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### SPHENO-OCCIPITAL SYNCHONDROSIS MATURATION AS RELATED TO THE DEVELOPMENT OF CERVICAL VERTEBRAE, MANDIBULAR CANINE AND CHRONOLOGIC AGE: A CONE-BEAM COMPUTED TOMOGRAPHY ANALYSIS

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**Introduction:** Orthopaedic treatment necessitates patency of skull base synchondroses of which the speno-occipital is the last to fuse. The aim of this study was to investigate and determine the relationship between maturation of speno-occipital synchondrosis (SOS), and cervical vertebrae (CVM), dental development of the mandibular canine (DI) and chronologic age.

**Methods:** Retrospective cone-beam computed tomograms were selected based on chronological age grouping for each gender. Seventy-seven subjects (42 females and 35 males) were randomly selected for each of six groups: (1) 9 year old females, (2) 11-12 year old females, (3) 16-17 year old females, (4) 10-11 year old males, (5) 13-14 year old male and (6) 18-21 year old males. Spearman correlation coefficients between SOS, CVM, DI, and age, along with tabulations of SOS stage and CVM, were estimated separately for gender.

**Results:** The maturation of SOS was significantly correlated ( $p < 0.001$ ) with CVM (0.811 [females] and 0.786 [males]); and with Chronologic age (0.747 [females] and 0.800 [males]). A weaker correlation was found ( $p < 0.001$ ) between SOS maturation and DI (0.647 [females] and 0.630 [males]). All males with fused SOS were in CVM stage 4 or later and in the pubertal or post-pubertal age group, while all females were in at least CVM stage 3 and in the post-pubertal age group. No subjects with open SOS were in post pubertal age group.

**Conclusion:** SOS stages are valid indicators of potential growth and development and correlate with measures such as CVM.