

Evaluation of Sexual Dimorphism in Deciduous Dentition in Ghaziabad Population

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ABSTRACT

Aim: To evaluate the sexual dimorphism in deciduous dentition in Ghaziabad population.

Material and Methods: - The present study comprised total 120 bitewing radiographs (60 males and 60 females) within age group 4 to 6 years obtained from archives. The bitewing radiograph was placed on tracing paper and traced. Mesiodistal width of Maxillary and Mandibular second deciduous molar was marked to measure the parameters. The parameters were measured using Electronic Digital caliper. The data were analyzed statistically.

Result: - Mesiodistal width was higher in Males as compared with Females for Maxilla & Mandible sites. However, in maxilla site Mesiodistal Width differed significantly ($p < .05$) & for Mandible site no significant difference ($p > .05$) was present b/w Males & Females at .05 level of significance.

Conclusion: - Significant sexual dimorphism is seen in maxillary second deciduous molars. Hence second deciduous molar can be used for sex determination in children.

Keywords: Sexual Dimorphism, Deciduous Dentition, Maxillary deciduous molars.

INTRODUCTION

Sex prediction of skeletal in children has been a challenge in the forensic context. Various methods have been constructed and tested to estimate the age of young individuals. Among them are the physical examinations using anthropometric measurements, skeletal maturation, dental age estimation, a combination of dental development and anthropometric measurements and a combination of skeletal and tooth eruption.¹

Teeth are hardest and chemically most stable tissues in the body and exhibit least turnover of natural structure. They are well preserved after death. Further, they show significant sexual

dimorphism and are readily accessible for examination. Thus, they provide excellent materials for forensic studies involving identification of sex.² Various features of teeth, like morphology, crown size, root length etc., are characteristic for males and females.

Sexual dimorphism is defined as the differences in size, shape, stature and appearance between males and females. Sexual dimorphism of various characteristics of the human body, although genetically determined, also depends on environmental conditions during growth and development. Thus, indices of sexual dimorphism

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obtained for various features (e.g. measurements of particular teeth) of various human populations can be different.³

Forensic odontologist assists in determination of gender where skeletal remains present a great problem to forensic experts, especially when only fragments of body are recovered. Thus, forensic odontologist plays a key role in identifying the gender.⁴

The purpose of this study is to evaluate the sexual dimorphism in deciduous dentition in Ghaziabad population.

MATERIALS AND METHODS

The present study comprised total 120 bitewing radiographs (60 males and 60 females) within age group 4 to 6 years obtained from archives. The bitewing radiograph was placed on tracing paper and second deciduous molar was traced to measure the parameters (fig 1.) The parameters were measured on the second mandibular and maxillary deciduous molar teeth by using Electronic Digital caliper. The data were analyzed statistically. Student's t test was used to compare the measurements between the two sex groups.

RESULTS

Statistical analysis using Unpaired T- test show that Mesiodistal width was higher in Males as compared with Females for Maxilla & Mandible sites. However, in maxilla site Mesiodistal Width differed significantly ($p < .05$) & for Mandible site no significant difference ($p > .05$) was present b/w Males & Females at .05 level of significance. (Table 1)

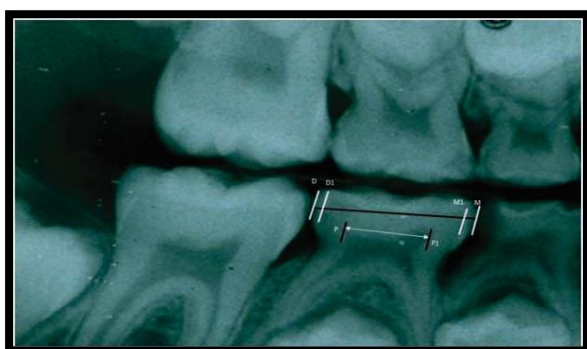


Fig 1: Measuring Mesiodistal width in Bitewing radiograph.

Table 1: Mesiodistal Width of Deciduous Molar.

Sites	Sex	Mean $\pm$ S.D	S.E.M	p Value
Maxilla	Male	10.86 $\pm$.89	.114	0.0072*
	Female	9.84 $\pm$.56	.072	$p < .05$ (Sig.)
Mandible	Male	10.91 $\pm$.57	.074	0.8778**
	Female	10.13 $\pm$.54	.070	$p > .05$ (N.S.)

Sig. = Significant

NS = Nothing Significant

DISCUSSION

All aspects of tooth like its size are greatly affected by the environmental factors, race and ethnicity. A tooth as a whole play an important role in forensic odontology. The height of an individual and the crown length are two parameters that are gaining great attention in forensic odontology. In forensic examination, stature evaluation is an integral step which aids in identification process. Estimation of physical profile from various crown dimensions would thus be a great help for the forensic odontologist in the investigation process of the deceased individuals in various mass disasters and also investigation of the living.⁵ Gender estimation is one of the most important steps to identify the deceased individual, especially in cases of mass disasters, natural calamities, road traffic accidents, fire accidents, etc. where only the skeletal remains are left behind.⁶

Odontometry has been considered as a valuable adjunctive tool for human identification in some situations where other tissues or body parts are not available either due to decomposition or in incidents of inferno or accidents. This method is a relatively simple, inexpensive, and easy to perform. As teeth dimensions and arch, parameters vary from individual to individual, determination of population-specific data would be an additional help to the forensic expertise in establishing the identity of a deceased or living individual. There is a paucity of literature on individual tooth dimensions, all arch parameters and the use of various tooth indices in determining the sexual dimorphism; hence, the present preliminary study has been undertaken.⁷

According to the studies conducted by Black T et al (1978)⁸, Cardoso et al (2009)⁹, Barberia et al (2010)¹⁰, Akshara et al (2017)¹¹, the most dimorphic tooth among deciduous teeth, irrespective of a group or a

population was the second deciduous molar. Hence, second deciduous molar was considered as the key tooth for the morphogenetic field.

Paknahad M et al (2016)⁷, conducted a radio-odontometric study for sexual dimorphism in primary dentition. It was observed that mesiodistal width of second deciduous molar was significantly larger in males than females. He concluded that second molar could be used as an additional support for assessment of sexual dimorphism in primary teeth.

The findings of present study show that significant sexual dimorphism is seen in maxillary second deciduous molars. Hence second deciduous molar can be used for sex determination in children.

CONCLUSION

Within the limitations of the study it can be concluded that primary teeth dimensions can benefit in assessing the sex of the juvenile skeletons in cases of mass disasters and accidents, along with other reliable methods of sex determination.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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