Forensic odontology, part 5. Child abuse issues.


Hinchliffe-J.

judy.hinchliffe@gmail.com. Child abuse, child maltreatment, non-accidental injury and child homicide: all terms that are hard to believe exist in the 21st civilised century, but non-accidental injury of children is a major problem, crossing all socioeconomic, ethnic and educational groups, and is happening all over the world. Available statistics on child abuse and deaths related to abuse are frightening, and as many cases are not reported, actual numbers are likely to be much higher. This paper aims to increase understanding of child abuse issues and encourage the dental team to be alert to the possibility of abuse, recognise the physical injuries and make referrals to the appropriate agency if necessary. In child abuse cases physical injuries to the head and facial area are common while other types of abuse are less visible but are damaging to a vulnerable child in other ways. Keeping children safe is a shared responsibility and a top priority for all of us.

English.

2011.

Impact of identity theft on methods of identification.

Responsibility for confirming a decedent's identity commonly falls on the shoulders of the coroner or medical examiner. Misidentification of bodies results in emotional turmoil for the next-of-kin and can negatively impact the coroner's or medical examiner's career. To avoid such mishaps, the use of scientific methods to establish a positive identification is advocated. The use of scientific methods of identification may not be reliable in cases where the decedent had assumed the identity of another person. Case studies of erroneously identified bodies due to identity theft from the state medical examiner offices in Iowa and New Mexico are presented. This article discusses the scope and major concepts of identity theft and how identity theft prevents the guarantee of a positive identification.

English.

2011.

**Comparative analysis of sclerotic dentinal changes in attrited and carious teeth around pulp chamber for age determination.**


Chatterjee-S.

Department of Oral and Maxillofacial Pathology, MM-College of Dental Sciences and Research, M.M. University, Ambala 133203, Haryana, India. shailjachatterjee@gmail.com<mailto:shailjachatterjee@gmail.com>.

AIM: The aim of this study was to estimate age by comparing sclerotic dentin thickness around coronal pulp chamber in carious and attrited teeth.
METHODOLOGY: Inclusion criteria for teeth selection was eruption age around six to seven years (incisors and first molars). 100 teeth (50 carious+50 attrited) were ground up to their pulp chamber, observed and photographed under an Olympus stereomicroscope. Image J 1.38 NIH software was employed to analyze dentinal thickness.

STATISTICAL ANALYSIS: Regression formula was employed for evaluating age and compared with clinical age obtained at time of extraction.

RESULTS: No matching values were found between calculated age and actual clinical age.

CONCLUSION: Sclerotic dentin thickness values cannot be used as an indicator for the purpose of age estimation.

English.
2011.

Radiocarbon analysis of dental enamel and bone to evaluate date of birth and death: perspective from the southern hemisphere.


Ubelaker-Douglas-H, Parra-Roberto-C.

Department of Anthropology, NMNH, MRC 112, Smithsonian Institution, Washington, DC 20560, United States. ubelaked@si.edu<mailto:ubelaked@si.edu>.

Radiocarbon analysis was conducted on dental enamel, cortical bone and trabecular bone from four human adults from Andean Peru with known birth dates and death dates, the latter all falling within the modern bomb-curve period. Radiocarbon results were compared with known tropospheric values from the southern hemisphere. The results demonstrate that dental enamel can provide useful information
regarding birth dates in consideration of known formation times of the specific teeth examined if the radiocarbon values fall within the modern bomb-curve period. Trabecular bone radiocarbon values are closer to the tropospheric values at the date of death than are values from cortical bone reflecting relative differences in the rate of bone remodeling in those tissues. Age at death also represents an important factor.

Differentiation of traumatic and heat-induced dental tissue fractures via SEM analysis.


Campbell-Miranda-N, Fairgrieve-Scott-I.

Forensic Osteology Laboratory, Department of Forensic Science, Laurentian University, Ramsey Lake Road, Sudbury, ON P3E 2C6 Canada.

Previous studies have examined the effects of heating on teeth; however, none have identified characteristics that allow analysts to differentiate traumatic from heat-induced fractures. This study examined our ability to discern notable differences in preincineration traumatic fractures and heat-induced fractures in postincineration dentition. Twelve anterior dental specimens were subjected to blunt force trauma while a second set were not. All 24 samples were then incinerated in a muffle furnace at a peak temperature (900°C) consistent with house fires. The specimens were subsequently examined with a scanning electron microscope to identify and compare heat-induced and traumatic fractures. The results obtained during examination yielded no differences between the features displayed by specimens that had been inflicted with preincineration trauma and those that did not. Unlike bone,
Dental shape match rates in selected and orthodontically treated populations in New York State: a two-dimensional study.

Department of Physics, Canisius College, 2001 Main Street, Buffalo, NY, USA.

Forensically identifying a suspect's dentition from a bitemark in an open population requires the supposition that every person's dental alignment is different. There have been few studies that have tested this claim. Four hundred and ten lower anterior dentitions from a selected population and 110 lower anterior dentitions from one that was orthodontically treated were measured using geometric morphometric analysis, allowing comparison of arch shape. Dental match rates of 1.46% and 42.7% of individuals were found in the respective populations, given an established measurement error. Orthodontic treatment had a strong effect on match rate suggesting that treated or naturally well-aligned dentitions may be indistinguishable. Sexual dimorphism was found to be only slightly significant. Principal shape variation in both populations was degree of arch curvature. Results of studying these populations show that dental matches can occur, and that statements of certainty concerning individualization in such populations should be approached with caution.

English.
Three-dimensional modeling of the various volumes of canines to determine age and sex: a preliminary study.


Unite Mixte de Recherche 6578/CNRS, EFS-Universite de la Mediterranee, 51, Boulevard Pierre Dramard 13916 Marseille Cedex 20, France. delphine.tardivo@gmail.com<mailto:delphine.tardivo@gmail.com>.

Canines are usually used in anthropological and forensic sciences for sex and age determination. The best methods to estimate age are based on secondary dentine apposition, evaluated from periapical X-rays.

The aim of this study was to propose a new method of sex and age estimation using 3D models to obtain more precise predictions using tooth volumes. Fifty-eight dental CT scans of patients aged 14-74 with a well-balanced sex ratio composed the sample. One hundred and thirty-three healthy canines were modeled (Mimics 12.0). The sample was divided into a training sample and a validation sample. An age formula was determined using the "pulp volume/tooth volume" ratio.

Sex prediction was adjusted with total volumes. Applying the equations to the validation sample, no significant difference was found between the real and predicted ages, and 100% of the sex predictions were correct. This preliminary study gives interesting results, and this method is worth being tested on a larger data sample.

English.

2011.