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### Anatomic crown width/length ratios of unworn and worn maxillary teeth in white subjects

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#### Abstract

##### Statement of problem

Dimensions of teeth have been available for a century. Some significant and clinically relevant aspects of dental esthetics, however, such as the crown width/length ratios, have not been presented in tooth morphology sources until recently.

##### Purpose

The purpose of this study was to analyze the anatomic crowns of 4 tooth groups (central incisors, lateral incisors, canines, and first premolars) of the maxillary dentition with respect to width, length and width/length ratios and determine how these parameters are influenced by the incisal edge wear.

## Material and methods

Standardized digital images of 146 extracted human maxillary anterior teeth from white subjects (44 central incisors, 41 lateral incisors, 38 canines, 23 first premolars) were used to measure the widest mesiodistal portion "W" (in millimeters) and the longest incisio-cervical/occluso-cervical distance "L" (in millimeters). The width/length ratio "R" (%) was calculated for each tooth. A 1-way analysis of variance was used to compare the mean values of W, L, and R for the different groups ("unworn" and "worn" subgroups, except for premolars). Multiple least significant difference range tests (confidence level 95%) were then applied to determine which means differed statistically from others.

## Results

There was no influence of the incisal wear on the average value of W (width) within the same tooth group. The widest crowns were those of central incisors (9.10 to 9.24 mm) > canines (7.90 to 8.06 mm) > lateral incisors (7.07 to 7.38 mm). Premolars (7.84 mm) had similar width as canines and worn lateral incisors. The L-value was logically influenced by incisal wear (worn teeth were shorter than unworn teeth) except for lateral incisors. The longest crowns were those of unworn central incisors (11.69 mm) > unworn canines (10.83 mm) and worn central incisors (10.67 mm) > worn canines (9.90), worn and unworn lateral incisors (9.34 to 9.55 mm), and premolars (9.33 mm). Width/length ratios also showed significant differences. The highest values were found for worn central incisors (87%) and premolars (84%). The latter were also similar to worn canines (81%), which constituted a homogeneous group with worn lateral incisors (79%) and unworn central incisors (78%). The lowest ratios were found for unworn canines and unworn lateral incisors (both showing 73%).

## Conclusions

Along with other specific and objective parameters related to dental esthetics, average values for W (mesiodistal crown dimension), L (incisocervical crown dimension), and R (width/length ratio) given in this study for white subjects may serve as guidelines for treatment planning in restorative dentistry and periodontal surgery.



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