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Journal of Dental Specialities

Journal homepage: https://www.jdsits.in/

Review Article

The role of forensic odontology and dental anthropology: An approach to forensic issues

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ARTICLE INFO

Article history:
Received 29-01-2024
Accepted 21-02-2024
Available online 04-04-2024

Keywords:
Bite marks
Dental records
Forensic identification
Largescale disaster
Judicial problems

ABSTRACT

Dental treatment essential to justice Action, review of evidence, appropriate evaluation and presentation of dental examination results. Most involve the use of teeth and oral samples for identification in a legal context. Dental anthropology, on the other hand, provides information such as characteristics of teeth, tooth morphology, size and shape changes, restoration, disease, tooth loss, wear pattern, dentistry, color and teeth. Dental records are also useful for comparing teeth; this can help determine a person's age, gender, race or ethnicity, personality and occupation, all of which can take on meaning on their own. The dental profession plays an important role as well as the responsibility to maintain accurate dental records to provide the necessary information to assist in the identification of victims. This article provides an overview of how forensic odontology and dental anthropology play an important role in identifying individuals and finding ways to resolve legal issues.

1. Introduction

The application of science and technology in criminal investigation, prosecution, and decisionmaking is the goal of the forensic science research discipline and there should be cooperation between all parties.[1,2] The team does a lot of work. Whether used in crime or crime, identification is central to the development of forensic science.[1–3] Personal evidence must be established to be reliable and credible. Radiographic superposition, DNA identification, finger, palm or footprint comparison, teeth comparison are the methods used in identification.[1–3] One of the most reliable and widely used methods is dental analysis by comparing antemortem and postmortem data. Forensic odontology, the discipline that deals with oral and dental evidence, is a specialized field.[1,2] The definition of forensic odontology is the branch of dentistry that involves the appropriate processing and analysis of dental records, evaluation of the accuracy of dental findings, and presentation in the interest of justice. The development of forensic odontology as a different discipline.[1–3] Oscar Almouda (father of forensic dentistry), who identified the victims of the Paris fire.

In this world full of crimes and disasters, forensic odontology has developed wide areas of application:[1–4]

1. Analysis and evaluation of injuries to the jaw, teeth and oral soft tissues.
2. Criminal investigation and/or identification in cases of serious damage,[2,3]
3. Identification, drug examination and examination of bite marks, which frequently occur in gender, child abuse and self-defense.
4. Age estimation.[1–3]

Diagnosis of palate crease (lip examination) and lip imprint (lip examination) are now two additional methods for identification. Saliva chemistry (finding substances in

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https://doi.org/10.18231/j.jds.2024.005

saliva) is also used as a tool in forensic odontology.[1–4] Deoxyribonucleic acid (DNA) and proteins are now used as a specific guide in dentistry in the era of genomics and proteomics. Scientific identification methods are based on genomic and mitochondrial DNA found in tissue, dentin or cementum, as well as in salivary cells.[3,4]

2. Radiography

Forensic dentists use x-rays as a guide when determining the age of an unknown person. Comparison of pre- and postmortem radiographs is considered one of the most ethical aspects of human identity.[2–4] Radiography can be used for root and tooth analysis, detection of jaw abnormalities, cosmetic contouring, cavities and endodontic treatment.[2–4] A good indicator of age in the early twenties is the presence of nine lower third molars, which are considered the last teeth to emerge in the mouth.[1–4] Various tooth characteristics such as morphology, tooth angulation, and degree of healing provide sufficient information that the results are accurate when compared with antemortem radiographs.[2–5] In human teeth, tooth eruption occurs in a sequence that begins in the womb and continues until all permanent teeth emerge. This allows age to be determined accurately using radiographic interpretation.[4–6] Even in cases where the body is too deformed to be found, radiographs can be useful to forensic dentists in preliminary diagnosis. 13 Despite the above, the main task is to describe people.[3–5] Currently, forensic dentists use Automatic Dental Identification (ADIS), a computer program. Life finds the best match in its database.[6,7] Additionally, forensic dentists work in a challenging environment due to the increasing number of dental records and information related to natural disasters.[5–7] Forensic teams are challenged by traditional electronic testing methods that require more time and human resources. By using ADIS, forensic dentists can complete more work while handling smaller workloads.[6,7] Cutting Paper Pulp etc. paper pulp Tooth volume comparison, the newest method, involves volume matching of teeth with cone CT (e.g. tomography) and X-ray microfocus CT scans. They create root canals with higher resolution than traditional methods.[8,9]

3. Bite Mark Analysis

Collect evidence of bite marks on victims: Whether the victim is dead or alive, the following important information should be recorded.[10,11]

1. Demographics - test taker's name, age, gender, nationality, registration information, exam date and name.[8–10]
2. Location of the bite site - Identify the anatomical location by showing the contour (straight, curved or irregular) and condition of the tissues. Underlying tissue – bone, cartilage, muscle or fat.[10,11]
3. Shape of bite marks - round, oval, crescent or irregular.• Sign Color, Sign Size - Must be written in both vertical and horizontal metric.[11]
4. Types of injuries due to bites may include: petechial bleeding, contusions, abrasions, lacerations, cuts, ruptures, artifacts, etc.[11,12]

Steps to examine victims: The most important evidence obtained from bite victims is photography. A general photograph of the injury should be taken immediately. Injections include:[12,13]

1. With and without ABFO No. 2 scales.
2. There are colours and black and white.[13,14]
3. Turn on and off camera click (tilting the flash can resolve the three-dimensional situation of the same bite)
4. A full-body photograph showing the location of the injury.
5. Close-up shot that can easily be scaled to 1:1.[12–14]
6. If the wound is missing, take a UV photo. 7. If the bite is in an anatomically mobile area, various organs must be used to measure the effect of movement.[13–15]

4. Velopharyngoscopy

To identify the victim due to missing teeth, forensic odontology is used, among other methods, to prevent damage.[14,15] The anterior part of the roof of the mouth hosts asymmetric folds of fibrous tissue called palatal rugae, on either side of the midpalatal suture.[15,16] They know it's private and personal. Therefore, they can be used as forensic parameters. It is known that every person has a unique palatal wrinkle pattern. "Rugoscopy" or "Rugoscopy" is the term used to describe the examination of palatal creases.[14–16] Thomas Hermosa first used the term "palatal rugoscopy" in 1932. Many studies have been conducted to determine the role of palatal rugae in personality. The idea behind wrinkle patterns is that similar to fingerprints, they are unique to each person, remain the same throughout life, and are highly resistant to damage.[15,16] In disasters, it is an important tool for research groups to study burned people and corpses to simulate theburning and decomposition of evidence.[16–18]

5. Cheiloscopy

Cheiloscopy is the examination of the human body using the lips.[19–21] The Greek word "Cheilos" means lip and "Scopy" means to examine carefully. Human identity is one of the most complex concepts.[19–21] Everyone's lips are different. Lip folds or lip folds are unique to each person and can be used to identify themselves. Lip prints can provide valuable information and aid in authentication in real-time verification.[19–21] Lip striae are lines and spaces that appear as creases and grooves on a person's lips in the area where

the oral labial mucosa passes into the outer layer of skin (also known as the vermilion border). Liposcopy is the examination of wrinkles or grooves.[19–21]

6. DNA Analysis

Sample Collection-Traditional endodontic access, vertical separation, horizontal sectioning, cryogenic grinding etc.Teeth are a good source of genetic information. Nucleated cells can separate from the surrounding bone. DNA is responsible for all important information in healthy and diseased individuals, and teeth provide an advantage to DNA due to their chemical and physical resistance. The importance of forensic odontology becomes evidence in crimes such as bomb explosions, war or plane crashes, threats to human life, and cases where traditional identification methods cannot be applied, such as carbonized or advanced decomposition corpses. possible. Therefore, efficiency meets the need for faster and more accurate forensic identification processes. Because teeth are stored in the alveolar bone, they preserve the integrity of their genetic material and become a potential source of DNA material that plays an important role in identification and criminal activities. DNA stores genetic material and is unique to each individual. DNA profile analysis in identification provides a new perspective on the accuracy and reliability of identification. Therefore, dentists working in the field of forensic dentistry need to include this new technology in their efforts to extract DNA from genetic material.

7. Anthropological Review

Osteological information is generally collected through scientific research. A forensic dentist can assist the medical examiner in the process of identifying a deceased person.[22] The structure of the skull provides a lot of information about age, gender and ancestry. Forensic dentists can estimate people from three main groups: Caucasian, Mongolian, and Black.[22] Supporting information can be obtained from the presence of shovel-shaped incisors and Carabelli ridges, which further support the ancestral guess. Dental records provide great accuracy to forensic dentists in estimating the age of individuals whose soft tissue has been removed, especially in babies with neonatal lines on the enamel process during forensic studies. Basic information can be obtained from enamel samples and the neonatal system when examined with a scanning electron microscope.[22]

8. Conclusion

Dental science provides reliable information to identify human remains after a crime or natural disaster.[22] Dental records help gather information from the unknown, even in important cases where the body is far from a clear explanation. A special and important method of identifying individuals is called forensic dentistry, and the collection of dental records by dentists can be useful in forensic studies.[22] It is the dentist's duty to record dental records and retain details during daily dental work; because this will help authorities identify unknown persons.[22] Teeth are hard and durable, symbolizing their use in medicine and law. Knowing the importance of dental treatment will help dentists and dentists gather evidence and uphold the law.[22]

9. Source of Funding

None.

10. Conflict of Interest

None.

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Cite this article: Pagare J, Garad I. The role of forensic odontology and dental anthropology: An approach to forensic issues. *J Dent Spec* 2024;12(1):21-24.