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Identificação humana através de perícia odonto-legal: relato de caso

Lucia Virginia M. Gomes Porto [a, *], Raisa Queiroz Catunda[b], Janaina Ribeiro de Sousa[c]

[a,c] *Instituto de Polícia Científica (PB), Brasil*
[b] *Faculty of Medicine and Dentistry, University of Alberta, Canada*

**Endereço de e-mail para correspondência: luciavirginia@gmail.com*

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Resumo

O estudo dos elementos dentários merece destaque não apenas pela importância fisiológica, mas também pela contribuição jurídica, social e humanitária. Em situações onde o reconhecimento visual e a dactiloscopia não sejam possíveis (corpos destruídos pela ação do fogo, do tempo ou crânios separados do esqueleto), a busca da identidade pelo exame dos dentes tem destaque. A identificação Odonto-Legal tem metodologia comparativa - cotejo de características do material examinado (dados post-mortem) com características assinaladas em um momento anterior (dados ante-mortem). Assim, é imprescindível um registro arquivado adequadamente e que retrate de forma fiel e completa as condições bucais do examinado. O presente relato de caso descreve o confronto de um prontuário odontológico com os dados obtidos no exame necroscópico no intuito de identificar um corpo carbonizado no Instituto de Medicina e Odontologia Legal de Patos - Paraíba - Brasil. Foram encontrados sete pontos de concordância e destes, três são fortemente individualizadores. Não foram constatadas incompatibilidades, restando concluir pela identificação. A técnica Odonto-Legal destaca-se pela simplicidade, efetividade e baixo custo. O prontuário - regulamentado e obrigatório segundo normativas do Conselho Federal de Odontologia - é, muitas vezes, o único recurso que se pode lançar mão na busca pela identidade, devendo ser construído em todo e qualquer procedimento odontológico, tornando-se uma poderosa ferramenta para as Ciências Forenses.

Palavras-Chave: Antropologia Forense; Odontologia Legal; Radiografia Dentária.

Abstract

The study of dental elements deserves attention, not only for the physiological importance, but also for the legal, social and humanitarian contribution. In situations where visual recognition and fingerprinting are not possible (bodies destroyed by fire, or time or skull separated from the skeleton), the search for identity by examination of teeth is highlighted. Identification of human remains via dental knowledge is done using a comparative technique – It involves the comparison of characteristics of the material examined (post-mortem data) with characteristics indicated at an earlier point in time (ante-mortem data). Thus, a properly filed record is essential, which should accurately portray the oral conditions of the examinee. The present case report describes the comparison of a dental chart with the data obtained in the necroscopic examination for the identification of a carbonized body at Institute of Forensic Medicine and Dentistry of Patos - Paraíba - Brazil. Eight points of agreement were found. Of these, three provide strong evidence for a identification. After analysis, there were no incompatibilities and it was concluded that the dental record and the body were a match. Forensic Dentistry stands out for its simplicity, effectiveness and low cost. The dental record - regulated and mandated according to the Federal Dental Board rules - is often the only resource that can be found in the search for identity. Therefore, it is a powerful tool and must be built in all dental procedures.

Keywords: Forensic Anthropology; Forensic Dentistry; Dental Radiography.

1. INTRODUCTION

Human identification is one area of expertise for a specialist in Forensic Dentistry [1]. Identification is a process where an individual determines the identity of a person or thing. It involves a several steps with the purpose is to find an identity. Therefore, to identify a person it is necessary to determine the individuality by establishing unique characteristics to the body and match the dental records body and the chart [2, 3].

The transformations experienced by dental tissues post-mortem suffer little influence from external factors

when compared to other parameters [4-6]. This is because dental tissues are more mineralized and structurally unique in their composition [5]. These qualities allow dental tissues to resist burials, carbonizations, immersions and other inclemency, such as trauma, effects of putrefaction and time [4-6].

The materials used in dental restorations as well as dental implants are also extremely resistant to fire destruction as a result, they remain in the mouth even when subjected to high temperatures [4,7-10] In this way, they have the ability of retaining their original characteristics [8-10

There are also other individualizing structures in the oral cavity such as: state of conservation, implantation, number of teeth, position and characteristics, conformation, color, wear, caries, restoration, pathologies, prosthetic devices, orthodontic appliances, among others [2,6,9,10]. It is also understood that there are no people with the same denture [11].The analysis of dental specificities is considered as a primary method of identification, as well as fingerprinting and DNA examination [12]. This is because it responds positively to all technical and biological requirements (uniqueness, immutability, permanence, classifiably and practicality) of this process [2,6]. The dental method has a shorter working time and a lower cost when compared to the DNA test [3,13]. Apart from its excellent reliability, provided it is performed with discretion and minutia, being, under certain conditions, the only possible application [5,6,].

The dental records consist of documentation obtained during dental treatment [11,14-15]. It includes the clinical records, prescriptions, recommendations, certificates, complementary exams, radiographs, photographs, models in plaster, bleaching trays and other documents [11,14-15].

This work aimed to describe a case of identification of a carbonized individual through dental records, describing the methodology, analysis and discussion, demonstrating the importance of Forensic Dentistry for Human Identification.

2. CASE REPORT

According to the police report, in August 26th, 2014, a vehicle collided with a truck on the federal highway (BR-230) and burned down, causing the driver's carbonization. The corpse was delivered to the coroner's office (Institute of Forensic Medicine and Dentistry of Patos - Paraíba - Brazil) and the Official Dental Expert was designated to identify it. The Forensic Dentistry identification process was performed through the following phases: 1) Forensic Dentistry Necropsy, 2) Analysis of the medical records sent by alleged relatives, and 3) Comparison.

2.1. Forensic dentistry necropsy description of the forensic dental exam

At the time of the examination, the corpse was in a black nylon carrying body bag. It presented carbonization in every region of the head, with loss of cephalic content.

There was carbonization of the face with destruction of the upper third. The dental elements were exposed. The mandible remained attached to the skull by the musculature, since its right branch was destroyed and the left mandibular ramus was fractured at the point of contact with the mandible body. To visualize the arches, the muscular inserts connecting the mandible to the tongue were sectioned and the soft tissues removed, as well as the vestibular bone plate of the left hemi-mandible to expose the roots. The left mandibular ramus was fragmented and removed, the carbonized soft tissue remains of the upper lip and gingival mucosa on the upper dental elements were also removed. (Fig 1-4).

Figure 1. Right hemi-mandible.

Figure 2. Frontal view of the mandible.

Figure 3. Left hemi-mandible.

Figure 4. Canine roots and left inferior premolars.

2.2. Analysis of the dental records received

The alleged relatives of the victim were instructed to look for any type of dental or photographic documentation capable of identifying the individual by their teeth. A dental record was obtained with the following characteristics:

A clinical sheet, in letterhead, with the name of the dentist (without identification of the registration number in the Regional Council of Dentistry - RCD), composed of 04 pages and a single sheet without identification of clinic or professional, presenting the treatment plan, with 4 periapical radiographs affixed with metal clips.

On the first page of the booklet form, the patient's identification was completed by hand, with different colored pens (red and blue), including: name, date of the examination, residential address, home telephone number, business telephone number, gender and marital status. The fields: date of birth and profession were blank.

The second topic on the same page - Clinical History - Patient Dental Exam - consisting of objective and subjective questions about the general health of the patient, was blank. This topic has continuity on page 2, also with no answers, and there is only, in the table for complementary observations, notation of prescription of drugs, with no date, and in the budget table, calculation dated November 4th, 2002.

The Odontogram - Treatment Plan - initial item on page 3 - is limited to an arrow pointing to tooth #34 (first lower left molar).

The Treatment Evolution contained inconsistent dates for procedures. Some procedures were out of order and sometimes illegible. For example: Exam + AC + Tricresol + PC to 22mm; the tooth hurt; ... (unreadable); 12:30 tooth hurt again and I changed the temporary filling and put …(unreadable); tooth hurt – 18:30 – I Left it opened.

The field for the Emergency Examination - Endodontics - constituent of page 4 - is blank. No signature or rubric of the professional was observed.

The single form that presents the title Treatment Plan - brings in its first line the same identification of patient present in the booklet form, with information of endodontic treatment performed in tooth #34 described in a disordered and sometimes illegible / incomprehensible way, such as canal length, performed procedure, reinstrumentation, cone type, "OD amalgam restoration". It can be noticed the registration of two dates: September 24th, 2002 and October 9th, 2002, the latter associated with the expression: final.

Of the four periapical radiographs affixed to this form, two of them are dark and stained and do not present conditions for analysis. The others are suggestive of insufficient exposure time (clear) and have cuts in parts of the tooth crown (Fig 5).

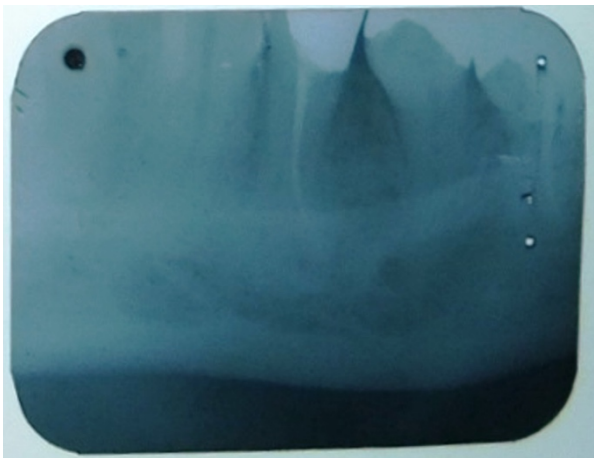

Figure 5. Periapical radiography on patient's dental records.

On the back of this separate form, annotations referring to tooth #26 are recorded, on September 13th, 2004: file type, channel length, budget, payment condition (number of instalments). Two lines of the professional are observed and in the last lines the annotation: T. canal 26 - September 13th, 2004 (endodontic treatment). T canal 34 – September 24th, 2002 (endodontic treatment).

2.3. Comparison

The data obtained in the dental necroscopic examination were compared with the information contained in the dental records provided by the alleged relatives of the victim. For better visualization, these results were grouped in a table with two columns. The left column is equivalent to the information collected in the examination of the corpse and the right refers to the ante-mortem data. The information collected through the professional's notes is recorded as "(clinical record)" and the information collected through the radiographs is recorded as "(RX)" (Chart 1).

Chart 1. Comparison: dental necroscopic examination (post-mortem exam) versus dental records (ante-mortem data)

Post-mortem exam		Ante-mortem data	
26	Resin filling on occlusal surface and amalgam on buccal surface	26	Endodontic treatment (clinical record)
33	Sound. Crown presents buccoversion of its mesial face (proclined). Crowding. Curvature of the root to mesial.	33	Curvature of the root to mesial. (RX)
34	Sound. Crown presents buccoversion of its mesial face (proclined). Crowding. Curvature of the root to mesial	34	Endodontic treatment. Crown radiopacity. Curvature of the root to distal - dilaceration (RX). Amalgam filling on occluso-distal surface (clinical record)
35	Amalgam filling on mesio-occluso-distal surface. Curvature of the root to mesial	35	Crown radiopacity. Slight curvature of the root to mesial (RX)
36	Mesio-occluso-disto-lingual complex amalgam. Amalgam filling on buccal surface. Filling material inside the root (endodontic treatment).	36	Endodontic treatment. Crown radiopacity (RX)

Complying with the ethical principles contained in the national parameters established by Brazilian National Health Board Resolution 466/2012, regulating aspects related to ETHICS INVOLVING STUDIES WITH/IN HUMAN BEINGS, this research was submitted for evaluation to the Research Ethics Committee, and was approved under protocol number 54189916.6.0000.5181.

3. DISCUSSION

The identification of carbonized individuals and in an advanced state of decomposition by the analysis of dental specificities is reported in the literature as feasible, practical, and efficient [3,4,9,16-21 Considering that the work of forensic experts is currently indispensable in identifying victims from major collective disasters [12, 20-22].

The success rate in the Forensic Dentistry identification depends on the existence of relevant characteristics present in the dental arches of the corpse as well as in the records presented for comparison - clinical record, radiographs, plaster models, intraoral photographs, among others [2,4,10,21,22,,,]. Depending on the quantity and quality of the convergent points obtained in this confrontation, the cadaver examined may be correlated, with a greater or lesser degree of certainty, as corresponding to the missing person [4,18,21,22,. When the antemortem and postmortem data are clearly inconsistent, the possibility of positive identification can be definitively eliminated. However, it should be understood that identification by exclusion is a valid technique in certain circumstances. [22]

Dental record is a document of great importance in Forensic Dentistry and serves as evidence at any time, being decisive for post-mortem identification. Authors describe cases of medical records that, although not adequately filled, or even simplified dental records, presented satisfactory conditions for identification [4,16,19,23,].

Despite these facts, it is not uncommon to find difficulties in obtaining comparative parameters that make it possible to proceed with a greater degree of accuracy at the moment of identification. This is due to errors in the completion of records and lack of notes in two odontograms (before and after the professional performance), not evidencing the change in the situation of dental events [19].

In this case report, the alleged relatives of the victim sent a clinical record with innumerable blank spaces (mainly without status of all teeth) and 4 periapical radiographs, only two of them under conditions of analysis.

The comparison between the data provided in the clinical file and the necroscopic examination was insufficient for identification, since this document was limited to annotations referring to the endodontic treatments performed on teeth #26 (left upper first molar) and #34 (lower left anterior premolar), carried out respectively about 10 years ago and the other about 12 years ago from the date of the survey. As there was no radiographic apparatus in the necropsy room, it was possible to find only obturator material in the root canal of teeth 34 and 36 (first premolar and first molar of the lower left hemi-arch).

Regarding the comparison between the necroscopic examination and the radiographs presented, similarities were found in four teeth - canine, first premolar, second premolar and first molar of the lower left arch. The matched characteristics were related to the anatomy of the teeth (size, shape, and curvature of roots) and treatments performed on them (form and size of restorations and existence of endodontic treatments). There were no discrepancies or disagreements in the examination made from the comparative technique, between the ante-mortem radiographs and the forensic examination.

Thus, when comparing with clinical data only, identification was classified as possible only because there were no incompatible characteristics capable of excluding the corpse from being the owner of this document, nor were there any relevant characteristics capable of affirming with conviction it was the same person (endodontic treatment in first lower premolar was found as a coincident point, but no possibility of dental morphology examination).

When the radiographs were analyzed, the following compatibilities were evidenced: endodontic treatments in teeth #34 and #36 (first lower premolar and first lower left molar), distal and vestibular restoration in tooth 36 (first lower left molar), mesio-occlusal-distal restoration in tooth #35 (second lower left premolar), disto-occlusal restoration in tooth #34 (first lower premolar). Besides these compatibilities, important details were evidenced: root curvature of left inferior canine to mesial, radicular curvature of the first lower premolar to the distal and the mild root curvature of the second lower premolar to mesial; highly individualizing points, especially when associated.

The related literature highlights the fact that there is no minimum number of corresponding points in the comparison for positive identification by the Forensic Dentistry method, since the dental particularities vary from case to case and a qualitative analysis of these points ends up being prominent [416,18,21]. Thus, the focus is the potential of individualization of a given coincident point, that is, a variation of convergent points occurs in each specific case, and it can be stated that only one coincident point can be enough to establish the identity [16,18,21].

The present case report corroborates the aforementioned information, considering that the confrontation indicated a total of eight points of coincidence, restricted to the examination of four teeth, but three of these points present important qualitative elements, which together portray an exclusive characteristic of an individual, meeting the technical and biological requirements for reliable human identification according to Interpol's Disaster Victim Identification (DVI) Guide [12].

Among the various documents that make up the dental records, imaging exams stand out for human identification. Among these, the radiographic examinations, which, when carefully produced and correctly filed, allow the individualization of any person, besides being low cost [17]. The analysis of dental records accompanied by ante-mortem and post-mortem radiographs has become a fundamental tool in the identification processes in Forensic Dentistry [9,16,17,21].

In fact, the periapical radiographs were prominent in the expert examination and were essential for examining the root morphology. If this complementary examination were not present, the existing incomplete clinical record, would not be a consistent tool for identification. Only two periapical radiographs performed 12 years ago were enough to reverse a situation that would at first sight be classified as a possible identification, reinforcing the idea that even data collected long ago can be used safely.

The documentation presented portrays the negligence of the professional in the preparation of dental records. There was no information on the condition of all teeth after dental treatment as recommended by Serra et al (2012) [19] as well as the identification of the restored surfaces or the material used in the restorations. It was also evidenced the use of acronyms, abbreviations and illegible letters, which greatly complicate the understanding . Radiographs were not packed in cartons, had no adequate imaging, processing and revelation techniques (clear and dark radiographs), had cut-off images of tooth crowns and were not identified. Procedures should be taken to improve the quality of radiographic imaging because, although it does not preclude interpretation, it impairs the examination and may omit relevant points from past clinical situations.

It is evident that radiographs, unlike subjective records, such as dental records that lack details and may contain errors, provide objective data by accurately recording the unique morphology of dental restorations, crowns and roots, and dental/bone anatomy, comparing similarities and relevant and individual characteristics, including the collection of post-mortem data, since there is no need to manipulate fragile and brittle teeth in decomposed, mutilated or charred bodies. In addition, the technique is fast and non-invasive and is the most frequent complementary exam in the clinical Dentistry [17].

The loss of post-mortem teeth (those whose open alveoli show no signs of tissue scarring) is a factor that makes it difficult and limit the investigations of the identity of the bodies by the team of dentists, making it advisable the presence of these professionals at the site of the accident, helping the police recover the elements, emphasizing the need for special care in the handling of human skulls [4,12].

It was also impossible to record the post-mortem radiographic examination in this study, which could make comparison unfeasible. Fortunately, the relevant points for the identification were in the morphology of the roots of the lower left hemi-arch and it was possible to remove the buccal bone board to visualize these characteristics.

4. CONCLUSION

The comparison of the ante-mortem periapical radiographs with the necroscopic examination showed

coincidences in relevant qualitative characteristics and no discrepancy, resulting in the identification of the victim. Therefore, complementary examinations, such as imaging, help not only the diagnosis and treatment, they are essential tools for the identification of carbonized bodies. The Forensic Dentistry identification is fundamental for justice and stands out for the simplicity, effectiveness and low cost. The clinical record is often the only resource that can be put to use and must be built into any and all dental procedures, making it a powerful tool for Forensic Science.

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