

G39 Disaster Victims Identification (DVI) Using Digital Radiology: A Case Report of a Brumadinho Victim Identification by the Dental Comparative Method

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Learning Overview: The goal of this presentation is to demonstrate, through a literature review and case report, the importance of the presence of a digital X-ray device for the comparative dental study within the Legal Medical Institutes and how the method is relevant in DVI, plus the benefit of using this instead of other identification methods.

Impact on the Forensic Science Community: The scrapping of Legal Medical Institutes is a known reality in Brazil. Lack of equipment and the devaluation of coroners is a barrier to the successful identification of dead bodies. Bringing this problem to the center of the discussion can be decisive in revising the amount of investment in this sector. In this context, this presentation will impact the forensic science community by revealing the importance of an X-ray machine in the work of the dental professional and how it can directly impact the rapid and accurate identification of bodies in mass accidents.

A mass disaster is a sudden natural or man-made event that sets in motion multiple work teams. The identification of corpses in these disasters is a process that involves, in addition to technical and scientific procedures, affective issues related to the families involved, legal procedures, and other activities.¹

Dental structures are highly resistant to destruction, but dental identification also depends on relying on all available Antemortem (AM) dental documentation of the missing person. The role played by dentists in Postmortem (PM) dental examinations is extremely objective, and the use of dental radiology is an absolute need. AM radiographs can be easily compared with PM radiographic images, because even in the absence of dentistry or prosthesis work, the images offer very personal anatomical details.² The advancement of microelectronics and informatics, allied to the reduction of the cost of equipment, allowed the development of new, more powerful, and reliable techniques for comparing radiological images with forensic dentistry application.³ Radiological scanning with digital X-ray before the necroscopic examination is useful for a quick overview of the remains and provides an easy method to record the data found in their *in situ* state.⁴

Dentists from the Forensic Anthropology Sector of the Legal Medical Institute of Belo Horizonte (LMI-BH) were assigned to perform a dental anthropological examination of an unknown corpse from the region where the Feijão Mine dam was ruptured, located in the city of Brumadinho in Minas Gerais, on January 25, 2019. After due expert procedures, dental data were collected and recorded in an expert report. Digital radiographs of the mandibular remnant were taken and archived at the LMI Forensic Radiology Service. Based on the comparative study of the occurrences and dental work present in the radiographic images of the mandibular remnant with the AM radiographic images, it was found that there was compatibility between AM and PM data. The characteristics revealed were sufficient, in isolation, for the effective recognition of the screen. Thus, it was concluded there is express need for the existence of digital X-ray devices for forensic purposes within the Legal Medical Institutes. Human identification by dental techniques is effective, more agile, and less expensive; however, in cases of cadavers without AM dental parameters for comparison, it is not possible.⁵

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