

The skull anatomy and cranial endocast of the pseudosuchid archosaur *Prestosuchus chiniquensis* from the Triassic of Brazil

Bianca Martins Mastrantonio, María Belén Von Baczko, Julia Brenda Desojo, and Cesar L. Schultz
Acta Palaeontologica Polonica 64 (1), 2019: 171-198 doi:<https://doi.org/10.4202/app.00527.2018>

Prestosuchus chiniquensis is the most famous “rauisuchian” described by Friedrich von Huene, eight decades ago, and several specimens have been assigned to this taxon since then. In the present contribution, we provide the first detailed description of a complete and very well preserved skull (including the braincase) assigned to *Prestosuchus chiniquensis* from the *Dinodontosaurus* Assemblage Zone of the Santa Maria Supersequence of southern Brazil. The detailed description of the skull of *Prestosuchus chiniquensis*, besides increasing the knowledge about this taxon, may help elucidate the taxonomic relationships of pseudosuchians even further, since most of the characters used in phylogenetic analyzes are cranial. The presence of the subnarial fenestra, a controvertial extra opening on the skull of “rauisuchians”, is thoroughly discussed considering the evidence provided by this new specimen. We consider that the small slit-opening between the premaxilla and the maxilla in *Prestosuchus chiniquensis*, can not safely be considered a true fenestra, but indicates more likely the existence of some degree of cranial kinesis between these elements which can result in different relative positions of the bones after definitive burial and fossilization, so that the size and shape of this opening is taphonomically controlled. Complementarily, the digital reconstruction of its cranial endocast was developed both from the observation of the preserved braincase and from CT scan images, which resulted in obtaining the first endocast known for a “rauisuchian”. The endocast of *Prestosuchus chiniquensis* exhibited some remarkable convergences with that of theropod dinosaurs, which could be a reflection of the similar niches they occupied, since “rauisuchians” were the top predators at the end of the Late Triassic, before the extinction of all non-crocodylomorph pseudosuchians.

Key words: Archosauria, Pseudosuchia, Rauisuchia, Loricata, neuroanatomy, Triassic, Ladinian, Carnian, Brazil.

Bianca M. Mastrantonio [bmmastrantonio@gmail.com] and Cesar L. Schultz [cesar.schultz@ufrgs.br], Laboratório de Paleovertebrados, Departamento de Paleontologia e Estratigrafia, Instituto de Geociências, Universidade Federal do Rio Grande do Sul (UFRGS), Cx. P. 15001, 91501-970, Porto Alegre, RS, Brazil. María B. von Baczko [belenvonbaczko@gmail.com] and Julia B. Desojo [julideso@fcnym.unlp.edu.ar],

Division Paleontología de Vertebrados, Museo de La Plata, Paseo del Bosque s/n, B1900FWA, La Plata, Argentina; Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Avenida Rivadavia 1917, C1033AAJ, Ciudad Autónoma de Buenos Aires, Argentina.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(2.023.1 kB\)](#)