

PATTERNS OF FORAMEN MAGNUM SIZE AND SHAPE IN RHINOCEROTOIDEA (CERATOMORPHA: PERISSODACTYLA).

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INTRODUCTION: The foramen magnum (FM) surrounds the upper cervical spinal cord near the cervico-medullary junction. In fossil crania, it may provide the only data (indirectly) for central nervous system (CNS) size in the absence of preserved endocasts, cranial cavities, or vertebral canals. It may also provide evidence for spinal cord shape. Patterns of FM size and shape within clades may reveal general aspects of CNS evolution. The Rhinocerotoidae is one such group whose fossil record, diversity, and extant representatives allows a broader analysis of this aspect of organismal evolution.

METHODS: Primary data were greatest height (dorsoventral) and width (transverse) taken on adults and subadults. Derived variables were shape (height/width) and size (elliptical area). The skull was modelled as an ellipse using length and width variables. Bivariate analyses were used to investigate foramen size and shape.

RESULTS: Size analyses indicate that (a) absolute size increases fairly linearly with absolute skull size, (b) relative size is fairly constant with no relationship to skull size. *Shape* analyses show that (a) the foramen magnum is slightly flattened dorsoventrally across all genera studied (mean H/W = 0.88) and that (b) there is no relationship between foramen shape and skull size or shape. The flattened FM may be correlated with a flattened spinal cord which in turn may allow greater flexibility in cervical flexion-extension.