



COMPARATIVE ANALYSIS OF SEXUAL DIMORPHISM USING INTERCANINE DISTANCES OF THE MAXILLA AND MANDIBLE

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ARTICLE INFO

Article History:

Received 15th December, 2016

Received in revised form 24th January, 2017

Accepted 14th February, 2017

Published online 28th March, 2017

Key words:

Dimorphism, Maxilla and Mandible

ABSTRACT

Aim: To analyse and compare sexual dimorphism using intercanine distance of their maxillary and mandibular jaw. By using intercanine distance of live specimens, we can estimate sexual dimorphism in dry specimens in forensics.

Objective: In forensics, for each and every victim, DNA sampling, genetic coding, etc having done can be quite time consuming and expensive. To find its gender is one of the most major difficulties a forensic expert might face while working in that specific case. By using intercanine distance that varies between male and female, we can conclude their gender. This method is considered to be cost nullifying method as well as an easy procedure to undergo. So if the results that we obtain from maxilla and mandible of live specimens are significant then we can use the same for dry specimens in forensics too.

Reason: By the results obtained from maxillary and mandibular intercanine distance in live human we can conclude their gender in forensics.

Conclusion: Since the current study and previous study results correlate with the results obtained from this study, we can thus conclude that using maxillary and mandibular intercanine distances is a great method to use as an indicator for sexual determination.

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INTRODUCTION

Tooth morphometry is resistant to postmortem destruction and can be used as an adjunct in skeletal sex and age determination. (10) Studies have proven that no two oral cavities are alike and similar to fingerprints, odontometric measurements are also unique and can be used for sex identification. Hence, teeth make up a valuable tool in various forensic studies. (6) Odontometric studies have been used in the past for personal identification. (11) Hence, teeth make up a valuable tool in various forensic studies & have been used in the past for personal identification (7). Determination of sex plays an important aspect in the forensics field. It becomes the first priority in the process of identification of a person by a forensic investigator in the case of mishaps, chemical and nuclear bomb explosions, natural disasters crime investigations, and ethnic studies. In forensics, for each and every victim, DNA sampling, genetic coding, etc having done can be quite time consuming and expensive. To find the gender is one of the major difficulties a forensic expert might face while working in that specific case.

Materials Used

- Vernier calliper
- Disinfectant & Cotton

- Around 50 patients were observed during this study. 25 of them were men and 25 of them were women. They were under the age category 25-45 years.

METHODOLOGY

We measure the maxillary and mandibular intercanine distance by using the vernier calliper for 50 patients (25 males and 25 females) between the age groups 25-45 of good oral health. Firstly, the vernier calliper is adjusted in such a way that only the intercanine distance (distance between the two canines) are measured. First the maxillary intercanine distance of the patient is measured and recorded. Next the mandibular intercanine measurement is obtained. After usage, it is important that the vernier disinfected with suitable disinfectant, so that it could be used to measure the intercanine measurement for other patients. Readings are noted separately for both men and women.

RESULT

From the results noted during the study, the maxillary intercanine distance range for male varies from 1.25 to 2.25 cm with an average of 1.41 cm. For female maxillary intercanine distance varies between 0.81 to 2.11 cm. with an average of 1.74cm. The mandibular intercanine distance range for male is 0.71 to 1.84 cm with an average of 1.17cm The female mandibular intercanine distance range is from 0.61 to

Comparative analysis of sexual dimorphism using intercanine Distances of the maxilla and mandible

2.55 cm and with an average of 1.28 cm. But as an overall, we can see that more number of females have a greater maxillary intercanine distance compared to males. Whereas males have wider mandible intercanine distance when compared to that of females.

Table 1

GENDER	Maxillary intercanine distance range	Maxillary intercanine distance (avg)	Mandibular intercaninae distance range	Mandibular intercanine distance (avg)
Male	1.25 - 2.21 cm	1.41 cm	0.71 - 1.84 cm	1.17 cm
Female	0.81 - 2.11 cm	1.74 cm	0.61 - 2.55 cm	1.28 cm

DISCUSSION

From the results obtained, the average of the maxillary and mandibular intercanine distance are calculated separately for both the genders. From the results, we can clearly say that females have narrower intercanine distance when compared to that of males. As an overview when we apply it in forensics, we can say that the dry specimen having a narrow mandibular intercanine distance and wider maxillary intercanine distance belongs to that of a female. The ones having a narrower maxillary intercanine distance and wider mandibular intercanine distance belongs to that of a male.(5) According to previous studies the similar results were also obtained. It shows 68% of accuracy in gender identification by using the intercanine distances to arrive at sexual dimorphism determination (7).

CONCLUSION

The results obtained from previous studies and the results we have obtained during this study correlate. According to current study results, it is shown that by using intercanine distances, we can apply it in forensics for sexual dimorphism identification. Thus we can conclude that the maxillary and mandibular intercanine distances are important for identification of gender. This method is considered to be cost nullifying method as well as an easy procedure to undergo. So if the results that we obtain from maxilla and mandible of live specimens are significant then we can use the same for dry specimens in forensics too. Hence we can finalize that using maxillary and mandibular intercanine distances is a great method to use as an indicator for sexual determination

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How to cite this article:

Harippriya Karthikeyan *et al* (2017) ' Comparative analysis of sexual dimorphism using intercanine Distances of the maxilla and mandible', *International Journal of Current Advanced Research*, 06(03), pp. 2859-2860.
DOI: <http://dx.doi.org/10.24327/ijcar.2017.2860.0125>