

Predictors of Residual Obstructive Sleep Apnea in Children following Adenotonsillectomy

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Background: Obstructive sleep apnea (OSA) is the most frequently diagnosed pediatric sleep disorder, affecting 3-6% of the 74 million children in the US. Children with moderate to severe sleep apnea, defined by an Apnea-Hypopnea Index (AHI) score of 5.1 or higher, are candidates for adenotonsillectomy. Follow-up sleep studies are frequently ordered following the adenotonsillectomy in these patients due to the absence of a standardized protocol that elucidates when a follow-up sleep study is needed in children with OSA. This retrospective cohort study will investigate predictors of residual OSA in children following adenotonsillectomy.

Methods: In this single-center retrospective study, data was collected by reviewing the medical records and PSG REDCap database from 2021-2024. Patients aged 2-18 with two sleep studies, one before and one after adenotonsillectomy, and a baseline AHI of 5.1 or higher were included. Variables related to the severity of OSA such as body mass index (BMI), neck circumference, hypoxic burden, AHI, rapid eye movement (REM) AHI, and Epworth Sleepiness Scale (ESS) were evaluated.

Results: 370 patients met the criteria for the study, including 206 males and 164 females ranging in age from 2-17 with a median age of 6. Patient BMIs pre-adenotonsillectomy ranged from 11-62.4 with a median of 18.6. Pre-adenotonsillectomy, 50 patients had moderate OSA, and 320 patients had severe OSA with a median AHI of 17.55. Post-adenotonsillectomy, 189 patients had mild OSA, 80 patients had moderate OSA, and 73 patients had severe OSA with a median AHI of 3.8.

Conclusion: Evaluation of variables related to the severity of OSA may be used to help predict the necessity of follow-up sleep studies secondary to adenotonsillectomy. A metric that determines if a follow-up sleep study is warranted in children with OSA who undergo adenotonsillectomy could reduce unnecessary sleep studies and improve accessibility of sleep studies for other patients.