COMMENTARY

Do Obese Children Require Inpatient Monitoring After Adenotonsillectomy?


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Obesity is one of the major risk factors for obstructive sleep apnea (OSA). Adenotonsillectomy (AT) is considered the first line of treatment in children with OSA, even among obese children. AT is generally a safe procedure, but it carries increased risk in certain populations. The postoperative complications from AT can be classified into two categories: nonrespiratory (hemorrhage) and respiratory complications (worsening of apnea, hypoxemia, and pulmonary edema). The mortality and major morbidity of AT are primarily related to respiratory complications. Unforeseen serious respiratory complications, including deaths, have been reported in children. The guideline from the American Academy of Pediatrics indicates increased risk for postoperative respiratory complications following AT in children younger than 3 years and children with severe OSA, obesity, craniofacial anomalies, and neuromuscular disorders.

There are several reports showing increased respiratory complications during perioperative and postoperative periods following AT in obese children, although these reports are retrospective and observational studies. Two prospective studies evaluating polysomnographic findings immediately after AT yielded conflicting results. Both studies failed to specifically assess obese children. In this issue of the Journal of Clinical Sleep Medicine, De et al. reported significant residual OSA on the first surgical night following AT in obese children. This is the first study to evaluate this issue in obese children. In this prospective study of 20 obese subjects, 85% of patients had abnormal polysomnographic studies on the night following surgery similar to baseline (obstructive apnea-hypopnea index: 27.1 ± 22.9 events/h [pre] versus 27.0 ± 34.3 events/h [post]). In addition, the degree of oxygen desaturation associated with respiratory events was significant on the postoperative night (80.1 ± 7.9% [pre] versus 82.0 ± 8.7% [post]). The authors also found changes in sleep architecture including increased stage N2 sleep and decreased rapid eye movement sleep.

It is unclear from this study whether obesity itself or severity of OSA was associated with significant residual OSA the night following AT. Most subjects (75%) in this study had severe OSA, with only a few subjects with mild to moderate OSA. Significant residual postoperative OSA could be related to severity of OSA at baseline. The lack of control (nonobese) with the similar severity of OSA is a major limitation of this study. Why are obese children at risk for substantial residual OSA and postoperative complications on the night following AT? As outlined by the authors, several factors may play a role including intrinsic effect of obesity on ventilator control, decreased pulmonary reserve, and alteration of volume of distribution and pharmacokinetics of anesthetics and narcotic medications. Interestingly, the authors did not find the correlation between postoperative narcotics doses and obstructive and central respiratory events. However, the number of subjects was small and may not be adequate to evaluate this issue.

The findings from this study emphasize the importance of postoperative monitoring in obese children undergoing AT. AT is routinely performed as an outpatient procedure in many medical centers. As mentioned by the authors, the recent survey showed significant variation in admission practices in children following AT. The practice parameter from the American Academy of Pediatrics (AAP) in 2012 and the American Society of Anesthesiologists in 2006 and 2014 include obese children as one of the high-risk patients who should be monitored as inpatients postoperatively. The published guideline from the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) in 2011 advocates polysomnography for high-risk children including obesity, but only includes children younger than age 3 and severe OSA as an indication for inpatient overnight monitoring after tonsillectomy. Obesity is not mentioned in the AAO-HNS guideline for inpatient monitoring. Perhaps the data from this study will strengthen the argument to include obesity as a criterion for postoperative admission. Do all obese children even with mild OSA require inpatient monitoring after AT? The jury is still out. One previous study suggested that obesity was a risk factor for postoperative respiratory complications following AT independent of sleep-disordered breathing, but the subjects in that study were severely obese children. How long do we need to monitor these children? Prior studies have shown that apnea and desaturation may not be apparent until 5 to 18 hours postoperatively, partly due to alteration in timing of rapid eye movement sleep. Further studies are certainly needed to answer these questions.

REFERENCES