

Contributions of Forensic Odontology in Human Identification

Briem Stamm¹ and Alan Diego^{2*}

¹*Faculty of Dentistry, University of Buenos Aires, Argentina*

²*Faculty of Dentistry, National University of Rosario, Argentina*

***Corresponding author:** Alan Diego, Specialist in Legal Dentistry, Faculty of Dentistry, National University of Rosario, Argentina

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Opinion

The forensic science is concerned investigation of crime and administration of justice, requiring coordinated efforts of an interdisciplinary team. This temperament involves the cooperation & coordination of law enforcement officials, forensic pathologists, forensic anthropologists, forensic odontologists, criminalistics, and other specialists as deemed necessary. Human identification is one of the most challenging subjects that man has been confronted with. Forensic odontology has become an integral part of forensic medicine and has aroused growing interest in the globalized world, where different cultures have tightened their links, magnifying social, cultural, political, economic and scientific exchange, needing to promote interdisciplinary identification of people traveling around the world, victims of traffic accidents, violent crimes, kidnappings and terrorist attacks. The dental experts are members of such teams, involved in various tasks to respond to the departments responsible for administering justice.

With the passage of time, the role of forensic odontology has increased as very often teeth and dental restorations are the only means of identification. Forensic odontology has played a key role in identification of persons in mass disasters (aviation, earthquakes, Tsunamis), in crime investigations, in ethnic studies, and in identification of decomposed and disfigured bodies like that of drowned persons, fire victims, and victims of motor vehicle accidents. Other areas of application include criminalistics, in cases involving abuse of children and elderly. Bite marks also help in detection of culprits. It also render sits service in probing of dental malpractice, archeology etc. The scope of forensic dentistry is broad and ever-challenging. Each case is different and even the seemingly routine case may test the dentist's ingenuity in applying his dental knowledge.

The various methods employed in forensic odontology include tooth prints, radiographs, photographic study, rugoscopy, cheiloscopy and molecular methods. Investigative methods applied in forensic odontology are reasonably reliable, yet the short comings must be accounted for to make it a more meaningful and relevant

procedure. Most dental identifications are based on restorations, caries, missing teeth and/or prosthetic devices, such as partial and full removal prostheses, which may be readily documented in the record. The establishment of forensic odontology as a unique discipline has been attributed to Dr. Oscar Amoedo (Father of Forensic Odontology), who identified the victims of a fire accident in Paris, France in 1898.

Forensic Odontology plays a fundamental role in situations where habitual methods of identification, such as fingerprinting and/or visual recognition, cannot be performed, i.e. putrefied, charred or skeletonized bodies. The fundamental principles underlying dental identification are based on comparison and exclusion. The comparison between ante-mortem (AM) and postmortem (PM) information will be effective as long as the data collected during the patient's life have been completed by the dental practitioner in a faithful, enlightened and as complete manner as possible. Unfortunately, reality indicates that ante-mortem dental records often contain cant, illegible and even irrelevant information, making it impossible for the coroner to contribute positive identification.

From the comparative maneuvers performed to identify a person, you can arrive at 4 different situations:

- a. Positive identification: The points of comparison between information ante-mortem and postmortem are sufficient, there being no discrepancies, i.e. absolute agreement.
- b. Possible identification: There is concordance in some points resulting from the comparison between ante-mortem and postmortem data, although there may be discrepancy with some reasonable explanation. You cannot conclude positive identification. Some situations could be when comparing odontograms, it is observed in the PM tab absence of a tooth that is present in the AM tab or restorations that are not listed in the AM tab. This may have a logical explanation, since if the record has a certain age, It is probable that the exodoncia and/

or the restorative treatments could have been realized later by another professional and do not appear in the documentation with the expert dentist in that moment.

c. Insufficient evidence: The data obtained from rigorous comparative maneuvers are insufficient to achieve identification by dental methods.

d. Exclusion: There are insurmountable discrepancies in the AM-PM comparison, and it is therefore impossible to identify by proper techniques of Forensic Odontology.

e. Concluding, the forensic odontology has applications that require different levels of readiness both technically and emotionally on the part of interdisciplinary team members. The applications include identification and age estimation of living or deceased individuals from their teeth, jaws, or facial bones; analysis of bite marks to identify perpetrators; victims of violent and sexual attacks; cases of family violence (marital, child and elderly abuse and neglect) and last but not the least, to help in archeological and anthropological studies of populations. Recent tragedies and past and present situations

have increased awareness concerning the importance of forensic dentistry in identification of victims.

f. However, forensic odontology is not yet fully introduced into the dental curriculum as a subject. Moreover, the likelihood of future disasters due to terrorism, earthquakes and other causes require the dental profession in the world to prepare for an expanded role that would be in bioterrorism response, crime or in civil proceedings. Dentistry has an important role in the recognition of abuse among persons of all ages. Dentist have a major role to play in keeping accurate dental records and providing all necessary information so that legal authorities may recognize malpractice, negligence, fraud or abuse, and identify unknown humans.

g. Currently, there is no agreement among forensic dentists about the uniqueness of the dentition or behavior of human skin during biting for example. Although these issues have never been proven scientifically, much research is needed to prove suspicions that human dentition is unique. Last but not least important forensic dentistry is an important science and must be treated as such.