



---

### G43 Visualization of Histological and Physiological Criteria Used in Dental Methods of Age Assessment

*Aime Conigliaro, MA\**, Fort de Rosny, 1 boulevard Théophile Sueur, Rosny sous-bois 93110, FRANCE; and *Charles E. Georget, PhD*, 5 Rue Voltaire, Amboise 37400, FRANCE

---

After attending this presentation, attendees will understand the interest in using, as rationally as possible, the criteria included in these age-assessment methods, especially as each image of comparison can more accurately target the score for each criterion.

This presentation will impact the forensic science community by demonstrating through clinical cases that the estimated age of a victim can vary by a few years depending on the benchmark used to evaluate the criteria. The pictorial catalog of comparison was developed with the contribution of optical microscopy and will make experts aware that it is easier and more accurate to compare a picture with other pictures than a picture with drawings or descriptive texts.

The goal of this work is to develop easier and more efficient applications to estimate the age of an adult victim at the time of death. The study mainly includes the improvement of the interpretation of histological and physiological criteria used in the age assessment methods currently existing. Of concern are six factors: (1) abrasion; (2) periodontal disease; (3) root transparency; (4) secondary dentine; (5) cementum apposition; and, (6) root resorption.

All criteria were studied using the same protocol. The height of periodontitis raises no problem of interpretation because it only depends on a measure of the whole tooth in its socket before extraction, if possible. On the contrary, after extraction and fine cutting of the tooth on its main axis in buccolingual on the mesial and distal sides, the other five criteria are the subject of observations. These latter lead to the choice of a representative image of a score.

Generally, the interpretation advocated by this study of the age assessment methods is based on a macroscopic observation. This study is original as it uses a microscope connected by a Universal Serial Bus (USB) connection to the computer; the display of the image is observed on a screen before its capture. These enlarged views allow easier and more reliable reading of the factors studied. This is especially the case for secondary dentin apposition, cementum apposition, and root resorption where the macroscopic interpretation is often difficult as it is not totally visible.

After having established the picture catalog of comparison of all the factors, the latter is tested by means of teeth extracted from patients of a known age. The evaluation of the imaging is made by calculating the age for the methods of estimation using some or all of the histological and physiological criteria.

**Conclusion:** To conclude this work, the procedure is applied to an assessment of the age of a real victim. The use of the picture catalog of comparison allows easier and more reliable reading of the factors studied, specifically the cementum apposition and root resorption; however, age assessment is more efficient.

---

#### Age Assessment, Optical Microscopy, Postmortem