G33 The Princes in the Tower: Dental Age Estimation of the Archived Records of the Extant Remains of Edward V and Richard, Duke of York

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After attending this presentation, attendees will be aware that the skeletal remains of Edward V and Richard, Duke of York, are entombed in Westminster Abbey, London. Attendees will have the opportunity to consider the information on the dental development of the two princes and be able to assess the impact of dental age estimation on the identity of the two princes.

This presentation will impact the forensic science community by investigating the probability that the ages of the extant specimens of Edward V and Richard, Duke of York, call into question the reliability of the identification of the skeletal remains entombed in Westminster Abbey, London.

Introduction: King Edward IV ascended the throne in 1461 and brought stability to the kingdom. His younger brother was Richard, Duke of Gloucester — later Richard III. In April, 1483, Edward IV died unexpectedly. His successor, the 12¾-year-old King Edward V, journeyed from Ludlow Castle to London for the coronation and entered the Tower of London, a royal residence, on May 4, 1483. His younger brother, who was ten years old, was brought to the Tower of London in July, 1483, as a playmate. They never left the Tower and were not seen after the end of July, 1483. It is alleged that they were murdered by smothering on September 3, 1483.

In 1647, workmen clearing a staircase to the White Tower discovered a wooden trunk containing the skeletons of two children who were thought to be the missing princes. King Charles II ordered that the skeletal remains be interred in Westminster Abbey.

Materials and Methods: The data available for study are from the 1935 paper published in *Archeologica*.[1] The article contains skiagrams (the former name for radiographs) of the long bones, and the jaws of the remains of two young children.

In this presentation, only the dental findings will be considered. Edward V — the specimens comprise part of a jaw bone without teeth. There are sockets of teeth in the lower left premolar-molar region. The Duke of York — the jaw contains three teeth *in situ*.

The tooth development stages were assessed using the eight stage system.[2] The probability that the subjects were below the age claimed was calculated using the United Kingdom Caucasian Reference Data Set.[3] From this, the probability that the two specimens had ages that were concordant with the known ages was calculated using the method of probability estimates.[4]

Results: Edward V — the two sockets on the skiagrams present are consistent with the UL5Fm (#25) and the LL7Em (#37) and these give an age estimate of 10.49 years. Compared to the calendar age of 12.84 years, the probability that the subject is *below* that calendar age threshold is p=0.993 (99.3%). This is outside the limits of the interquartile width.

Edward V — likelihood of being less than 12.84 years is p=0.993 (99.3%), p >12.84=0.007 (0.7%).

Richard Duke of York — the three teeth on the skiagrams are consistent with LR5Dm (#45), LR4Em (#44), and LR3Fm (#43). These give a calculated age of 9.09 years compared to the calendar age of 10.05 years. This is within the interquartile width. Likelihood of being less than 10.05 years is p=0.737 (73.7%), p >10.05=0.263 (26.3%).

Discussion: The results illustrate that these alleged princes were younger than the stated calendar age, the young King by a difference of more than two years. Is this sufficient evidence to set aside the belief that these skeletons are from the royal bloodline?

Conclusion: These results support the ongoing request from modern scientists to gain access to the marble urn in Westminster Abbey to determine if the skeletal material is related to the princes' presumed uncle, Richard III.

Reference(s):

1. Tanner L.E., Wright W. Recent investigations regarding the fate of The Princes in the Tower. *Archeologica*. 1935: 1-26.
2. Demirjian A., Goldstein H., Tanner J.M. A New System of Dental Age Assessment. *Human Biology.* 1973; 45(2): 211-227.
3. www.dentalage.co.uk/R/UK-Caucasian.
4. Lucas V.S., McDonald F., Neil M., Roberts G. Dental age estimation: The role of probability estimates at the 10-year threshold. *Journal of Forensic and Legal Medicine.* 2014; 26: 61- 64.

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