

A NEW RECONSTRUCTION OF THE SHANIDAR 5 CRANIUM

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Abstract : *A reconsideration of the Iraqi Neandertal Shanidar 5 cranium has demonstrated that the left parietal bone was incorrectly oriented. The proper orientation removes any indication of the mid-sagittal parietal profile of the specimen. It is therefore no longer possible to maintain that the individual experienced artificial cranial deformation, although Shanidar 5 and the other Shanidar Neandertal crania have unusual levels of frontal mid-sagittal flatness.*

Résumé : *Une nouvelle observation du crâne néandertalien Shanidar 5 (Irak), a montré que, lors de sa reconstruction, le pariétal gauche avait été mal positionné. Une correction de l'orientation du pariétal enlève toute indication du profil sagittal des pariétaux. Il n'est donc plus possible de maintenir que Shanidar 5 a subi une déformation artificielle du crâne et ce même si tous les crânes néandertaliens de Shanidar présentent un aplatissement frontal exceptionnel.*

Key-Words : *Neandertals, Shanidar, Cranium.*

Mots Clefs : *Néandertaliens, Shanidar, Crâne.*

In 1960, during the last season of excavations at Shanidar Cave in Iraqi Kurdistan, R.S. Solecki and co-workers discovered an adult Neandertal skeleton in the east wall of the excavation area¹. This individual, identified only four days after the discovery of the Shanidar 4 remains, became Shanidar 5. As a result of the accumulated remains of the previously known Shanidar 1 and 2 partial skeletons and the Shanidar 4, 6, 8 and 9 multiple burial, T.D. Stewart left the Shanidar 5 remains unpacked in the Iraq Museum. The post-cranial elements were excavated and cleaned but not assembled, and the cranium was pressed against a rock and largely covered with a protective plaster and burlap wrapping.

When one of us (E.T.) became involved in the analysis of the Shanidar Middle Paleolithic human remains in 1976, the first project was to unpack and assemble the Shanidar 5 postcrania and to excavate, clean and reassemble the Shanidar 5 cranial remains in the Iraq Museum. The Shanidar 5 cranium

had been pressed up against a rock, such that only the largely complete frontal bone with the adjacent parietal bone along the coronal suture was evident on the surface. The largely complete left temporal bone was folded underneath the frontal bone, and the facial skeleton was fragmented and folded sagittally under the frontal and temporal bones². In addition, several pieces of left parietal bone were arranged in the sediment up against the posterior margin of the left frontal squamous and anterior parietal margin.

The initial reconstruction in 1976 reassembled the frontal bone without distortion. The facial mask was reassembled with a slight transverse distortion, such that the midline is several millimeters too posterior as a result of summed angular displacements across multiple joins. This is indicated by the relationship between nasion on the frontal bone and superior root of the nasal bones. The temporal and parietal pieces were kept separately³.

1. SOLECKI, 1961.

2. TRINKAUS, 1977, plate 4.

3. TRINKAUS, 1977, 1978.



fig. 1 : *The re-reconstructed Shanidar 5 cranium in norma verticalis. Scale in centimeters.*

In 1978, further reconstruction was done. A small piece of parietal bone with squamous suture was identified, which provided a contact between the temporal bone and the anterior parietal bone near stephanion. It also involved placing the large piece of the central left parietal bone in relation to the frontal and anterior parietal segments. This parietal segment preserves the exterior surface in excellent condition, but the endocranial surface is highly eroded with no trace of the meningeal vessel sulci. One angle preserves two eroded sutures, 49.5 and 58.0 mm long, which were identified at that time as the posterior sagittal and the medial lambdoid sutures extending from lambda. Using external contours and the midline defined by prosthion, nasion and bregma to align the identified lambda, this parietal piece was attached to the anterior cranium. In 1980, this reconstruction was molded (by MC), along with the left temporal bone, and subsequently fully published⁴.

4. TRINKAUS, 1983.



fig. 2 : *The re-reconstructed Shanidar 5 cranium in norma lateralis left. The irregularity in the mid-sagittal profile and temporal line just anterior of the coronal suture is the result of a exocranial trauma (Trinkaus, 1983). Scale in centimeters.*

In the meantime, it was noted that this reconstruction echoed, in a more extreme form, a mid-sagittal profile evident on the stratigraphically similar Shanidar 1 cranium, namely a very flat frontal (nasion-bregma) arc and a highly curved parietal (bregma-lambda) one. This combination of curvatures was interpreted⁵ as the result of modest intentional cranial deformation of these two Middle Paleolithic hominids, the oldest inferred evidence for such a practice.

In 1994, two of us (C.P.G. and A.G.T.) were examining for the first time a cast of the Shanidar 5 cranium in the Musée de l'Homme (Paris). They noticed that what purported to be the left lambdoid suture was in fact the eroded left squamous suture, and therefore the left parietal portion of the earlier reconstruction required correction. Once the error had been identified, a cast of the cranium was cut (by MC), the parietal piece correctly assembled, the missing bone between it and the anterior parietal filled in, and the whole remolded (figs 1 and 2). The resultant arrangement is accepted by all of us as the correct reconstruction of the Shanidar 5 cranium.

5. TRINKAUS, 1982, 1983.

THE SHANIDAR 5 LEFT PARIETAL BONE

The left parietal bone of Shanidar 5 now consists of three separate sections (figs 1 and 2), which are positioned by their sutural contacts with the frontal or temporal bones. There is a mediolateral section plain 35 mm wide fused to the frontal bone along the coronal suture (previously present). There is the small piece that articulates with the temporal bone along the mid-squamous suture and has an eroded contact with the antero-inferior parietal section along the coronal suture. And there is the mid-parietal section which articulates with the posterior third of the squamous suture on the temporal bone and arcs medially at least three-quarters of the way to the midline. There is a minimum gap of 8.5 mm between the third piece and the section along the coronal suture.

The mid-parietal piece retains the posterior third of the squamous suture back to the parietal notch, and then most of the parieto-mastoid suture but not including asterion. None of the lambdoid or sagittal sutures is preserved. The parietal side of the squamous suture retains only the external margin, such that virtually all of the bevel of the squamous suture on the temporal bone is exposed endocranially. The left temporal line is present from the postero-inferior squamous suture to the antero-superior break for 44.5 mm (chord distance), and it reaches a breadth of 6.3 mm. Endocranially, surface bone is only preserved inferiorly for up to 29 mm from the parieto-mastoid suture.

RESULTANT MORPHOLOGY

The corrected orientation of the Shanidar 5 left parietal bone eliminates the previously perceived mid-sagittal bregma-lambda arc. Since lambda is not present on the cranium, it is not possible to assess the curvature of the sagittal suture of Shanidar 5. Only a general impression of parietal sagittal curvature can be gained from the cranium, and it appears to have been generally similar to that of Shanidar 1⁶.

The now correctly identified left temporal line is notable for both its previously described marked deviation just anterior of the coronal suture⁷ and its faint marking posteriorly on the parietal bones. The temporal line goes from a promi-

nent temporal crest just posterior of the fronto-zygomatic suture, to a moderately marked line near stephanion, to a faint one as it approaches the squamous suture. There is no suggestion of an angular torus, and the line is faint along its entire posterior parietal course.

In addition, in posterior view, the parietal bone now presents an even medio-lateral arc, indicating the presence of a "forme en bombe" coronal neurocranial profile, a feature noted for the Neandertals.

IMPLICATIONS FOR ARTIFICIAL CRANIAL DEFORMATION

One of us (E.T.)⁸ had stated that the cranial vault of Shanidar 5 was the longest (in nasion-lambda length) and had the lowest height: length index of any Neandertal specimen, that lambda was in an unprecedentedly postero-superior position, that the nasion-lambda subtense was unusually low, and that the parietal curvature was considerably greater than the frontal curvature. To explain these features, he postulated that the individual had been subjected in infancy to artificial cranial deformation. In the corrected reconstruction the mid-sagittal parietal arc is not represented; it is consequently not possible to assess accurately whether it exhibits the pattern seen in Shanidar 1 and many artificially deformed crania (a strongly curved parietal arc, especially in relation to a relatively flat frontal arc). The one of us who originally proposed artificial deformation to explain the morphology of the Shanidar 5 neurocranium (E.T.) therefore withdraws that interpretation (evaluation of the cranial deformation interpretation of the Shanidar 1 cranium must rest on a reassessment of that specimen).

At the same time, the frontal mid-sagittal arc of Shanidar 5 remains very flat, with a frontal angle (a higher angle indicates a straighter arc⁹) of 147°. This value is surpassed among Neandertals (*sensu lato*) only by the estimate of $\geq 150^\circ$ for Shanidar 4¹⁰ and approached only by Shanidar 1 (144°). These Shanidar values contrast with those of Amud 1 (139°), Tabun 1 (131°) and a sample of last glacial European Neandertals ($138.9^\circ \pm 2.2^\circ$, N = 9). Consequently it must be recognized that the Shanidar sample presents an unusual pattern of frontal mid-sagittal flatness.

6. TRINKAUS, 1983.

7. *Ibid.*

8. *Ibid.*

9. HOWELLS, 1973.

10. TRINKAUS *et al.*, 1996.

SUMMARY

We have identified that the left mid-parietal fragment of the Shanidar 5 cranium was incorrectly positioned. The mid-sagittal parietal segment is missing, and we now no longer consider that artificial cranial deformation can be inferred for the specimen. At the same time, the Shanidar Neandertals remain unusual in their extreme frontal flattening. It is hoped that this correction to the reconstruction of the Shanidar 5 cranium will assist with its integration into the later Pleistocene hominid fossil record.

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