



## Physical Anthropology Section – 2005

### H67 The Morphometric Study of the Hyoid Bone for Sex Determination of Koreans

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The goal of this presentation is to present research on the hyoid bone which might be useful for sex determination of Koreans in archaeological and forensic studies.

This presentation will impact the forensic community and/or humanity by investigating sexual dimorphism in the hyoid bone and the usefulness of the hyoid bone as a sex indicator. Use of the hyoid bone would make sex determination more scientific and exact, and racial differences by this study would be easier than before.

Sex determination is usually the first step of the identification process because many of the subsequent methods for age and stature estimation are sex-dependent. Most of the older studies of sex differences are centered on morphological traits. For example, the shape of the hyoid bone is sex-related. Newer studies on the hyoid focus on morphometry in a largely quantitative and statistical sense. This study focuses on morphometry of the hyoid bone for sex determination.

The hyoid bones were examined from 52 Korean males and 33 Korean females. As for the age range of the subjects, all age categories over 20 years took part in the data, for both males and females. In each case, the hyoid bone was separated from the larynx and dissected surrounding connective tissue. Each specimen was photographed with a digital camera. For each bone 34 measurements were taken directly from the photograph with a computer program, and statistically analyzed with the computer program SPSS 11.0.

Twenty of 34 measurements have significant sex differences. They include maximum sagittal length, width of body of the hyoid bone, and length of greater horn, etc ( $p < 0.05$ ). In the case of males, the discriminant function follows  $F = 4.021 \times X1 + 4.496 \times X2 + 1.541 \times X3 - 74.251$ . In the case of females, it follows  $F = 3.520 \times X1 + 3.295 \times X2 + 1.138 \times X3 - 52.145$ . 'X1' is the length between the midpoint of the left side of the hyoid body and the midpoint of the right side of the hyoid body measured through the central axis of the hyoid body. 'X2' is the maximum width of the proximal end of the greater cornua, measured perpendicular to the internal surface of the bone on the left. 'X3' is the length of the distance from the narrowest segment of the greater cornua to a point equidistant between the distal and proximal ends of the greater cornua, measured through the central axis of the greater cornua on the right.

The canonical correlation of discriminant function is 0.720. Based on these results, it is possible to statistically discriminate males from females.

**Hyoid Bone, Sex Determination, Koreans**