Research Article

Gingival Recession: Prevalence, Severity and Possible Etiological Factors in the Out Patients of Subharti Dental College and Hospital, Meerut- An Epidemiological Study

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Abstract: Gingival recession is defined as the displacement of the gingival margin apical to the cemento enamel junction. The oral epithelium migrates apically to the border of destroyed connective tissue. Gingival recession is an undesirable condition resulting in root exposure which is unaesthetic and may lead to sensitivity and root caries. The aim of the present study was 1.To quantify and analyze the prevalence and severity of the gingival recession.2. To identify the influence of some possible risk factors associated with gingival recession. The study was carried out in subjects of age group between 20-60 years, who were systemically healthy and signed the consent to participate enthusiastically in this study. Relevant information was recorded in the restructured performa. The statistical tests applied were percentage tests and chi square test. These were recorded in the form of bar graphs and tables. In results the Among 100 patients diagnosed with gingival recession, 58 were the females and 42 were males. According to the arch, the affected side and the tooth affected among the 325 sites with gingival recession; 169 were in the mandibular arch, 101 were involving the canine, 168 teeth were on left side. Of the total subjects studied, major etiological agents were found to be poor oral hygiene and faulty tooth brushing technique. In conclusion the present study was the first to consider all the three factors i.e. the prevalence, severity and the various etiological agents causing gingival recession. It showed that gingival recession was more prevalent in the females, within the age group 30 to 39 years with the canine being the most commonly involved and molars being the least. Also, it was more frequently involving in the left side of mandibular arch. Among various factors studied, poor oral hygiene and faulty tooth brushing were the main etiogical factors.
Keywords: Gingival recession, Epidemiology, Prevalence, Etiology.

INTRODUCTION

People have become esthetically aware and hence the demand for the correction of the defects hampering their esthetics poses a great challenge for the dental practitioners. Gingival recession has been defined as the displacement of the marginal tissue beyond the cemento enamel junction (CEJ) with concomitant exposure of the root surface. It is commonly observed in adult subjects [1]. Gingival recession can be localized or generalized, often associated with one or two surfaces [2]. It is unaesthetic and may lead to senstivity and root caries [3]. Other factors which play a significant role in the occurrence of gingival recession are anatomical, pathological and physiological factors. Anatomical factors include fenestration, dehiscence of the alveolar bone, abnormal tooth position in the arch, aberrant path of eruption of the tooth and individual tooth shape [4]. Physiological factors may include the orthodontic movement of teeth leading to dehiscence formation [5]. Pathological

factors include bone resorption as sequelae to microbially induced periodontal diseases. In addition to psychological factors, various forms of trauma – such as vigorous tooth brushing, aberrant renal attachment, occlusal injury, operative procedures and tobacco chewing have been thought to play a role in the etiology of recession [6].

With root coverage being one of the primary goals of mucogingival surgery, the need to classify recession areas According to their potential to be covered became necessary among clinicians. The first attempt to classify gingival recession According to its amenability of being covered using mucogingival surgical procedures was published by Sullivan & Atkins [7]. The basis for their gingival recession classification was the depth and width of the defect.

    a. Deep Wide
    b. Shallow Wide
    c. Deep Narrow

d. Shallow Narrow

The authors reported an inverse relationship between the sizes of the defect to the likelihood of root coverage. The implication was that the deep wide recession showed very limited potential for complete root coverage.

Later, Miller [8] proposed a classification scheme for recession defects that is the one currently the most commonly used by clinicians. He classified gingival recession According to the height of the interproximal papillae adjacent to the defect area. He specifically described the height of the interproximal gingivae as the single most important factor in determining the likelihood of a successful root coverage outcome8.

Many techniques have been developed to regenerate the lost periodontal tissue, including the use of pedicle flaps [9] epithelialized soft tissue autografts (free gingival grafts) [7], allograft [10], and bilaminar grafts (connective tissue grafts with pedicle flaps) [11]. The use of a sub-epithelial connective tissue graft (SCTG) is the most widely used most predictable technique and considered the gold standard in recession management [12].

However, for the optimum treatment planning, proper diagnosis is a prerequisite. Thus the present study was undertaken to find the prevalence, severity and the possible etiological causes for the recession defects.

Aims and Objectives
1) To analyze the prevalence of gingival recession among the patients attending the outpatient department of Subharti Dental College and Hospital, Meerut.
2) To identify the severity of gingival recession.
3) To identify the influence of possible risk factors causing gingival recession.

MATERIAL AND METHODS
The study sample consisted of 100 adult subjects aged between 20 to 60 years, randomly selected from the patients attending the outpatient department of Subharti Dental College and Hospital, Meerut. All participants were informed about the study and signed an informed consent form. UNC 15 probe was used to measure the recession defects under sufficient illumination. The information and data were registered in a special questionnaire to detect the correlation between gingival recession and some risk factors as age, tooth brushing, smoking, tobacco chewing, and the other risk factors like occlusal injury, high frenum attachment, tooth malposition, crowding and periodontitis.

The patients were divided into 4 groups According to their age as:

Group A: 20 to 29
Group B: 30 to 39
Group C: 40 to 49
Group D: More than or equal to 50 years.

2425 teeth were examined out of which 325 teeth revealed various grades of Gingival Recession.

Inclusion Criteria
*   Subjects within the age group of 20 – 60 years.
*   Subjects with fully erupted permanent teeth.
*   Patients with evident apical shift of gingival margin.
*   Patients with prominent CEJ (cemento enamel junction).

Exclusion Criteria
*   Systemic diseases
*   Test teeth with artificial crowns.
*   Test teeth with fixed partial dentures.
*   Any history of surgery at the site of recession.
*   Pregnant or lactating females

METHODOLOGY
Four surfaces of each tooth: mesial, buccal – labial, distal and lingual – palatal were measured using UNC 15. The distance from cemento enamel junction (CEJ) to the gingival margin was measured. All the 4 surfaces of each tooth were evaluated. However the side with the deepest recession was taken into consideration.Taking the recession length as the criteria, teeth were categorized into three groups. Recessions less than 3mm, Recessions 3 to 5mm and Recessions more than 5mm were taken into consideration.

Patients were grouped According to their age into 4 Groups and a detailed medical and dental history was recorded. Important information to detect the correlation between the gingival recession and some risk factors were:
*   Tooth Brushing Techniques
*   Tobacco Chewing habits
*   Smoking
*   Use of Abrasive Tooth Powder
*   Oral hygiene maintenance
*   Malocclusion (crowding)
*   Orthodontic braces
*   Occlusal injury

RESULTS
A total of 100 patients were included in the study of which 42 were males and 58 were females (fig 1). 100 subjects had total 2425 teeth of which only 325 teeth showed the presence of Gingival Recession. Among the 4 groups- Group B i.e. the patients in the age group of 30 to 39 (mean age for females to be 37.62 and mean age for males to be 35.52) had the maximum prevalence of gingival recession (fig 2). Considering the teeth involved in gingival recession, it was found to be

more prevalent in the canine and least common in the molars (fig 3). Also, the gingival recession defects are found to be more common on the left side than on the right side. In the present study, out of 325 teeth, 168 teeth were of the left side while 157 teeth were of the right side (fig 4). Considering the arches, out of 325 defects, 169 were found to be in the mandibular arch and 156 in the maxillary arch (fig 5). The recession defects were found to be more common in the anterior region i.e. 228 and less common in the posterior region i.e. 97(fig 6). The severity of the gingival recession was found to be more in the incisal region which showed the maximum of gingival recession 5mm or more in length when measured with UNC 15(Table-1). Among the various factors taken into the present study, the most common factors causing the gingival recession in the population of Meerut are the poor oral hygiene and the faulty tooth brushing (fig 7).
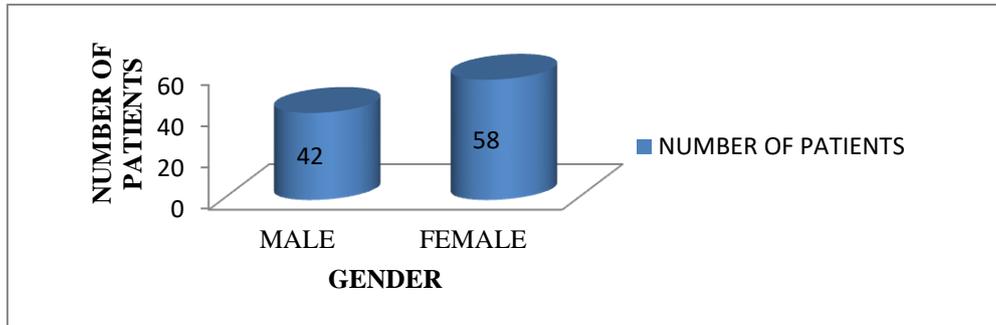

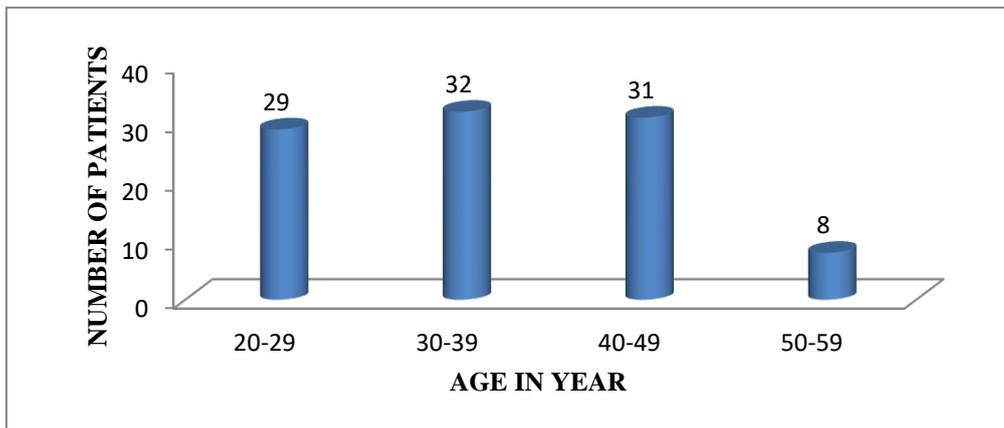**Fig-1: Prevalence of Gingival Recession According to the Gender**

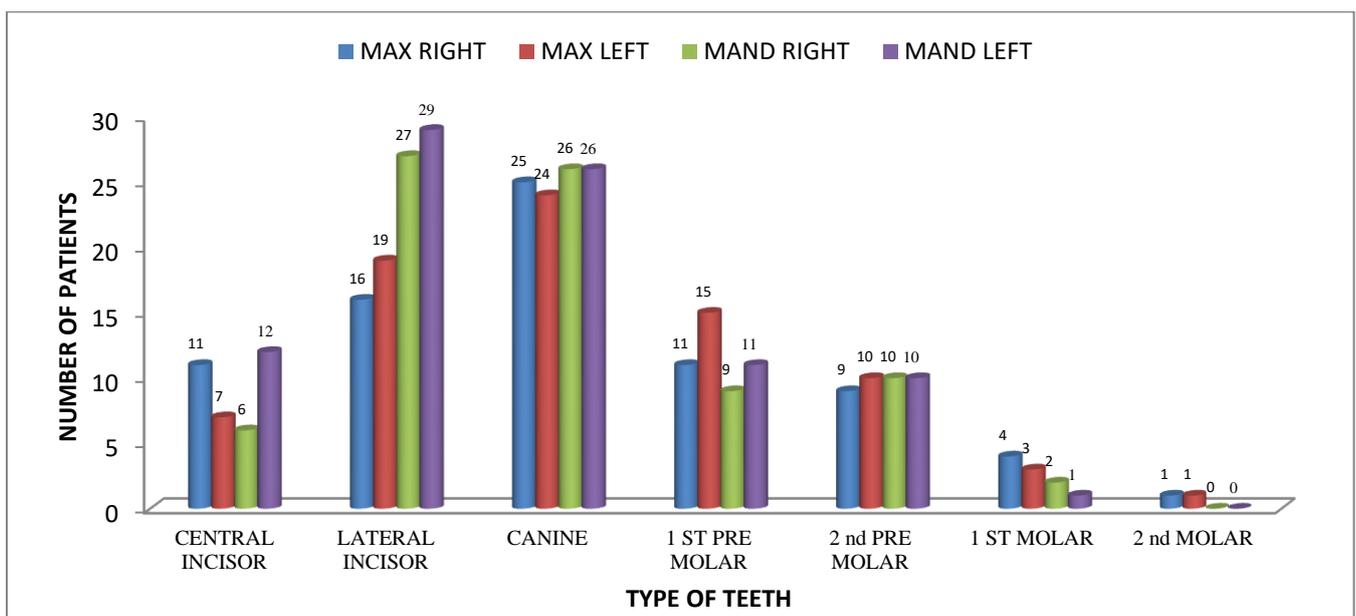**Fig-2: Prevalence of Gingival Recession According to the Age**

Fig 3: Prevalence of Gingival Recession in different teeth.
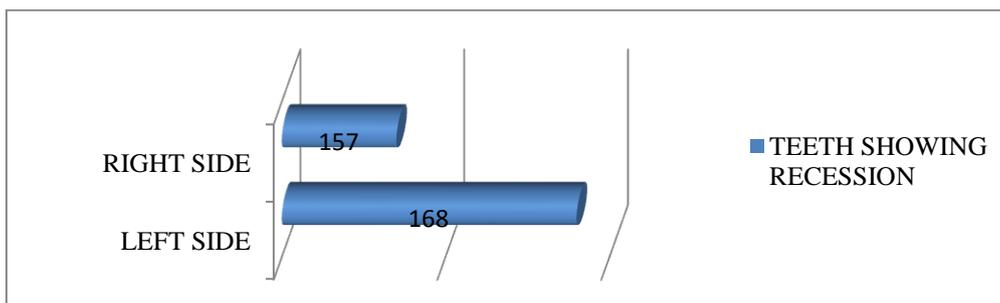
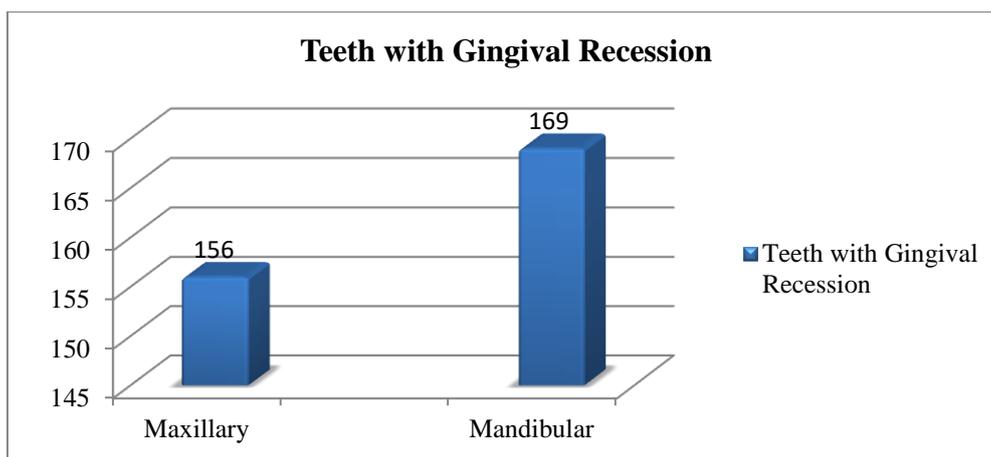**Fig 4: Prevalence of Gingival Recession According to SIDE involved**

Fig-5: Prevalence of Gingival Recession According to ARCH involved
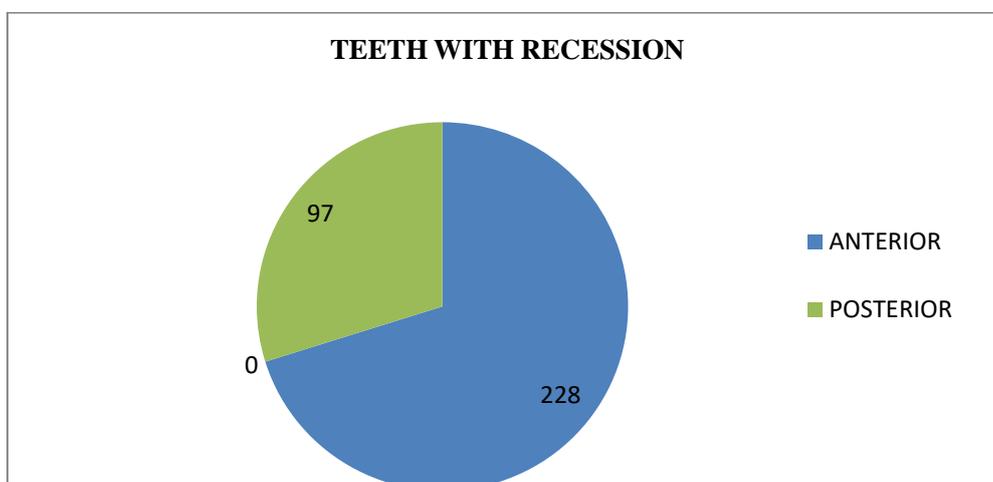

Fig-6: Prevalence of Gingival Recession According to Region in the Arch involved

Fig 7: Severity of Gingival Recession According to the Length of the Recession Defect

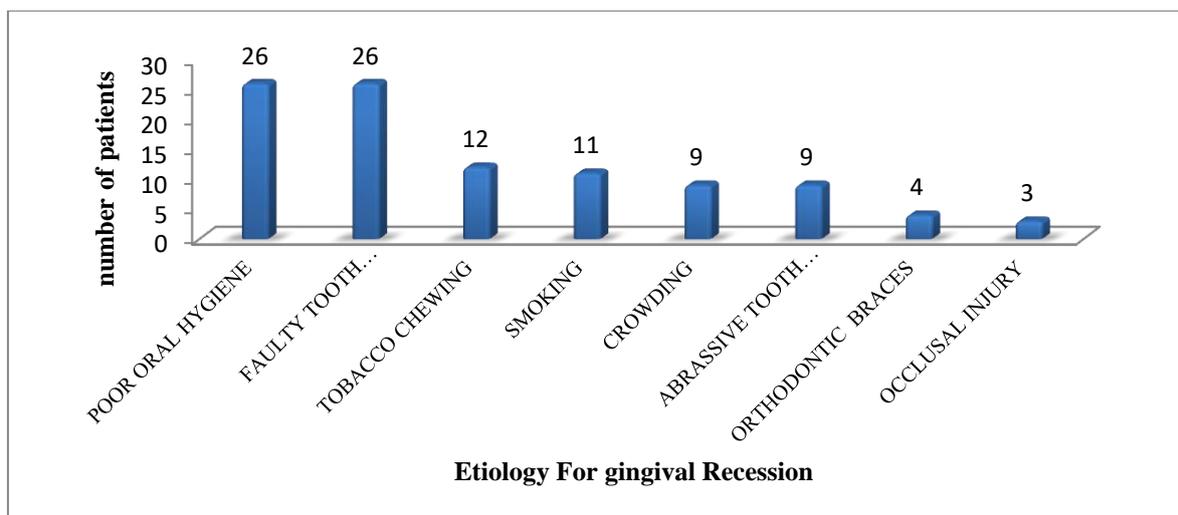| TEETH	<3mm	3-5mm	>5mm
Incisors	56	48	23
Canine	48	42	11
Premolars	41	24	20
Molars	3	3	0

Fig-7: Major Etiological Factors for Gingival Recession

The stastical results applied were chi square test and percentage tests. Comparing the side of the arch (maxillary or mandibular) and region in the same arch (anterior or posterior) they were found to be highly significant. (χ^2 =34.30, p value<0.001). Whereas the gingival recession versus side of the arch were not significant ($\chi2$ =0.91, p value>0.001).

DISCUSSION

The study was undertaken to study the prevalence, severity and possible etiology of recession factors in the outpatient department of Subharti Dental College and Hospital, Meerut. The relationship between increased prevalence of gingival recession with age could be due to the longer exposure to the agents that caused gingival recession. The severity of gingival recession was more in the lower anterior region. The reason could be:

1. The presence of calculus.
2. Anterior teeth crowding
3. Trauma from occlusion
4. Shallow vestibule

The prevalence of gingival recession is more on the left side as compared to the right side which could be attributed to the more vigorous tooth brushing on this side by the right handed patients.

The poor oral hygiene maintained by the patients and the faulty tooth brushing technique were the major etiological factors which could be due to the poor patient education and motivation for maintaining their oral health.

In the present study, females had more prevalence of gingival recession than males. The reason attributing to this may be the overzealous tooth brushing done by females in an attempt to attain more a better oral hygiene.

Gorman WJ [13] concluded that the frequency of gingival recession increased with age and was found to be greater in men than in women of the same age. This was however contrary to our study where we found the gingival recession to be more common among females.

Malpositioned teeth and toothbrush trauma were found to be the most frequent etiologic factors associated with gingival recession. Recession associated with labially positioned teeth occurred in 40 percent of patients with 16 to 25 years of age and increased to 80 percent of patients in the 36 to 86 years of age group.

Albandar, Kingman [14] studied 9689 subject to find the prevalence of gingival recession among subjects in the age group 30 to 90 years. They concluded that 23.8 percent people had one or more tooth surfaces with gingival recession of 3 mm or more. They also found the prevalence of 1 mm or more recession in people of age 30 years or more to be 58 percent. They concluded that the recession appeared to increase with age.

Susin *et al.;* [15] reported the high prevalence of gingival recession was reported in Brazilian population and it was also found that more than half of the individuals were presenting ≥ 3 mm recession defects. These were associated with a high level of periodontal disease.

These findings were corroborated by Murray [16] who examined 4,000 subjects and found that the incidence of gingival recession increased with age. They concluded that the prevalence of gingival recession in the anterior mandibular teeth was more than that in the anterior maxillary teeth. This result might be related to the fact that the keratinized mucosa in the maxillary area is often much thicker and wider than its counterpart in the mandibular anterior area.

Epidemiological studies done by Addy *et al.;* [17] have concluded that faulty tooth brushing may be associated with gingival recession. Buccal gingival recession of the left side of the arch is more frequent than on the right side of the arch. The concept of multiple etiologies of gingival recession was also reported in parallel longitudinal studies conducted in Norwegian and Sri Lankan populations during the period 1969 to 1990 among 15 to 50 years of age by Löe et al in 1992 [18].

The habit of chewing fresh leaves and twigs of khat is thought to stimulate amphetamine-like effects causing gingival recession due to mechanical effect on gingiva, especially in the side being used for chewing khat.

O'Leary *et al.;* [19] reported gingival recession to be 78 to 100% among middle-aged individuals involving 22 to 53% of the teeth in US population [19].

Sangnes *et al.;* [20], reported 51% of the adult subjects aged more than 18 years to have gingival recession [20], Schamschula *et al.;* concluded that 11 to 40% of the adult individuals had gingival recession. In Urban Brazilian the gingival recession was reported to be 51.6% where Vehkalaht [22] reported that 68% of the subjects had gingival recessions.

CONCLUSION

The present study revealed that the prevalence of gingival recession is more in females than males. Gingival recession was found to be more common in mandibular arch than maxillary. Left side of the arch is more commonly affected. Canine is the most commonly involved teeth with the severity being more in the anterior region than in posterior region. Among the various etiological factors studied, Poor oral hygiene and faulty tooth brushing technique are the major etiological factors among the patients approaching the outpatient department of Periodontology, Subharti Dental College and Hospital.

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