patients undergoing orthodontic treatment were selected from school of dental sciences, Karad. These 150 patients were divided in 3 groups. 50 patients were allotted in group A, who were instructed to carry out their normal oral hygiene methods. Next 50 patients were in group B who were instructed to perform bass tooth brushing technique (The brush head is positioned in an Oblique direction turned to the root apex aiming to introduce the bristles on the gingival sulcus. The brush is then shifted on an antero-posterior direction, using short rhythmic movements) for the next 2 months. Last 50 patients were in group C who were instructed to use 0.12% chlorhexidine mouthwash (Chlorhexidine has always been the best option in management in severe gingivitis in adolescent patients. A three month use of 0.12 % chlorhexidine approximately reduced 65% plaque, 77% gingival bleeding) along with bass toothbrushing technique for the next 3 months. The oral hygiene of all patients was recorded on the 1st day, at the end of first month and at the end of second month. Gingival index: (Loe H and Silness P, 1963) and Turesky Gilmore Glickman modification of the Quigley-Hin plaque index: (1962) is used for evaluating the oral hygiene of all 150 patients in all 3 groups. According to the data recorded and after statistical evaluation it is seen that patients in group C (patients using bass tooth brushing technique and 0.12% chlorhexidine mouthwash) could maintain better oral hygiene as compared to group A (patients who followed their normal oral hygiene aids) and group B patients (patients performing bass tooth brushing technique). Thus, this study shows that bass tooth brushing technique should be performed along with 0.12% chlorhexidine mouthwash for maintaining oral hygiene for patients undergoing orthodontic treatment.

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INTRODUCTION

Patients undergoing orthodontic treatment are more prone to develop gingivitis during the treatment (Farhad Atassi, 2010).

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Plaque accumulation during the treatment is the main reason for gingivitis and eventually periodontal diseases (Løe, 1965). Outcome of the success of treatment largely depends on the periodontal status of patients as the treatment not only concentrates on the dental and skeletal harmony but should also maintain healthy tissues and supporting structures

(Priscila Ariede Petinuci Bardal, 2011). Plaque control is the major consensus during orthodontic treatment to prevent the occurrence of cavities and periodontal inflammation (Fularisagamesh). Periodontal diseases result into gingival recession and bone loss and thus affect the forces applied on the tooth (Boyd, 2013; Wennstrom, 1996). However plaque accumulation and gingival inflammation both can be equally reduced in well-motivated patients. Professional care and self instructions for home care will help us in maintenance of oral hygiene (Alkan, 2007). This research will help us to find out the aids in maintaining healthy oral hygiene. Control studies evaluating the effectiveness of usual brushing techniques do not show clear advantage for any of the methods. It is probable that the scrubbing technique is the most simple and common brushing method. For patients with periodontal disease, the instruction of a sulcular brushing, using vibrating movements to increase the access to gingival areas is common. Bass technique emphasizes the sulcular placement of the bristle (Patricia *et al.*, 2012). Thus bass tooth brushing technique is most effective in patients undergoing orthodontic treatment (Nassar *et al.*, 2013). According to Fularisagamesh G, Revankar Siddharth, Shivnaikar Sachin in Periodontal Maintenance Program in Orthodontic Patients have shown that chlorhexidine considerably reduces plaque and gingival bleeding (Fularisagamesh *et al.*, 2013). Thus chlorhexidine mouthwash shows positive results in maintaining oral hygiene (Brightman, 1991; Anderson *et al.*, 1997).

Objective

- Patients should be explained all the modalities of treatment procedure and their effects on the gingiva and periodontium thus creating a positive reinforcement.
- Motivating and educating the patients about the correlation between orthodontic treatment and periodontium remains the cornerstone for achieving optimal oral hygiene results.
- Evaluating the effectiveness of Bass tooth brushing method in conjugation with 0.12% Chlorhexidine mouthwash on the oral hygiene of patients with fixed orthodontic appliances.
- To create awareness and help in achieving a healthy oral hygiene status.
- Achieving inter-disciplinary approach and positive reinforcement of patients undergoing orthodontic treatment aiming for maintaining healthy periodontium.

MATERIALS AND METHODS

150 patients undergoing fixed orthodontic treatment in School of Dental Sciences, Karad are selected for the study. 50 patients were allotted in group A and these patients were asked to continue with their normal oral hygiene aids for the next 2 months. Next 50 patients were in group B and were demonstrated with Bass tooth brushing method (The brush head is positioned in an Oblique direction turned to the root apex aiming to introduce the bristles on the gingival sulcus. The brush is then shifted on an antero-posterior direction, using short rhythmic movements (Fularisagamesh *et al.*, 2013). For the next 2 months. According to Patricia O Nassar, Carolina G Bombardell Scrubbing technique presented 24.5% of plaque, those that performed Modified Stillman presented 26.9% of plaque and those that performed Bass method presented 24.8% of plaque and hence bass toothbrushing technique is most effective tooth brushing

technique (Patricia, 2012). This can be explained by the fact that this technique emphasizes the sulcular placement of the bristles, removing the plaque not only from the gingival margin but also subgingivally. Last 50 patients were in Group C and were asked to use Bass tooth brushing method (The brush head is positioned in an Oblique direction turned to the root apex aiming to introduce the bristles on the gingival sulcus. The brush is then shifted on an antero-posterior direction, using short rhythmic movements along with 0.12% Chlorhexidine mouthwash (Farhad Atassi *et al.*, 2010; Patricia *et al.*, 2012) (Chlohex mouthwash) for the next 2 months. According to Fularisagamesh G, Revankar Siddharth, Shivnaikar Sachin Chlorhexidine has always been the best option in management in severe gingivitis in adolescent patients. A three month use of 0.12 % chlorhexidine approximately reduced 65% plaque, 77% gingival bleeding (Brightman *et al.*, 1991; Anderson *et al.*, 1997).

Oral hygiene of this patients will be evaluated on the 1st day of patients selection, at the end of first month and at the end of second month. The oral hygiene will be evaluated on the basis of gingival index by Loe H and Silness in 1963 and Turesky-Gilmore-Glickman modification of the Quigley-Hein Plaque index. Gingival index by Loe H and Silness in 1963 is solely used for the purpose of assessing the severity of gingivitis. Mouth mirror and periodontal probe was used to assess the gingival index. The tissues surrounding each tooth are divided into four gingival scoring units and the score was recorded. The teeth and gingival was dried lightly with a blast of air and cotton balls. Turesky-Gilmore-Glickman modification of the Quigley-Hein Plaque index is a plaque measurement that focused on the gingival third of the tooth surface. The facial surfaces of the anterior tooth was examined using a basic fuchsin mouthwash as a disclosing agent. Numerical score was used from 0 to 5. This index was modified to emphasize the differences in plaque accumulation in the gingival third of the tooth. Mouth mirror and disclosing agent was used for examination. Plaque is assessed on the labial, lingual and buccal surfaces of all the teeth after using a disclosing agent. This index provides a comprehensive method for evaluating anti-plaque procedures.

Both these indices were recorded in all 150 patients on the first day, at the end of first month and at the end of second month and then the recorded data is compared for evaluating the oral hygiene of patients undergoing orthodontic treatment.

Inclusion: Patients undergoing fixed orthodontic treatment.

Exclusion: Patients with any systemic disorder. Patients with any other systemic disorder were not used as the disease itself may worsen the oral hygiene irrespective of the maintenance and this might affect the objective and results of the study.

RESULTS

The oral hygiene was evaluated of the patients in all three groups for three months at regular interval and the following data was recorded. After comparing the findings and the indices recorded in table I, table II and table III it shows that the gingival index and plaque index did show increase in the value in all 3 group of patients but showed maximum increase in group A patients and the oral hygiene was better maintained in group C patients as compared to group B. In group A patients there was significant increase in the gingival index and

the plaque index in the monthly examinations which showed that the patients could not maintain a better oral hygiene with their normal aids. In group B patients, the gingival and plaque index did increase with monthly examinations but was lower than that in group 1 patients. In group C patients the increase in the gingival index and plaque index was reduced considerably as compared to group 1 and group 2 patients. After comparing the findings and the indices recorded in table 1, table 2 and table 3 it shows that the gingival index and plaque index did show increase in the value in all 3 group of patients but showed maximum increase in group A patients and the oral hygiene was better maintained in group 3 patients as compared to group A and group B patients. The line chart and bar graph represents the same values in a pictorial manner as seen in Figure 1, Figure 2 and Figure 3.

DISCUSSION

The main aim of this study is to evaluate oral hygiene maintenance in patients with fixed orthodontic appliances and evaluating the effectiveness of Bass tooth brushing method in conjugation with 0.12% Chlorhexidine mouthwash on the oral hygiene of patients with fixed orthodontic appliances. Being able to exercise proper control over dental plaque and periodontal health while avoiding inflammation and bleeding remains a great challenge both for the dentist, who need to assess, guide and treat his/her patients, and for patients, who are largely responsible for maintaining their own health. In the case of orthodontic patients, this challenge is even greater. In fixed orthodontic treatment, plaque retention surfaces are increased and, as a result, most patients are confronted with hygiene difficulties, which eventually cause elevated plaque indices. Accumulation of plaque causes gingivitis causing rise in gingival and plaque indices (Farhad Atassi *et al.*, 2010; Loe, 1965). patients undergoing orthodontic treatment have to frequently visit the dentist making it possible for them to promote or instruct oral hygiene measures to the patient. Orthodontist should be aware of their patients oral hygiene problems since one of the main goals of orthodontics is to achieve dental and skeletal harmony while preserving healthy teeth and support surfaces (Priscila Ariede Petinuci Bardal *et al.*, 2011). Oral hygiene evaluation in orthodontic patients is done as it may lead to plaque accumulation leading to periodontal diseases (Fularisagamesh). If patients suffer from periodontal diseases during the orthodontic treatment than it might lead to gingival recession and bone loss which further affect the forces applied on the tooth during the treatment. Orthodontic treatment can be continued if the remaining bone and periodontium are healthy (Boyd, 2013; Wennstrom, 1996). Thus for long term successful treatment the oral hygiene should be maintained including professional care and self instructions for home care (Alkan, 2007). It is clear from this study that patients should use 0.12% Chlorhexidine mouthwash in conjugation with bass tooth brushing technique in order to maintain oral hygiene for patients undergoing orthodontic treatment. Bass tooth brushing technique emphasizes the sulcular placement of the bristles, removing the plaque not only from the gingival margin but also subgingivally. Brushing technique has the cleaning efficiency can reach a depth of 0.5 mm subgingivally (Patricia *et al.*, 2012). There is a very significant reduction of plaque percentage in the group that performed the Bass method.⁹ Chlorhexidine has always been the best option in management in severe gingivitis in adolescent patients. A three month use of 0.12 % chlorhexidine approximately reduced 65% plaque, 77% gingival bleeding (Fularisagamesh *et al.*, 2013). Chlorhexidine showed positive results in maintaining oral hygiene (Brightman, 1991; Anderson, 1997).

Conclusion

It is evident that patients wearing orthodontic appliances have a problem in maintaining good oral hygiene. Educating and motivating these patients to maintain their oral health and providing recommendations for oral home care aids to improve their compliance remains the cornerstone for achieving optimal oral hygiene results. Patients must gain an understanding of what their treatment may be like and what their responsibilities are. Therefore based on the study patients undergoing orthodontic treatment should be advised to use 0.12% of

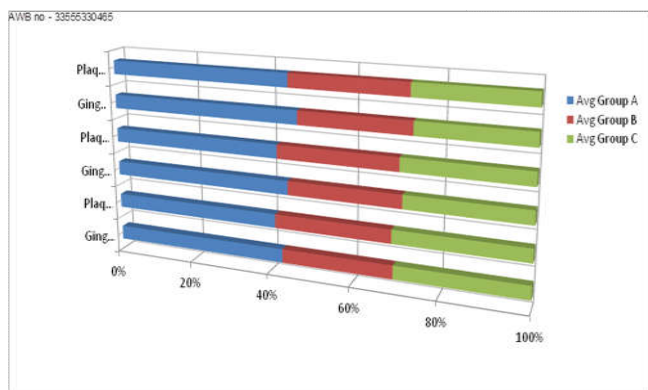


Figure 1.

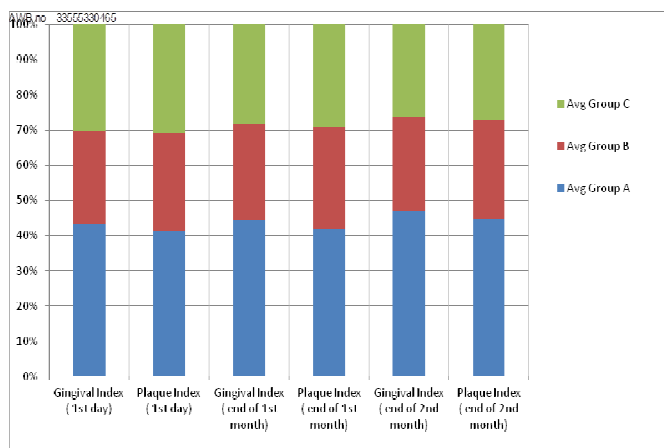


Figure 2.

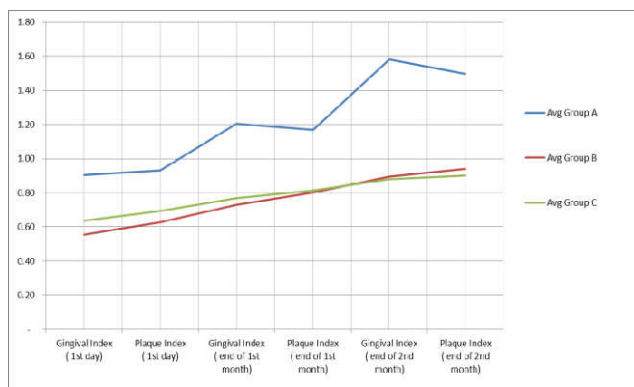


Figure 3.

Chlorhexidine mouthwash in conjugation with Bass tooth brushing technique for oral hygiene maintenance.

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