A double-tusked dicynodont therapsid — Pathology, variability, or a new species?

Jörg FRÖBISCH & Robert R. REISZ

Department of Biology, University of Toronto, 3359 Mississauga Rd., Mississagua, ON, L5L 1C6, Canada

As their scientific name already implies, the presence of a pair of large teeth is one of many synapomorphies that diagnoses dicynodont anomodonts. In basal taxa, additional dentition consists of a varying number of cheek teeth. In addition, substantial parts of the lower jaw, palate, and snout region were covered by a keratinous beak during life, as indicated by pitted and roughened surfaces in these areas. The enlarged teeth are not homologous with the caniniforms of more basal synapsids and thus represent neomorphic structures, more properly called tusks. They usually erupt from more or less prominent, ventrally projecting caniniform processes in the maxillary bones on each side of the skull. In some derived taxa the tusks are reduced or completely absent. In other forms the absence or presence of tusks in various specimens of the same taxon has been interpreted as sexual dimorphism.

Here I report on an unusual specimen that shows close affinities to the Middle to Upper Permian genus *Emydops* to which it has previously been ascribed. The specimen was discovered within the known stratigraphic range of *Emydops* in the *Cistecephalus* Assemblage Zone of the South African Karoo Basin in 1917. It shares a number of derived characters with *Emydops* such as its small size, a wide temporal region, prominent lateral dentary shelfs, and an embayment on the medial surface of the palatal rim. However, instead of one tusk it bears two tusks on each side of the skull. This double-tusked condition, as yet unknown in dicynodonts, raises the question whether this feature is pathological, falls within the range of intraspecific variation, or represents a diagnostic character that sets this specimen apart from other taxa.