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Cranial Base Length in Pediatric Populations with Obstructive Sleep Apnea: A Systematic Review

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Objective: To review the existing literature on the relationship between the cranial base length (CBL) and obstructive sleep apnea (OSA) in children

Methods: Cross-sectional studies that evaluated the association between CBL and pediatric OSA were included. Searches of literature up to May 2016 were carried out using Ovid MEDLINE, EMBASE, and Science Citation Index. A modified NIH Quality Assessment Tool was used to assess risk of bias (RoB) among the finally selected studies.

Results: Only 4 articles were finally selected that evaluated CBL in a pediatric population with a diagnosis of OSA through nocturnal polysomnography (PSG). All four studies used cephalometric landmarks to measure the CBL. Two of the studies (n=57 - added) comparing groups of healthy vs. OSA diagnosed children showed significant and "probably" significant shorter CBL in children affected with OSA. Another study (n=15) that looked at OSA affected vs. healthy children and one (n=56) that looked at correlation of CBL with OSA severity in children did not find a significant association/correlation between CBL and OSA. The risk of bias assessment ranged from 1-6 of a potential 9 in the selected studies.

Conclusions: The existing literature on the association of CBL and pediatric OSA have moderate-high RoB. Low sample size, limitations of 2-D imaging, and limited number of studies prevent us from establishing a positive association between pediatric OSA and CBL. More studies, preferably using 3-D imaging, are required to evaluate a potential association, which could be potentially used for early diagnosis and prevention of OSA consequences.