

The Neanderthal endocast from Gánovce (Poprad, Slovak Republic)

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A natural Neanderthal endocast was found in 1926 during quarrying of a travertine knoll in Gánovce, near Poprad, Slovakia. A young Czech paleoanthropologist, Emanuel Vlček, was the first who recognized that the endocast did not belong to a modern human, but rather to a Neanderthal [1]. During his career, Vlček published several analyses of the cast. He provided a metric analysis of the specimen, a radiological study, and a morphological analysis including a geometrical comparison based on vault outlines and superimposition criteria [2,3]. However, he wrote mostly in Czech or German, and thus most of his work remains unknown or inaccessible for current scholars. This study is aimed at summarizing the information available on the Gánovce endocranial cast, and at providing a metric evaluation of its morphology following a multivariate approach. The cast of the endocranium was naturally formed by travertine and it has been dated to 105 ka BP [4]. It is partially covered by attached mineralized bone fragments of cranial vault, mostly on the left and upper parts of the endocast. The volume of the endocast is about 1320 cc. The endocast has particularly well preserved inferior and occipital parts, with apparent *juga cerebralis*, *foramen magnum*, dural venous sinuses, and even short segments of the middle meningeal vessels imprints. Here, we perform a multivariate analysis of its main diameters, further confirming its Neanderthal morphology. The computed tomography technique and digital anatomy tools are used to model and reconstruct the endocast, so it can be further studied and measured. The endocast is particularly wide and flat, with an exceptional frontal width. The dural venous sinuses are present on the occipital part and on the basis of the cast. The superior sagittal sinus runs into the confluence of sinuses, and paired transverse and sigmoidal sinuses are visible. Moreover, the endocast shows an occipito-marginal sinus, not described previously, which represents an infrequent vascular trait. The morphology of the Gánovce endocast suggests once more that the Neanderthal endocranial phenotype had already evolved at 100 ka [5].

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