

# Tooth Wear and Need of Orthodontic Treatment: A study involving Prosthodontists and Restorative Specialists

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## ABSTRACT

**Background:** Studies are rare on association between tooth wear and need for orthodontic therapy.

**Aim:** To find out the frequency of tooth wear in patients who are in need for orthodontic patients.

**Study design & setting:** This prospective cross-sectional study was conducted at de'Mont Dental College, Lahore & PMC Dental Institute-FMU, Faisalabad.

**Methodology:** Two hundred orthodontic patients were selected and clinically examined to find out the frequency of tooth wear. There were no significant differences in the mean tooth wear values by IOTN groups.

**Conclusion:** It was concluded that the need for orthodontic treatment does not contribute to increased tooth wear.

**Keywords:** Wear; Orthodontics; IOTN; Need.

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## INTRODUCTION

Tooth wear is a non carious loss of tooth structure and is considered to be a normal physiological process with different mechanisms involved<sup>1</sup>. Different terms are used to refer to tooth wear: Attrition, erosion, abrasion and abfraction<sup>2</sup>. It is usually caused by tooth-to-tooth in cases of attrition<sup>3</sup>.

There are different causes of tooth wear and variety of mechanisms. Attrition, erosion and abrasion are type of tooth wears and reflect specific causative factors. Age, gender, strength of bite, oral habits such as Para-functions and mouth breathing, dietary factors, vertical facial proportions, type of malocclusion, teeth cleansing habits and type of malocclusion, all play important role in etiology of tooth wear<sup>4-8</sup>.

Loss of occlusal tooth substance can leads to loss of vertical dimension and can induce Para-functioning<sup>9</sup>. There are several other complications of tooth wear, such as, loss of esthetics, aging effects, loss of tooth structure, food impaction, dentine hypersensitivity, pulp exposure, temporomandibular joint related issues and atypical facial pain<sup>10-12</sup>.

Studies are limited on relationship between teeth wear and need for orthodontic treatment. Therefore, the objective of current study was to find out the frequency of tooth wear in patients who are in need for orthodontic patients.

## MATERIAL AND METHODS

This study was conducted at Orthodontic, Prosthodontic and Restorative departments of de'Mont dental college, Lahore & PMC Dental Institute-FMU, Faisalabad. The

duration of study was from 1.1.2017 to 1.1.2019. The design of study was prospective cross-sectional design.

Two hundred orthodontic patients were selected to find out the frequency of tooth wear (attrition, abrasion, abfraction). The selection criteria included: Age 12-24 years, both the genders, in need of orthodontic treatment. Patients with history of orthodontic treatment, teeth fracture, history of dental trauma, systemic diseases, dental anomalies like amelogenesis imperfecta and dental fluorosis were excluded.

Orthodontic patients were clinically examined in standardized lighting conditions to find out the frequency of tooth wear (attrition, abrasion, abfraction) by applying Hooper index<sup>13</sup>. The subjects were considered to be in need of orthodontic treatment if they were in grade 4 to 5 of IOTN. The following were considered as tooth wear, wear facets on cusps or any occlusal/incisal aspect, non-carious tooth surface loss in form of cupping lesions, non-carious tooth surface loss in form of fractures posterior fillings, and non-carious tooth surface loss in form of sharp v-shape notches on cervical surfaces.

Kappa test was applied for reliability. Full mouth mean tooth-wear score was calculated and Parametric/non-Parametric tests were applied as appropriate.

## RESULTS

The data was found to be reliable. The kappa values were fair. There were no significant differences for tooth wear for any gender or for any IOTN group. Thus no significant differences in tooth wear in relation to need for orthodontic treatment was found (Table I).

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Table 1: Mean tooth wear scores by IOTN (Mean  $\pm$  SD)

Teeth	IOTN $\leq$ 4	IOTN $\geq$ 4	P
Incisors	2.12 $\pm$ 0.45	2.32 $\pm$ 0.48	0.121
Canines	2.23 $\pm$ 0.34	2.32 $\pm$ 0.76	0.711
Premolars	2.54 $\pm$ 0.67	2.53 $\pm$ 0.55	0.811
Molars	3.01 $\pm$ 0.12	3.05 $\pm$ 0.89	0.321
Whole mouth	2.84 $\pm$ 0.78	2.76 $\pm$ 0.21	0.211

## DISCUSSION

Attrition, erosion and abrasion are type of tooth wears. Studies are limited on relationship between teeth wear and need for orthodontic treatment. Therefore, the objective of current study was to find out the frequency of tooth wear in patients who are in need for orthodontic patients.

In the present study orthodontic patients were clinically examined in standardized lighting conditions to find out the frequency of tooth wear (attrition, abrasion, abfraction) by applying Hooper index<sup>13</sup>. The Hooper index was used because of its qualitative and descriptive nature. The mean values were taken to avoid multiple variables.

In the present study no sex differences were found. This is in agreement with the findings of previous studies were no sex differences were found<sup>14,15</sup> but in contrast with the findings of previous studies were sex differences were found<sup>16-18</sup>.

In the present study the subjects were considered to be in need of orthodontic treatment if they were in grade 4 to 5 of IOTN. There were no significant differences for tooth wear for any IOTN group.. This might be due to the fact that occlusal factors don not predispose to dental wear. Results are in agreement with the findings of other studies<sup>19,20</sup>.

Thus it was found that the need for orthodontic treatment does not contribute to increased tooth wear but further large scale studies with better methodology are suggested.

## CONCLUSION

The need for orthodontic treatment does not contribute to increased tooth wear.

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