

Assessment of Oral Hygiene Behavior during Fixed Orthodontic Treatment in Patients Visiting Indira Gandhi Government Dental College, Jammu

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Abstract

Objective: To assess oral hygiene behavior among patients undergoing fixed orthodontic treatment.

Material and Method: One hundred orthodontic patients (37 males and 63 females) undergoing fixed orthodontic treatment in the Department of Orthodontics Indira Gandhi Government Dental College, Jammu were studied. Patients were asked to fill the provided questionnaire regarding the reason for opting orthodontic treatment, oral hygiene behavior after placement of fixed orthodontic appliances. The result was statistically analyzed using SPSS software version 20 for interpretation of data.

Results: Most of the patients used orthodontic toothbrush and fluoridated toothpastes to maintain oral hygiene but frequency of brushing for majority of the subjects was only once. Majority of the females used interdental brush and floss (57.14% and 33.33% respectively) regularly whereas majority of the males (78.37%) used mouthwash as a supplemental oral hygiene aid. There was no statistically significant gender difference with the selection of oral hygiene products.

Conclusion: Patients undergoing fixed orthodontic treatment are required to be educated and motivated to maintain their oral health. Orthodontists should emphasize on increasing the awareness of the patients towards maintaining oral hygiene with various oral hygiene measures to prevent dental caries and periodontal disease during fixed orthodontic treatment.

Key words: Fixed Orthodontic treatment, Oral hygiene behavior, Orthodontics, Jammu

INTRODUCTION

Patient undergoes orthodontic treatment to enhance esthetics, function, and increase self esteem. However, fixed orthodontic therapy is often associated with various risk factors like white spot lesions (enamel demineralization), tooth decay, marginal gingivitis, gingival enlargement. Studies done in the past have shown that orthodontic therapy can lead to respective risk factors.^[1,2] Excessive plaque retention adjacent to brackets and attachments is the cause of this white spot lesion.^[3]

One of the major and most common challenges in prevention within the field of oral health is the control of plaque and, consequently, the control of dental caries and gingival inflammation.^[4]

Fixed orthodontic appliances with bands, coils, elastics, or- thodontic archwires, and direct bonding of brackets influence the accumulation of dental plaque.^[5,6]

Various studies evaluated and compared the effectiveness of various plaque elimination methods like manual or electric toothbrushes on plaque elimination for patients undergoing orthodontic treatment,^[7-10] whereas some of them evaluated the efficiency of toothpastes and mouthwashes with different ingredients, on gingival health and plaque elimination.^[11-16]

Hence, it is a challenge for the orthodontist to maintain proper oral hygiene in patients undergoing fixed orthodontic

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treatment to prevent various risk factors associated with the accumulation of dental plaque. Thus the purpose of the present study is assessment of oral hygiene behavior among patients undergoing fixed orthodontic treatment.

MATERIALS AND METHOD

One hundred orthodontic patients (37 males and 63 females) undergoing fixed orthodontic treatment in the Department of Orthodontics Indira Gandhi Government Dental College, Jammu were studied. Patients were asked to fill the provided questionnaire regarding the reason for opting orthodontic treatment, oral hygiene behavior after placement of fixed orthodontic appliances. The result was statistically analyzed using SPSS software version 20 for interpretation of data. The questions regarding the selection of toothbrush, toothpaste and supplemental oral hygiene products, frequency of brushing and oral hygiene education, as received from orthodontist.

RESULTS

The results of our study showed that out of total 100 subjects undergoing fixed orthodontic treatment majority of the males and females (54.05% and 55.5% respectively) chose orthodontic toothbrush to maintain oral hygiene, followed by 21.6% males and 23.8% females choosing ultrasoft tooth brush (Table 1). The results of our study showed that 45.94% males and 52.38% females used to brush once a day followed by 32.43% males and 30.15% females who used to brush twice a day. A lesser percentage of 21.6% and 17.46% of males and females used to brush after every meal (Table 2). Table 3 shows that 78.4% of males and 74.6% females used fluoridated toothpaste in comparison with 21.6% males and 25.4% females who used non-fluoridated toothpastes. Table 4 shows that during orthodontic treatment, majority of the females i.e. 57.14 % used interdental brush regularly whereas 37.8% of males use interdental brush occasionally.

DISCUSSION

Orthodontic treatment helps to improve the patient's self esteem, facial aesthetics and masticatory functions. [17,18]

In spite of various advantages of fixed orthodontic appliances they were found to contribute towards increased plaque accumulation and if proper oral hygiene measures were not implemented it will lead to gingivitis, dental caries, and halitosis. [19,20]

In the present study, majority of the males and females used orthodontic toothbrush, which is in accordance

Table 1: Oral hygiene behavior on basis of selection of toothbrush

Selection of tooth brush	Males (%) n=37	Females (%) n=63
Ultra Soft tooth brush	8 (21.6)	15 (23.8)
Medium	7 (18.9)	10 (15.87)
Hard	2 (5.40)	3 (4.76)
Ortho	20 (54.05)	35 (55.5)

P=0.9768 (statistically insignificant)

Table 2: Oral hygiene behavior on basis of frequency of brushing

Frequency of brushing	Males (%) n=37	Females (%) n=63
Once	17 (45.94)	33 (52.38)
Twice	12 (32.43)	19 (30.15)
After every meal	8 (21.6)	11 (17.46)

P=0.8008 (statistically insignificant)

Table 3: Oral hygiene behavior on basis of frequency of brushing

Selection of tooth paste	Males (%) n=37	Females (%) n=63
Fluoridated	29 (78.4)	47 (74.6)
Non- Fluoridated	8 (21.6%)	16 (25.4)

P=0.6696 (statistically insignificant)

with the findings of study done by Anuwongnukroh N *et al.* [21] However certain studies showed conflicting results regarding the effectiveness of the orthodontic toothbrush in reducing plaque when compared with conventional toothbrush. [22,23]

The results of our study showed that majority of the males and females brush only once a day which is contradictory with the findings of Anuwongnukroh N *et al.* [21] who found that majority of the subjects (44.8%) brushed their teeth twice a day, while the remaining brushed more than twice. Our study showed that majority of the subjects used fluoridated tooth pastes which is in agreement with other studies like 82% of the patients in one of the study used fluoridated toothpaste, whereas 6.7% of the samples did not use fluoridated toothpaste. [21] The results of the present study showed that majority of the females used interdental brush and dental floss regularly as a supplemental oral hygiene aid whereas males used mouth wash more in comparison to other supplemental oral hygiene products. [24-28]

The studies done with the use of oral irrigator are very sparse and further studies are required to prove its efficacy.

As fixed orthodontic treatment reduces the efficiency of the patient to maintain oral hygiene, it is important for the orthodontist to give proper education regarding the use of oral hygiene aids and maintain the oral hygiene properly.

Table 4: Oral hygiene behavior on basis of usage of supplemental oral hygiene products

	Interdental brush		Dental floss		Mouth wash		Oral irrigator	
	Males (%) n=37	Females (%) n=63	Males (%) n=37	Females (%) n=63	Males (%) n=37	Females (%) n=63	Males (%) n=37	Females (%) n=63
Regular use	13 (35.13)	36 (57.14)	11 (29.7)	21 (33.33)	29 (78.37)	37 (58.73)	0 (0)	0 (0)
Occasional use	14 (37.8)	15 (23.8)	13 (35.13)	20 (31.7)	6 (16.2)	15 (23.80)	0 (0)	0 (0%)
No use	10 (27.02)	12 (19.04)	13 (35.13)	22 (34.9)	2 (5.4)	11 (17.5)	0 (0)	0 (0)

CONCLUSION

Patients undergoing fixed orthodontic treatment are required to be educated and motivated to maintain their oral health. Orthodontists should emphasize on increasing the awareness of the patients towards maintaining oral hygiene with various oral hygiene measures to prevent dental caries and periodontal disease during fixed orthodontic treatment.

REFERENCES

- O'Reilly MM, Featherstone JDB (1987) Demineralization and remineralization around orthodontic appliances: an in vivo study. *Am J Orthod Dentofacial Orthop* 92: 33-40.
- Bishara SE, Ostby AW (2008) White Spot Lesions: Formation, Prevention, and Treatment. *Seminars in Orthodontics* 14:174-182.
- Beyth N, Redlich M, Harrari D, Freidman M, Steinberg D (2003) Effect of sustained-release chlorhexidine varnish on *Streptococcus mutans* and *Actinomyces viscosus* in orthodontic patients. *Am J Orthod Dentofacial Orthop* 123: 345-348.
- Carvalho LEP, Granjeiro JM, Bastos JRM, Henriques JFC, Tarzia O. Clorexidina em Odontologia. *Rev Gaúcha Odontol.* 1991;39(6):423-7.
- McGlynn FD, LeCompte EJ, Thomas RG, Courts FJ, Melamed BG. Effects of behavioral self-management on oral hygiene adherence among orthodontic patients. *Am J Orthod Dentofacial Orthop.* 1987;91:15-21.
- Berglund LJ, Small CL. Effective oral hygiene for orthodontic patients. *J Clin Orthod.* 1990;24:315-320.
- Heasman P, Wilson Z, MacGregor I, Kelly P. Comparative study of electric and manual toothbrushes in patients with fixed orthodontic appliances. *Am J Orthod Dentofacial Orthop.* 1998;114:45-49.
- Clerehugh V, Williams P, Shaw WC, Worthington HV, Warren P. A practice-based randomised controlled trial of the efficacy of an electric and a manual toothbrush on gingival health in patients with fixed orthodontic appliances. *J Dent.* 1998;26:633-639.
- Thienpont V, Dermaut L R, Van Maele G. Comparative study of 2 electric and 2 manual toothbrushes in patients with fixed orthodontic appliances. *Am J Orthod Dentofacial Orthop.* 2001;120:353-360.
- Hickman J, Millett DT, Sander L, Brown E, Love J. Powered vs manual tooth brushing in fixed appliance patients: a short term randomized clinical trial. *Angle Orthod.* 2002;72:135-140.
- Olympio KPK, Bardal PAP, de M Bastos JR, Buzalaf MAR. Effectiveness of a chlorhexidine dentifrice in orthodontic patients: a randomized-controlled trial. *J Clin Periodontol.* 2006;33:421-426.
- Ogaard B, Alm AA, Larsson E, Adolffson U. A prospective, randomized clinical study on the effects of an amine fluoride/stannous fluoride toothpaste/mouthrinse on plaque, gingivitis and initial caries lesion development in orthodontic patients. *Eur J Orthod.* 2006;28:8-12.
- Pontier JP, Pine C, Jackson DL, DiDonato AK, Close J, Moore PA. Efficacy of a prebrushing rinse for orthodontic patients. *Clin Prev Dent.* 1990;12:12-17.
- Ramaglia L, Sbordone L, Ciaglia RN, Barone A, Martina R. A clinical comparison of the efficacy and efficiency of two professional prophylaxis procedures in orthodontic patients. *Eur J Orthod.* 1999;21:423-428.
- Burch JG, Lanese R, Ngan P. A two-month study of the effects of oral irrigation and automatic toothbrush use in an adult orthodontic population with fixed appliances. *Am J Orthod Dentofacial Orthop.* 1994;106:121-126.
- Attarzadeh F. Water irrigating devices for the orthodontic patient. *Int J Orthod.* 1990;28:17-22.
- Kiyak HA, Reichmuth M (2002) Body image issues in dental medicine. *Body image: a handbook of theory, research, and clinical practice.* New York: Guilford pp: 342-350.
- Ellis PE, Benson PE (2002) Potential hazards of orthodontic treatment- what your patient should know. *Dent Update* 29: 492-496.
- Artun J, Brobakken BO (1986) Prevalence of carious white spots a er orthodontic with multibonded appliances. *Eur J Orthod* 8: 229-234. 13.
- Morrow D, Wood DP, Speechley M (1992) Clinical effect of subgingival chlorhexidine irrigation on gingivitis in adolescent orthodontic patients. *Am J Orthod dentofac Orthop* 101: 408-413.
- Anuwongnukroh N, Dechkunakorn S, Kanpiputana R (2017) Oral Hygiene Behavior during Fixed Orthodontic Treatment. *Dentistry* 7: 457
- Williams P, Fenwick A, Schou L, Adams W (1987) A clinical trial of an orthodontic toothbrush. *Eur J Orthod* 9: 295-304. 18.
- Kiliçoğlu H, Yildirim M, Polater H (1997) Comparison of the effectiveness of two types of toothbrushes on the oral hygiene of patients undergoing orthodontic treatment with fixed appliances. *Am J Orthod Dentofacial Orthop* 111: 591-594.
- Imai P, Yu X, MacDonald D (2012) Comparison of interdental brush to dental floss for reduction of clinical parameters of periodontal disease: A systematic review. *Can J Dent Hygiene* 46: 63-78.
- Kiger RD, Nylund K, Feller RP (1991) A comparison of proximal plaque removal using floss and interdental brushes. *J Clin Periodontol* 18:681-684.
- Ishak N, Watts T (2007) A comparison of the efficacy and ease of use of dental floss and interdental brushes in a randomized split mouth trial incorporating an assessment of subgingival plaque. *Oral Health Prev Dent* 5: 13-18.
- Christou V, Timmerman MF, Van der Velden U, Van der Weijden FA (1998) Comparison of different approaches of interdental oral hygiene: interdental brushes versus dental floss. *J Periodontol* 69: 759-764.
- Baehni PC, Takeuchi Y (2013) Anti-plaque agents in the prevention of biofilm-associated oral diseases. *Oral Dis* 9: 23-29.

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