Modern Forensics Solved Mystery Of 4,000-Year-Old Decapitated Mummy Head

By Jamie Wells, M.D. — April 4, 2018

Until now, the identity of a century old discovery of a 4,000-year-old decapitated Egyptian human mummy head eluded researchers. This is a tale of human perseverance, astounding advances in forensic science over time coupled with multidisciplinary efforts including but not limited to museum curation, anthropology history, medical imaging, laboratory analysis by the FBI in Quantico, Harvard Medical School and the Department of Homeland Security’s National Biodefense Analysis and Countermeasures Center.

Due to the success of my recent piece Medieval Woman’s Remains Show She Gave ‘Birth’ In Coffin After Death, Had Brain Surgery, it occurs to me that these accounts captivate audiences. When you consider and really reflect on why, you realize that despite their seemingly macabre subject matter these stories are, in fact, quite the opposite. Interest in them is rather optimistic in nature. They tell us there is unlimited potential to human understanding. They make us appreciate the innovations we have been fortunate enough to experience and know how lucky we are to live in a time where we likely could survive such adverse events.

And, if that’s what we can do now, then imagine what we will be able to do and fathom in another 4,000 years?

The Story Behind the Mummy Head Found in Tomb 10A

From the time the mummified human head was excavated in 1915 from the necropolis of Deir el-Bersha by the Nile River until it was displayed in 2009 in the exhibition The Secrets of Tomb 10A: Egypt 2000 BC
by Boston’s Museum of Fine Arts, its identity has been uncertain. Though it was known to be either early Middle Kingdom governor Djehutynakht or his wife, our ability to extract enough DNA for sufficient testing was not only limited by technology but also the consequence of the state of ruin of the specimen.

Their burial chamber was at the bottom of a 30-foot pit and had been looted in antiquity. Despite the theft of invaluable jewels, upon its discovery, Tomb 10A contained one of the largest collections of funerary possessions ever found from that period (e.g. 60 model boats, figures of men and women performing daily rituals, intricate carvings and paintings on the coffin which included an inner and outer one, pottery). Due to the Nomarch’s (aka Ancient Egyptian’s administration official or provincial governor) prominence, works of art reflecting the era were among the findings. As a result, tomb robbers did not spare the bodies in their search for treasures which is how the head was found atop the relatively intact coffin and a torso in the corner of the vault.

**The Challenges of Identifying The Head**

In 2005, a CT scan was obtained on the head. Apparently, it was a common practice of the time to perform post-mortem bony resections so that a person might more easily eat, for example, in the after life. Without these facial bones along with a lack of knowledge about ancient Egyptian skulls for comparison, determining the sex of this specimen was quite problematic. The remaining components appeared to be from a man, but experts could not be conclusive.

Next, the Federal Bureau of Investigation (FBI) DNA analysis Laboratory was called in to collaborate. At this time, there was a consensus it was mostly futile to attempt testing on such old remains due to modern day human DNA contamination and other failed efforts in early paleogenetics. Because environmental conditions expedited DNA degradation, the fragments that survived were too small to study.

Given the rarity of unearthing such remains from the end of the 11th and the beginning of the 12th Dynasties (give or take a generation), the fact the specimen itself is considered a work of art precludes using identifying chemical processes and manipulations that could further irreversibly damage it.

**The Scientific Trail Toward Biological Sexing of Such Damaged Specimens**

With the passage of time, came increased understanding and progress. In 2009, a surprisingly well-preserved tooth was carefully extracted from the head using a modern fiber optic scope and forceps. Due to the prior concerns and limitations, it took molecular techniques a bit to catch up and be able to recover DNA from such old samples. High throughput sequencing (HTS) permitted recovery of these small fragments.

The head was deemed male by “using shotgun sequencing and two established methods of biological sex determination (Rx and Ry), by way of mitochondrial genome analysis as a means of sequence data authentication.” The elaborate and collaborative process (and their other findings) is extensively outlined by the authors in their publication for the journal *Genes* [3].

Though more work needs to be done to discern greater information on such antiquated and
damaged specimens, the success of this endeavor removes barriers to the possibilities. Even more insight into our past might be just around the corner.

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