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## Morphometric Evaluation of the Foramen Magnum and Variations in its Shape: A Study on Computerized Tomographic Images of Normal Adults

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**Abstract:** The purpose of this study was to evaluate the radiological measurements of the foramen magnum (FM) and their relation to sex as well as to note variations in the shape of the FM. Cranial computerized tomographic images (CT) of 110 normal subjects (57 males - 53 females) between the ages of 18 and 80 years were examined in this study. The sagittal and transverse diameters of the FM were measured with a millimetric sliding caliper. Additionally, the area of the FM was also estimated. The statistical analysis for sex comparison was made using Student's t test. To determine the relationships between the studied parameters, Pearson correlation coefficients were calculated. In addition, the frequency percentage ratios of the variable shape types of the FM were also determined. Our findings showed that the sagittal, transverse diameters and area of the FM were significantly greater in males than in females ( $P < 0.001$ ). The statistical comparisons of the correlations between all measuring parameters showed significant associations ( $P < 0.01$ ). According to the identity with the shape type, the FM was found to be oval in 8.1%, egg-shaped in 6.3%, round in 21.8%, tetragonal in 12.7%, pentagonal in 13.6%, hexagonal in 17.2%, irregular (A) in 10.9% and irregular (B) in 9.09%. It can be concluded that the sex differences in the dimensions of the FM and the variations in its shape are of diagnostic clinical and radiological importance.

**Key Words:** Foramen magnum, Measurements, Variations

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