Sex assessment using odontometry and cranial anthropometry: evaluation in an Indian sample.

Author: Thapar, Raveena; Angadi, Punnya V; Hallikerimath, Seema; Kale, Alka D


Abstract: Crania and teeth are considered to be useful adjuncts for sex assessment and in construction of a postmortem profile, however, there is very little information regarding the relationship between tooth and cranial size. The purpose of this study was to demonstrate the extent of sexual dimorphism of teeth and cranial size in an adult Indian population and their potential in sex estimation using logistic regression analysis. The sample consisted of 200 subjects (96 males and 104 females; age range of 18-30 years) of Indian origin. Cranial anthropometric measurements i.e. maximum head length and head breadth were measured and cephalic index was calculated. Tooth size (maximum mesiodistal and buccolingual dimensions) was measured for all the permanent teeth of the right side of the maxillary and mandibular arches, except the third molars. To ascertain the usefulness of absolute measurements of crania and teeth and the combination of both these parameters in sex prediction, logistic regression analysis was done. The cranial anthropometric measurements gave a sex assessment accuracy ranging from 53.5 to 79.9%, with head length giving the best accuracy. The sex classification accuracy of the odontometric measurements ranged from 61.5 to 76%, with combination of maxillary and mandibular teeth giving better accuracy. The use of both these parameters together vastly improved the accuracy to 88.4%. This study demonstrates that cranial anthropometry along with odontometry could be used for determining the gender of adult Indians in a forensic context. Among all the parameters, head length gave a superior sex prediction alone (79.9%) as well as in combination with odontometry (88.4%).

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The usefulness of dental and cervical maturation stages in New Zealand children for Disaster Victim Identification.

Author: Timmins, Kimberley; Liversidge, Helen; Farella, Mauro; Herbison, Peter; Kieser, Jules

Abstract: Age estimation of young victims of natural and un-natural disasters remains a crucial and challenging task during the process of Disaster Victim Identification (DVI). The purpose of this study was to compare dental maturity using the Demirjian and Cameriere methods and to explore the relationship between dental age and cervical vertebral maturity (CVM) using the Hassel and Farman method for a group of New Zealand children. The study used lateral cephalometric and panoramic radiographs of 200 orthodontic patients aged 7-17 years. Dental age was calculated from mandibular tooth formation stages using the Demirjian and Cameriere methods by calculating the ratio of tooth length to apex width for these teeth. CVM was assessed using stages from Hassel and Farman. Reliability of maturity from reassessment of 20 radiographs showed good agreement for the three methods. Chronological and dental ages were compared using a mixed model. Descriptive statistics of dental ages by CVM stage were calculated. The results show that both dental methods were similar in assessing maturity. A disadvantage of using the Cameriere method was that all seven teeth reached maturity at 13.69 and 14.06 years in females and males respectively, compared to age 16 using the Dermijian method. Females reached CVM stages at earlier chronological and dental ages than males. Mean chronological age for CVM stages 2-5 is about 1 year earlier in females than males. The Demirjian and Cameriere methods of dental maturity and CVM are reliable and useful in assessing dental and skeletal maturity. Ideally in a DVI situation, both the methods of Demirjian and Cameriere, together with CVM, should be employed in the ageing of individuals suspected of being between 7 and 16 years.

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The Danish Disaster Victim Identification effort in the Thai tsunami: organisation and results.

Author: Schou, Mette Pagh; Knudsen, Peter Juel Thiis


Abstract: Following the December 2004 tsunami in Thailand experts from many countries, including Denmark, went to Thailand to help with identification work. The Interpol system for Disaster Victim Identification (DVI) was employed for the identification of the many casualties. This paper describes the work of the Danish teams in Thailand from the 30th December 2004 until the 6th June 2005. The investigation covers all Danes reported missing directly after the tsunami in Thailand on the 26th December 2004 and who were later found deceased, or, in one case, never recovered. The AM and PM forms were reviewed retrospectively and the relevant information compared. Forensic odontology alone was responsible for 70.3% of identifications, and in two more cases (5.4%) the identification was established using a combination of odontology and fingerprint information. Fingerprints were used to establish identity in 8 cases (21.6%). DNA-typing was only used in one identification, in combination with fingerprinting data. Only one Danish victim was not identified. This review of the 37 Danish cases confirms that odontological examination yielded the most identifications, fingerprint data much fewer, and DNA was only used to a small extent, due to organisational problems with the examination and because the initial samples were of inferior quality.

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Forensic odontology involvement in disaster victim identification.

Author: Berketa, John William; James, Helen; Lake, Anthony W


Abstract: Forensic odontology is one of three primary identifiers designated by Interpol to identify victims of mass casualty events. Forensic odontology is involved in all five phases - Scene, Postmortem, Antemortem, Reconciliation and Debrief. Forward planning, adequate funding, international cooperation and standardization are essential to guarantee an effective response. A Standard Operation Procedure should be utilized to maximize quality, facilitate occupation and health issues, maintain security and form a structure to the relief program. Issues that must be considered in the management of the forensic odontology component of disaster victim identification are given in "Appendix 1". Each stage of the disaster, from initial notification to debrief, is analyzed and a comprehensive checklist of actions suggested.

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Disaster Victim Identification: quality management from an odontology perspective.

Author: Lake, A W; James, H; Berketa, J W


Abstract: The desired outcome of the victim identification component of a mass fatality event is correct identification of deceased persons in a timely manner allowing legal and social closure for relatives of the victims. Quality Management across all aspects of the Disaster Victim Identification (DVI) structure facilitates this process. Quality Management in forensic odontology is the understanding and implementation of a methodology that ensures collection, collation and preservation of the maximum amount of available dental data and the appropriate interpretation of that data to achieve outcomes to a standard expected by the DVI instructing authority, impacted parties and the forensic odontology specialist community. Managerial pre-event planning responsibility, via an odontology coordinator, includes setting a chain of command, developing and reviewing standard operating procedures (SOP), ensuring use of current scientific methodologies and staff training. During a DVI managerial responsibility includes tailoring SOP to the specific situation, ensuring member accreditation, encouraging inter-disciplinary cooperation and ensuring security of odontology data and work site. Individual responsibilities include the ability to work within a team, accept peer review, and share individual members’ skill sets to achieve the best outcome. These responsibilities also include adherence to chain of command and the SOP, maintenance of currency of knowledge and recognition of professional boundaries of expertise. This article highlights issues of Quality Management pertaining particularly to forensic odontology but can also be extrapolated to all DVI actions.

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Role of forensic pathologists in mass disasters.

Author: Schuliar, Yves; Knudsen, Peter Juel Thiis


Abstract: The forensic pathologist has always had a central role in the identification of the dead in every day practice, in accidents, and in disasters involving hundreds or thousands of victims. This role has changed in recent years, as advances in forensic odontology, genetics and anthropology have improved the chances of identifying victims beyond recognition. According to the Interpol DVI Guide, fingerprints, dental examination and DNA are the primary identifiers, and this has given new emphasis to the role of the forensic pathologist as the leader of a multidisciplinary team of experts in a disaster situation, based on his or her qualifications and the experience gained from doing the same work in the everyday situation of an institute of forensic medicine.

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Advances in forensic age estimation.

Author: Bassed, Richard B


Abstract: None available.

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Application of a modified stage classification in evaluating wisdom tooth eruption in a German population.

Author: Olze, Andreas; Peschke, Corinna; Schulz, Ronald; Schmeling, Andreas


Abstract: The evaluation of the eruption status of the wisdom teeth constitutes a significant component of the spectrum of dental methods available for purposes of forensic age diagnostics. In the present study, the status of wisdom tooth eruption was identified in 606 conventionally created orthopantomograms of 515 female and 91 male Germans, divided by sex and tooth, using a modified classification comprising four stages. Instead of the original stage C (gingival eruption) which cannot always be reliably identified on X-ray images of suboptimal quality, stage C of the modified classification was considered reached when the erupting wisdom tooth had reached at least half the length of the crown of the adjacent second molar, without however having yet reached
The individualisation of a dog bite mark: a case study highlighting the bite mark analysis, with emphasis on differences between dog and human bite marks.

Author: Bernitz, Herman; Bernitz, Zephné; Steenkamp, Gerhard; Blumenthal, Ryan; Stols, Gerrit

Abstract: A person who keeps or controls a dog in his own interest is liable "without fault" should that dog cause harm to any person. By owning a dog, man welcomes into his home a beast that preserves much of its primordial self, and is capable of inflicting a fatal bite wound. The courts may require the forensic expert to identify which specific dog caused the damage or fatal bite in an effort to establish the owner/controller of the animal. Very little has been published on the individualisation of dog bite marks, the procedures to be followed when confronted with usable bite marks and the range of analysis techniques available. The authors advocate a multidisciplinary approach, and utilise a case study to demonstrate the protocol to be followed when analysing a dog bite mark. The paper also highlights differences between human and dog inflicted bites. The authors warn against over interpretation of poor quality bite marks and a final conclusion of absolute certainty.