F15 Assessment of Age by Teeth

Charles E. Georget, DDS, PhD, and Aime H. Conigliaro, MA*, Institut de Recherche Criminelle de la Gendarmerie Nationale, 1 Blvd Theophile Sueur, Rosny Sous Bois, FRANCE*

After attending this presentation, attendees will be able to understand the methodology for estimating the dental age-aided design software and layout of data and results for how adults and elderly victims died.

This presentation will impact the forensic science community by showing how computerized methodology of age assessment provides reliable ergonomics and how its use in laboratories or mobile laboratories is important. This methodology is currently being tested in the Forensic Science Institute of French Gendarmerie (I.R.C.G.N). The practical applications presented can be used as a guideline available to forensic odontologists.

Each method of age assessment has advantages and disadvantages. The search for precision includes many factors (conditions of nutrition, life, growth, normal or premature aging, and disease). Currently, forensic practices are moving toward a dual assessment of age in two different systems, the evaluation of bone age and dental age (Pasquier 1999).

Age assessment is an important element of dental forensic examination. It is often required by magistrates and investigators as part of the dental analysis. Different methods exist to determine the dental age with the most appropriate depending on the case to be examined. The choice of method is multifactorial and depends not only on the categorical age of the victim (child, adolescent, adult, elderly), but also on the status of the victim (living or dead), and finally the technical constraints.

The goal of this work is to develop a suitable methodology for assessing age in deceased adults and elderly victims. This methodology involves the use of two methods, taking into account the histological and physiological factors. The Lamendin Method (1990) uses the entire tooth without preparation and studies the root transparency (root dentin sclerosis) and periodontosis factors. The Johanson Method (1971), derived from the Gustafson Method (1947), takes into account attrition, secondary dentin, periodontosis, cement apposition, root resorption, and root transparency. A value is assigned to each factor correlated with age. Each factor has seven levels of interpretation. Using two methods tends to confirm the probabilities when the results are consistent. Otherwise, it is necessary to seek the cause of inconsistent results.

A second step consists of automating data collection and calculation of age for both methods. Regarding the Lamendin method, the teeth selected for the evaluation are photographed on a light box. A camera connected to a computer allows shooting with remote target monitor. This photograph is included in the processing software. Measurements of the height of the root, the heights of periodontosis, and root transparency are made, then the estimated age is automatically calculated. On the Johanson method, a fine cut is performed with a microtome equipped with a diamond saw. This cut is photographed and six factors are measured. The results are automatically plotted on a summary explanation.

The use of different dental methods of estimation is interesting. Estimation applied to several teeth of the same victim is recommended. Consistency of results is essential; if there are significant differences, the cause must be investigated. The use of photography and processing software allows reliable measurements, observations, and facilitated automated results. In the end, the system provides significant time savings.

Dental Age Assessment, Lamendin Method, Johanson Method

 ** Presenting Author*