Reliability of mandibular canine and mandibular canine index in sex determination: A study using Uyghur population

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Abstract (English): Sex determination is a key process that is required to establish the forensic profile of an individual. Mandibular canine index (MCI) method yields fairly positive results for sex determination. However, this method has been challenged by a few authors. This study aimed to examine the reliability of MCI in Chinese Uyghur population and to establish its normal value for this ethnic group. Dental casts of 216 students (117 males and 119 females) from the College of Stomatolgy of Xinjiang Medical University in China were used to determine the sexing accuracy of MCI. The mesiodistal (MD) dimension of mandibular canine crowns, the inter-canine distance, and the MCI were calculated. The accuracy of the standard MCI derived from the current data was compared with that of the standard MCIs derived from previous data. Results were statistically described using the independent-samples t-test. The MD dimension of mandibular crown, the inter-canine distance, and the MCI exhibited statistically significant sexual dimorphism. Sex determination using the MCI derived from the current data revealed fairly reliable results. Therefore, MCI is a reliable method for sex determination for Uyghur population, with 0.248 as standard MCI value.

MeSH: Adolescent;Adult;Asian Continental Ancestry Group;China;Cuspid -- anatomy & histology (major);Ethnic Groups;Female;Forensic Dentistry;Humans;Male;Mandible;ROC Curve;Reproducibility of Results;Sensitivity and Specificity;Sex Characteristics (major);Tooth Crown -- anatomy & histology (major);Young Adult

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Is Demirjian's original method really useful for age estimation in a forensic context?

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Abstract (English): PURPOSE

The suitability of Demirjian’s method for forensic age estimation has been systematically questioned. The aim of this study is to further assess the reliability of Demirjian's original method in forensic age estimation using a sample of Portuguese children.

METHODS

564 panoramic radiographs of Portuguese boys and girls between 6 and 16 years of age were evaluated using Demirjian's method. Dental age (DA) was determined using the 50th percentile for the maturity score obtained for each age group. The mean difference between chronological age (CA) and dental age (DA) and the mean absolute difference between CA and DA were calculated for
each age group. Paired t tests were used to test the statistical significance of mean differences between CA and DA. For each individual, a 94% confidence interval was calculated for estimated DA, using the 3rd and 97th percentiles in Demirjian's conversion tables.

RESULTS

Chronological age was overestimated in boys, in every age group; mean differences between CA and DA were statistically significant, expect for age 7. In girls, chronological age was overestimated in the 10-15 year-old age group. The difference between CA and DA was highest in the 12 years olds for both sexes. The 94% confidence intervals did not include the true chronological age in all 6, 13, and 15 year-old girls, and all 14 and 15 year-old boys. Only a small portion of the individuals in the remaining age groups had their true chronological age falling within the probable age interval.

CONCLUSIONS

Results show a systematic bias and consistent inaccuracy in estimating age from dental development using Demirjian's original method, making this methodology unsuitable for age estimation in the study sample. These results add to published evidence which suggests that Demirjian's method is not suitable and should be abandoned altogether for forensic age estimation purposes.
Use of a non-volatile agent to stabilize severely incinerated dental remains

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Abstract (English): PURPOSE

The aim of this study was to identify volatile-free products that would be suitable for stabilizing incinerated dental remains at the scene of an incident, and that would not compromise any postmortem examination.

METHODS

The anterior mandibles of sheep were incinerated, sprayed unilaterally with stabilizing agents, vibrated for 30 s, and assessed. The effect of the stabilizing solutions on radiographic examination was also recorded. Tests for volatility and the effect on human mandibles were also conducted.

RESULTS

A flour/water mixture of one part flour to two parts water, and a paste mixture of one part Clag™ glue to one part water both produced significant stabilization results. The flour mixture left an opaque layer on the samples that it was applied to, which still allowed dental examination, but the glue paste mixture resulted in a clearer layer. Both solutions allowed radiographic examination and were free of volatiles.
CONCLUSION

Diluted Clag™ paste, when sprayed on to incinerated remains, assists in their stabilization for transportation. When Clag™ paste is unavailable a mixture of two parts water to one part plain flour could be utilized for stabilization.

MeSH: Animals; Burns; Excipients (major); Fires (major); Forensic Dentistry -- methods (major); Mandible -- radiography (major); Models, Animal; Sheep

Journal classification: Index Medicus

Substance: Substance Substance: Excipients; CAS: 0;

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Forensic oral dentistry: a comprehensive focus for forensic dentistry

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MeSH: Forensic Dentistry (major); Humans; Pathology, Oral (major); Professional Competence; Professional Role

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Human identification through the analysis of smile photographs

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**Abstract (English):** The comparison between antemortem and portmortem data comprehends the basis of the dental identification process. High-tech devices allow for optimal manipulation of postmortem data. However, in especial situations, the victims do not have records of dental treatments, making necessary the search for antemortem data from personal belongings. Smile photographs are one of the most common sources of dental information detected from personal belongings. In this context, the present study reports a forensic case in which a charred body was positively identified through the application of 3 techniques for the analysis of smile photographs.

**MeSH:** Accidents, Aviation;Anodontia;Burns;Dental Amalgam;Dental Restoration, Permanent;Fires (major);Forensic Dentistry -- methods (major);Humans;Incisor -- abnormalities;Male;Malocclusion;Molar, Third;Photography (major);Smiling (major);Tooth, Impacted;Young Adult

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The reliability of Cameriere’s method in Turkish children: a preliminary report

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Abstract (English): Dental age estimation in children is an important issue both legally and medically. Currently, however, there is a lack of contemporary dental age estimation standards for a Turkish population. This study assessed the accuracy of Cameriere’s method by examining the panoramic radiographs of 573 healthy Turkish children between the ages of 8 and 15 years. Radiographs of the left permanent developing mandibular teeth, except wisdom teeth, were
evaluated. All subjects were divided into 7 groups according to their chronological age. The Intra-class Correlation Coefficient was used to determine the intra- and inter-observer agreement error. A comparison of the distributions of estimation errors among age groups was performed using the Nemenyi test. There were no significant differences between inter-observer (p=0.352), and intra-observer readings after 2 weeks (p=0.275 and p=0.273, respectively). The dental age was underestimated when using Cameriere's method with a mean difference of -0.35 years (-0.24 years for girls and -0.47 years for boys). The median values of the differences between dental and chronological age were -0.44 years in boys (range: -3.70, 4.06) and -0.21 years in girls (range: -2.74, 3.29). In addition, the differences between dental and chronological ages in the different age groups decreased with increasing chronological age. Results from the Nemenyi test implied that Cameriere's method is more accurate for girls than for boys in this cohort of a Turkish population.

**MeSH:** Adolescent; Age Determination by Teeth -- methods (major); Child; Dentition, Permanent; Female; Forensic Dentistry; Humans; Linear Models; Male; Observer Variation; Radiography, Panoramic (major); Reproducibility of Results; Tooth Apex -- growth & development (major); Tooth Apex -- radiography; Turkey

**Journal classification:** Index Medicus

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