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Classifications for Gingival Recession: A Mini Review

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ABSTRACT

Gingival Recession is a common problem associated with or without Periodontitis. It can be associated with many etiological factors. The one of the common factor is faulty tooth brushing trauma. There are other factors too which contribute to the gingival recession. Not only Gingival Recession causes an esthetic problem but also causes hypersensitivity and associated caries. This paper reviews the various classifications for gingival recession which can be useful for the proper diagnosis and treatment.

Keywords: Gingival Recession, Classification for Gingival Recession, Palatal recession

INTRODUCTION

Gingival recession is defined as an apical shift of the gingival margin (GM) from its position 1 mm coronal to or at the level of the cemento-enamel junction (CEJ) with exposure of the root surface to the oral environment. [1] The displacement of marginal tissue apical to the cemento-enamel junction (CEJ). [2] The term "marginal tissue recession" has been considered to be more accurate than "gingival recession," since the marginal tissue may have been what is known as alveolar mucosa. The classification of any disease helps in the favorable communication with a fellow professional. It also helps in a great deal to diagnose and come up with the correct treatment plan and knowing the prognosis for the same. There have been many cases of gingival recession been treated successfully whereas some with not much success. Diagnosing at the earliest can save the time and complexity of the treatment. The following are the classifications for gingival recession.

1. Sullivan and Atkins (1968)

The basis for the classification was depth and width of the defect.

The four categories were:

- Deep wide
- Shallow wide
- Deep narrow
- Shallow narrow.

This classification though simple is subjected to open interpretation of the examiner and inter examiner variability and is therefore not reproducible. [3]

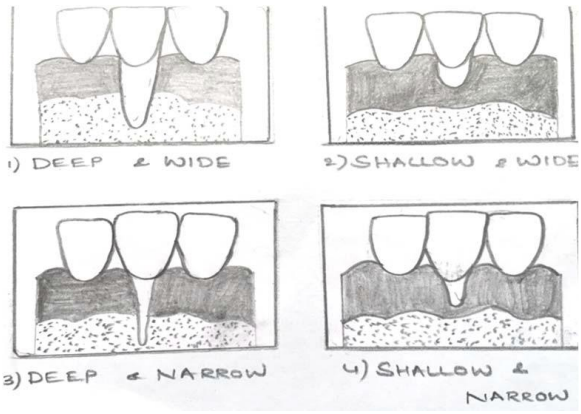

Figure 1: Sullivan & Atkins Classification

[Swathi Ravipudi et al. Gingival Recession: Short Literature Review on Etiology, Classifications and Various Treatment Options. J. Pharm. Sci. & Res. Vol. 9(2), 2017, 215-220] [4]

2. Mlinek et al. (1973)

- Shallow narrow: Recession <3 mm
- Deep wide: Recession >3 mm.

This modification reduced subjective variation, but it does not specify the

landmark for horizontal measurement as variable measurement may be present at variable distances.

3. Liu and Solt (1980)

Based on marginal tissue recession

- **Visual:** Measured from CEJ to soft tissue margin
- **Hidden:** Loss of attachment within the pocket that is apical to tissue margin.

This classification being not informative, does not classify visible recession, the focus being more on attachment loss than visible recession.

4. Bengue et al. (1983)

Classified the recessions according to the coverage prognosis:

- U-type - poor prognosis
- V-type - fair prognosis
- I-type - good prognosis. [5]

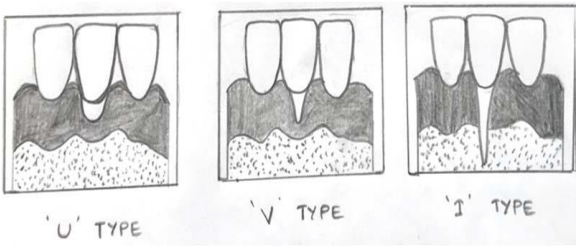

Figure 2: Bengue classification

[Swathi Ravipudi et al Gingival Recession: Short Literature Review on Etiology, Classifications and Various Treatment Options. J. Pharm. Sci. & Res. Vol. 9(2), 2017, 215-220] [4]

5. Miller (1985)

Useful in predicting the final amount of root coverage following a free gingival graft procedure.

- Class I and II gingival recessions, show no loss of inter-proximal periodontal attachment loss and bone loss and complete root coverage can be achieved.
- Class III: the interdental periodontal support loss is mild to moderate, and partial root coverage can be accomplished.
- Class IV: the interproximal periodontal attachment loss is so severe that no root coverage is feasible.

He has primarily based his classification of gingival recession defects on following aspects:

A. Extent of gingival recession defects

Extent of hard and soft tissue loss in interdental areas surrounding the gingival recession defects. [6]

6. Smith (1990)

He proposed index of recession that consists of two digits separated by a dash. The first digit denotes the horizontal and the second digit denotes the vertical component of a site of recession.

- **Score 0** - No clinical evidence of root exposure.
- **Score 1** - No clinical evidence of root exposure and there is also a subjective awareness of dentinal hypersensitivity in response to air blast is reported, and/or there is clinically detectable exposure of the CEJ for up to 10% of the estimated mid-mesial to mid-distal distance.
- **Score 2** - Horizontal exposure of the CEJ more than 10% but not exceeding 25% of the estimated mid-mesial to mid-distal distance .
- **Score 3** - Exposure of the CEJ more than 25% of the mid-mesial to mid-distal distance but not exceeding 50%
- **Score 4** - Exposure of the CEJ more than 50% of the mid-mesial to mid-distal distance but not exceeding 75%
- **Score 5** - Exposure of the CEJ more than 75% of the mid-mesial to mid-distal distance up to 100%.

VERTICAL EXTENT OF RECESSION

- **Score 0** - No clinical evidence of root exposure.
- **Score 1** - No clinical exposure of root exposure and there is also a subjective awareness of dentinal hypersensitivity is reported and/or there is clinically detectable exposure of the CEJ not extending more than 1 mm vertically to the gingival margin.

- **Score 2–8** - Root exposure is seen 2–8 mm extending vertically from the CEJ to the base of the soft tissue defect.
- **Score 9** - Root exposure seen more than 8 mm from the CEJ to the base of the soft tissue defect.
- **Score *** - An asterisk is present next to the second digit whenever the vertical component of the soft tissue defect encroaches into the MGJ or extends beyond it into alveolar mucosa; the absence of an asterisk implies either absence of MGJ involvement at the indexed site or its non involvement in the soft tissue defect. [7]

7. Nordland WP and Tarnow DP (1998)

A classification system for loss of papillary height**.** The system utilizes three identifiable landmarks:

1. Interdental contact point
2. Facial apical extent of the CEJ
3. Interproximal coronal extent of the CEJ

Normal: Interdental papilla fills embrasure space to the apical extent of the interdental contact point/area

- **Class I:** The tip of the interdental papilla lies between the inter-dental contact point and the most coronal extent of the inter-proximal cemento enamel junction (CEJ)
- **Class II:** The tip of the inter-dental papilla lies at or apical to the inter-proximal cemento enamel junction CEJ but coronal to the apical extent of the facial CEJ
- **Class III:** The tip of the papilla lies level with or apical to the facial CEJ. [8]

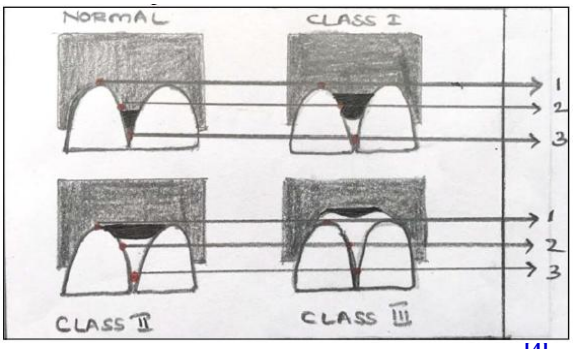

Figure 3: Nordland WP and Tarnow DP's classification [4]

1. The interdental contact point
2. The apical extent of the facial CEJ
3. The coronal extent of the proximal CEJ

[Swathi Ravipudi et al. Gingival Recession: Short Literature Review on Etiology, Classifications and Various Treatment Options. J. Pharm. Sci. & Res. Vol. 9(2), 2017, 215-220]

8. Mahajan (2010)

A modified classification of gingival recession

- **Class I**: Gingival recession defect not extending to the MGJ .
- **Class II**: Gingival recession defect extending to the MGJ/ beyond it .
- **Class III**: Gingival recession defect with bone or soft tissue loss in the interdental area up to cervical 1/3 of the root surface and/or malpositioning of the teeth.
- **Class IV**: Gingival recession defect with severe bone or soft tissue loss in the interdental area greater than cervical 1/3 of the root surface and/or severe malpositioning of the teeth.

Prognosis as per Mahajan's classification:

1) **Best:** Class I and Class II with thick gingival profile
2) **Good:** Class I and Class II with thin gingival profile
3) **Fair:** Class III with thick gingival profile
4) **Poor:** Class III and Class IV with thin gingival profile.

This modification still does not accommodate all clinical conditions. For example, a tooth with gingival recession not extending up to MGJ but with interdental soft and hard tissue loss can neither be placed in Class I nor in Class III since there is no mention of involvement of MGJ in Class II. [9]

9. Cairo et al. (2011)

Gingival recession based on the assessment of CAL at both buccal and interproximal sites.

- **Type 1**: Gingival recession with no loss of interproximal attachment.

Interproximal CEJ was clinically not detectable at both mesial and distal aspects of the tooth.

- **Type 2:** Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the depth of the interproximal pocket) was less than or equal to the buccal attachment loss (measured from the buccal CEJ to the depth of the buccal pocket)
- **Type 3:** Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the depth of the pocket) was higher than the buccal attachment loss (measured from the buccal CEJ to the depth of the buccal pocket). [10]

10. Rotundo et al. (2011)

Classified gingival recession taking into consideration both soft and hard dental tissues.

For this classification, specific taxonomic variables have been considered,

1. the amount of keratinized tissue (KT = 2 mm);
2. the presence/absence of noncarious cervical lesion (NCCL), with a consequent unidentifiable CEJ;
3. and the presence/absence of interproximal attachment loss.

Considering these variables, the following method of assessment is suggested:

1) KT ≥2 mm , NCCL – absent
- Interproximal attachment loss – absent.

2) KT <2 mm , NCCL – present
- Interproximal attachment loss – present

As a consequence, the following classes may be identified within the population:

- KT ≥2 mm – no NCCL – no interproximal attachment loss (AAA)
- KT ≥2 mm – NCCL – no interproximal attachment loss (ABA)
- KT ≥2 mm – no NCCL – interproximal attachment loss (AAB)
- KT ≥2 mm – NCCL – interproximal attachment loss (ABB)
- KT <2 mm – no NCCL – no interproximal attachment loss (BAA)
- KT <2 mm – NCCL – no interproximal attachment loss (BBA)
- KT <2 mm – no NCCL – interproximal attachment loss (BAB)
- KT <2 mm – NCCL – interproximal attachment loss (BBB)

11. Kumar and Masamatti (2013)

It can be applied for facial surfaces of maxillary teeth and facial and lingual surfaces of mandibular teeth. Interdental papilla recession can also be classified according to this new classification.

- **Class I:** There is no loss of interdental bone or soft tissue. This is sub classified into two categories:
- **ClassIA:** Gingival margin on F/L aspect lies apical to CEJ, but coronal to MGJ with attached gingiva present between marginal gingiva and MGJ.
- **Class IB:** Gingival margin on F/L aspect lies at or apical to MGJ with an absence of attached gingiva between marginal gingiva and MGJ. [10]

Class II: The tip of the interdental papilla is located between the interdental contact point and the level of the CEJ midbuccally/midlingually. Interproximal bone loss is visible on the radiograph.

This is sub-classified into three categories:

- **Class IIA**: There is no marginal tissue recession on F/L aspect
- **Class IIB:** Gingival margin on F/L aspect lies apical to CEJ but coronal to MGJ with attached gingiva present between marginal gingiva and MGJ
- **Class IIC**: Gingival margin on F/L aspect lies at or apical to MGJ with an absence of attached gingiva between marginal gingiva and MGJ.

Class III: The tip of the interdental papilla is located at or apical to the level of the CEJ midbuccally/midlingually. Interproximal bone loss is visible on the radiograph.

This is sub-classified into two categories:

- **Class IIIA**: Gingival margin on F/L aspect lies apical to CEJ, but coronal to MGJ with attached gingiva present between marginal gingiva and MGJ
- **Class IIIB:** Gingival margin on F/L aspect lies at or apical to MGJ with an absence of attached gingiva between marginal gingiva and MGJ. [11]

12. Proposed Classification for palatal recession

The position of interdental papilla always remains the basis for classifying gingival recession on palatal aspect. The criteria of sub classifications have been modified to compensate for the absence of MGJ.

1: Marginal tissue recession on palatal aspect with no loss of interdental bone or soft-tissue

- 1 A: Marginal tissue recession ≤3 mm from CEJ
- 1 B: Marginal tissue recession of >3 mm from CEJ

2: The tip of the interdental papilla is located between the inter-dental contact point and the level of the cement enamel junction mid-palatally. Interproximal bone loss is visible on the radiograph.

- 2 A: Marginal tissue recession ≤3 mm from CEJ
- 2 B: Marginal tissue recession of >3 mm from CEJ

3: The tip of the interdental papilla is located at or apical to the level of the cement enamel junction mid-palatally. Interproximal bone loss is visible on the radiograph.

- 3 A: Marginal tissue recession ≤3 mm from CEJ
- Marginal tissue recession of >3 mm from CEJ

13. Prashant et al. (2014)

It is a classification that describes that the dental surface defects that is important in diagnosing gingival recession areas which might help in selecting definite treatment approach.

The evaluation was performed on both frontal and lateral views using a 4X magnification lens, a periodontal probe (PCP UNC 15), and a dental explorer.

- Class A, identifiable CEJ on the entire buccal surface
- Class B, unidentifiable CEJ totally or partially.

Considering the presence of cervical discrepancies (step), measured with a periodontal probe perpendicular to the long axis of the:

Class (+), presence of cervical step (>0.5 mm) involving the root or the crown and the root and Class (−), absence of cervical step

CONCLUSIONS

There are a variety of classifications for gingival recessions. However each classification has its own advantages and limitations. No classification is complete and fulfils all criteria. Further studies continue to develop more classifications for the ease to classify gingival recessions.

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