Percentage, Severity and Etiologies of Clinically Visible Gingival Recession in Adult Population of Sangli District- A Pilot Study

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Abstract:

Introduction: Due to increasing patients for a harmonious smile, a common concern in periodontology is solving gingival aesthetic problems, mainly gingival recession (GR), which has gained the status of discomfort in esthetic and cosmetic dentistry. Even though gingival recession may occur without any symptoms it can give rise to pain from exposed dentine, patient concern about loss of the tooth, poor esthetics or root caries. The denuded root surfaces cause deterioration in the esthetic appearance, dentin hypersensitivity, and inability to perform proper oral hygiene procedures. Hence the present study is conducted to assess percentage, severity and possible etiologies of clinically visible gingival recession in adult population of sangli district.

Material and methods: A cross-sectional study was carried out on 210 adolescent. All the patients were examined in the OPD Dept of Periodontology in college of Bharati Vidyapeeth dental college and hospital sangli. The questionnaire directed to patients had questions referring to gender, age, occupation and socioeconomic status. After receiving the answers from the patients, the patients were examined clinically. Clinical parameters: Gingival index, Russell's periodontal index, simplified oral hygiene index, visible clinical attachment loss, width of attached gingiva, class of gingival recession (according to Millers 1985 classification), number of teeth with gingival recession were examined.

Results: The results of this study proved that neglecting oral hygiene is the most common cause behind increase the gingival recession among adolescents.

Conclusion: To summarize, GR is a highly prevalent condition among population, and there is insufficient dental health awareness among the sangli district population. The designation of educational program for periodontal health care is mandatory to decrease the risk of gingival recession among population specially the adolescents.

Keywords: etiology, plaque , recession

Introduction -

Due to increasing patients for a harmonious smile, a common concern in periodontology is solving gingival aesthetic problems, mainly gingival recession (GR), which has gained the status of discomfort in esthetic and cosmetic dentistry. Gingival recession has been defined as an apical shift of the gingival margin over the cementoenamel junction [CEJ] and the exposure of the root surface to the oral environment[1].

The aetiology of GR is multifactorial and is always the result of more than one factor acting together such as anatomical [alveolar bone dehiscence, high muscle attachment, occlusal trauma, frenal pull, thin gingival biotype], inflammatory [destructive periodontal disease, presence of dental plaque and supra/subgingival calculus, inadequate teeth brushing], traumatic factors [vigorous oral hygiene habits, oral piercing] and iatrogenic factors related to reconstructive, conservative, orthodontic, periodontological or prosthetic treatment[2].

Epidemiological studies show that more than 50% of subjects in the populations studied have one or more sites with recession of at least 1 mm, buccal sites being most affected. Higher levels of recession have been found in males than females[3].

Even though gingival recession may occur without any symptoms it can give rise to pain from exposed dentine, patient concern about loss of the tooth, poor esthetics or root caries. The denuded root surfaces cause deterioration in the esthetic appearance, dentin hypersensitivity, and inability to perform proper oral hygiene procedures.[4]

Löe et al. stated a hypothesis that there was more than one type of gingival recession and probably several factors determining the initiation and development of these lesions on the basis of the occurrence and levels of gingival recession in two cohorts of individuals participating in parallel longitudinal studies in Norway (1969-1988) and Sri Lanka (1970-1990), covering the age range from 15 years to 50 years.[5]

Hence the present study is conducted to assess percentage, severity and possible etiologies of clinically visible gingival recession in adult population of sangli district.

The present study aims at analyzing the prevalence severity and etiologies of clinically visible gingival recession in adult population attending dental OPD of Department of Periodontology in Bharati Vidyapeeth dental college sangli. The objectives of study was to assess the percentage, extent and severity of gingival recession in a sample and to assess the association of potential risk indicators with the occurrence of gingival recession in this population.

Materials and methods-

A cross-sectional study was carried out on 210 adolescent. All the patients were examined in the OPD Dept of Periodontology in college of Bharati Vidyapeeth dental college and hospital sangli. Total 210 subjects within age range of 18 to 50 years attending OPD of Department of Periodontology was enrolled in the study. Based on pilot study conducted assumed precision for current study was set at 5% and confidence interval at 95%. With previous prevalence of 84%, sample size requirement of 210 is evident. Verbal consent for data collection was obtained from the individuals who participated in the study through clinical examination and questionnaire approved from ethical research committee of college.

The questionnaire directed to patients had questions referring to gender, age, occupation and socioeconomic status. After receiving the answers from the patients, the patients were examined clinically. Clinical parameters: Gingival index, Russell's periodontal index, simplified oral hygiene index, visible clinical attachment loss, width of attached gingiva, class of gingival recession (according to Millers 1985 classification), number of teeth with gingival recession were examined. Inclusion criteria are within age range of 18-50 years, minimum number of 20 natural teeth, teeth that are fully erupted. Exclusion criteria include Patients unable to provide informed consent or comply with study protocol, individuals suffering from systemic diseases like diabetes mellitus, hypertension, Pregnant and lactating individuals, Physically or mentally disabled individuals, patient under medication like calcium channel blockers, anticonvulsants and immunosuppressive drugs. This study is approved from Ethical Committee, Bharati Vidyapeeth Medical College and Hospital, Sangli.

Result-

The study group comprised of total 210 subjects in that 128 males and 82 females with a mean age of 37.69 ± 6.9 years were included. The given population was divided into 3 groups i.e. lower, middle and higher group according to their respective income depending upon their color of ration card. Yellow color denotes below poverty line(below 15000)which is 35.2% , safron color denotes middle class(15000-01lakh) which is 41% and white color denotes higher classi.e.23.8% (more than 1 lakh and above) in given population. Prevalence of subjects with gingival recession is 69%. In total 2101 sites.

In a present study patients are asked questions on habits, brushing technique, smoking, tobacco chewing. Also in clinical examination plaque index and oral hygiene simplified index were recorded to assess overall oral hygiene of the patient. Russels periodontal index were recorded to assess periodontal disease. To assess mucogingival problems width of attached gingiva and vestibular depth was recorded. Also patient who are undergoing orthodontic therapy were included. These above parameters were recorded to assess percentage of severity and etiological factors for recession (table 1)

42.7% of severity of recession is seen with faulty brushing technique and in periodontitis patients. 42.7% is seen with periodontitis patients; 6.8% recession is seen with patients who are having habit of tobacco chewing, high frenal attachment is seen in 4.8%, 0.6% population is having inadequate vestibular

depth and 2.4% of recession is seen in patients who are on orthodontic therapy(table 1).

In this present study the severity of recession more in patiets with lower socioeconomic status, faulty tooth brushing technique and who are having existion periodontal disease. As compared to other etiological factors included in study the faulty tooth brushing technique with poor oral hygiene is statically significant factor in prevalence of gingival recession

Patients who are with recession and without recession are compared in present study. The plaque index, gingival index and periodontal index are highly significant in patients with gingival recession as compared patients without gingival recession.(table 2) Also in present study the width of attached gingiva was recorded by tension test method; the subject who are having recession shows inadequate width of attached gingiva as compared to subjects without width of attached gingiva.

In present study prevalence no. of teeth who are having gingival recession was also recorded. The gingival recession was classified according to P.D. Millers gingival recession classification. Percentage of association of number of teeth involved with type of etiology was calculated (table 8). Total 145 no. of teeth were involved with gingival recession. Maximum class 2 gingival recession was seen in patients with faulty tooth brushing habits which is 59.6% (table 3).

Discussion-

 Marginal tissue recession can cause major functional and esthetic problems. Interproximal recession creates space in which plaque, food, and bacteria can accumulate. Hyperemia of the pulp and associated symptoms may also result from exposure of the root surface.

 Periodontal health can be evaluated through different indicators including gingival recession. Its etiology is determined by a number of predisposing and precipitating factors. Predisposing factors may be anatomical or associated with occlusal trauma. The anatomical include poorly adhered gingiva, tooth malposition and crowding, root prominence, and bone defects. Those associated with occlusal trauma are related to the intensity and duration of trauma. In contrast, precipitating factors are a series of sociodemographic, socioeconomic, and environmental issues.[7]

Chambrone L conducted systematic review on the influence of tobacco smoking on the outcomes achieved by root-coverage procedures observed that gingival recession was associated with sex, number of teeth present, bleeding on probing (BOP), the presence or absence of systemic disease(s), use of dentures, and use of alcohol and tobacco, or with inflammation measurements such as presence of plaque.[8]

The present study is conducted to assess percentage, severity and possible etiologies of clinically visible gingival recession in adult population of sangli district. Total 210 subjects within age range of 18 to 50 years attending OPD of Department of Periodontology was enrolled in the study. Based on pilot study conducted assumed precision for current study was set at 5% and confidence interval at 95%. With previous prevalence of 84%, sample size requirement of 210 is evident.

The objectives was to assess the percentage, extent and severity of gingival recession in a sample and to assess the association of potential risk indicators with the occurrence of gingival recession in this population.

This study is approved from Ethical Committee, BharatiVidyapeeth Medical College and Hospital, Sangli. A structured standard proforma questionnaire consisting of following data was filled by each individual: name, age, gender, occupation, level of education, socioeconomic status. Clinical parameters like Gingival index, Russell's periodontal index, simplified oral hygiene index, visible clinical attachment loss, width of attached gingiva, class of gingival recession, number of teeth with gingival recession was recorded.

Pires et al reported that the presence of gingival recession in the anterior lingual mandibular region of a young population was associated with the use of piercings, age, male gender, and BOP. According to the results of this study proved that gingival recession is multifactorial condition, the highest number 56 (22.4%) of patients were presented with GR and 8.4% without GR in the age group of 14 years, which may be due to neglecting oral hygiene at this age group, which may be due faulty brushing that exerts detrimental forces on marginal gingiva with subsequent gingival recession.[9] Similarly in present study 42.7% of severity of recession is seen with faulty brushing technique and in periodontitis patients. 42.7% is seen with periodontitis patients; 6.8% recession is seen with patients who are having habit of tobacco chewing, high frenal attachment is seen in 4.8%, 0.6% population is having inadequate vestibular depth and 2.4% of recession is seen in patients who are on orthodontic therapy. [9]

Chrysanthakopoulos conducted study on prevalence and associated factors of gingival recession in Greek adults concluded that gingival inflammation, as determined by the gingival index, and smoking were the most important associated risk factors of gingival recession.[10] Turkish conducted study on Epidemiology and risk indicators in a university dental hospital in Turkey concluded that high level of gingival recession in this population is significantly associated with a high level of dental plaque and calculus, male gender, smoking duration, tooth brushing frequency, traumatic tooth brushing and high frenum.[11]

Both the above studies are in accordance with present study as this study resulted in Patietnts who are with recession and without recession are compared in present study. The plaque index, gingival index and periodontal index are highly significant in patients with gingival recession as compared patients without gingival recession.

The majority of studies including the recent ones reach to the same conclusion in all age groups of population about the most causative factor of gingival recession is the bad oral hygiene besides other causative factors as teeth crowding, frenal attachment, tooth brushing, bad oral habits to a lesser extent.

Conclusion-

To summarize, GR is a highly prevalent condition among population, and there is insufficient dental health awareness among the sangli district population. The results of this study proved that neglecting oral hygiene is the most common cause behind increase the gingival recession among adolescents. The designation of educational program for periodontal health care is mandatory to decrease the risk of gingival recession among population specially the adolescents.

References

1. Kassab M, Cohen R. The etiology and prevalence of gingival recession. J Am Dent Assoc. 2003;134:220-5.

2. Gingival recession: Prevalence and risk indicators among young greek adults J Clin Exp Dent. 2014;6(3):e243-9.

3. Susin C, Haas AN, Oppermann RV, Haugejorden O, Albandar JM. Gingival recession: Epidemiology and risk indicators in a representative urban Brazilian population. J Periodontol 2004;75:1377-86.

4. Hossam A. Eid. Prevalence of anterior gingival recession and related factors among Saudi adolescent males in Abha City, Aseer Region, Saudi Arabia. Journal of Dental Research and Review ● Jan-Apr 2014 ● Vol. 1 ● Issue 1

5. Löe H, Anerud A, Boysen H. The natural history of periodontal disease in man: Prevalence, severity, and extent of gingival recession. J Periodontol1992;63:489-95

6. Ioannis Fragkioudakis | Dimitra Tassou | Maria Sideri | Ioannis Vouros Prevalance and clinical characteristics of gingival recession in Greek young adults: A cross-sectional study Clin Exp Dent Res. 2021;7:672–678.

7. Eid HE. Prevalence of anterior gingival recession and related factors among Saudi adolescent males in Abha City, Aseer Region, Saudi Arabia. J Dent Res Rev 2014;1:18-23.

8. Chambrone L, Chambrone D, Pustiglioni FE, Chambrone LA, Lima LA. The influence of tobacco smoking on the outcomes achieved by root-coverage procedures: A systematic review. J Am Dent Assoc 2009;140:294-306

9. Pires IL, Cota LO, Oliveira AC, Costa JE, Costa FO. Association between periodontal condition and use of tongue piercing: A case-control study. J Clin Periodontol 2010;37:712-8

10. Chrysanthakopoulos NA. Prevalence and associated factors of gingival recession in Greek adults. J Investig Clin Dent 2013;4:178-85

11. Toker H, Ozdemir H. Gingival recession: Epidemiology and risk indicators in a university dental hospital in Turkey. Int J Dent Hyg 2009;7:115-20.

Table 1: Etiology of gingival recession

(N=145)	Frequency (n)	Percentage (%)
Periodontal Disease	62	42.7%

Faulty Toothbrushing	62	42.7%
Tobacco consumption	10	6.8%
High Frenal Attachment	7	4.8%
Inadequate vestibular depth	1	0.6%
Orthodontic Treatment	3	2.4%
Total	145	100%

Table 2: Comparison of gingival and periodontal indices in subjects with no gingival recession and with gingival recession

	Subjects Without recession (n=65)	Subjects with recession (n=145)	Unpaired t test	P value, Significance
OHI-S	**1.04 (0.38)**	**1.82(0.62)**	**t = -9.186**	**P< 0.001****
GI	**1.36 (0.34)**	**2.0 (0.35)**	**t = -12.270**	**P< 0.001****
Russel's Index	**1.93 (0.58)**	**4.21 (1.21)**	**t = -14.418**	**P< 0.001****

CAL	**1.88 (1.36)**	**4.73 (0.95)**	**t = 17.408**	**P<0.001****

**p< 0.001 – highly statistical significant difference

Table 3: Association of Gingival recession type (n=145) with etiology

(N=145)	Class 1 (n=25)	Class 2 (n=67)	Class 3 (n=53)
Periodontal Disease (n=62)	2 (3.2%)	19(30.6%)	41 (66.2%)
Faulty Toothbrushing (n=62)	17 (27.4%)	37 (59.6%)	8 (13%)
Tobacco consumption (n=10)	2 (20%)	5 (50%)	3 (30%)
High Frenal Attachment (n=7)	3 (42.8%)	3 (42.8%)	1 (14.4%)
Inadequate vestibular depth (n=1)	0 (0%)	1 (100%)	0 (0%)
Orthodontic Treatment (n=3)	1 (33.3%)	2 (66.7%)	0 (0%)
	Chi square test = 267.1, p< 0.001** (highly statistical significant association)		