Congenitally Missing Maxillary First Molars: A Case Study Conducted on FSD 19-161

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INTRODUCTION

Congenitally missing maxillary first molars are considered a trait that is indicative of Asian ancestry, specifically Japanese. Previous studies, including the one conducted by Abe et al. (2010), have linked the absence of this tooth with groupings of individuals that originate in this region of the world. In the forensic context, understanding the congenital absence of this molar can allow for greater interpretation of the skeletal remains and provide the forensic anthropologist the ability to create a more accurate biological profile of the individual in question.

FSD 19-161 arrived at the University of Montana from the Petroleum County Coroner’s Office in September of 2019 when forensic anthropological analysis began. After conducting the analysis of the remains presented, it was originally profiled as a European Male through metric and non-metric methods. However, several methods assessed contradictory ancestry estimations. One method indicated European ancestry, while another indicated Japanese descent.

Dental x-rays were also taken of the decedent and analyzed to provide a greater understanding of the individual and their pathologies. After reviewing the dental x-rays, it was confirmed that the maxillary first molars were actually missing and that these molars are congenitally absent and were not pulled antemortem, due to the placement and angle of the second molar root. Taking what was already known about the ancestral relationship of this pathology, with the new information provided by the dental x-rays we were able to readjust the biological profile of the decedent and included that the individual was likely of mixed European and Japanese descent.

BACKGROUND

Congenitally missing maxillary first molars are a dental anomaly that describes when the maxillary M1 never develops and is missing from the dental arcade. This is known as “hypodontia” and occurs when at least one permanent tooth does not develop. This pathology is not frequently seen in a majority of the population; however, their absence can indicate ancestry in some cases. According to a study conducted by Abe et al. (2010), agenesis of the maxillary first molars is seen in higher rates than agenesis of other molars and is also seen in higher frequencies in Japanese populations. It does not seem as though the trait is influenced by sex and is often seen in similar ratios in males and females.

DISCUSSION

FSD 19-161 provided multiple, non-metric indicators that they were of European descent, such as the shape of the orbits and narrow nasal aperture; however, FORDISC (v. 3.1) reported that the individual was likely of Japanese descent. This was an unexpected result, yet when coupled with the congenitally missing maxillary first molars, indicated that the individual was likely of Japanese or mixed ancestry. The discovery of the congenitally missing first molars occurred when looking at radiographs of the decedent’s teeth. By examining the position of the root of what was initially thought to be the maxillary M1, it was determined that this tooth is actually the maxillary M2. The M1 was determined to be congenitally missing because the alveolar bone was completely healed and did not show any signs of trauma. This information led to a revised ancestral assessment and the likelihood that the decedent could have been a Japanese individual was included in the profile.

CONCLUSION

The congenital absence of the first maxillary molars is indicative of Japanese descent and understanding that this pathology is associated with certain ancestral populations can assist forensic anthropologists in creating a more accurate and complete biological profile, as evidenced by case FSD 19-161. Understanding the significance of the congenital absence of teeth, specifically the first maxillary molar, will result in more accurate biological profiles in the future. In depth analyses of a decedent’s teeth may allow for a more reliable interpretation and analysis of remains, which in turn would increase the likelihood of correctly identifying a decedent.

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REFERENCES


