

## **Gender Evaluation using Frontal Sinus Morphometry By Means of Computed Tomography**

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Gender evaluation is essential in forensic personal identification. Frontal Sinus (FS) was chosen as the gender discrimination tool in this study to evaluate the relationships between gender and FS morphometry using Computed Tomography (CT) owing to the uniqueness and high trauma resistivity of FS.

A retrospective, quantitative study was conducted using 288 brain and paranasal sinus CT images of male (144) and female (144) patients available at the Department of Radiology, National Hospital, Kandy, Sri Lanka. Images were analyzed using RadiAnt DICOM viewer software. The presence or absence of the FS, the number of chambers, and the presence or absence of the septum were investigated as FS features. Maximum height, width, antero-posterior (AP) diameter and volume of the both left and right FS were investigated as FS measurements. Data were analyzed using SPSS statistical software. According to the study female group had statistically significant lower values for mean values of all measurements obtained in comparison to the male group. In both groups, the mean values of the left side were greater than the right side for FS maximum AP diameter, height, width, and volume. According to the results accuracy of determination of male patients through the FS measurements, highest accuracy was seen through total volume of FS 66.0%. Although there were lot of similarities in the findings compared to the results of similar studies carried out in different countries in the world, some discrepancies were also there which might be due to anatomical variations in different ethnicities.

Significant associations of several FS parameters such as the height and width of the right FS, AP diameter and volumes of both FS with gender were identified and relatively good precision in the determination of gender could be attained in this study. Therefore, FS morphometry could be used as an effective method to determine the gender.

**Keywords:** Frontal sinus morphometry, Gender evaluation, Computed Tomography