

## A29 Aging From Cranial Suture Closure

*Sittiporn Ruengdit, PhD\**, Chiang Mai University, Meung, Chiang Mai, THAILAND; *D. Troy Case, PhD*, North Carolina State University, Raleigh, NC 27695-8107; *Pasuk Mahakkanukrauh, MD*, Chiang Mai University, Chiang Mai 50200, THAILAND

**Learning Overview:** After attending this presentation, attendees will better understand a newly developed age estimation model in applying cranial suture closure for skeletal remains.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by providing a new approach for estimating age at death using cranial sutures, especially for Thai, Southeast Asian, and Asian populations.

Age estimation from human skeletal remains is an important step to reconstruct a biological profile such as age, ancestry, sex, and stature, which could assist in personal identification of unknown skeletal remains. Cranial sutures have long been studied for their age-related closure. Some researchers suggested they can be applied for age estimation, while others provided a caution according to their unreliability and wide estimated age ranges. However, until now, forensic anthropologists still attempt to investigate the best way of estimating age at death from cranial suture closure because the skull is usually found at the crime scene due to its distinct appearance and endurance to postmortem insults.

For these reasons, a study of age estimation from cranial suture closure in a Thai population was conducted to develop an age estimation model from cranial suture closure. A total of 48 cranial sutures from 296 dry crania belonging to Thai individuals were visually examined for their closure. According to the results, 17 age estimation models applying closure of the 17 sutures are proposed. The 17 age estimation models were derived from cumulative probit regression analysis. They were developed from 17 sutures: 13 endocranial sutures, 3 ectocranial sutures, and 1 maxillary suture. Thirteen endocranial sutures were six parts of coronal, four parts of sagittal, two parts of lambdoidal, and one occipitomastoid. Three ectocranial sutures were coronal pterica, pterion, and sphenofrontal. One of the maxillary sutures was posterior median palatine. Sensitivity and specificity of these 17 models were also analyzed. Most of the models revealed surprisingly high sensitivity (100%) in a group of young adults (<35 years), but relatively low specificity. This suggested that all of these models would work well if the age of unknown remains were narrowed down to young adult. In addition, the models derived from coronal bregmatica on the right side (80% for both sensitivity and specificity) and sagittal bregmatica provided relatively high sensitivity and specificity in a group aged less than 35 years (88% and 70%, respectively). These two sutures could serve as practical age indicators.

In conclusion, the present study provides an in-depth investigation of applying cranial suture closure for estimating age at death of Thai individuals. It is important to note that it would be inappropriate to rely solely on cranial suture closure as an age indicator if other more reliable skeletal part(s) are also found. In such circumstances, consequently, cranial suture closure could be applied as a supportive age indicator.

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### Forensic Anthropology, Age Estimation, Cranial Suture