ACTA PALAEONTOLOGICA POLONICA

Carved teeth and strange jaws: How glyptodonts masticated

Richard A. Fariña and Sergio F. Vizcaíno
Acta Palaeontologica Polonica 46 (2), 2001: 219-234

In this paper, the highly peculiar masticatory apparatus of glyptodonts is studied. The general morphology of the skull is analysed using a morphometric procedure, the Resistant Fit Theta Rho Analysis, which allows comparison among different biological forms. Here, a large terminal form, the late Pleistocene genus *Glyptodon*, is compared with the smaller primitive Miocene genus *Propalaehoplophorus*, and with the generalised Recent armadillo *Chaetophractus*. The masticatory musculature of glyptodonts is reconstructed. Their tooth form and wear facets, as well as their mandibular symphysis and jaw joint, are analysed. A model of jaw movement is constructed based on these analyses. It is demonstrated that the masticatory apparatus of glyptodonts had undergone a telescoping process, which was already underway in the most ancient forms whose skull is known. This process created problems in regard to the way stresses produced by mastication were absorbed by the mandible, and therefore it might be regarded as non-adaptive. Some functional explanatory hypotheses are discussed, such as a requirement of keeping the moment of the weight of the cranium small enough to be counterbalanced by the neck muscles, or fitting the head into the armour.

Key words: Biomechanics, Xenarthra, South America, palaeobiology, jaw mechanics.

Richard A. Fariña [fari~a@fcien.edu.uy], Departamento de Paleontología, Facultad de Ciencias, Iguá 4225, 11400 Montevideo, Uruguay; Sergio F. Vizcaíno [vizcaino@museo.fcnym.unlp.edu.ar], Departamento Científico Paleontología de Vertebrados, Museo de La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina; CONICET.


Full text (432.5 kB)