Hyuri de Souza Araújo

Estimativa de idade pela mineralização dentária: relato de caso

Brasília
2016

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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
2016

Agradeço, em primeiro lugar, a Deus, pela força e coragem
durante toda esta longa caminhada.

AGRADECIMENTOS

A Deus, por ter me dado vida e saúde, pela oportunidade de chegar até aqui. Por tudo que Ele tem me proporcionado.

Aos meus pais, por todo o esforço que fizeram a fim de me proporcionar o melhor, pelo amor, compreensão, paciência e todo apoio que obtive por parte deles.

Ao Prof. Dr. Malthus Galvão, pelos conselhos, apoio, paciência e pela excelente orientação.

Ao meu irmão, pela força e apoio.

A minha namorada, Ana Karoline, pelo incentivo, carinho, cobranças, nunca deixando de me apoiar.

Aos meus professores, pela boa formação durante esses cinco anos na graduação.

Aos meus colegas de turma, pelos bons momentos, conselhos, sempre ajudando uns aos outros. Em especial, ao Áttio e Lucas, que foram mais que amigos, foram irmãos. Também não poderia me esquecer da Wátylla e da Karol, responsáveis por bons momentos e boas risadas. Vocês estarão sempre nas minhas lembranças.

Aos meus familiares, que de certa forma, contribuíram para minha formação.

EPÍGRAFE

“O sucesso nasce do querer, da determinação e persistência em se chegar a um objetivo. Mesmo não atingido o alvo, quem busca e vence obstáculos, no mínimo fará coisas admiráveis”.

José de Alencar

RESUMO

ARAÚJO, Hyuri de Souza. Estimativa de idade pela mineralização dentária: relato de caso. 2016. Trabalho de Conclusão de Curso (Graduação em Odontologia) – Departamento de Odontologia da Faculdade de Ciências da Saúde da Universidade de Brasília.

A Odontologia Legal é uma ciência que tem sido amplamente utilizada em processos cíveis e penais, destacando-se os casos de identificação humana.

Por serem os elementos mais resistentes do corpo humano, muitas vezes os dentes são os únicos vestígios utilizáveis para se identificar um cadáver, tarefa de relevante função social.

A estimativa de idade faz parte do processo de identificação humana, que se inicia pela chamada *Tétrade Antropométrica*: idade, estatura, sexo e ancestralidade geográfica.

A idade, per si, não identifica, mas restringe o universo dos corpos ou desaparecidos a serem confrontados.

O objetivo deste trabalho é demonstrar a aplicação prática, em um caso concreto, da determinação da idade média aproximada e limites, de acordo com a mineralização dentária.

Para o cálculo, utilizou-se o "Sistema Computadorizado Integrado para Estimativa da Idade pelos Dentes", embasado na tabela de mineralização de Nicodemo, Moraes e Médici Filho.

A partir da compatibilidade entre a idade estimada da ossada e da desaparecida, prosseguiu-se com exames comparativos como o fotográfico, entre imagens *intra-vitae* e *post-mortem*, nos quais se percebe particularidades dentárias em número e raridade que proporcionam uma identificação positiva.

ABSTRACT

ARAÚJO, Hyuri de Souza. Age estimation by dental mineralization: case report. 2016. Undergraduate Course Final Monograph (Undergraduate Course in Dentistry) – Department of Dentistry, School of Health Sciences, University of Brasília.

Forensic dentistry is a science that has been broadly applied in criminal and civil procedures, specifically in cases of human identification.

As the most resistant elements of human body, frequently teeth are only usable traces for corpse identification, a relevant social assignment.

The age estimation is part of the human identification procedure which start from the so called anthropometric tetrad: age, stature, gender and geographic ancestry.

The age, per se, doesn't identify but it restricts the universe of the bodies or missing people that are to be compared.

The aim of this report is to demonstrate the practical application, in a real situation, for approximate age and limits determination, from dental mineralization.

For the calculation, "Integrated computer-based system for age estimation from teeth" was used based upon on the table of mineralization of Nicodemo, Moraes and Médici Filho.

By matching the bone age and the missing person age, followed with photographic comparative exams, using intra-vitae and post-mortem images, peculiarities in teeth number and unique features were noticed to provide a positive identification.

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ARTIGO CIENTÍFICO

Este trabalho de Conclusão de Curso é baseado no artigo científico:
ARAÚJO, Hyuri de Souza; GALVÃO, Malthus Fonseca.
Estimativa de idade pela mineralização dentária: relato de caso.
Apresentado sob as normas de publicação da Revista ***Forensic Science International***.

FOLHA DE TÍTULO

Estimativa de idade pela mineralização dentária: relato de caso

Age estimation by dental mineralization: case report

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RESUMO

Estimativa de idade pela mineralização dentária: relato de caso

Resumo

A Odontologia Legal é uma ciência que tem sido amplamente utilizada em processos cíveis e penais, destacando-se os casos de identificação humana.
Por serem os elementos mais resistentes do corpo humano, muitas vezes os dentes são os únicos vestígios utilizáveis para se identificar um cadáver, tarefa de relevante função social.
A estimativa de idade faz parte do processo de identificação humana, que se inicia pela chamada *Tétrade Antropométrica*: idade, estatura, sexo e ancestralidade geográfica.
A idade, per si, não identifica, mas restringe o universo dos corpos ou desaparecidos a serem confrontados.
O objetivo deste trabalho é demonstrar a aplicação prática, em um caso concreto, da determinação da idade média aproximada e limites, de acordo com a mineralização dentária.
Para o cálculo, utilizou-se o "Sistema Computadorizado Integrado para Estimativa da Idade pelos Dentes", embasado na tabela de mineralização de Nicodemo, Moraes e Médici Filho.
A partir da compatibilidade entre a idade estimada da ossada e da desaparecida, prosseguiu-se com exames comparativos como o fotográfico, entre imagens *intra-vitae e post-mortem*, nos quais percebe-se particularidades dentárias em número e raridade que proporcionam uma identificação positiva.

Palavras-chave: Identificação Humana. Estimativa de Idade Dentária. Odontologia Forense.

ABSTRACT

Age estimation by dental mineralization: case report

Abstract

Forensic dentistry is a science that has been broadly applied in criminal and civil procedures, specifically in cases of human identification.
As the most resistant elements of human body, frequently teeth are usable traces for corpse identification, a relevant social assignment.
The age estimation is part of the human identification procedure which start from the so called anthropometric tetrad: age, stature, gender and geographic ancestry.
The age, per se, doesn't identify but it restricts the universe of the bodies or missing people that are to be compared.
The aim of this report is to demonstrate the practical application, in a real situation, for approximate age and limits determination, from dental mineralization.
For the calculation, "Integrated computer-based system for age estimation from teeth" was used based upon on the table of mineralization of Nicodemo, Moraes and Médici Filho.
By matching the bone age and the missing person age, followed with photographic comparative exams, using intra-vitae and post-mortem images, peculiarities in teeth number and unique features were noticed to provide a positive identification.

Key words: Human identification. Dental age estimation. Forensic Dentistry.

INTRODUÇÃO

A Odontologia Legal é uma especialidade odontológica que apresenta grande relevância social no que diz respeito à identificação humana. Em desastres em massa, por exemplo, os corpos passam por diversas transformações, incluindo destruição de partes moles, muitas vezes inviabilizando a identificação pelo método datiloscópico [1].

A identificação humana não é somente um pré-requisito para se declarar oficialmente indivíduos mortos, mas é também a base para a investigação de crimes, desastres em massa ou crimes de guerra [2].

Nas situações mais adversas, os dentes podem ser os únicos elementos no processo de identificação [3]. Isso se dá pelo fato de que eles são os mais resistentes às intempéries do corpo humano. Além da grande resistência ao calor, os dentes são protegidos pela língua, bochechas e lábios, podendo permanecer intactos, mesmo depois de exposições do corpo como um todo a altas temperaturas.

A odontologia tem demonstrado ser fundamental nas investigações forenses, graças às suas técnicas comparativas e reconstrutivas [4].

MÉTODOS DE IDENTIFICAÇÃO

Segundo o manual da *American Board of Forensic Odontology* - ABFO existem quatro métodos para identificação humana: reconhecimento visual, datiloscópico, genético e odontológico [5]. Diferentemente, o *Disaster Victim Identification Guide*, da Interpol, classifica os métodos de identificação em primários (análise datiloscópica, dentária e genética) e secundários (descrições pessoais, achados médicos, roupas encontradas com as vítimas, etc.) [6]. Apesar das diferenças, ambas as

classificações trazem a Odontologia como um importante método científico de identificação humana.
Este processo se inicia pela determinação da chamada Tétrade Antropométrica:

- Idade
- Estatura
- Sexo
- Ancestralidade Geográfica

ESTIMATIVA DE IDADE

No campo pericial, a estimativa da idade em corpos e esqueletos desconhecidos, como método auxiliar na identificação humana, é uma das importantes técnicas já consagradas na ciência forense [7,8,9,10].
O objetivo desta estimativa é definir uma idade média aproximada e limites. Considerando que, ao longo da vida, o ser humano passa por três etapas: desenvolvimento progressivo, estabilização e envelhecimento; e que encontramos sinais em cada uma dessas fases que permitem uma aproximação da idade real do organismo examinado, busca-se, ao longo do tempo, o desenvolvimento e aprimoramento dos métodos de estimativa de idade, utilizando-se parâmetros indicativos de evolução ou involução orgânica [11].

ERUPÇÃO DENTÁRIA

A erupção dentária, apesar de subordinada a fatores genéticos e ambientais, tem, na maioria dos casos, muita constância, podendo ser aplicada para se estimar a idade cronológica de indivíduos vivos ou mortos [12].

MINERALIZAÇÃO DENTÁRIA

Para a estimativa da idade, em especial na fase de formação dentária, a Odontologia é a área do conhecimento mais importante, uma vez que as fases de mineralização dentária apresentam menos variabilidade que outros, como os fechamentos epifisários. Desta forma, a utilização da mineralização apresenta resultados mais precisos que a erupção dentária, posto que esta é mais variável.

No Brasil, a maior parte dos autores reporta o uso das tabelas de Nolla (1960) e Nicodemo (1967) para fins de estimativa da idade pela mineralização dentária.

Quanto mais jovem for o examinando, maior aproximação da idade cronológica poderá ser obtida, pois as variações individuais crescem com a idade. Como exemplo, qualquer pessoa distingue duas crianças, uma com 2 anos de idade e outra com 5. Seria impossível entre 50 e 53 anos. Nos jovens, as mudanças ao longo do tempo são mais numerosas, marcantes e constantes [11]. Para a idade adulta, pode-se utilizar o método de Gustafson [13], no qual as alterações tardias que ocorrem no aparelho estomatognático de indivíduos adultos são analisadas em seis pontos em dentes monorradiculares. São eles: desgaste oclusal, periodontose, formação de dentina secundária, deposição de cemento na raiz, reabsorção radicular e transparência radicular apical.

A avaliação da idade dentária pode ser realizada mediante exames diretos e indiretos. O primeiro é feito pelo exame clínico, onde se verifica o número de dentes irrompidos, sequência eruptiva e estado geral dos elementos dentários. O exame indireto é feito pela análise das radiografias intra e extrabucais. Como exemplo de indireto, podemos citar o prontuário [14].

A figura 1 ilustra os estágios de mineralização dos dentes permanentes proposto por Nicodemo, Moraes e Médici Filho, construída a partir da população brasileira [15].

Figura 1 – Estágios: 1 – primeiras evidências da formação da coroa; 2 – um terço de coroa; 3 – dois terços de coroa; 4 – coroa completa; 5 – início de mineralização da raiz; 6 – um terço de raiz; 7 – dois terços de raiz; 8 – término apical.

TABELA DE NICODEMO, MORAES E MÉDICI FILHO

DENTE	1ª Evidência da mineralização	1/3 da coroa	2/3 da coroa	Coroa completa	Início da formação radicular	1/3 da raiz	2/3 da raiz	Término apical
SUPERIORES								
Incisivo Central	5-7	8-15	18-30	36-57	60-78	75-90	87-108	100-116
Incisivo Lateral	9-15	24-30	33-57	54-72	72-88	84-102	96-112	105-117
Canino	5-6	12-33	36-60	60-78	76-87	90-114	111-141	126-156
1° Pré-molar	27-30	48-66	57-75	78-96	87-108	102-126	117-138	129-159
2° Pré-molar	36-57	51-66	66-84	78-102	93-117	105-129	117-144	141-159
1° Molar	1-6	6-16	18-30	36-48	54-66	66-84	75-96	90-104
2° Molar	39-57	52-66	69-84	81-102	102-126	120-135	129-153	150-162
3° Molar	90-132	96-138	102-156	138-174	162-198	180-204	192-234	216-246
INFERIORES								
Incisivo Central	3,9-6,1	9-12	18-27	28-45	48-68	60-78	76-96	90-102
Incisivo Lateral	4,6-5,8	7-12	18-30	18-66	54-78	68-88	80-99	92-102
Canino	4-7	8-30	24-54	51-72	69-93	84-108	105-135	129-156
1° Pré-molar	27-36	45-60	51-72	69-90	84-102	102-126	114-141	132-156
2° Pré-molar	33-54	48-63	66-81	78-96	93-144	108-132	117-144	141-159
1° Molar	1-6	6-12	18-28	18-45	54-66	57-81	78-96	90-104
2° Molar	39-60	51-66	72-87	84-105	102-126	117-135	129-153	150-165
3° Molar	90-132	96-138	102-156	138-174	162-198	180-204	192-234	216-246

Tabela 1 - Os dados referem-se a meses de vida extrauterina.

OBJETIVO

Este trabalho tem como objetivo principal demonstrar a aplicação prática, em um caso concreto, da determinação da idade média aproximada e limites, de acordo com a mineralização dentária, no qual a idade calculada, entre 14 e 16 anos, foi fundamental para a pesquisa no banco de desaparecidos, posto que não se trata de idade comum em casos semelhantes.

DESCRIÇÃO DO CASO

Consta no histórico policial que uma jovem do sexo feminino, com idade à época de 14 anos, não retornou, como habitualmente, à sua residência. No dia subsequente a mãe da desaparecida acionou a delegacia circunscricional.
Onze dias depois, um cadáver em avançado estado de decomposição foi encontrado em outra circunscrição, a aproximadamente 30 quilômetros de distância da delegacia na qual o desaparecimento fora registrado, às margens de uma rodovia distrital, enrolado em um edredom e em um lençol, amarrados com barbantes, conforme figura 2.

Figura 2 - Aspecto do cadáver ao ser encontrado. (Fotografia: Perito Criminal Victor Hugo – Instituto de Criminalística da Polícia Civil do Distrito Federal)

Nenhum vestígio relacionado à *causa mortis* foi encontrado, como fraturas, projetis de arma de fogo, sufusões hemorrágicas ou outros.

Após a inspeção inicial, o corpo foi submetido a processo físico-químico para remoção dos remanescentes de partes moles e posterior análise detalhada do esqueleto, mostrado na figura 3. Este se apresentava imaturo, com diversas linhas epifisárias persistentes e algumas epífises ainda soltas, como a femoral direita distal e falangeana, observadas na figura 4.

O exame radiográfico terceiros molares em fase de mineralização dos primeiros terços cervicais radiculares, conforme figura 5 .

Figura 3 – Esqueleto completo após o preparo.

Figura 4 –Acima, epífise femoral aberta. Abaixo, resquício de linha epifisária falangeana.

Figura 5 - Radiografia lateral oblíqua da mandíbula.

Os dentes não apresentavam lesões de cárie, fraturas ou outros, entretanto algumas regiões desmineralizadas e relevos e contornos característicos, como a borda incisal superior.

O estudo entomológico, realizado pela equipe do Professor Pujol, do Núcleo de Entomologia Forense da Universidade de Brasília, concluiu que o óbito ocorreu muito provavelmente por volta do dia do desaparecimento. Este estudo se embasa no intervalo mínimo necessário para o desenvolvimento larval observado, considerada a espécie e a temperatura média.

A estatura média calculada, a partir das maiores dimensões dos ossos longos, aplicando-se as fórmulas de Trotter e Gleser, para o sexo feminino, foi de 159 cm para a etnia caucasóide e 155 cm para a negróide.

Para o cálculo da estimativa de idade, utilizou-se o “Sistema Computadorizado Integrado para Estimativa da Idade pelos Dentes” [16,17]. Neste programa, a fase de mineralização de

cada elemento dentário é informada isoladamente, conforme a figura 6.

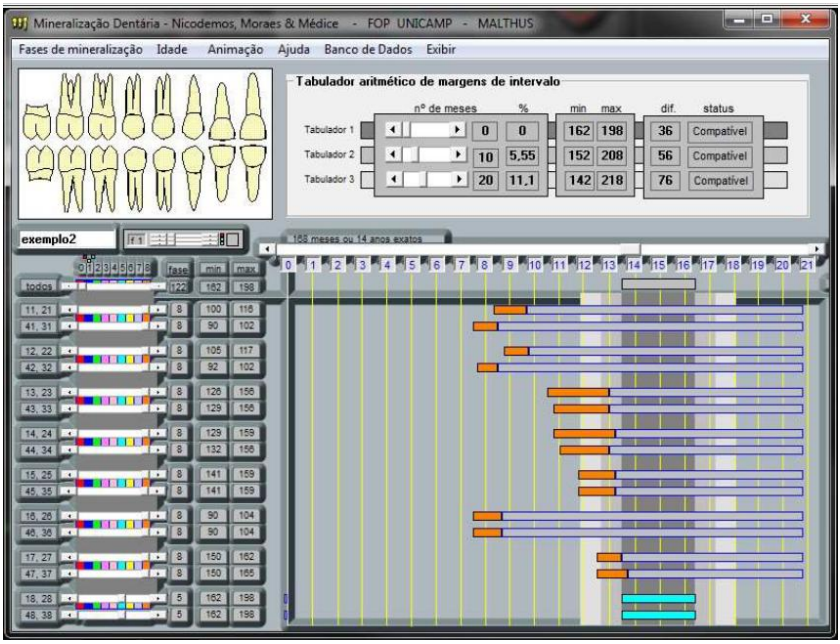

Figura 6 - Cálculo da estimativa da idade utilizando o programa "Sistema Computadorizado Integrado para Estimativa da Idade pelos Dentes".

A mineralização somente do terço cervical radicular dos terceiros molares inferiores, pela tabela de Nicodemo, Moraes e Médici Filho, indica idade entre 13,5 e 16,5 anos.

A ossada apresentava características que indicam miscigenação. Como componente negróide, destacou-se o biprognatismo e, como caucasóide, a forma das órbitas mais arredondadas [18].

A identificação necropapiloscópica foi inexequível, em decorrência da putrefação avançada do corpo e consequente destruição *post-mortem* das papilas dérmicas, o que foi consignado no laudo do Instituto de Identificação, do Departamento de Polícia Técnica, da Polícia Civil do Distrito Federal.

Apesar da grande distância entre a região do desaparecimento e o local de encontro dos restos mortais, o que não é comum, logo se cogitou a correspondência entre a desaparecida e o cadáver, pois eram os únicos com aquela faixa etária e sexo. No mesmo sentido, o estudo da cronotanatognose.

Esta hipótese de correspondência foi confirmada pela identificação odontológica por comparação dos dentes superiores anteriores quanto à forma, posições, dimensões e, especialmente quanto às irregularidades de relevo e linha incisal, entre a ossada e as fotografias encaminhadas pela família. As coincidências foram de tal magnitude que possibilitou a sobreposição de imagens dos dentes anteriores superiores.

DISCUSSÃO

A avaliação da idade dentária pode ser feita mediante exame clínico e radiográfico. No primeiro, se verifica o número de dentes irrompidos, a sequência da erupção dos mesmos, exodontias, cáries e desgastes, entre outros. No radiográfico, é possível avaliar a mineralização dentária sem a necessidade de se extrair os dentes em análise. Também por estes exames podemos calcular a idade pelo desenvolvimento ósseo, analisando as epífises. Em odontologia, é comum o exame radiográfico do punho para determinação da idade óssea, necessário em terapêuticas ortodônticas.

Quanto mais jovem for a pessoa, maior a aproximação da estimativa com a idade real [11]. Isso porque até os 18 anos as variações dentárias são numerosas, marcantes e com alta constância.

Cada método utiliza critérios específicos e a variabilidade destes leva a limitações e dificuldades na exatidão para obtenção da estimativa da idade.

No caso em questão, a utilização da mineralização dentária foi bem sucedida pelo fato de que o cadáver examinado era de uma

jovem. As fases de formação dentária foram observadas através de radiografias laterais oblíquas da mandíbula. As periapicais são melhores, entretanto, fogem da rotina da radiologia do IML-DF, que rotineiramente utiliza filmes convencionais.

Para se estimar uma idade mais próxima da real, deve-se lançar mão de várias informações possíveis advindas também de outros métodos.

Com o recebimento de fotografias de familiares, comparou-se as mesmas com os restos mortais e observou-se grande semelhança entre ambos, conforme figura 7.

Figura 7 - Sobreposição da face e do crânio da vítima.

Também foi realizada a comparação dos dentes anteriores superiores e, devido a aspectos como forma, posição e dimensões, a identificação foi positiva, conforme figura 8.

Figura 8 - Comparativo da linha do sorriso.

CONSIDERAÇÕES FINAIS

A estimativa de idade muito contribui para o processo de identificação humana, em especial nos casos envolvendo crianças e adolescentes, pois, nesta faixa etária, o cálculo é preciso e a quantidade de pessoas desaparecidas é pequena.
Mais uma razão para colocarmos a odontologia legal como destaque no cenário das ciências forenses, visto que o método odontológico é rápido, prático e de baixo custo, comparando-se com outros métodos científicos de identificação.

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ANEXOS

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An international journal dedicated to the applications of medicine and science in the administration of justice.

AUTHOR INFORMATION PACK TABLE OF CONTENTS

- Description
- Audience
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[4] Cancer Research UK, Cancer statistics reports for the UK. http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/, 2003 (accessed 13.03.03).

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