Lead in teeth can tell their origin

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Palatal rugae as a tool for human identification

Author: Adisa, Akinyele Olumuyiwa1; Kolude, Bamidele; Ogunrinde, Tunde Joshua
Abstract (English): OBJECTIVE

This study was conducted to assess the accuracy of palatal rugae as a tool for human identification and to determine factors that may limit accuracy. This will serve as a potential basis for advising national health policy formulation on human identification as forensic rugoscopy is unexplored in sub-Saharan Africa.

MATERIALS AND METHODS

One hundred consenting participants were recruited; impressions of the upper jaws were taken and cast with dental stone. All the teeth on the models were trimmed off to prevent identification by tooth morphology and the models were coded. Five uncalibrated dentists independently pair-matched the models based on the pattern of the palatal rugae.

RESULTS

The overall accuracy for all 50 paired models ranged from 72 to 96%, while the percentage correct match for each of the 50 paired models range from 40-100%. All the examiners properly matched 60% of the models.

CONCLUSION

Rugoscopy is a useful technique for human identification due to the unique rugae pattern in every individual. However, without the aid of ancillary aids, visual inspection alone can be challenging.

CLINICAL RELEVANCE

This study provides useful information on an additional clinical technique relevant for human identification.

MeSH: Adult; Dental Casting Technique; Dental Impression Technique; Forensic Dentistry -- methods (major); Humans; Palate -- anatomy & histology (major); Reproducibility of Results; Young Adult

Journal classification: Index Medicus

Correspondence author: Adisa, Akinyele Olumuyiwa Department of Oral Pathology, University of Ibadan and University College Hospital, Ibadan, Nigeria.
Optimal dental age estimation practice in United Arab Emirates' children

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Abstract (English): The aim of the study was to detect whether the Willems model, developed on a Belgian reference sample, can be used for age estimations in United Arab Emirates (UAE) children.
Furthermore, it was verified that if added third molars development information in children provided more accurate age predictions. On 1900 panoramic radiographs, the development of left mandibular permanent teeth (PT) and third molars (TM) was registered according the Demirjian and the Kohler technique, respectively. The PT data were used to verify the Willems model and to develop a UAE model and to verify it. Multiple regression models with PT, TM, and PT + TM scores as independent and age as dependent factor were developed. Comparing the verified Willems- and the UAE model revealed differences in mean error of -0.01 year, mean absolute error of 0.01 year and root mean squared error of 0.90 year. Neglectable overall decrease in RMSE was detected combining PM and TM developmental information.

MeSH: Adolescent; Adult; Age Determination by Teeth -- methods (major); Child; Child, Preschool; Dentition, Permanent (major); Female; Forensic Dentistry; Humans; Linear Models; Male; Mandible; Molar, Third -- growth &development; Molar, Third -- radiography (major); Radiography, Panoramic; Tooth -- growth &development; Tooth -- radiography (major); United Arab Emirates; Young Adult

Journal classification: Index Medicus

Identifier (keyword): United Arab Emirates, Willems model, dental age estimation, forensic odontology, forensic science, tooth development

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Language: English

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DOI: http://dx.doi.org/10.1111/1556-4029.12351
Generation of intra-oral-like images from cone beam computed tomography volumes for dental forensic image comparison

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Abstract (English): UNLABELLED

Identification of unknown individuals using dental comparison is well established in the forensic setting. The identification technique can be time and resource consuming if many individuals need to be identified at once. Medical CT (MDCT) for dental profiling has had limited success, mostly due to artifact from metal-containing dental restorations and implants.

DESCRIPTION

The authors describe a CBCT reformatting technique that creates images, which closely approximate conventional dental images.

METHOD

Using a i-CAT Platinum CBCT unit and standard issue i-CAT Vision software, a protocol is developed to reproducibly and reliably reformat CBCT volumes. The reformatted images are presented with conventional digital images from the same anatomic area for comparison.
CONCLUSION

The authors conclude that images derived from CBCT volumes following this protocol are similar enough to conventional dental radiographs to allow for dental forensic comparison/identification and that CBCT offers a superior option over MDCT for this purpose.

MeSH: Cadaver; Cone-Beam Computed Tomography (major); Forensic Dentistry; Humans; Image Processing, Computer-Assisted -- methods (major); Mandible; Radiography, Bitewing; Radiography, Dental, Digital -- methods (major); Radiography, Panoramic

Journal classification: Index Medicus

Identifier (keyword): cone beam computed tomography, dental imaging, forensic dental identification, forensic dentistry, forensic odontology, forensic science

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Language of abstract: English
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Quick response code in acrylic denture: will it respond when needed?

Author: Ragavendra, Thayappa Raju; Mhaske, Shubhangi; Gouraha, Abhishek; Yuwanathi, Monal; Kamath, Kavitha P; Saawarn, Swati; Kasetty, Sowmya


Abstract (English): Use of acids and other caustic substances in destroying the human body to avoid personal identification is drawing great deal of attention in recent times. With rapid industrial growth, incidence of industrial disasters has increased. In an event of chemical industry disaster, human identification can become a challenge. Embedding bar codes and other electronic means for identification in denture have proved to be a novel innovation in identification of edentulous patients. However, the validity of this method in events of chemical extremes has not been assessed. Hence, the study was undertaken to know the effect of different acids on dentures embedded with quick response codes. Results of this study indicate that simple bar code can be readable up to 33 h after acid treatment. With minimal armamentarium, bar code can be generated incorporating large data into it, providing it to be a cheap and reliable means of denture identification.

MeSH: Acrylic Resins (major); Automatic Data Processing (major); Caustics (major); Denture, Complete (major); Forensic Dentistry; Humans; Hydrochloric Acid; Nitric Acid; Sulfuric Acids; Time Factors

Journal classification: Index Medicus

Substance: Substance: Acrylic Resins; CAS: 0 ; Substance: Caustics; CAS: 0 ; Substance: Sulfuric Acids; CAS: 0 ; Substance: Nitric Acid; CAS: 411VRN1TV4 ; Substance: sulfuric acid; CAS: O40UQP6WCF ; Substance: Hydrochloric Acid; CAS: QTT17582CB;

Language: English

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