F7 Mesio-Distal Width of Canines: A Tool for Sex Determination

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After attending this presentation, attendees will be able to determine the sex of an individual from a canine tooth in cases of bodies found as fragments or skeletal remains.

This presentation will impact the forensic science community by imparting a new tool in the determination of sex from a tooth.

Teeth, in the living as well as the dead, are the most useful objects in the field of forensic investigation. Their ability to survive in situations like mass disasters makes them an important tool in victim identification.[1] Though the morphology and structure of a tooth is similar in both men and women, there are subtle variations that could be valuable in the determination of sex. "Sexual Dimorphism" refers to those differences in size, stature, and appearance between male and female and can be applied to dental identification since no two oral cavities are alike.[2] Variations in the dental size can give a clue about differences between the sexes. Many authors have measured the crowns of teeth in both men and women and found definite variations. Canines, that are reported to survive air crash and hurricane disasters, are perhaps the most stable teeth in the oral cavity because of the labio-lingual thickness of the crown and the root anchorage in the alveolar process of the jaws.[2-7] Measurement of mesio-distal width of the mandibular and maxillary canines provides good evidence of sex identification due to dimorphism.[5]

Materials for the present study consisted of 500 students belonging to various parts of Karnataka, India, in the age group of 15 – 25 years comprised of 250 males and 250 females. The mesio-distal crown width of mandibular and maxillary canine teeth, i.e., the greatest mesio-distal width of the crown between the contact points of the teeth on either side of the jaw, was measured. The results obtained were subjected for analysis to derive conclusions. Sexual dimorphism in the right and left mandibular and maxillary canines was calculated using *Garn & Lens (1967)* formula.[6] The data obtained were quantified and analyzed statistically using a stastistics software package to determine the significance of differences between the sexes.

It was observed that the mean value of the mesio-distal crown width of right and left mandibular canines were higher in males than in females with statistical significance ($p < 0.001$). Similarly, the mean value of mesio-distal crown width of right and left maxillary canines was also more in males than in females with statistically significant value ($p < 0.001$)

The conclusions drawn were:

- Mesio-distal width of canines in all the quadrants for a given gender did not show any significant variation.
- The mean mesio-distal width of mandibular canines was greater in males than females.
- The mean mesio-distal width of maxillary canines was greater among males than females.

The results of the mesio-distal width of canines obtained could be of importance to anthropologists and of help to the clinical orthodontist for space assessment. It even helps forensic experts in cases of mass disasters in assessing the sex of an unknown remain.

References:

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