

Giovanna Bissacot

Métodos de identificação humana utilizados no Laboratório de
Antropologia Forense do IML-DPT-PCDF, entre 1993 e 2013

Brasília
2015

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Métodos de identificação humana utilizados no Laboratório de Antropologia Forense do IML-DPT-PCDF, entre 1993 e 2013

Trabalho de Conclusão de Curso apresentado ao Departamento de Odontologia da Faculdade de Ciências da Saúde da Universidade de Brasília, como requisito parcial para a conclusão do curso de Graduação em Odontologia.

Orientador: Prof. Dr. Malthus Fonseca Galvão

Brasília
2015

À minha família, que sempre esteve ao meu lado, me dando
suporte e incentivando em minha vida acadêmica.

AGRADECIMENTOS

Ao meu Orientador, Professor Doutor Malthus Fonseca Galvão, por ter me incentivado nessa jornada acadêmica e vida pessoal, e me ensinado que com objetivos alcançaremos tudo aquilo que buscamos.

À equipe do IML pela receptividade e, especialmente, à equipe do Laboratório de Antropologia Forense por ter feito de mim parte do grupo, me oferecendo oportunidades únicas e incríveis de aprendizado e crescimento pessoal e profissional.

EPÍGRAFE

“Talvez não tenha conseguido fazer o melhor,
mas lutei para que o melhor fosse feito.
Não sou o que deveria ser mas, Graças a Deus,
não sou o que era antes”.

Marthin Luther King

RESUMO

BISSACOT, Giovanna. Métodos de identificação humana utilizados no Laboratório de Antropologia Forense do IML-DPT-PCDF, entre 1993 e 2013. 2015. Trabalho de Conclusão de Curso (Graduação em Odontologia) – Departamento de Odontologia da Faculdade de Ciências da Saúde da Universidade de Brasília.

Equipes de Antropologia Forense muitas vezes necessitam dos conhecimentos e habilidades da odontologia, em especial para fins de identificação humana. O presente artigo apresenta um estudo descritivo analítico feito a partir dos registros de todos os casos de identificação humana cadavérica ocorridos entre 1993 e 2013 do Laboratório de Antropologia Forense do Distrito Federal, com o intuito de aquilatar a importância da Odontologia na identificação humana, ao lado de outras técnicas, e apresentar alguns dos métodos odontológicos de identificação humana utilizados.

ABSTRACT

BISSACOT, Giovanna. Methods for Human Identification used in the Laboratory of Forensic Anthropology from IML-DPT-PCDF, between 1993 and 2013. 2015. Undergraduate Thesis (Undergraduate Course in Dentistry) – Department of Dentistry, School of Health Sciences, University of Brasília

Teams of Forensic Anthropology often need knowledge and skills in forensic dentistry, especially for the purposes of human identification. This article presents a descriptive analytic study from the records of all cases of identification that occurred between 1993 and 2013 at the Laboratory of Forensic Anthropology of the Federal District, in order to assess the importance of dentistry in human identification, along with other techniques, and present some of the dental methods used for human identification.

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ARTIGO CIENTÍFICO

Este Trabalho de Conclusão de Curso é baseado no artigo científico:

BISSACOT, Giovanna; GALVÃO, Malthus Fonseca; TRINDADE FILHO, Aluisio; NOGUEIRA, Ricardo César Frade; OLIVEIRA, Elvis Adriano da Silva. Métodos de identificação humana utilizados no laboratório de antropologia forense do IML-DPT-PCDF, entre 1993 e 2013.

Apresentado sob as normas de publicação da Revista Forensic Science International.

FOLHA DE TÍTULO

Métodos de identificação humana utilizados no Laboratório de Antropologia Forense do IML-DPT-PCDF, entre 1993 e 2013

Methods for Human Identification used in the Laboratory of Forensic Anthropology from IML-DPT-PCDF, between 1993 and 2013

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RESUMO

Métodos de identificação humana utilizados no Laboratório de Antropologia Forense do IML-DPT-PCDF, entre 1993 e 2013

Resumo

Equipes de Antropologia Forense muitas vezes necessitam dos conhecimentos e habilidades da odontologia, em especial para fins de identificação humana. O presente artigo apresenta um estudo descritivo analítico feito a partir dos registros de todos os casos de identificação humana cadavérica ocorridos entre 1993 e 2013 do Laboratório de Antropologia Forense do Distrito Federal, com o intuito de aquilatar a importância da Odontologia na identificação humana, ao lado de outras técnicas, e apresentar alguns dos métodos odontológicos de identificação humana utilizados.

Palavras-chave

Odontologia Forense, identificação cadavérica, identificação humana, antropologia forense.

ABSTRACT

Methods for Human Identification used in the Laboratory of Forensic Anthropology from IML-DPT-PCDF, between 1993 and 2013

Abstract

Teams of Forensic Anthropology often need knowledge and skills in forensic dentistry, especially for the purposes of human identification. This article presents a descriptive analytic study from the records of all cases of identification that occurred between 1993 and 2013 at the Laboratory of Forensic Anthropology of the Federal District, in order to assess the importance of dentistry in human identification, along with other techniques, and present some of the dental methods used for human identification.

Keywords

Forensic Odontology, cadaverous identification, human identification, forensic anthropology

INTRODUÇÃO

Nas últimas décadas, o método de identificação humana por meio dos elementos dentários, em crescente utilização, mostrou-se altamente confiável e de extrema importância [3]. De acordo com o Guia DVI (Disaster Victims Identification) da Interpol, papiloscopia, odontologia e genética forenses são meios primários de identificação [8].

Restaurações dentárias são elementos únicos e individuais e, junto com características de desenvolvimento, representam uma chave para a identificação humana. Uma característica importante dos dentes é a sua durabilidade. São a parte mais difícil de ser destruída do corpo humano [7]. Em casos de carbonização, mandíbula, maxila e dentes ficam bem protegidos pela língua, lábios e bochecha [2]. Além disso, em desastres de massa, naturais ou artificiais, em especial aeronáuticos, e durante e após guerras, a necessidade da identificação pela odontologia se mostra crescente [2].

A busca com as palavras-chave: *human dentistry forensic identification*, na base de dados PUBMED, retornou 598 artigos de todo o mundo. Destes, 6 abordavam pesquisas que informavam dados significantes de identificação positiva por meio do uso da odontologia forense [1,2,3,4,5,9].

Entre os selecionados, somente em um se fez buscas de dados significativos em serviços públicos de medicina legal. Este trabalho foi realizado em 1995 na Suécia, com o objetivo de investigar a qualidade dos registros *ante-mortem* e suas possíveis implicações para o trabalho de identificação, consolidando dados de 10 anos [1]. Os outros artigos [2,3,4,5,10] evidenciaram a importância da odontologia forense em casos específicos, como desastres de massa. A porcentagem de cadáveres identificados por meio de vestígios odontológicos variou de 16 a 70,3% nos trabalhos analisados.

A identificação humana utiliza vários métodos. No Laboratório pesquisado, utiliza-se primeiramente o método papiloscópico, por ser de fácil acesso e resultado rápido. Quando este é inexequível, são usados os métodos antropológico, odontológico e, por fim, o genético.

Cada método apresenta suas peculiaridades, mas aprofundar-nos-emos no Odontológico. Neste, existem várias técnicas, e a escolha dependerá das informações que se tem do suspeito a ser identificado. Assim como nos demais métodos de identificação, em determinado caso pode-se utilizar mais de uma metodologia odontológica. Esta redundância, quando possível, aumenta, de forma óbvia, os índices de probabilidade de identificação, pois estes dependem diretamente da quantidade de caracteres comparados e de suas prevalências na população.

O Instituto de Medicina Legal do Distrito Federal (IML-DF) apresenta grande demanda por ser referência no país, tendo participado ativamente dos processos de identificação humana em grandes desastres, como a queda do voo 1907 na floresta amazônica e, em cooperação internacional, nos casos do supermercado Ycuá Bolaños, no Paraguai 2004, e no terremoto do Peru, 2007.

Devido à rica casuística desta instituição, torna-se importante a organização dos dados de identificações para mensurar o sucesso e efetividade da equipe do IML-DF, especialmente da odontologia forense na resolução desses casos.

Estudos como este são de grande valor para destacar a importância da participação do cirurgião-dentista na equipe forense, principalmente na área ligada à antropologia; e incentivar os estudos sobre o assunto, com o intuito de gerar mais conhecimento, tornando as informações mais consistentes e difundidas.

Este trabalho, portanto, tem como objetivo analisar os casos de identificação humana ocorridos entre 1993 e 2013 no IML-DF, para evidenciar quantos deles tiveram a odontologia como fator

determinante para a identificação cadavérica e o método odontológico empregado.

MATERIAL E MÉTODO

O presente estudo foi submetido à análise pelo Comitê de Ética em Pesquisa com Seres Humanos da Faculdade de Medicina da Universidade de Brasília, com aprovação sob protocolo número 116.726/2014.

Os 557 laudos produzidos entre 1993 e 2013 no Laboratório de Antropologia Forense do IML-DF foram analisados e, destes, 375 eram casos em que foi necessária a identificação cadavérica.

Para avaliar quantos casos tiveram a odontologia como fator determinante para a identificação cadavérica, foi realizada leitura minuciosa de todos os laudos de identificação no período do estudo, no Laboratório de Antropologia Forense do IML-DF. A confidencialidade dos dados foi assegurada por intermédio do Termo de Responsabilidade e Compromisso do Pesquisador.

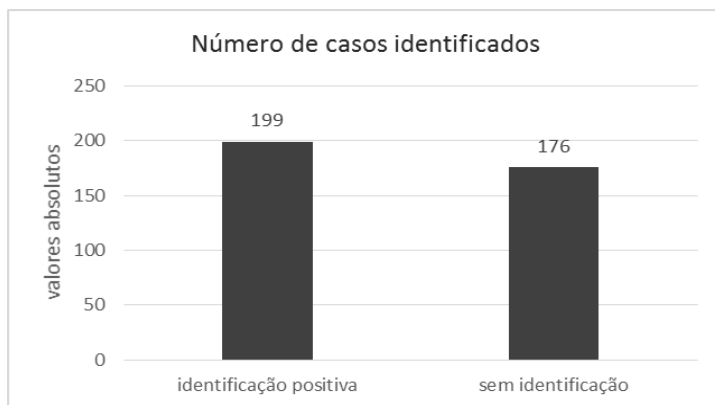
Para que fosse possível a análise minuciosa dos dados de cada laudo e a comparação das informações neles contidas, uma tabela foi criada no programa Excel®, com diversos campos de detalhamento, como o ano e número do laudo, sucinta descrição do caso, autoridade solicitante, identificado ou não, método(s) de identificação, método(s) de identificação odontológica. Tal tabela continha ainda informações do perfil biológico, compostos por quatro parâmetros: sexo, idade, estatura e ancestralidade geográfica. Concluída a coleta e tabulação dos dados, estes foram submetidos à análise, por meio de estatística descritiva.

RESULTADOS

Em relação aos métodos de identificação, poucos são os casos em que se utilizou apenas um; grande parte das vezes, utilizou-se pelo menos dois métodos em um mesmo caso, o que aumenta a probabilidade de identificação.

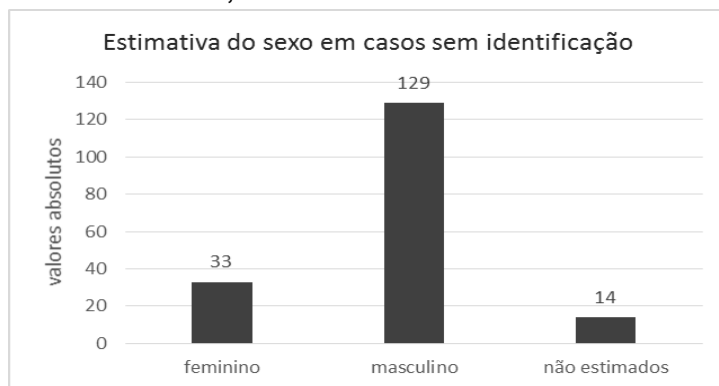
Entre os 375 laudos analisados, 199 (53%) foram de casos com identificação positiva (Gráfico 1).

Gráfico 1- número de casos com identificação positiva, e casos em que não foi possível fazer a identificação no IML-DF de 1993 a 2013; em valores absolutos



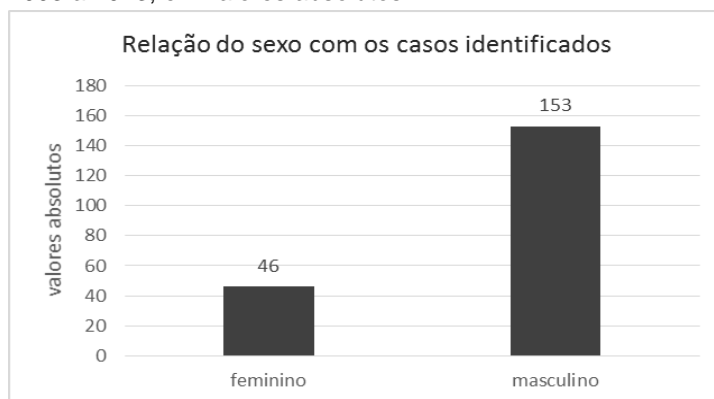
Dos 176 casos de não identificação, 33 eram do sexo feminino, 129 masculino e não foi possível estimar o sexo em 14 casos (Gráfico 2).

Gráfico 2- Estimativa do sexo em casos não identificados no IML-DF de 1993 a 2013; em valores absolutos



Dos 199 identificados, 46 (23%) eram do sexo feminino e 153 (77%) masculino (Gráfico 3).

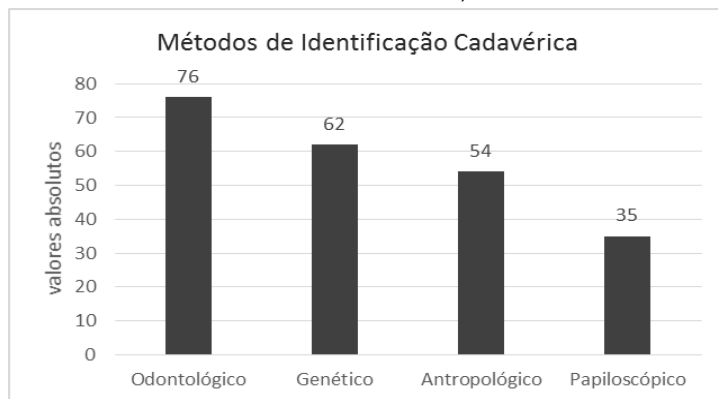
Gráfico 3- Estimativa do sexo dos casos identificados no IML-DF de 1993 a 2013; em valores absolutos



Dos 199 casos identificados, em 76 (38%) utilizou-se o método odontológico, em 62 (31%) o genético, em 54 (27%), o antropológico e, em 35 (18%) o papiloscópico, lembrando que

um mesmo caso pode apresentar mais de um método de identificação (Gráfico 4).

Gráfico 4- Métodos de identificação cadavérica utilizados para os casos identificados no IML-DF de 1993 a 2013; em valores absolutos



A Tabela 1 apresenta o total de casos por utilização dos diversos métodos odontológicos de identificação no IML do Distrito Federal.

Tabela 1- Métodos de identificação Odontológica utilizados para casos identificados no IML-DF de 1993 a 2013, em números absolutos

Método de Identificação Odontológica utilizado	N
Fotografia Casual do Sorriso	31
Prontuário Odontológico	29
Radiografia Periapical	25
Prótese	10
Radiografia Panorâmica	7
Informações do Dentista	5
Modelo de Gesso	4
Radiografia de Perfil para Cefalometria	3
Radiografia do Crânio para Fins Médicos	2
Radiografia interproximal	1
Documentação Ortodôntica	1
Fotografias Odontológicas Profissionais	1

DISCUSSÃO

O Laboratório de Antropologia Forense do IML-DF produz, além dos laudos de identificação cadavérica, uma diversidade de laudos, como de análise de prontuários médicos e perícias diversas com fins que não os de identificação cadavérica.

De um total de 557 laudos analisados, 375 eram casos de identificação cadavérica e, destes, 176 casos (47%) não foram identificados. Existem diversas razões que dificultam ou inviabilizam uma identificação, como a inexistência de um suspeito, por se tratar de pessoa indigente, que não é reclamada por sua família, ou pela escassez de informações a serem comparadas.

Os restos mortais dos casos em que não houve indícios suficientes para se afirmar que se tratava de determinada pessoa permanecem no Laboratório de Antropologia Forense, devidamente catalogados para um eventual confronto futuro.

De acordo com a rotina estabelecida no IML-DF, para que seja feita a identificação de um cadáver, o material deve ser cuidadosamente analisado, com o intuito de se conhecer características básicas, precisas ou não, como sexo, estatura, idade e ancestralidade geográfica.

O banco de dados gerado por essa pesquisa conta com todas essas informações relativas a cada laudo; contudo, neste trabalho, enfatizamos os resultados relacionados com os métodos de identificação cadavérica, especificamente os odontológicos.

Ficou clara, nos resultados do estudo, (Gráfico 4 e Tabela.1) a importância da Odontologia como método de identificação dentro da Antropologia Forense; tendo sido o método que atingiu o maior índice de sucesso, no período analisado. Uma grande vantagem desse método é o fato de apresentar resultados rápidos e de baixo custo; diferentemente, por exemplo, da

técnica genética que é mais dispendiosa e demorada, podendo gerar atraso na conclusão do laudo e, por óbvio, aumenta a espera da família para as cerimônias fúnebres, essenciais em nossa cultura.

Infelizmente, em nossa revisão bibliográfica, não encontramos trabalhos que demonstrem esse mesmo tipo de dado para fins de comparação com nossos resultados.

É bastante evidente, na instituição e período avaliados, a frequente identificação por fotografias casuais do sorriso, por prontuários odontológicos, por radiografias periapicais e outros métodos odontológicos, exibidos na Tabela 1.

Por esta razão, entre outras, o prontuário odontológico é um documento importantíssimo, que deve ser guardado pelo cirurgião dentista como prova de seu trabalho e acompanhamento do paciente [6].

As radiografias periapicais também são exames muito comuns durante o tratamento odontológico e, hoje em dia, de fácil acesso e baixo custo, e podem ser obtidas no próprio consultório odontológico, o que aumenta sua prevalência.

As fotografias casuais de sorriso estão cada vez mais comuns nesta era digital, com a popularização dos smartphones com seus “selfies”, das máquinas digitais e, principalmente, com o advento das redes sociais e crescente inclusão social.

A Odontologia é um método primário de identificação [8], o que significa que somente sua conclusão é suficiente para gerar uma identificação, sem necessidade de associação com outros métodos.

CONCLUSÃO

Este estudo demonstra de forma clara a importância da odontologia em vinte e um anos de casuística do Laboratório de Antropologia Forense do IML-DF para a identificação humana.

A odontologia foi o método mais prevalente, dentre os diversos utilizados (odontológico, genético, papiloscópico e antropológico). Dentro do método odontológico, sobressaíram-se as comparações por fotografias casuais do sorriso, pelos prontuários odontológicos e pelas radiografias periapicais.

Poucos trabalhos com o enfoque deste foram encontrados, apesar da necessidade do conhecimento destes dados, para se comprovar cada vez mais a imprescindibilidade da presença do cirurgião-dentista na equipe de Antropologia Forense.

REFERÊNCIAS BIBLIOGRÁFICAS

- [1] H. Borrman, U. Dahlbom, E. Loyola, N. René, Quality evaluation of 10 years patient records in forensic odontology. *Int J Legal Med* (1995) 108: 100–104
- [2] H. Brkic, D. Strinovic, M. Slaus, J. Skavic, D. Zecevic, M. Milicevic, Dental identification of war victims from Petrinja in Croatia. *Int J Legal Med* (1997) 110: 47–51
- [3] A. Valenzuela, S. Martin-de las Heras, T. Marques, N. Exposito, J.M. Bohoyo, The application of dental methods of identification to human burn victims in a mass disaster. *Int J Legal Med* (2000) 113: 236–239
- [4] H. Brkic, D. Strinovic, M. Kubat, V. Petroveckij, Odontological identification of human remains from mass graves in Croatia. *Int J Legal Med* (2000) 114:19–22
- [5] J. Dumanèiæ, Z. Kaiæ, V. Njemirovskij, H. Brkiæ, D. Zeèeviæ, Dental Identification after Two Mass Disasters in Croatia. *Croat Med J* (2001) 42: 657–662
- [6] L.R. Paranhos, J.C.F. Caldas, A.L. Iwashita, M.A. Scanavini, R.C. Paschini, A importância do prontuário odontológico nas perícias de identificação humana. *RFO* (2009) 14: 14–17
- [7] A.S.S.D. Terada, N.L.P. Leite, T.C.P. Silveira, J.M. Secchieri, M.A. Guimarães, R.H.A. Silva, Identificação Humana em

Odontologia Legal por meio de registro fotográfico de sorriso: relato de caso. Rev Odontol UNESP (2011) 40: 199–202

[8] Y. Schuliar, P.J.T. Knudsen, Role of forensic pathologists in mass disasters. Forensic Sci Med Pathol (2012) 8: 164–173

[9] M.P. Schou, P.J. Knudsen, The Danish Disaster Victim identification effort in the Thai tsunami: organization and results. Forensic Sci Med Pathol (2012) 8:125–130

[10] L.D.M. Modesti, G.M. Vieira, M.F. Galvão, R.F.B. de Amorim, Human Identification by Oral Prosthesis Analysis with Probability Rates Higher than DNA Analysis. J Forensic Sci, (2014) 59: 825–829

[11] M.F. Galvão, site de medicina legal, disponível em: <<http://www.malthus.com.br>>

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ISSN: 0379-0738

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1. Original Research Articles (Regular Papers)
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3. Forensic Anthropology Population Data
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- Aging sub adult skeletal remains
- Aging adult skeletal remains
- Aging living sub adults and adults

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