



Odontology – 2020

G13 Forensic Dental Identification: Using Computerized Tomographic (CT) Scans to Identify Human Remains

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Learning Overview: After attending this presentation, attendees will have learned how postmortem CT scans may be used in forensic odontology, in conjunction with fingerprint analysis, DNA profiling, and clinically used radiological documentation techniques such as dental periapical radiographs, bitewing films, and panoramic X-rays. CT scans may be used when these forensic methodologies are unavailable or impossible to perform on human remains.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by exploring how postmortem CT scans may reduce the need for jaw resections by aiding in the dental identification of human remains.

This presentation will introduce attendees to an alternative tool in aiding in the identification of a decedent, by comparing antemortem and postmortem radiographs, which is currently being used by the Office of the Chief Medical Examiner (OCME) in Maryland. This presentation will also explore the advantages and marked disadvantages of using CT scans when other methods are unavailable.

Radiography can play an important part in forensic odontology, mainly to establish identification. This may take the precise form of comparison between antemortem and postmortem radiographs. Radiographs may also be taken to determine the age of a minor victim and even help in the assessment of the sex and ethnic group.¹ Along with dental and DNA analysis, radiographic images are used to identify unknown individuals. This requires the securing of premortem examination (e.g., CT scan or radiograph) of the suspect individual and the matching of specific anatomical details with similar postmortem studies.¹ Anatomical details such as the shape of the teeth, roots, supernumerary teeth, missing and present teeth, attrition, abrasion, coronal fracture, signs of bone resorption resulting from periodontal disease, bone pathology, diastemas, dental cavities, endodontic treatment, interradicular and intracoronal posts, implants, extraction socket(s), and dental prostheses can be used for identification purposes.²

Data examined will show that use of CT scans may prove remarkable because positive identification of a decedent has been accomplished by performing a CT scan on an unidentified cranium and comparing multiple landmarks and images with corresponding features in an antemortem CT scan.³ Conventional CT is a useful imaging method in the process of human identification and presents innumerable advantages in this field compared to traditional radiographic projection.⁴ CT has been utilized in the study of skulls and, in the forensic context, as an additional resource in the process of identification.

The use of CT scans may increase the quantity and quality of information involved in the death of the person examined.⁵ Overall, there is an emphasis that the use of the CT scan may contribute significantly to forensic purposes, allowing the exploration of dental identification in cases where traditional fingerprint analysis, and classic radiographical methodologies, are not available or conclusive.

Reference(s):

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Computerized Tomographic (CT) Scans, Postmortem Identifications, Dental Identification