Original Research Article

GINGIVAL RECESSION AMONG THE PATIENTS WEARING FIXED BRACES VISITING DENTAL COLLEGE OF LARKANA

ABSTRACT

Aim: To evaluate gingival recession among the patients wearing fix braces visiting dental college of Larkana.
Study design: Descriptive Cross Sectional
Place and Duration of Study: Department of Prosthodontics, Liaquat Medical University Hospital from December 2017 to November 2018.
Methodology: This study was carried out at Bibi Aseefa Dental College Larkana. The patients were recruited with consecutive sampling technique. The gingival recession was evaluated clinically using Miller`s classification. A structured questionnaire was used for the information relevant to oral hygiene status. Data was analyzed using SPSS version-16.Chi-square test was applied between the gender and gingival recession at 95% confidence interval.
Results: Males were 23% and females were 77%. The mean age was 21.03±4.684.The class-I recession was observed in 6% patients and Class-II was in 2% patients. The gingival recession was observed in 8.5% patients. There was significant relationship between gingival recession and gender (p-value-0.018).

Conclusion: It is concluded that there was much patients facing the problem of gingival recession during treatment. There was significant association of gender and gingival recession.

Keywords: Gingiva recession, Orthodontic treatment, Periodontal problems

1. INTRODUCTION

Gingival recession is a condition in which marginal gingival moves apically from its normal position beyond the cement-enamel junction. It is found in both developed as well as in developing countries[1].The aetiology of gingival recession is multifactorial. Several factors may play a role in recession development, i.e., excessive or inadequate teeth brushing, destructive periodontal disease, tooth mal-positioning, alveolar bone dehiscence, thin and delicate marginal tissue covering a non-vascularized root surface, high muscle attachment and frenal pull, occlusal trauma, lip piercing and iatrogenic factors related to reconstructive, conservative, periodontal, orthodontic or prosthetics treatment[2]. Periodontic-orthodontic interrelationship has been subject to a lot of investigation until today, and it is still, a controversial issue. Malocclusion has been shown to affect periodontal health[3]
Among these etiologic factors, a strong correlation was found between the severity and extent of gingival recession to past orthodontic treatment, and it was suggested that orthodontic tooth movement, especially beyond the labial or lingual alveolar plate, may lead to gingival recession[4]

Active orthodontic treatment/retention phase can affect through different mechanisms. Displacement of teeth, particularly the movement of teeth to position outward the labial, lingual movement can also affect due to thinning of alveolar bone plate. Many practitioners use fixed retainers in the anterior part of mandible and maxilla which may induce recession-facilitative gingivitis[5]. The force induce tension through tooth movement can loss the tissue attachment by which tissue moves apically and crown exposure would be more[6]. In some models extensive bodily movement of teeth reduces the

alveolar bone height and causes the apical migration of gingiva[7]. The effects seen clinically following the insertion of orthodontic appliances into the oral cavity can contribute to chronic infection, inflammatory hyperplasia, irreversible loss of attachment (permanent bone loss), and gingival recession. Although an association between orthodontic tooth movement and gingival recession has been mentioned in both the orthodontic and the periodontal literature, many of these studies are relevant to mandibular incisor teeth[8,9].The mechanical pressures of orthodontic appliances may evoke local soft tissue responses in the gingiva. The proximity of orthodontic appliances to the gingival sulcus, plaque accumulation, and the impediments they pose to oral hygiene habits further complicate the process of efficient salutary orthodontic care[10-12]. The available literature is limited so the purpose of this study is to evaluate gingival recession among the patients wearing fix braces visiting dental college of Larkana.

2. MATERIAL AND METHODS

This study was conducted from December 2018 to February 2020 at Department of Orthodontics, BADC Larkana. Anonymity and confidentiality of participants' data was maintained throughout the research. Written informed consent was obtained from all the participants prior to collection of data. Sample size was calculated by Raosoft online calculator as margin of error=5%, confidence interval = 95%, response distribution/ prevalence =10.3% (the prevalence of gingival recession after orthodontic treatment in mandibular incisor was 10.3%)[10]. The sample size calculated was 141. Patients undergoing fixed orthodontic appliance treatment having either gender with age range of 10-40 years were set as inclusion criteria. Patients of diabetic mellitus and not willing to participate in study were set as exclusion criteria.

2.1 Data collection procedure

Clinical examination was performed by the investigator in a good light on dental unit using disposable hand gloves, cotton, mouth mirror, dental explorer and CPTIN probe. The teeth were examined on their labial and lingual/palatal aspect. Gingival recession was observed clinically and classified by Miller's classification[13]. A structured questionnaire was used for asking the information relevant to oral hygiene status. Data was analyzed using SPSS version-23.0. The frequencies and percentages were calculated for the categorical variables like gender, duration of treatment, type of tooth brush used, frequency and type of movements during brushing. The mean and standard deviation was calculated for the continuous variables like age. The chi-square test was applied between the gender and recession to check the statistical difference. The p-value set as $P>0.05$.

3. RESULTS

In this study total 141 individuals were included. Males comprised of 23% and females of 77%. The mean age was 21.03±4.684. According to the duration of treatment, 45% patients had more than one year of time. Manual tooth brushes and ortho brushes were used by 95% and 5% patients respectively. Majority of the participants(47%) were using tooth brush twice a day. Up and down brushing technique was reportedly used by 62% of participants as shown in table-1.

Gingival position varied according to the depth. 6% were in Class-I and 2% were in Class-II according to miller`s classification (Figure-1).

The gingival recession was observed in 8.5% patients (Figure-2)

Of the 8.5% patients(showing gingival recession), the males constituted the 4.3% and the females 4.3%. There was significant relationship between gingival recession and gender (p-value-0.018) as shown in table-2.

Table-1 Descriptive statistics for different variables regarding gingival recession

VARIABLES	CHARCTERISTICS	FREQUENCY	PERCENTAGE%	Mean Age
Gender	Male	32	22.7	
	Female	109	77.3	
Duration of treatment	Less than 6 months	31	22	
	Less than 1 year	47	33.3	
	More than 1year	63	44.7	
Type of brush used	Manual brush	134	95	
	Ortho brush	7	5	
				21.03±4.684
Frequency of brushing	Not every day	3	2.1	
	Once a day	55	39	
	Twice a day	66	46.8	
	More than 2 times	17	12.1	
Type of movement during brushing	Up and down	87	61.7	
	Circular	19	13.5	
	Mixed	35	24.8	

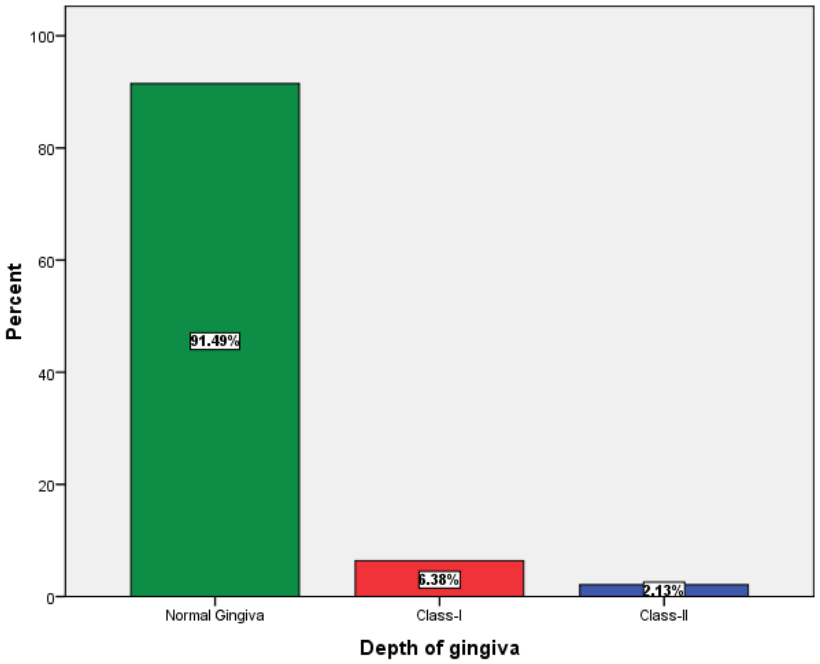

Fig.1. Descriptive Statistics For Depth Of Gingival Recession

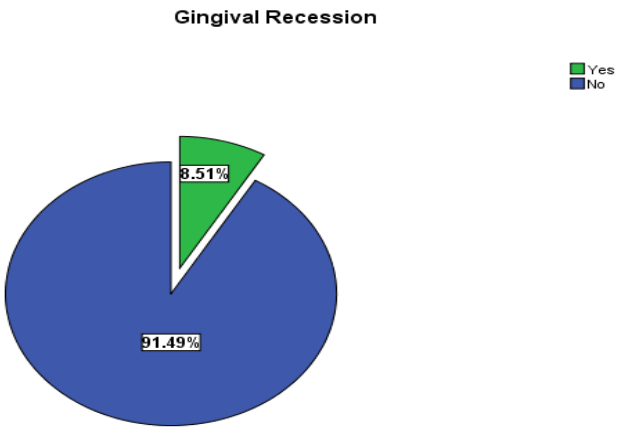

Fig.2. Prevalence of Gingival Recession

Table-2 Comparison of plaque score in gender

		Gingival Recession		Total	*p*-value
Gender		Yes	No		
	Male	6	26	32	
		4.3%	18.4%	22.7%	
	Female	6	103	109	0.018
		4.3%	73.0%	77.3%	
Total		12	129	141	
		8.5%	91.5%	100.0%	

4. DISCUSSION

An association between orthodontic tooth movement and gingival recession has been mentioned in both orthodontic and periodontal literature, with some reports arguing on behalf of a causal connection and others arguing against it[14-16]. In this study, gingival recession was observed in 9% patients having age range of 10-40 years which is in contradiction with the study results of Martin et al who had observed 64% prevalence in patients of 20-29 years[17]. Most studies which investigate gingival recession reported that periodontal tissue in younger patients has a more favorable response to orthodontic treatment than in older adolescents and adults[18-20]. Vassali *et al*. suggested that treatment duration, treatment type, the skeletal or dental relationship, age, sex or race did not have an influence on the development of recessions during treatment. The increasing frequency of recessions with increasing age was also observed in most other studies comparing orthodontically treated and untreated participants as well as those in different population groups[21-23].

The evaluation of gingival recessions in this study was carried out clinically according to the Miller classification. This method proved to be reliable, reproducible, and informative [18]. It has been shown that most cases of gingival recession, which occur during an orthodontic treatment, are seen in regions of the anterior upper and lower teeth. However we have examined all teeth surfaces of anterior as well as posterior segments. Oral hygiene maintenance methods were recorded for each patient. In this study, class I type of recession was observed more commonly which is in agreement with the studies conducted by Mythri S[24], Almeida *et al*[25]. It could be due to the presence of plaque and not using proper type and technique of toothbrushing.

There was a significant difference in prevalence of gingival recession between male and female patients of this study, which is in agreement with the study conducted by Gebistorf M et al [26]. However, our study results do not coincide with Renkema et al [27]. The difference could be due to the difference in age, population, duration of treatment and study design.

5. Conclusion

It is concluded that there were many patients facing the problem of gingival recession during treatment, however, it was at initial stages. So there is need of oral hygiene awareness among the patients. Additionally, proper oral hygiene instructions must be given to all patients throughout the treatment duration. There was significant inter-gender difference.

CONSENT (WHEREEVER APPLICABLE)

The written informed consent was taken from each patient prior to study. The confidentiality was maintained.

ETHICAL APPROVAL (WHEREEVER APPLICABLE)

The ethical permission was sought from the Ethical Review Committee (ERC) of the SMBBMU, Larkana, Pakistan.

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