

Guidance on Assigning Ratings

In assigning ratings to the teeth as observed in the OPGs, Demirjian provided a set of rules as further guidance. These guidelines are:

1. The mandibular permanent teeth are rated in the following order: 2nd molar, 1st molar, 2nd bicuspid, canine, lateral incisor, central incisor.
2. All teeth are rated on a scale of A to H. The rating is assigned by following carefully the written criteria for each stage, and by comparing the tooth with the diagrams and x-ray pictures given. The illustrations should only be used as an aid, not as the sole source of comparison. For each stage there are one, two or three written criteria marked a), b), c). If only one criterion is given this must be met for the stage to be taken as reached; if two criteria are given, then it is sufficient if the first one of them is met for the stage to be recorded as reached; if three criteria are given, the first two of them must be met for the stage to be considered reached. At each stage, in addition to the criteria for that stage, the criteria for the previous stage must be satisfied. In borderline cases the earlier stage is always assigned.
3. There are no absolute measurements to be taken. A pair of dividers is sufficient to compare the relative length (crown/root). To determine apex closure stages no magnifying glass is necessary. The ratings should be made with the naked eye.
4. The crown height is defined as being the maximum distance between the highest tip of the cusps and the cemento-enamel junction. When the buccal and lingual cusps are not at the same level, the midpoint between them is considered the highest point.

METHOD

Demirjian Rating	Maturity score
0	0
A	1
B	2
C	3
D	4
E	5
F	6
G	7
H	8

1. Assess the stages of development of teeth 41 to 47 (or 31 to 37) and assign each tooth a specific development stage, according to the eight defined stages of the Demirjian system.
2. The stages are then converted to numerical values 1 to 8 according to the table opposite. These values are then totalled to give the Simple Maturity Score (SMS) for that case. A predicted age can then be read off the appropriate conversion chart (over) depending on sex.
3. The 95% confidence interval of ± 1.8 years should be used, and is represented on the conversion chart by the yellow lines.

Development Stages of the Permanent Dentition

A

In both uniradicular and multiradicular teeth, a beginning of calcification is seen at the superior level of the crypt in the form of an inverted cone or cones. There is no fusion of these calcified points.



B

Fusion of the calcified points forms one or several cusps which unite to give a regularly outlined occlusal surface.



C

- Enamel formation is complete at the occlusal surface. Its extension and convergence towards the cervical region is seen.
- The beginning of a dentinal deposit is seen.
- The outline of the pulp chamber has a curved shape at the occlusal border.



D

- The crown formation is completed down to the cemento-enamel junction.
- The superior border of the pulp chamber in the uniradicular teeth has a definite curved form, being concave towards the cervical region. The projection of the pulp horns if present, gives an outline shaped like an umbrella top. In molars the pulp chamber has a trapezoidal form.
- Beginning of root formation is seen in the form of a spicule.



E

Uniradicular teeth:

- a. The walls of the pulp chamber now form straight lines, whose continuity is broken by the presence of the pulp horn, which is larger than in the previous stage.
- b. The root length is less than the crown height.

Molars:

- a. Initial formation of the radicular bifurcation is seen in the form of either a calcified point or a semi-lunar shape.
- b. The root length is still less than the crown height.



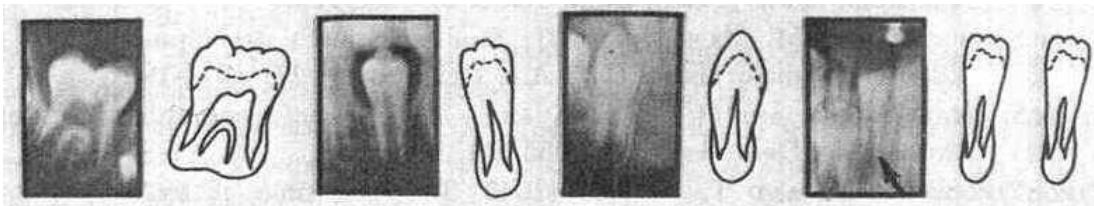
F

Uniradicular teeth:

- a. The walls of the pulp chamber now form a more or less isosceles triangle. The apex ends in a funnel shape.
- b. The root length is equal to or greater than the crown height.

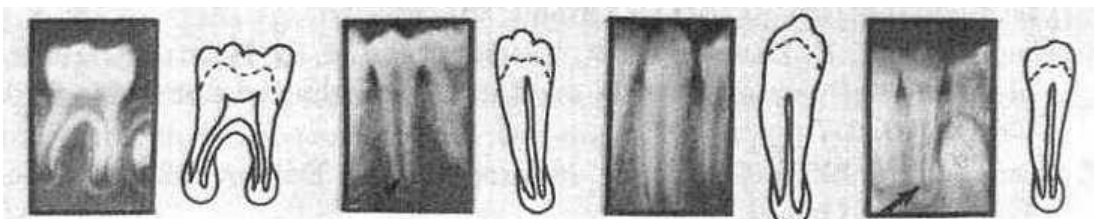
Molars:

- a. The calcified region of the bifurcation has developed down further from its semi-lunar stage to give the roots a more definite and distinct outline with funnel shaped endings.
- b. The root length is equal to or greater than the crown height.



G

The walls of the root canal are now parallel and its apical end is still partially open (Distal root on molars).



H

- a. The apical end of the root canal is completely closed (Distal root on molars).
- b. The periodontal membrane has a uniform width around the root and the apex.

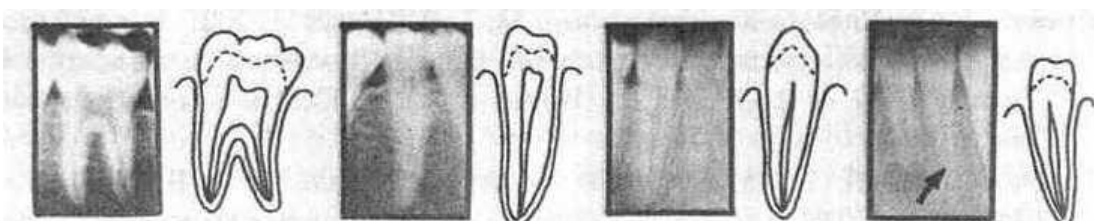


Figure 1: The development status of each group of teeth (from left to right - molars, premolars, canines, incisors) is defined for stages A-H. The definition of each stage of the permanent dentition is based on the associated biological criteria (from Demirjian '76).

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