Purpose
Miller’s is the most commonly used classification of gingival tissue recessions (Miller 1985). However, data on the reliability of this classification are missing so far, although reliability, which 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 vs. thick & low scalloping; 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), slight (0.0-0.2), fair (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 was 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.

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 concerning the sufficient inter- and intra-observer agreement of this classification.

References

Table 1. Inter- and intra-observer agreements of the assessed parameters (Miller’s classification, gingival phenotype, tooth shape, and identifiability of the CEJ).

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.

Figure 1. (a) Intra-observer agreement of Miller’s classification for observer 2 and (b) inter-observer agreement of Miller’s classification for (b) observer 2 to 1, (c) observer 2 to 3, and (d) observer 2 to 4. The white square represents a perfect match, the grey frame mismatch for one class, and the black frame mismatch for two classes. There was no mismatch for three classes (Miller’s classes I vs. IV).

Figure 2. (a, b) Represent 2 teeth where all four observers agreed: (a) mandibular left central incisor, Miller class II; and (b) mandibular left central incisor, Miller class IV. (c, d) Represent 2 teeth where the four observers disagreed: (c) maxillary right first premolar, two said Miller class I and two said Miller class III; and (d) maxillary left first premolar, one said Miller class I, one Miller class II, and two Miller class III.