



PREVALENCE AND ETIOLOGY OF GINGIVAL RECESSION

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ABSTRACT

Gingival recession and its sequelae like hyper sensitivity and poor aesthesis are frequently observed in patients. The occurrence and severity vary between populations. This study was conducted among 500 subjects attending Government Dental College, Thiruvananthapuram aged 15 years and above. Personal data and the data collected by examination of the oral cavity were recorded on the proforma and analyzed statistically. The results showed that 58% of the subjects were affected with gingival recession. Males showed a higher percentage of gingival recession (51.7%) than females (48.3%). A statistically significant increase was found in the prevalence of gingival recession with regard to age from 36.3% in the 15 to 25 years of age group to 100% after the age of 45 years. Gingival recession occurred most frequently in the maxillary first molars. Statistical analysis revealed that the most frequent etiological factor associated with gingival recession was malalignment of teeth (54.5%).

KEYWORDS : Gingival recession, prevalence, etiology.**INTRODUCTION**

Gingival recession is a commonly observed clinical phenomenon which may cause poor aesthesis and hyper sensitivity of the teeth due to the exposure of the roots.

Gingival recession is defined as an apical shift of the gingival margin from its physiologic position, 1 to 2 mm coronal to the cemento enamel junction, causing pathologic exposure of the root surfaces.¹ Recession may be localized to a tooth or a group of teeth or may be generalized throughout the mouth.

The various factors implicated in the etiology of gingival recession are tooth malposition,^{2,3,4,5,6} brushing techniques,^{2,6,7} disuse,⁶ high frenum or muscle attachment,^{2,6,7} inflammatory periodontal disease,^{2,8} occlusal trauma,^{2,6} local irritants,⁶ aging,^{6,7,8,9} orthodontic tooth movement¹⁰ and surgical therapy for pocket elimination^{11,12}.

Several aspects of gingival recession make it clinically significant. Exposed root surfaces are susceptible to caries.^{13,14} Wearing away of the cementum exposed by recession leaves an underlying dentinal surface that is extremely sensitive, particularly to touch^{11,15}. Interproximal recession creates spaces in which plaque, food and bacteria can accumulate. Lengthening of the clinical crown may interfere with the cosmetic requirements in some especially in the anterior region of the mouth.

Gingival recession was a common finding among the patients attending the outpatient department of Government Dental College, Thiruvananthapuram. Most of the patients came with sole problem of gingival recession and its various sequelae. Despite the frequent observation in adult subjects, the occurrence of gingival recession presents considerable differences between study populations. Limited amount of prevalence and etiology related studies on gingival recession have been carried out in Kerala. the

aim of the present study was to determine the prevalence and to explore probable etiological factors of gingival recession.

MATERIALS AND METHODS

Patients attending Outpatient Department of Dental College, Thiruvananthapuram were selected for this investigation. 500 subjects including males and females aged 15 years and above were examined using the random sampling technique. The sample was divided into 4 groups by age classification 15-25 years, 26-35 years, 36-45 years and above 45 years. Personal data including age, sex, occupation, diet, income, oral hygiene habits, and history of previous gingival surgery were recorded on the proforma by the operator. Examination of the oral cavity was performed throughout by the operator with the patient seated in a dental chair. Wasting diseases of the teeth, alignment of the teeth in the arch, missing teeth, frenal and muscle attachments, trauma from occlusion, toothbrush trauma, denture and clasp irritation, restoration, food impaction, mobility of teeth, calculus, plaque, inflammation of the gingiva, visible exposure of the root surface, and periodontal pocket depth in millimeters of involved teeth were carefully evaluated.

The data using the parameters gingival index (Loe and Silness),¹⁶ calculus index (Green and Vermillion),¹⁷ plaque index (Turesky-Gilmore-Glickman modification of the Quigley-Hein Plaque index),¹⁸ mobility index (Miller)¹⁹ were collected and statistically analyzed.

RESULTS

Out of the total 500 subjects examined, 290 (58%) were affected with gingival recession. Out of the 235 males, 150 (63.8%) and of 265 females, 140 (52.8%) had gingival recession. Males showed a higher percentage of gingival recession than females, which is statistically significant ($p < 0.02$). Frequency of recession increased from youngest to oldest age group in both sex, which is found statistically highly significant ($p < 0.001$) (Table 1).

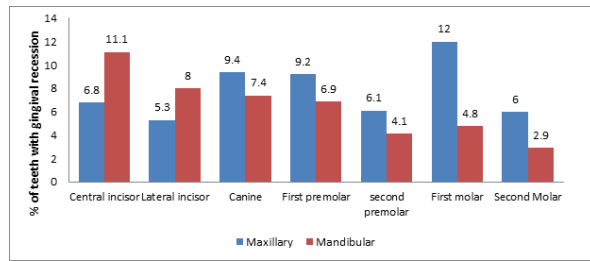
Table-1 Age and sexwise distribution of subjects affected

Age group	Male			Female			Total		
	Total Number	With recession	%	Total Number	With recession	%	Total Number	With recession	%
15- 25	115	45	39.1	119	40	33.6	234	85	36.3
26-35	64	50	78.1	89	47	52.8	153	97	63.4
36-45	32	31	96.8	41	37	90.2	73	68	93.2
Above 45	24	24	100	16	16	100	40	40	100

Age and sexwise distribution of teeth with gingival recession also showed that frequency of recession increased from youngest age group to oldest one in both sex which is also statistically highly significant ($p < 0.001$). The most frequently affected tooth was maxillary first molar (12%), followed by mandibular central incisor

(11.1%), maxillary canines (9.4%), maxillary first premolars (9.2%), mandibular lateral incisor (8%), mandibular canine (7.4%), mandibular first premolar (6.9%). The least affected tooth was mandibular second molar (2.9%) (Figure-1).

Figure-1 Percentage of teeth with recession according to the type of teeth



Of the total 3355 tooth surfaces affected, 2033 (60.6%) were facial and 1322 (39.4%) were lingual surfaces. For each age group in both sex, the most frequently affected surface was facial. In males, of the total surfaces affected 61% were facial and 39% were lingual, while that for females were 59.9% and 40.1% respectively (Table-2).

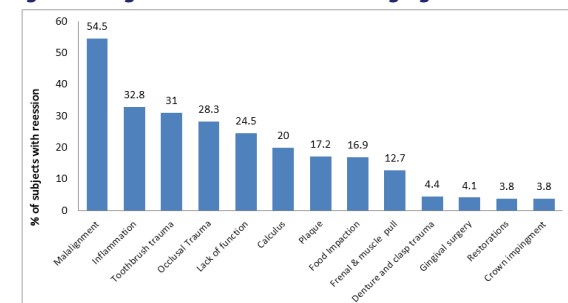
Table-2. Comparison of surfaces affected according to age and sex.

Age group		Male		Female		Total	
		Facial	Lingual	Facial	Lingual	Facial	Lingual
15-25 years	No	159	63	129	58	288	121
	%	71.6	28.4	69.0	31.0	70.4	29.6
26-35 years	No	330	142	190	114	520	256
	%	69.9	30.1	62.5	37.5	67.0	33.0
36-45 years	No	348	260	260	171	608	431
	%	57.2	42.8	60.3	39.7	58.5	41.5
Above 45 years	No	425	341	192	173	617	514
	%	55.5	44.5	52.6	47.4	54.5	45.5
Total	No	1262	806	771	516	2033	1322
	%	61.0	39.0	59.9	40.1	60.6	39.4

Considering the oral hygiene habit, it was seen that percentage of subjects having gingival recession was more marked in finger and charred husk users (74.8%) than in toothbrush and paste/powder users (53.2%). Out of the 290 subjects with recession, 158 (54.5%) had gingival recession in malaligned teeth. Out of 1045 malaligned teeth, 446 (42.7%) had gingival recession. The percentage of malaligned teeth with recession increased from younger to the older age group in both sex. Of the 290 subjects with gingival recession 95 (32.8%) showed gingival inflammation. The number of subjects with gingival recession associated with inflammatory periodontal disease increased with age in both sex. 90 (31%) subjects out of 290 had gingival recession associated with toothbrush trauma. The most common etiologic factor causing gingival recession was malalignment of teeth followed by inflammation, toothbrush trauma, occlusal trauma, lack of function, calculus, plaque, food impaction and frenal and muscle pull (figure-2).

25 subjects had coronally placed mandibular labial frenum out of which 19 (76%) had recession in the lower incisors. The maxillary frenum was coronally placed in 15 subjects out of which only 4 (26.7%) had recession.

Fig-2 Etiological factors associated with gingival recession



DISCUSSION

It is evident from the dental literature that gingival recession is a common clinical finding in adults. The present study conducted among patients attending Government Dental College, Thiruvananthapuram was to determine the prevalence of gingival recession and correlate it with apparent clinical etiological factors such as malalignment, toothbrush trauma, occlusal trauma, inflammatory periodontal diseases, high frenal or muscle attachment, calculus, plaque, lack of function, surgical therapy for pocket elimination, crown impingement, and faulty restorations.

Of the total 500 subjects examined, 290 had gingival recession and the prevalence rate was 58%. Gorman⁶ reported a 78.6% prevalence among subjects in Ohio state. Chrysanthakopoulos²⁰ in his study among Greek adult population between the age of 18 to 77 years reported a prevalence of 53.5%. A study conducted by Anarthe et al²¹ showed a 76% prevalence of gingival recession.

In this study, males showed a greater prevalence of gingival recession (51.7%) than females (48.3%). This finding was in agreement with the studies conducted by Dodwad² and Gorman.⁶ But this was not consistent with the findings reported by Ainamo et al²² according to which girls were affected more at 7th and 12th year and at 17th years, recession was equally common in both sex.

With regard to age, the prevalence to gingival recession increased from 36.3% in the 15 to 25 age group to 100 % after the age of 45 years. This finding was in corroboration with the studies by Gorman,⁶ Safati,⁸ Marini,⁹ Mohan¹¹ and Loe.²³ The increased prevalence of gingival recession may be due to the fact that the tissues are subjected to the influence of predisposing factors for a longer time. Age changes in the connective tissue like atrophic changes and retarded fibroblastic activity may also contribute to the increased prevalence of gingival recession.²⁴

It was noted that facial surfaces of teeth were affected in larger proportions than the lingual surfaces in all age groups and in both sex. This is in agreement with the data presented by Gorman⁶ and Mohan.¹¹ This may be due to the improper brushing technique. While brushing more force is applied on the facial surfaces than on the lingual surfaces. High frenal and muscle attachments on the buccal surfaces also lead to increased recession.

Another finding in this study showed that gingival recession occurred most frequently in the maxillary first molar (12%), followed by mandibular central incisor (11.1%), maxillary canines (9.4%), maxillary first premolars (9.2%), mandibular lateral incisor (8%), mandibular canine (7.4%), mandibular first premolar (6.9%). These findings differed from other studies which have shown the highest frequency of gingival recession in mandibular anterior teeth,^{2,5,21} maxillary canines and premolars,⁶ maxillary canines and mandibular central incisors¹¹ and maxillary and mandibular first and second molars.²⁰

Different tooth cleansing methods were correlated with prevalence of gingival recession. It was significantly more marked in finger and charred husk users than in toothbrush and paste/powder users. This may be due to the abrasive action of the coarse charred husk. This was consistent with the finding reported by Pathak.²⁵

A number of factors acting singly or in combination produce or affect gingival recession. Here the factors noted were malpositioning of teeth, inflammatory periodontal disease, toothbrush trauma, frenal and muscle pull, calculus, plaque, food impaction, lack of function, crown impingement, occlusal trauma, denture and clasp trauma, overhanging restorations and gingival surgery. Susceptibility to recession is influenced by the position of the teeth in the arch. On rotated, tilted or facially or lingually displaced teeth, the bony plate is thinned or reduced in height. The gingival margins are thus positioned in accordance with tooth alignment and with bone thickness and height. When the thinner and more delicate

tissues are subjected to mechanical trauma and plaque, destruction of bone and gingiva may take place and results in recession.

It was found that 54.5% of the subjects with gingival recession had malaligned teeth. The percentage of subjects having malaligned teeth showing recession increased from 31.8% in the youngest age group to 96.5% in the oldest age group. Gorman⁶ reported that 91% of patients with recession had malposed teeth. Mohan¹¹ reported that only 2% of receded teeth had malposition.

It was observed that 28.3% of subjects had recession in 322 teeth associated with occlusal trauma. The association between occlusal trauma and gingival recession was reported by Dodwad,² Stoner,⁴ Gorman⁶ and Mohan.¹¹

Of the 290 subjects having recession 90 (31.0%) had recession associated with toothbrush trauma. Males had a greater frequency of recession than females. Gorman⁶ and Toker⁷ reported a positive correlation between recession and toothbrush trauma.

Clasp and denture trauma showed an association with recession in 4.4% of subjects having recession. This finding was in accordance with Gorman.⁶ The recession may be due to the mechanical irritation or pressure traumatizing the gingiva.

Of the 290 subjects with recession 12.7% had recession associated with frenal and muscle pull. Pathak²⁵ in his study reported that 14% of the subjects had gingival recession associated with high muscular attachment.

CONCLUSION

This study concludes that the prevalence and extent of gingival recession increased with age. Males showed a greater frequency of gingival recession than females except in the oldest age group, where both sex showed the same frequency of recession. Malalignment of teeth was found to be the most frequent etiological factor associated with gingival recession. Gingival recession was found more frequently on the upper first molar and on the facial surfaces.

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