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**Reply:**

P. Chapman and R. Gupta

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**Reply:**

Any speculation concerning the postmortem mutilations of Djehutynakht's head must take into account the fact that they were systematic and deliberate. A number of observations provide unequivocal evidence of this fact. The remarkable symmetry of the mutilations is alone compelling evidence of their deliberate nature. The clean transection of each coronoid process was clearly made to mobilize this structure. Immediately behind this on either side are also irregular cuts into the anterior lips of the glenoid fossae, suggesting that, once the coronoid process had been transected, the cutting tool was driven further back along the same axis. Another striking finding is that, with the exception of the in-driven fragment of the left zygomatic body, all of the affected bones were completely removed bilaterally. This includes the anterior walls of the maxillary sinuses and contiguous inferior orbital rims, the right zygoma, both zygomatic arches, and the coronoid processes. This was all achieved leaving the overlying skin intact. The inescapable conclusion is that the entire process was performed transorally along a corridor created by the progressive anteroposterior removal of bone and related soft tissue back as far as the temporomandibular joints.

These findings are incompatible with the suggestion that the observed mutilations were the result of incidental damage due to rough handling during embalming, "archeological excavation, transportation, robbery [or] plundering," all of which would have simply left randomly crushed skeletal elements in situ beneath the intact skin. Similarly the pristine state of the mummy wrappings precludes damage due to plundering.

Although it is true that the embalmers of that time were quite skillful in the use of subcutaneous packing to restore a normal appearance to the deceased, it is difficult to imagine that they would have gratuitously removed extensive portions of the facial skeleton to correct the enormous deformity they had just created. This would be highly illogical because it is just these bones that are so important in determining an individual's normal facial appearance. There is also no precedent for the embalmers removing these structures for any other purpose. It is also not credible that simply forcing packing into the subcutaneous tissues would have caused extensive fracturing of the bone, much less its complete dissolution.

Bilateral coronoid processes of the mandibles are deep structures in the masticator space, which do not significantly alter the facial appearance. That they have been resected bilaterally alludes to a deliberate act of a purposeful practitioner who was trying to accomplish something other than preserving or reconstructing the facial appearance. The compensatory nature of the wrapping and the osteotomy defects also lend evidence to the fact that the mutilations were done before the wrapping was applied to the mummified head. Even though the facial skeleton has been extensively modified, the external appearance of the mummy is remarkably symmetric. For example, the right zygoma has been completely resected, whereas that on the left has been dislocated and pushed into the maxillary sinus. Similarly the bilateral zygomaticotemporal arches have been resected. The corresponding depressions on the superficial surface have been expertly reconstructed by varying thicknesses of the linen and the intervening resin. If the sole aim was merely to preserve the facial appearance, why would one do such extensive mutilations and then reconstruct the defect caused by such an intervention?

As the correspondents note, deliberate postmortem mutilations of

the corpse are otherwise known. Perforation of the skull in various ways to remove the brain is, of course, the best example. Early in Egyptian history, there are also examples of dismemberment including decapitation of the corpse.<sup>1</sup> The body parts were then reassembled within undisturbed mummy wrappings. To our knowledge however, there is no other example in the archeological record of the sort of deliberate mutilations we describe. The correspondents cite (their reference 2) an unpublished dissertation addressing the patterns of postmortem damage to mummified remains. It would be of interest for the investigator to re-examine the material for evidence of similar deliberate mutilations that might otherwise have been assumed to be the result of accidental damage. Especially relevant would be remains contemporary with or antedating Djehutynakht, in view of the changes to be expected in embalming procedures during the several thousand years of ancient Egyptian history.

As the correspondents indicate, rigor mortis can persist up to several days. At this time, the jaw is rigidly closed so that only the cheeks can be retracted, and it is generally not possible to open the mouth to examine the oral cavity adequately. Another of the "basic principles of post mortem pathology" is that the onset of significant putrefaction of the corpse coincides with the end of rigor mortis. If the embalmers were compelled to mobilize the jaw before the body began to putrefy, they would have necessarily done so during the period of rigor mortis, regardless of the length of time that rigor mortis was present.

The ancient Egyptians were remarkably pragmatic. One must assume that if they went to this considerable effort to systematically mutilate the facial skeleton in the manner we have observed, it must have served an important purpose in relationship to the funerary ritual and burial ceremonies. From a functional anatomic standpoint, the only unifying feature of these mutilations is that they serve to mobilize the lower jaw. This logically calls attention to a possible relationship with the Opening of the Mouth ritual. Reference to this ceremony is first documented in texts inscribed on the walls of the burial chamber in the pyramid of King Unas (ca 2375 BC). This complex and incompletely understood ritual continued to be one of the most important aspects of funerary cult throughout the long history of ancient Egypt.<sup>2</sup> During that time, there were numerous modifications and additions. The use of diachronic evidence such as the *Book of the Dead*, which the correspondents cite, is of limited value for understanding the significance of the mutilations we describe, which were performed 500 years earlier than those writings. Although the actual performance of these mutilations was not a part of the ceremony itself, it did assure that the subsequent ritual would be effective in its purpose of "opening the mouth" of the deceased, who would be able to take sustenance and speak in the afterlife.

**References**

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P. Chapman

R. Gupta

Massachusetts General Hospital  
Boston, Mass

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