Inter- and intra-observer agreement on Miller’s classification of gingival tissue recessions

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Purpose

Miller’s is the most commonly used classification of gingival tissue recessions (Miller 1985). However, data on the reliability of this classification is missing so far, which although reliability, reflects the consistency of repeated measurements, is regarded as a prerequisite for judging the utility of a classification (Karras 1997). The aim of the present study was to determine inter- and intra-observer agreement on Miller’s classification and on 3 additional parameters associated with gingival tissue recessions.

Methods

Two hundred photographs (50 of each region: maxillary/mandibular anterior/posterior teeth) of gingival tissue recessions were evaluated twice (interval: one month) by 4 observers in Miller’s classification (classes I to IV; Miller 1985), gingival phenotype (thin & high or thick & low scallop; Seibert 1989), tooth shape (long-narrow or short-wide; Olsson 1991 & 1993), and identifiability of the cemento-enamel junction (CEJ). The level of agreement was assessed according to a 4-level nomenclature (Landis 1977): poor 0.0-0.2, slight 0.21-0.4, moderate 0.41-0.6, substantial 0.61-0.8, and almost perfect 0.81-1.0.

Results

The inter- and intra-observer agreements on the assessed parameters are summarised in Table 1. The inter-observer agreement on Miller’s classification was substantial, with the highest values for the anterior teeth. The intra-observer agreement was substantial to almost perfect, with the highest values for maxillary anterior teeth. The difference between the first and second ratings as well as among the different observers were mainly among Miller’s classes I, II, and III, but never between classes I and IV (Figure 1 and 2).

The inter-observer agreement on the gingival phenotype was slight to moderate, with higher values for anterior mandibular teeth. Similar results were seen for intra-observer agreements. In general, the intra-observer agreements for all regions were moderate for each observer. The inter-observer agreement on tooth shape was fair to moderate, with higher values for the anterior mandibular teeth. Similar results are presented for intra-observer agreement. In general, intra-observer agreement for all regions were moderate for each observer. Inter-observer agreement on the identifiability of the CEJ was slight to fair, with values just slightly higher for anterior teeth. Intra-observer agreement was poor to almost perfect. The anterior mandibular teeth presented slightly higher values.

The inter- and intra-observer agreements of the assessed parameters were assessed by ICC and the other parameters by Kappas. In parentheses, the 95% Confidence Interval is presented for all regions. Parameters with an almost perfect reliability (>0.80) are presented in bold. CEJ...cemento-enamel junction.

Gingival phenotype (thin & high scalloping) significantly correlated with tooth shape (long-narrow) (rho=0.662, p<0.001; Table 2). Anterior teeth presented a higher correlation, with the mandibular anterior teeth presenting an almost perfect correlation (rho=0.954).

Table 2. Correlation between gingival phenotype and tooth shape (results from observer 2, Spearman correlation coefficient) indicating an association between a thin and high-scalloping gingival phenotype and long, narrow teeth.

Significant values (p<0.01) are in bold.

Conclusions

Miller’s classification of gingival tissue recessions was evaluated by 4 examiners using 200 photographs and yielded substantial to almost perfect agreement, with higher agreement for the anterior teeth. The present study offers the so far missing proof on the sufficient inter- and intra-observer agreement of this classification.

References