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Dentistry

GINGIVAL RECESSION: PREVALENCE ACROSS VARIOUS AGE GROUPS IN THE POPULATION OF HYDERABAD

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ABSTRACT **Objective:** To evaluate the prevalence of gingival recession in various age groups in the city of Hyderabad. **Materials and Methods:** This study was conducted by OroGlee Solutions Private Limited in Hyderabad. A total of 4863 subjects above the age of 18 years were examined for the presence of gingival recession. Oral examination was done using an intraoral camera. **Results:** Out of the 4863 individuals examined, 782 (16.1%) showed signs of gingival recession. In the 18 to 30 years age group, 350 (11.6%) out of 3018 individuals were affected. In the 31 to 40 years age group, 209 (16.5%) out of 1266 exhibited gingival recession. Among the 410 subjects in the 41 to 50 years age group, 129 individuals (31.5%) had gingival recession, while in the 169 individuals over 50 years, 94 (55.6%) were found to have gingival recession. **Conclusion:** Gingival recession is a prevalent yet frequently overlooked condition, mainly due to lack of awareness. This study offers important insights into its prevalence, highlighting the causes, clinical presentation, and treatment options, which are critical for both the public and dental professionals. Early diagnosis and treatment are vital for managing gingival recession effectively.

KEYWORDS : Gingival recession, Prevalence, Intra oral camera, Hyderabad

INTRODUCTION:

Gingival recession is the apical shifting of the marginal gingiva from its normal position on the crown of the tooth to the level of the root surface beyond the cemento-enamel junction. (1) Gingival recession is a highly prevalent problem affecting individuals of all ages worldwide. (2)

Gingival recession can result from various factors, including periodontal disease, plaque buildup, inflammation of gingiva, incorrect flossing techniques, vigorous tooth brushing and misaligned teeth. These factors may lead to either localized or generalized gingival recession, which can occur with or without a reduction in attached gum tissue. (3)

This phenomenon exposes the root surface, leaving it vulnerable to various complications. (4) Including root caries, increased dental sensitivity, and aesthetic issues. (5) In fact, it is regarded as one of the foremost aesthetic concerns associated with periodontal tissue health. (5)

To prevent or treat gingival recession, several options are available, such as grafting which strengthens the gums and protects the tooth roots, stabilizing the recession to prevent further deterioration, and covering the exposed roots to restore gum tissue for better aesthetics and protection. (6)

The aim of the present study is to evaluate the prevalence of gingival recession in various age groups in the city of Hyderabad, shedding light on the intricacies of gingival recession, including its underlying causes, available treatment modalities, and proactive measures for prevention.

MATERIALS AND METHODS:

A cross-sectional survey was conducted by OroGlee Solutions Private Limited among employees of various corporate offices in the city of Hyderabad. A total of 4863 individuals were examined at their respective places of work.

A survey questionnaire was prepared to acquire personal details such as age, gender, occupation, relevant dental and medical history and habits. Oral examination was done using an intraoral camera connected to a laptop to record videos of all aspects of teeth. Informed oral consent of the participants was obtained before examination.

INCLUSION CRITERIA:

Participants above the age of 18 years were included in the study.

EXCLUSION CRITERIA:

Participants below the age of 18 years were excluded from the study.

RESULTS:

A total of 4863 subjects above the age of 18 years participated in the study. Among these, a total of 782 individuals, representing 16.1%, have been found to have gingival recession. This condition varies significantly with age. In the younger age group of 18 to 30 years, 3,018 individuals participated. Out of these, 350 (11.6%) subjects showed signs of gingival recession.

In the age group of 31 to 40 years, there were 1,266 participants, out of which 209 individuals showed gingival recession, accounting for 16.5%.

In the 410 participants aged between 41 to 50 years, 129 (31.5%) individuals were affected by gingival recession.

Notably, in the oldest group consisting of 169 participants of over 50 years, the rate rises significantly, with 94 individuals (55.6%) exhibiting signs of gingival recession. (Table 1), (Fig 1).

Table 1: Distribution of Study Subjects and Prevalence of Gingival Recession in different age groups

Age group (in years)	Number of subjects examined	Percentage of subjects in the age group	Number of subjects with gingival recession	Percentage of subjects with gingival recession	Number of subjects without gingival recession	Percentage of subjects without gingival recession
18 to 30	3018	62.1%	350	11.6%	2668	88.4%
31 to 40	1266	26.0%	209	16.5%	1057	83.5%
41 to 50	410	8.4%	129	31.5%	281	68.5%
>50	169	3.5%	94	55.6%	75	44.4%
Total	4863	100%	782	16.1%	4081	83.9%

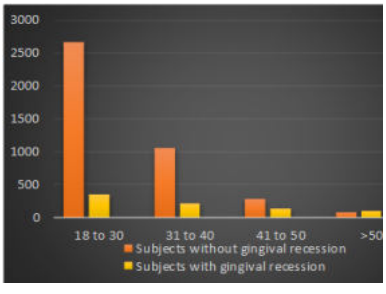

Fig1: Graphical Representation of Prevalence of Gingival Recession in various age groups

DISCUSSION:

One of the four main elements of periodontium is gingiva. The cementum, alveolar bone, and periodontal ligament are the other

elements. The gingiva surrounds the tooth root and alveolar bone up to the cementoenamel junction. Three domains constitute the gingiva anatomically: attached gingiva, interdental gingiva, and free marginal gingiva. (7)

Histologically, it consists of two distinct parts: connective tissue and epithelium. The connective tissue, contains proteins, growth factors, minerals, lipids, and water and is less cellular than the epithelium. These two components are responsible for mediating the initial responses associated with periodontitis and gingivitis. (7)

Gingival recession is defined as the apical shifting of the marginal gingiva from its normal position on the crown of the tooth. (8)

ETIOLOGY:
Research indicates that the etiology of gingival recession is multifactorial i.e. multiple factors always work together to cause the condition. (9) The common etiological factors are the local factors, periodontal diseases, mechanical forces and iatrogenic factors. (5)

Local factors: Gingival recession has been related to inflammation in the connective tissue next to the junctional epithelium caused by calculus and plaque. (5)

PERIODONTAL DISEASE: The interplay between the host's immune system and the bacteria in the plaque causes bone resorption, matrix breakdown, and epithelial downgrowth, which can lead to gingival recession, periodontal pockets, or both. (5)

MECHANICAL FORCES: Gingival recession often arises due to improper brushing techniques that wear down the gingival tissue. While the gingiva may appear inflammation-free, root surfaces become visible due to apical displacement. This can lead to soft tissue friction or gingival ablation. (5)

IATROGENIC FACTORS: Orthodontic tooth movement can impact both papillary and marginal tissues, frequently leading to gingival recession due to dehiscence. Furthermore, restorative and prosthodontic procedures, such as subgingival crown preparations, gingival retraction techniques, and subgingival restorations, can also contribute to gingival recession. (5)

CLASSIFICATION: (Fig 2)
The most widely used classification is Millers's classification of gingival recession (proposed in 1985):

CLASS I: Marginal tissue does not extend to the mucogingival junction and there is no loss of interdental bone.

CLASS II: Marginal recession extends to or beyond the mucogingival junction and there is no loss of interdental bone.

CLASS III: Marginal tissue recession extends to or beyond the mucogingival junction with loss of interdental bone or soft-tissue apical to the cemento enamel junction.

CLASS IV: Marginal tissue recession extends to or beyond the mucogingival junction with loss of interdental bone and causes mispositioning of the teeth. (10)

Fig 2: Miller's classification of gingival recession into four different classes. (11)

PATHOGENESIS:
Gingival recession can be caused by trauma, bacterial infection, morphological causes resulting from teeth aligned incorrectly in the dental arch, the physiological effect of tissue aging and physiological bone resorption. Anatomical gingival recession is seen when there is no apparent loss in the height of the interdental papilla and when there is no inflammation. [12]

Gingival recession caused by trauma differs from that caused by bacteria. It can result from improper brushing, incorrect use of dental floss, oral piercings, improper prosthetic restorations, issues with occlusal relationships and iatrogenic factors such as the dentist's intervention during orthodontic treatment. [13,14]

In trauma-induced gingival recessions, the healthy oral epithelium on the surface of the gingiva is affected, leading to abrasion of the gingival tissue. The connective tissue located beneath the oral epithelium is where inflammation begins. If the irritation from the traumatic force persists, it initiates a secondary inflammatory response, directly impacting the gingival connective tissue and potentially leading to a gingival ulcer, often without immediate signs of recession. As the irritation continues and the entire thickness of the gingival connective tissue is affected, clinical attachment loss occurs, exposing the root surface [12,15]

Bacterial-induced gingival recessions occur when the subgingival bacterial biofilm triggers an inflammatory response in the connective tissue between the oral epithelium and the sulcular epithelium. In cases where the gingival phenotype is thin, this inflammatory process affects the connective tissue extensively. Consequently, the gingival margin loses support from the underlying connective tissue, leading to its apical proliferation from the cemento-enamel junction, resulting in clinical attachment loss and the formation of a periodontal pocket. (12)

COMPLICATIONS:
1) AESTHETIC IMPACT: Gingival recession results in the exposure of the root surface, negatively affecting the aesthetic appearance, particularly when it involves the front teeth. (3)

2) PLAQUE ACCUMULATION: Areas affected by recession can become prone to plaque retention, allowing bacteria and debris to accumulate on the tooth surfaces. (3)

3) DENTAL HYPERSENSITIVITY: Recession exposes the cervical dentine to the oral environment, often causing acute and brief episodes of hypersensitivity. (3)

4) ABRASION: The exposed tooth surfaces due to recession are more vulnerable to abrasion and wear. (16)

5) RISK OF DENTAL CARIES: The exposed root surfaces are more susceptible to the development of root caries. (3)

TREATMENT:
Gingival recession is an intriguing and complicated condition that often causes distress to the patients because of sensitivity and aesthetic concerns. A range of surgical techniques has been developed to address this issue, such as autogenous tissue grafts, various flap designs, orthodontic interventions, and guided tissue regeneration (GTR). (17)

1) TISSUE GRAFTING: The purpose of tissue grafting is to protect the exposed roots of teeth. To accomplish this, different techniques and flap designs have been used. (18)

2) GUIDED TISSUE REGENERATION: The American Academy of Periodontology defines regeneration as "the reproduction or reconstitution of a lost or injured part." This refers to the biological process that fully restores the architecture and function of lost tissues, including the supporting structures of the tooth, such as alveolar bone, periodontal ligament, and cementum. (18) Guided Tissue Regeneration involves the use of barrier membranes, with or without bone substitute grafts, to facilitate the repair of periodontal tissues while maintaining their original structure and function through epithelial exclusion. (19)

PREVENTION:
Preventing gingival recession requires a combination of good oral

hygiene practices and professional care. It is essential to brush gently with the toothbrush and floss daily to remove plaque without damaging the gums. Regular dental check-ups are crucial for the early detection and management of periodontal disease, which can lead to recession.

In the present study, a total of 4863 individuals were examined to assess the prevalence of gingival recession. Of these, 782 individuals (16.1%) across all age groups were found to have gingival recession. Among these, 3018 individuals were in the 18 to 30 years age group, with 350 (11.6%) of them showing gingival recession. In the 31 to 40 years age group, 1266 individuals were assessed. Out of these, 209 (16.5%) had gingival recession. In the age group of 41 to 50 years, 410 individuals were examined and 129 (31.5%) were found to have gingival recession. In the age group of above 50 years, 169 individuals were assessed, with 94 (55.6%) showing signs of gingival recession.
A study was conducted by Dr. Manoj Humagain and Dr. Dashrath Kafle to assess the prevalence, extent, and severity of gingival recession among rural Nepalese adults. A total of 246 adult dentate patients aged 20 years and older were evaluated, all of whom had at least 24 natural teeth. The findings revealed that gingival recession was present in 65.44% of the participants, with a mean of 9.77 affected teeth per individual. Additionally, the prevalence of gingival recession varied significantly with age, showing rates of 41.37% in the 20-29 age group, 58.90% in the 30-39 group, 77.41% in the 40-49 group, and 86.79% in those aged 50 years and older. (20)

A study conducted by Harald Löe, Åge Ånerud, and Hans Boysen focused on gingival recession in two cohorts of individuals participating in parallel longitudinal studies in Norway (1969–1988) and Sri Lanka (1970–1990). The participants were in the age group ranging from 15 to 50 years. In the Norwegian cohort, gingival recession began early in life and was primarily confined to the buccal surfaces. More than 60% of the 20-year-olds were affected. By the age of 30 years, ≥70% had recession, still predominantly on buccal surfaces. As the group approached 50 years of age, more than 90% exhibited gingival recession, with ≥25% of buccal surfaces, ≥15% of lingual surfaces, and 3-4% of interproximal surfaces being involved. In the Sri Lankan cohort, ≥30% exhibited gingival recession before the age of 20 years. By the age of 30 years, 90% had recession on buccal, lingual, and interproximal surfaces, and by 40 years, 100% of the Sri Lankans had recession. As they approached 50 years, gingival recession was observed in ≥70% of buccal surfaces, ≥50% of lingual surfaces, and 40% of interproximal surfaces. This study showed the presence of more than one type of gingival recession and that the initiation and progression of gingival recession is determined by various factors. (21)

CONCLUSIONS:

Gingival recession is a prevalent condition that affects a significant portion of the population. Since its prevalence increases with age, it is a common concern among individuals. It presents a significant challenge to periodontal health. The consequences of gingival recession extend beyond aesthetic concerns, leading to increased tooth sensitivity, root caries and potential tooth loss, ultimately compromising overall oral health and quality of life.

The widespread occurrence of gingival recession underscores the importance of early recognition and intervention. The emotional and social consequences deserve equal consideration. Hence, there is a need to raise awareness among both dental professionals and the public. By promoting awareness and preventive measures, we can help reduce its prevalence and enhance the overall well-being of those at risk.

CONFLICT OF INTEREST:

There is no conflict of interest.

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REFERENCES:

[1] Mythri, S., Arunkumar, S. M., Hegde, S., Rajesh, S. K., Munaz, M., & Ashwin, D. (2015). Etiology and occurrence of gingival recession-An epidemiological study. Journal of Indian Society of Periodontology, 19(6), 671-675.
[2] Kasaj, A. (2018). Etiology and prevalence of gingival recession. Gingival Recession Management: A Clinical Manual, 19-31.
[3] Pradeep, K., Rajababu, P., Satyanarayana, D., & Sagar, V. (2012). Gingival recession: review and strategies in treatment of recession. Case reports in dentistry, 2012.
[4] Gorman, W. J. (1967). Prevalence and etiology of gingival recession. The Journal of Periodontology, 38(4), 316-322.
[5] Manchala, S. R., Vandana, K. L., Mandalapu, N. B., Mannem, S., & Dwarakanath, C. D. (2012). Epidemiology of gingival recession and risk indicators in dental hospital population of Bhimavaram. Journal of International Society of Preventive & Community Dentistry, 2(2), 69.
[6] Matter, Jacques. "Free gingival grafts for the treatment of gingival recession: a review of some techniques." Journal of Clinical Periodontology 9.2 (1982): 103-114.
[7] Bartold, P. M., Walsh, L. J., & Narayanan, A. S. (2000). Molecular and cell biology of the gingiva. Periodontology 2000, 24(1), 28-55.
[8] Seong, J., Bartlett, D., Newcombe, R. G., Claydon, N. C. A., Hellin, N., & West, N. X. (2018). Prevalence of gingival recession and study of associated related factors in young UK adults. Journal of dentistry, 76, 58-67.
[9] Chrysanthakopoulos, N. A., & Saini, R. (2016). Prevalence of Gingival Recession and associated Risk Factors among 18–45-Year-Old Who Attended a Dental Practice in Greece. Int J Experiment Dent Sci, 5(1), 28-33.
[10] Kumar, A., & Masamatti, S. S. (2013). A new classification system for gingival and palatal recession. Journal of Indian Society of Periodontology, 17(2), 175- 181.
[11] Dominiak, M., & Gedrange, T. (2014). New perspectives in the diagnostic of gingival recession. Advances in clinical and experimental medicine: official organ Wroclaw Medical University, 23(6), 857-863.
[12] Yordanova, I. (2020). Gingival Recessions-Pathogenesis and Prognosis: A Literature Review. International Journal of Science and Research (IJSR), 9, 885-888.
[13] Khocht A, Simon G, Person P, Denepitiya JL. Gingival recession in relation to history of hard toothbrush use. J Periodontol1993; 64:900-905
[14] Litonjua LA, Andreana S, Bush PJ, Cohen RE. Toothbrushing and gingival recession. Int Dent J. 2003 Apr; 53(2):67-72. doi: 10.1111/j.1875- 595x.2003.tb00661. x. PMID: 12731692.
[15] Repeke CE, Cardoso CR, Claudino M, Silveira EM, Trombone AP, Campanelli AP et al. Noninflammatory destructive periodontal disease: a clinical, microbiological, immunological and genetic investigation. J Appl Oral Sci. 2012; 20(1):113-121
[16] Kamath, K. P., Mishra, S., & Anand, P. S. (2014). Smokeless tobacco use as a risk factor for periodontal disease. Frontiers in public health, 2, 195.
[17] Kassab, Moawia M., Hala Badawi, and Andrew R. Dentino. "Treatment of gingival recession." Dental Clinics 54.1 (2010): 129-140.
[18] Kassab, M. M., & Cohen, R. E. (2003). The etiology and prevalence of gingival recession. The journal of the American dental association, 134(2), 220-225.
[19] Bashutski, J., Oh, T. J., Chan, H. L., & Wang, H. L. (2011). Guided tissue regeneration: a decision-making model. Journal of the International Academy of Periodontology, 13(2), 48-57.
[20] Humagain, Manoj, and Dashrath Kafle. "The evaluation of prevalence, extension and severity of gingival recession among rural nepalese adults." Orthodontic Journal of Nepal 3.1 (2013): 41-46.
[21] Löe, Harald, Åge Ånerud, and Hans Boysen. "The natural history of periodontal disease in man: prevalence, severity, and extent of gingival recession." Journal of periodontology 63.6 (1992): 489-495.