

Can maxillary canal morphology inform varanopid phylogenetic affinities?

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Acta Palaeontologica Polonica 66 (2), 2021: 389-393 doi:<https://doi.org/10.4202/app.00816.2020>

Varanopidae have historically been classified as members of the basal synapsid grade “Pelycosauria”. However, recent phylogenetic works proposed that varanopids may in fact belong to the Diapsida. Here, we use μ CT scanning and digital 3D reconstruction to compare the maxillary canal of the early diapsid *Orovenator mayorum*, the basal archosauromorph *Prolacerta broomi*, the ophiacodontid “pelycosaur” *Varanosaurus acutrostris*, and the varanopid *Heleosaurus scholtzi*. We find that the maxillary canals of *Orovenator* and *Prolacerta* are very similar and differ markedly from those of *Heleosaurus* and *Varanosaurus*. In the latter two, the morphology of the maxillary canal closely matches that of the Therapsida, which could support the traditional position of varanopids among the Synapsida.

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 [Supplementary file \(148.5 kB\)](#)