

Polysomnographic Findings after Adenotonsillectomy for Obstructive Sleep Apnea in Obese and Non-Obese Children: A Systemic review and Meta-Analysis.

[Lee CH](#)^{1,2}, [Hsu WC](#)^{3,4}, [Chang WH](#)^{1,4,5}, [Lin MT](#)^{2,3,6}, [Kang KT](#)^{1,2,4}.

Author information

- ¹Department of Otolaryngology, Taipei Hospital, Ministry of Health and Welfare, New Taipei City, Taiwan.
- ²Institute of Epidemiology and Preventive Medicine, College of Public Health, National Taiwan University, Taiwan.
- ³Sleep Center, National Taiwan University Hospital, Taipei, Taiwan.
- ⁴Department of Otolaryngology, National Taiwan University Hospital, Taipei, Taiwan.
- ⁵College of Medicine, Fu Jen Catholic University, Taipei, Taiwan.
- ⁶Department of Internal Medicine, Hsiao Chung-Cheng Hospital, New Taipei, Taiwan.

Abstract

BACKGROUND:

Use of polysomnography (PSG) is the gold standard of diagnosis and measurement of treatment effectiveness for pediatric obstructive sleep apnea (OSA). Although adenotonsillectomy (T&A) is effective in diminishing the apnea-hypopnea index (AHI), a meta-analysis of post-operative changes for all other PSG parameters, and outcome comparisons between obese and non-obese children following T&A, have never been conducted.

OBJECTIVE OF REVIEW:

To comprehensively review polysomnographic findings after surgery for obese and non-obese children with OSA.

SEARCH STRATEGY:

Study protocol was registered on PROSPERO (CRD42013004737). Two authors independently searched databases including PubMed, MEDLINE, EMBASE, and Cochrane Review from January 1997 to July 2014. The keywords used included: sleep apnea, OSA, sleep apnea syndromes, tonsillectomy, adenoidectomy, infant, child, adolescent and Humans.

EVALUATION METHOD:

A comprehensive systemic review and meta-analysis for literature for OSA children treated by T&A with polysomnography data. Random effects model was applied to determine postoperative sleep parameter changes and the surgical success rate between obese and non-obese groups. The quality of studies was assessed using the Newcastle-Ottawa Scale.

RESULTS:

In total, 51 studies with 3413 subjects were enrolled. After surgery, sleep architecture was altered by a significant decrease in sleep stage 1, and an increase in slow wave sleep and the rapid eye movement stage, and enhanced sleep efficiency. The mean difference between pre- and post-operative was a significant reduction of 12.4 event/hour in AHI, along with a reduction of obstructive index, hypopnea index, central index, and arousal index. Mean and minimum oxygen saturation increased significantly after surgery. The overall success rate was 51% for postoperative AHI <1

(obese vs. non-obese vs. combined, 34% vs. 49% vs. 56%), and 81% for AHI <5 (obese vs. non-obese vs. combined, 61% vs. 87% vs. 84%). Meta-regression analyses demonstrate that postoperative AHI was positively correlated with AHI and body mass index z score before surgery.

CONCLUSIONS:

Meta-analysis of current literature shows T&A offers prominent improvement in a variety of sleep parameters. Improvements in non-obese children exceeded those for obese children. Postoperative residual OSA remained in roughly half of the children, especially those with severe disease and obesity, making additional treatment strategies and/or long-term follow-up highly desirable. This article is protected by copyright. All rights reserved.

This article is protected by copyright. All rights reserved.

KEYWORDS:

Adenoidectomy; Child; Polysomnography; Sleep apnea syndromes; Tonsillectomy

PMID:

26436726

[PubMed - as supplied by publisher]

KEYWORDS:

Obstructive sleep apnea syndrome; Short Form-36; quality of life; randomized controlled trial; sleepiness; uvulopalatopharyngoplasty

PMID:

26404729

[PubMed - as supplied by publisher]

[Cochrane Database Syst Rev.](#) 2015 Oct 14;10:CD011165. doi: 10.1002/14651858.CD011165.pub2.

Tonsillectomy or adenotonsillectomy versus non-surgical management for obstructive sleep-disordered breathing in children.

[Venekamp RP](#)¹, [Hearne BJ](#), [Chandrasekharan D](#), [Blackshaw H](#), [Lim J](#), [Schilder AG](#).

Author information

- ¹Julius Center for Health Sciences and Primary Care & Department of Otorhinolaryngology, University Medical Center Utrecht, Heidelberglaan 100, Utrecht, Netherlands, 3508 GA.

Abstract

BACKGROUND:

Obstructive sleep-disordered breathing (oSDB) is a condition that encompasses breathing problems when asleep, due to an obstruction of the upper airways, ranging in severity from simple snoring to obstructive sleep apnoea syndrome (OSAS). It affects both children and adults. In children, hypertrophy of the tonsils and adenoid tissue is thought to be the commonest cause of oSDB. As such, tonsillectomy - with or without adenoidectomy - is considered an appropriate first-line treatment for most cases of paediatric oSDB.

OBJECTIVES:

To assess the benefits and harms of tonsillectomy with or without adenoidectomy compared with non-surgical management of children with OSDB.

SEARCH METHODS:

We searched the Cochrane Register of Studies Online, PubMed, EMBASE, CINAHL, Web of Science, Clinicaltrials.gov, ICTRP and additional sources for published and unpublished trials. The date of the search was 5 March 2015.

SELECTION CRITERIA:

Randomised controlled trials comparing the effectiveness and safety of (adeno)tonsillectomy with non-surgical management in children with OSDB aged 2 to 16 years.

DATA COLLECTION AND ANALYSIS:

We used the standard methodological procedures expected by The Cochrane Collaboration.

MAIN RESULTS:

Three trials (562 children) met our inclusion criteria. Two were at moderate to high risk of bias and one at low risk of bias. We did not pool the results because of substantial clinical heterogeneity. They evaluated three different groups of children: those diagnosed with mild to moderate OSAS by polysomnography (PSG) (453 children aged five to nine years; low risk of bias; CHAT trial), those with a clinical diagnosis of OSDB but with negative PSG recordings (29 children aged two to 14 years; moderate to high risk of bias; Goldstein) and children with Down syndrome or mucopolysaccharidosis (MPS) diagnosed with mild to moderate OSAS by PSG (80 children aged six to 12 years; moderate to high risk of bias; Sudarsan). Moreover, the trials included two different comparisons: adenotonsillectomy versus no surgery (CHAT trial and Goldstein) or versus continuous positive airway pressure (CPAP) (Sudarsan). Disease-specific quality of life and/or symptom score (using a validated instrument): first primary outcome. In the largest trial with lowest risk of bias (CHAT trial), at seven months, mean scores for those instruments measuring disease-specific quality of life and/or symptoms were lower (that is, better quality of life or fewer symptoms) in children receiving adenotonsillectomy than in those managed by watchful waiting: - OSA-18 questionnaire (scale 18 to 126): 31.8 versus 49.5 (mean difference (MD) -17.7, 95% confidence interval (CI) -21.2 to -14.2); - PSQ-SRBD questionnaire (scale 0 to 1): 0.2 versus 0.5 (MD -0.3, 95% CI -0.31 to -0.26); - Modified Epworth Sleepiness Scale (scale 0 to 24): 5.1 versus 7.1 (MD -2.0, 95% CI -2.9 to -1.1). No data on this primary outcome were reported in the Goldstein trial. In the Sudarsan trial, the mean OSA-18 score at 12 months did not significantly differ between the adenotonsillectomy and CPAP groups. The mean modified Epworth Sleepiness Scale scores did not differ at six months, but were lower in the surgery group at 12 months: 5.5 versus 7.9 (MD -2.4, 95% CI -3.1 to -1.7). Adverse events: second primary outcome. In the CHAT trial, 15 children experienced a serious adverse event: 6/194 (3%) in the adenotonsillectomy group and 9/203 (4%) in the control group (RD -1%, 95% CI -5% to 2%). No major complications were reported in the Goldstein trial. In the Sudarsan trial, 2/37 (5%) developed a secondary haemorrhage after adenotonsillectomy, while 1/36 (3%) developed a rash on the nasal dorsum secondary to the CPAP mask (RD -3%, 95% CI -6% to 12%). Secondary outcomes. In the CHAT trial, at seven months, mean scores for generic caregiver-rated quality of life were higher in children receiving adenotonsillectomy than in those managed by watchful waiting. No data on this outcome were reported by Sudarsan and Goldstein. In the CHAT trial, at seven months, more children in the surgery group had normalisation of respiratory events during sleep as measured by PSG than those allocated to watchful waiting: 153/194 (79%) versus 93/203 (46%) (RD 33%, 95% CI 24% to 42%). In the Goldstein trial, at six months, PSG recordings were similar between groups and in the Sudarsan trial resolution of OSAS (Apnoea/Hypopnoea Index score below 1) did not significantly differ between the adenotonsillectomy and CPAP groups. In the CHAT trial, at seven months, neurocognitive performance and attention and executive function had not improved with surgery: scores were similar in both groups. In the CHAT trial, at seven months, mean scores for caregiver-reported ratings of behaviour were lower (that is, better behaviour) in children receiving adenotonsillectomy than in those managed

by watchful waiting, however, teacher-reported ratings of behaviour did not significantly differ.No data on these outcomes were reported by Goldstein and Sudarsan.

AUTHORS' CONCLUSIONS:

In otherwise healthy children, without a syndrome, of older age (five to nine years), and diagnosed with mild to moderate OSAS by PSG, there is moderate quality evidence that adenotonsillectomy provides benefit in terms of quality of life, symptoms and behaviour as rated by caregivers and high quality evidence that this procedure is beneficial in terms of PSG parameters. At the same time, high quality evidence indicates no benefit in terms of objective measures of attention and neurocognitive performance compared with watchful waiting. Furthermore, PSG recordings of almost half of the children managed non-surgically had normalised by seven months, indicating that physicians and parents should carefully weigh the benefits and risks of adenotonsillectomy against watchful waiting in these children. This is a condition that may recover spontaneously over time.For non-syndromic children classified as having oSDB on purely clinical grounds but with negative PSG recordings, the evidence on the effects of adenotonsillectomy is of very low quality and is inconclusive.Low-quality evidence suggests that adenotonsillectomy and CPAP may be equally effective in children with Down syndrome or MPS diagnosed with mild to moderate OSAS by PSG.We are unable to present data on the benefits of adenotonsillectomy in children with oSDB aged under five, despite this being a population in whom this procedure is often performed for this purpose.

PMID:

26465274

[PubMed - indexed for MEDLINE]

[JAMA Otolaryngol Head Neck Surg.](#) 2016 Jan 1;142(1):25-31. doi: 10.1001/jamaoto.2015.2603.

Intracapsular and Extracapsular Tonsillectomy and Adenoidectomy in Pediatric Obstructive Sleep Apnea.

[Mukhatiyar P¹](#), [Nandalike K²](#), [Cohen HW³](#), [Sin S¹](#), [Gangar M⁴](#), [Bent JP⁴](#), [Arens R¹](#).

Author information

- ¹Division of Pediatric Respiratory and Sleep Medicine, The Children's Hospital at Montefiore, Albert Einstein College of Medicine, Bronx, New York.
- ²Department of Pediatric Pulmonology, UC Davis Children's Hospital, Sacramento, California.
- ³Department of Epidemiology and Population Health, Albert Einstein College of Medicine, Bronx, New York.
- ⁴Department of Otolaryngology-Head and Neck Surgery, The Children's Hospital at Montefiore, Albert Einstein College of Medicine, Bronx, New York.

Abstract

IMPORTANCE:

Limited information exists regarding clinical outcomes of children undergoing extracapsular tonsillectomy and adenoidectomy (ETA) or intracapsular tonsillectomy and adenoidectomy (ITA) for treatment of obstructive sleep apnea syndrome (OSAS).

OBJECTIVES:

To quantify polysomnography (PSG) and clinical outcomes of ETA and ITA in children with OSAS and to assess the contribution of comorbid conditions of asthma and obesity.

DESIGN, SETTING, AND PARTICIPANTS:

Retrospective cohort study using medical records at a tertiary pediatrics inner-city hospital. Medical records from 89 children who underwent ETA or ITA between October 1, 2008, and December 31, 2013, were analyzed. The dates of our analysis were January 6, 2014, to April 11, 2014. Inclusion criteria required no evidence of craniofacial or neurological disorders, confirmation of OSAS by PSG within the 2 years before surgery, and a second PSG within the 2 years after surgery.

INTERVENTIONS:

Each child underwent ETA or ITA after being evaluated by a pediatric otolaryngologist and obtaining written parental informed consent.

MAIN OUTCOMES AND MEASURES:

Main primary outcomes were derived from PSG. Secondary outcomes included treatment failure, defined as residual OSAS with an obstructive apnea-hypopnea index of at least 5 events per hour. Comparisons were made between and within groups. Logistic regression was used to identify factors associated with treatment failure.

RESULTS:

Fifty-two children underwent ETA, and 37 children underwent ITA. Children in the ETA group were older (7.5 vs 5.2 years, $P = .001$) and more obese (60% [31 of 52] vs 30% [11 of 37], $P = .004$). However, both groups had similar severity of OSAS, with median preoperative obstructive apnea-hypopnea indexes of 17.0 in the ETA group and 24.1 in the ITA group ($P = .21$), and similar prevalences of asthma (38% [20 of 52] vs 38% [14 of 37]). After surgery, significant improvement was noted on PSG in both groups, with no differences in any clinical outcomes. There was no association between procedure type, age, or body mass index z score and treatment failure. However, in a subset of patients with asthma and obesity, ITA was associated with residual OSAS (odds ratio, 16.5; 95% CI, 1.1-250.2; $P = .04$).

CONCLUSIONS AND RELEVANCE:

Both ETA and ITA are effective modalities to treat OSAS, with comparable surgical outcomes on short-term follow-up. However, when comorbid diagnoses of both asthma and obesity exist, OSAS is likely to be refractory to treatment with ITA compared with ETA.

PMID:

26583828

[PubMed - in process]

[Otolaryngol Head Neck Surg.](#) 2016 Mar;154(3):527-31. doi: 10.1177/0194599815621552. Epub 2015 Dec 8.

Decision Making for Children with Obstructive Sleep Apnea without Tonsillar Hypertrophy.

[Ishman SL](#)¹, [Tang A](#)², [Cohen AP](#)³, [Elhadi Babiker H](#)⁴, [Chini B](#)⁵, [Ehsan Z](#)⁵, [Fleck RJ](#)⁶, [Gordon C](#)⁴, [McPhail GL](#)⁵, [Pan B](#)⁴, [Saal HM](#)⁷, [Shott SR](#)⁸, [Amin RS](#)⁵.

Author information

- ¹Division of Pediatric Otolaryngology-Head and Neck Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA Division of Pulmonary Medicine, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA Department of Otolaryngology-Head and Neck

Surgery, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA
Stacey.Ishman@cchmc.org.

- ²Department of Otolaryngology-Head and Neck Surgery, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA.
- ³Division of Pediatric Otolaryngology-Head and Neck Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA.
- ⁴Division of Plastic Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA.
- ⁵Division of Pulmonary Medicine, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA Department of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA.
- ⁶Division of Radiology, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA.
- ⁷Division of Human Genetics, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA.
- ⁸Division of Pediatric Otolaryngology-Head and Neck Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA Department of Otolaryngology-Head and Neck Surgery, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA.

Abstract

OBJECTIVE:

Evidence-based medicine is the gold standard practice model for patient management. Our aim was to determine whether decisions made by pediatric subspecialists regarding management of obstructive sleep apnea in children without tonsillar hypertrophy adhered to this model or were based on clinical experiences.

STUDY DESIGN:

Single-institution prospective study.

SETTING:

Multidisciplinary upper airway center in an academic pediatric hospital.

SUBJECTS AND METHODS:

Twelve pediatric subspecialists representing 8 specialties participating in upper airway clinics and management conferences. Real-time decisions made in treatment conferences and upper airway clinics were collected. Physicians were queried regarding the basis of their decisions, and these decisions were then classified into 10 categories.

RESULTS:

Over 13 days (10 case conferences, 3 half-day clinics), 324 decisions were made for 58 patients (mean age = 8.9 ± 7.4 years, mean body mass index percentile = 75 ± 29); 34% (n = 108) of decisions were evidence based; 59% (n = 193) were nonevidence based; and 7% (n = 23) were based on parental preference. Providers were able to cite specific studies for <20% of these decisions. There was no significant increase in the proportion of evidence-based decisions made over time.

CONCLUSIONS:

We deemed 34% of decisions regarding the management of obstructive sleep apnea in children without tonsillar hypertrophy to be evidence based and found that sharing the basis for decisions did not improve the percentage of evidence-based decisions over time. These findings reflect significant evidence gaps and highlight the need for a systematic literature evaluation to identify best practice in

managing this population. We recommend that these evidence gaps be further characterized and incorporated into an agenda for future research.

© American Academy of Otolaryngology—Head and Neck Surgery Foundation 2015.

KEYWORDS:

evidence-based medicine; gaps in evidence; medical decision making; obstructive sleep apnea; pediatric

PMID:

26645533

[PubMed - in process]

[Laryngoscope](#). 2016 Jan 17. doi: 10.1002/lary.25842. [Epub ahead of print]

Assessment of pediatric obstructive sleep apnea using a drug-induced sleep endoscopy rating scale.

[Lam DJ](#)¹, [Weaver EM](#)², [Macarthur CJ](#)¹, [Milczuk HA](#)¹, [O'Neill E](#)¹, [Smith TL](#)¹, [Nguyen T](#)³, [Shea SA](#)⁴.

Author information

- ¹Department of Otolaryngology-Head and Neck Surgery, Oregon Health and Science University, Portland, Oregon.
- ²Department of Otolaryngology-Head and Neck Surgery, University of Washington, Seattle, Washington.
- ³Department of Public Health and Preventive Medicine, Division of Biostatistics, Oregon Health and Science University, Portland, Oregon.
- ⁴Oregon Institute of Occupational Health Sciences, Oregon Health and Science University, Portland, Oregon, U.S.A.

Abstract

OBJECTIVES/HYPOTHESIS:

Assess the reliability of a Sleep Endoscopy Rating Scale (SERS) and its relationship with pediatric obstructive sleep apnea (OSA) severity.

STUDY DESIGN:

Retrospective case series of pediatric patients who underwent drug-induced sleep endoscopy (DISE) at the time of surgery for OSA from January 1, 2013 to May 1, 2014.

METHODS:

Three blinded otolaryngologists scored obstruction on DISE recordings as absent (0), partial (+1), or complete (+2) at six anatomic levels: nasal airway, nasopharynx, velopharynx, oropharynx, hypopharynx, and arytenoids. Ratings were summed for a SERS total score (range, 0-12). Reliability was calculated using a κ statistic with linear weighting. SERS ratings and obstructive apnea-hypopnea index (OAHI) were compared using Spearman correlation. A receiver operating characteristic (ROC) analysis determined the ability of the SERS total score to predict severe OSA (OAHI >10).

RESULTS:

Thirty-nine patients were included (mean age, 8.3 ± 5.1 years; 36% obese; mean OAHl, 19.1 ± 23.7). Intrarater and inter-rater reliability was substantial-to-excellent ($\kappa = 0.61-0.83$) and fair-to-substantial ($\kappa = 0.33-0.76$), respectively. Ratings correlated best with OAHl for the oropharynx ($r = 0.54$, $P = .02$), hypopharynx ($r = 0.48$, $P = .04$), and SERS total score ($r = 0.75$, $P = .002$). In ROC analysis, a SERS total score ≥ 6 demonstrated sensitivity/specificity of 81.8%/87.5%, respectively, and correctly classified 84% of patients.

CONCLUSIONS:

The SERS can be applied reliably in children undergoing DISE for OSA. Ratings of the oropharynx, hypopharynx, and SERS total score demonstrated significant correlation with OSA severity. A SERS total score ≥ 6 was an accurate predictor of severe OSA.

LEVEL OF EVIDENCE:

4. Laryngoscope, 2016.

© 2016 The American Laryngological, Rhinological and Otological Society, Inc.

KEYWORDS:

Pediatric sleep apnea; adenotonsillectomy; drug-induced sleep endoscopy; obstructive sleep apnea

PMID:

26775080

[PubMed - as supplied by publisher]

[Laryngoscope](#). 2016 Feb;126(2):491-500. doi: 10.1002/lary.25459. Epub 2015 Jul 7.

Systematic review of site of obstruction identification and non-CPAP treatment options for children with persistent pediatric obstructive sleep apnea.

[Manickam PV](#)^{1,2}, [Shott SR](#)^{1,2}, [Boss EF](#)³, [Cohen AP](#)¹, [Meinzen-Derr JK](#)⁴, [Amin RS](#)^{5,2}, [Ishman SL](#)^{1,5,2}.

Author information

- ¹Division of Pediatric Otolaryngology-Head and Neck Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, U.S.A.
- ²University of Cincinnati College of Medicine, Cincinnati, Ohio, U.S.A.
- ³Department of Otolaryngology-Head and Neck Surgery, Johns Hopkins University School of Medicine, Baltimore, Maryland, U.S.A.
- ⁴Division of Biostatistics and Epidemiology, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, U.S.A.
- ⁵Division of Pulmonary Medicine, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, U.S.A.

Abstract

OBJECTIVES/HYPOTHESIS:

Although adenotonsillectomy is accepted as a first-line therapy for pediatric obstructive sleep apnea (OSA), there is currently no consensus regarding optimal methods for identifying the sites of

obstruction or treatment of children with persistent disease after surgery. With this in mind, our aim was to systematically review the English-language literature pertaining to these issues.

STUDY DESIGN:

Systematic review.

METHODS:

We searched all indexed years of Pubmed, Cochrane CENTRAL, DynaMed, UpToDate, CINAHL, and Scopus for English-language articles containing original human data, with ≥ 7 participants, all < 18 years old. Data regarding study design, demographics, clinical characteristics/outcomes, level of evidence, and risk of bias were obtained. Articles were independently reviewed by two investigators.

RESULTS:

Of 758 identified abstracts, 24 articles (combined population = 960) were ultimately included. Seventeen (71%) described methods to identify site(s) of obstruction: drug-induced sleep endoscopy (11/24), cine magnetic resonance imaging (MRI) (3/24), and alternative imaging (3/24). Treatment options included lingual tonsillectomy ($n = 6$), with success rates of 57% to 88% (Cohen's effect size $d = 1.38$), as well as supraglottoplasty ($n = 4$), with success rates of 58% to 72% ($d = 0.64$). Additional treatments included medications and surgery (e.g., partial midline glossectomy and tongue suspension).

CONCLUSIONS:

Drug-induced sleep endoscopy and cine MRI are the most commonly reported tools to identify sites of obstruction for children with persistent OSA; however, these techniques have not yet been clearly linked to outcomes. Evidence for treatment is extremely limited and focuses primarily on lingual tonsillectomy and supraglottoplasty. Also, reports regarding appropriate patient selection and outcomes in obese or otherwise healthy children are scant. *Laryngoscope*, 126:491-500, 2016.

© 2015 The American Laryngological, Rhinological and Otological Society, Inc.

KEYWORDS:

Diagnosis; cine MRI; drug-induced sleep endoscopy; lingual tonsillectomy; pediatric; persistent obstructive sleep apnea; sleep state-dependent laryngomalacia; supraglottoplasty; treatment

PMID:

26153380
[PubMed - in process]

[Laryngoscope](#). 2015 Dec 22. doi: 10.1002/lary.25827. [Epub ahead of print]

Supraglottoplasty for laryngomalacia with obstructive sleep apnea: A systematic review and meta-analysis.

[Camacho M](#)^{1,2}, [Dunn B](#)³, [Torre C](#)⁴, [Sasaki J](#)³, [Gonzales R](#)⁵, [Liu SY](#)⁶, [Chan DK](#)⁷, [Cortal V](#)⁸, [Cable BB](#)¹.

Author information

- ¹Otolaryngology-Head and Neck Surgery, Division of Sleep Surgery and Medicine, Tripler Army Medical Center, Honolulu, Hawaii.
- ²Department of Psychiatry and Behavioral Sciences, Sleep Medicine Division, Stanford Hospital and Clinics, Stanford Hospital and Clinics, Stanford, California, U.S.A.
- ³John A. Burns School of Medicine, University of Hawaii, Honolulu, Hawaii.
- ⁴Department of Otolaryngology-Head and Neck Surgery, Division of Sleep Surgery, Stanford Hospital and Clinics, Stanford, California, U.S.A.
- ⁵Department of Otorhinolaryngology/Sleep Medicine Centre-Hospital CUF, University of Porto, Porto, Portugal.
- ⁶Department of Otolaryngology-Head and Neck Surgery, Division of Pediatric Otolaryngology, University of California San Francisco, San Francisco, California, U.S.A.
- ⁷School of Medicine, Uniformed Services University of the Health Sciences, Bethesda, Maryland, U.S.A.
- ⁸CINTESIS-Centre for Research in Health Technologies and Information Systems, University of Porto, Porto, Portugal.

Abstract

OBJECTIVES/HYPOTHESIS:

To determine if apnea-hypopnea index (AHI) and lowest oxygen saturation (LSAT) improve following isolated supraglottoplasty for laryngomalacia with obstructive sleep apnea (OSA) in children.

STUDY DESIGN:

Systematic review and meta-analysis.

METHODS:

Nine databases, including PubMed/MEDLINE, were searched through September 30, 2015.

RESULTS:

A total of 517 studies were screened; 57 were reviewed; and 13 met criteria. One hundred thirty-eight patients were included (age range: 1 month-12.6 years). Sixty-four patients had sleep exclusive laryngomalacia, and in these patients: 1) AHI decreased from a mean (M) ± standard deviation (SD) of 14.0 ± 16.5 (95% confidence interval [CI] 10.0, 18.0) to 3.3 ± 4.0 (95% CI 2.4, 4.4) events/hour (relative reduction: 76.4% [95% CI 53.6, 106.4]); 2) LSAT improved from a M ± SD of 84.8 ± 8.4% (95% CI 82.8, 86.8) to 87.6 ± 4.4% (95% CI 86.6, 88.8); 3) standardized mean differences (SMD) demonstrated a small effect for LSAT and a large effect for AHI; and 4) cure (AHI < 1 event/hour) was 10.5% (19 patients with individual data). Seventy-four patients had congenital laryngomalacia, and in these patients: 1) AHI decreased from a M ± SD of 20.4 ± 23.9 (95% CI 12.8, 28.0) to 4.0 ± 4.5 (95% CI 2.6, 5.4) events/hour (relative reduction: 80.4% [95% CI 46.6, 107.4]); 2) LSAT improved from a M ± SD of 74.5 ± 11.9% (95% CI 70.9, 78.1) to 88.4 ± 6.6% (95% CI 86.4, 90.4); 3) SMD demonstrated a large effect for both AHI and LSAT; and 4) cure was 26.5% (38 patients with individual data).

CONCLUSION:

Supraglottoplasty has improved AHI and LSAT in children with OSA and either sleep exclusive laryngomalacia or congenital laryngomalacia; however, the majority of them are not cured. Laryngoscope, 2015.

© 2015 The American Laryngological, Rhinological and Otological Society, Inc.

KEYWORDS:

Obstructive sleep apnea; laryngomalacia; meta-analysis; supraglottoplasty; systematic review

PMID:

26691675

[PubMed - as supplied by publisher]