

In Response to: Sexual dimorphism

Sir,

We are happy about the interest shown by the reader regarding our article published in your journal - J Oral Maxillofac Pathol 2018; 22:423-9 “Sexual dimorphism of enamel area, coronal dentin area, bicervical diameter and dentin enamel junction scallop area in longitudinal ground section”. We are glad to clarify the doubts raised by the reader.

Reader query: According to this article all the measurements were done by preparing the ground sections of the teeth in longitudinal axis, buccolingually across the presumed center of tooth. Thickness of the enamel and dentin varies from one reference point to another (i.e.) thickness measured from the longitudinal axis cut from the cusp tips may differ from the same longitudinal axis cut slightly away from the center, either medially or distally. Further a 50-micron thick section may have varied thickness of enamel on each side.

Response: As it is a well-known fact that thickness of enamel and dentin varies from area to area in a given tooth; as stated in our article we have taken care to ensure that the

ground sections represent center of the tooth. However, slight variation might be possible due to human error. We haven't come across any other established method of getting sections from center of the tooth without even slightest error. Also, the enamel measurements in the study required ground sections and around 50µm thickness is the generally accepted thickness.

Reader query: This article did not mention the race of the subject nor the age of the patients from whom the teeth were extracted, as the age and race play a role in the anatomy of the tooth and jaw bone, since the magnitude

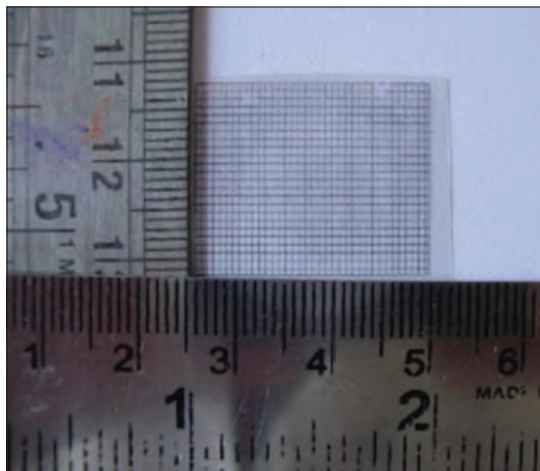


Figure 4: Customize graph on cellulose acetate sheet

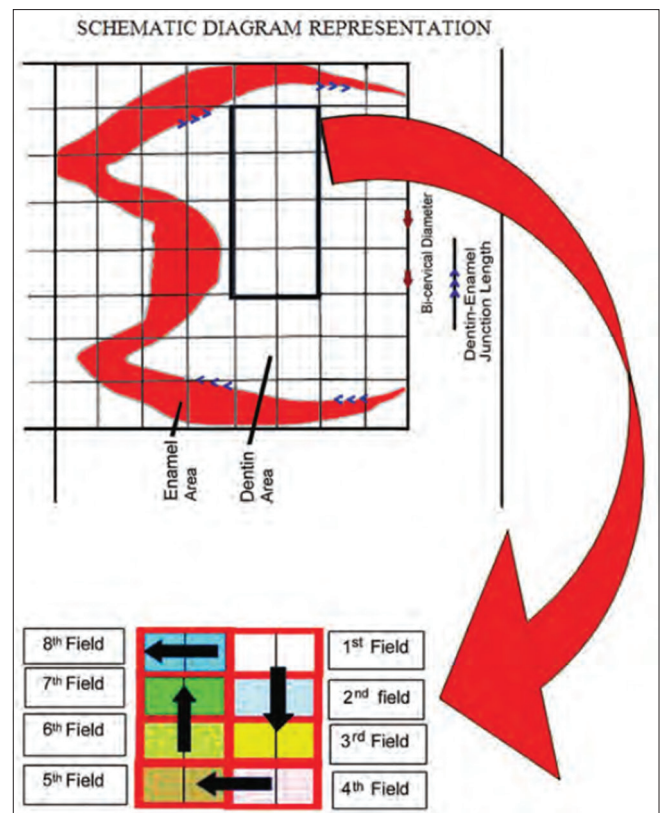


Figure 5: Method followed to capture all areas of section



Figure 7b: Photomicrograph of the prepared ground section showing measurement of the area of two rectangular grids on the enamel area (4x)

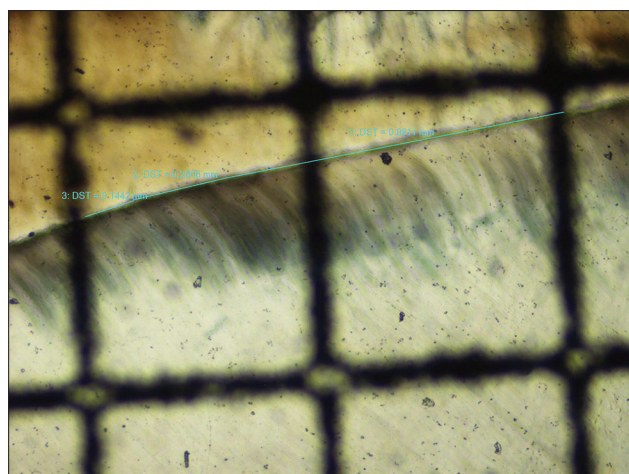


Figure 8b: Photomicrograph of the prepared ground section showing measurement of length dentinoenamel junction along the dentinoenamel junction in each grid (4x)



Figure 9b: Photomicrograph of the prepared ground section showing measurement of the area of two rectangular grids on the dentin area (4x)

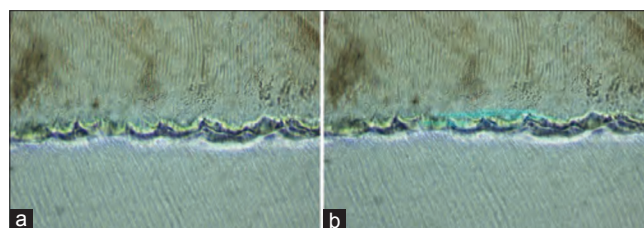


Figure 10: Photomicrograph showing the clear dentinoenamel scallop area (a) with measurement of dentinoenamel junction scallop area (20x) (b)

and patterning of sexual dimorphism in permanent teeth differs from population to population.

Response: All the subjects of whom the extracted teeth were used in the study are from Tumkur, Karnataka; we have only compared data between male and female and there is no attempt to compare between races.

With age, only the thickness of dentin varies due to secondary dentin formation, but the enamel thickness and the coronal dentinal area which we have measured i.e. the entire area coronal to bicervical diameter line [Figure 5]^[1] doesn't change with age once crown formation is completed. We have taken care not to use teeth with wasting diseases to avoid variation in enamel measurement. Hence, age of the sample doesn't have any implication on

the result. However, for information we have used teeth extracted from individuals of 15-25 years of age group.

Reader query: Enamel area, dentin area and bi-cervical diameter were measured in this study using a customized grid with no specifications given with regards to the dimension of the grid. Further this study fails to convey the units of the measurements used either in the text or in the tables.

Response: The dimensions of the customized grid can be observed in Figure 4^[1] which is 2X2.5cm in size, which is divided into 24X36 divisions. The grid is superimposed on the sections for measurement of enamel and dentin; area under each grid division covering them is measured individually under microscope with the help of software. The measurement is done in mm, which was visible in all the photomicrographs we had taken and measured. We regret the loss of clarity of figures appeared in the publication.

Reader query: As the surface (both the inner and the outer) of the enamel and dentin are curved superimposing the straight grid lines on the curved and angulated surface/line seems to be unfitting

Response: All the curvilinear measurements (length of DEJ, enamel area and coronal dentin area) were performed by tracing using software. Grid was used only as a reference to aid in visualizing the points to be traced. Reader seems to have failed to understand the methodology used. We would like to reaffirm there are no errors in measurements performed. Tracing can be visualized as light blue colored curvilinear lines in Figure 7b, 8b and 9b.^[1]

Reader query: Three-dimensionally, dentin enamel junction is made up of saucer shaped depressions which appear as scalloped line two dimensionally in thin micro sections. These saucers shaped depression vary in their diameter and depth. Measuring the area of this three-dimensional structure using a linear grid line adds no relevance. In the ground sections of tooth, one can identify DEJ containing varying number of scalloped with different size and shapes microscopically due to the overlapping of many planes, because of the thickness of the ground section. Measuring such a complex structure demands a three-dimensional technique rather than a linear grid line.

Response: We agree that not only DEJ, even enamel and dentin too are three dimensional structures. In our study we are measuring them in two-dimensional view of a ground section in terms of area. As scallops are going to vary at different planes 10 clearly visible and deep scallops from multiple areas were measured to consider average dimension for a case. While measuring scallops the grid was not superimposed on the sections as can be observed in Figure 10.^[1] Even in literature there are lot of studies which are measuring three dimensional structures in two dimensional measurements which are valid. For example, there are plenty of studies which have done morphometric analysis of cells^[2] in different conditions and disorders, which involves two-dimensional measurement of a three-dimensional cell. Even age estimation by dentinal sclerosis^[3] involves sectioning of tooth in one particular plane, whereas dentinal sclerosis in other areas of dentin which is not under plane of sectioning may be different. Hence, we would like to state that our attempt to measure DEJ scallops two dimensionally to be valid.

Reader query: Concluding the study with a very limited sample size of 60 premolars done in a country having population of around 130 crores is insupportable. A larger sample size is a mandate to state and conclude that sex of an individual can be established from ground sections of maxillary and mandibular first premolars.

Response: Sample size estimation was done for the study in consultation with statistician using published data available (Reference No 6), with statistician suggesting a sample size of 35 only. And we are not trying to establish a normative data for Indian population; we have just compared values between male and female subjects. Hence, an adjusted sample size of 60 was considered.

Ganganna Kokila¹, Wakambam Monalisa²,
Hidangmayum Denish Sharma³, Pillai Arun
Gopinathan⁴, Okram Manoranjan Singh⁵, Shubha
Kumaraswamy⁶

²Department of Oral Pathology and Microbiology, Dental College, Jawaharlal Nehru Institute of Medical Sciences, Porompat,

³Shine Dental Clinic, Sagolband, ⁵Confident Dental Care, Palace Compound, Imphal, Manipur, ¹Department of Oral Pathology and Microbiology, Sri Siddhartha Dental College and Hospital, Sri Siddhartha Academy of Higher Education, ⁶Department of Dentistry, Sridevi Institute of Medical Science and Research Hospital, Tumkuru, Karnataka, ⁴Department of Oral Pathology and Microbiology, Sri Sankara Dental College, Varkala, Kerala, India

REFERENCES

1. Monalisa W, Kokila G, Sharma HD, Gopinathan PA, Singh OM, Mayur S. Sexual dimorphism of enamel area, coronal dentin area, bicervical diameter and dentin enamel junction scallop area in longitudinal ground section. *J Oral Maxillofac Pathol* 2018; 22:423-9
2. Christopher V, Murthy S, Sr A, Singh S, Cp A, Shivaram SK, *et al.* Morphometry as a diagnostic tool for potentially malignant lesions. *J Clin Diagn Res* 2015;9: ZC22-5.
3. Kattappagari KK, Kommalapati RK, Katuri D, Murakonda RS, Chitturi RT, *et al.* Age estimation by assessment of dentin translucency in single rooted permanent teeth. *J Int Oral Health* 2014;6:37-40.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
Quick Response Code:	Website: www.jomfp.in
	DOI: 10.4103/0973-029X.256448

How to cite this article: Kokila G, Monalisa W, Sharma HD, Gopinathan PA, Singh OM, Kumaraswamy S. In Response to: Sexual dimorphism. *J Oral Maxillofac Pathol* 2019;23:153-5.

© 2019 Journal of Oral and Maxillofacial Pathology | Published by Wolters Kluwer - Medknow