

## **SUPPLEMENTARY APPENDIX S1:**

### **CATEGORIES OF EVIDENCE SUPPORTING A ROLE FOR OSA SURGERY IN ADULTS**

#### **“A” = Level I (individual RCTs and also Systematic Reviews/Meta-analyses)**

1. MacKay S, Carney AS, Catcheside PG, Chai-Coetzer CL, Chia M, Cistulli PA, et al. Effect of Multilevel Upper Airway Surgery vs Medical Management on the Apnea-Hypopnea Index and Patient-Reported Daytime Sleepiness Among Patients With Moderate or Severe Obstructive Sleep Apnea: The SAMS Randomized Clinical Trial. *JAMA*. 2020.

2. Browaldh N, Nerfeldt P, Lysdahl M, Bring J, Friberg D. SKUP3 randomised controlled trial: polysomnographic results after uvulopalatopharyngoplasty in selected patients with obstructive sleep apnoea. *Thorax* 2013;68:846–853.

3. A Randomized Trial of Adenotonsillectomy for Childhood Obstructive Sleep Apnea *N Engl J Med* 2013. DOI: 10.1056/NEJMoa1215881

4. Blood pressure after modified uvulopalatopharyngoplasty : results from the SKUP3 randomized controlled trial <http://dx.doi.org/10.1016/j.sleep.2017.02.030> 1389-9457

5. Browaldh N, Bring J, Friberg D SKUP3 RCT; Continuous Study : Changes in Sleepiness and Quality of Life after modified UPPP. *Laryngoscope* 2015. <http://dx.doi.org/10.1002/lary.25642>

6. Sommer JU, Heiser C, Gahleitner C, Herr RM, Hörmann K, Maurer JT, Stuck BA: Tonsillectomy with uvulopalatopharyngoplasty in obstructive sleep apnea—a two-center randomized controlled trial. *Dtsch Arztebl Int* 2016; 113: 1–8. D OI: 10.3238/arztebl.2016.0001

7. The Effect of Nasal Surgery on Continuous Positive Airway Pressure Device Use and Therapeutic Treatment Pressures: A Systematic Review and Meta Analysis Macario Camacho, MD<sup>1</sup>; Muhammad Riaz, MD<sup>2</sup>; Robson Capasso, MD<sup>3</sup>; Chad M. Ruoff, MD<sup>1</sup>; Christian Guilleminault, MD<sup>1</sup>; Clete A. Kushida, MD, PhD<sup>1</sup>; Victor Certal, MD<sup>4</sup> *SLEEP* 2015;38(2):279–286

8. Transpalatal advancement pharyngoplasty for obstructive sleep apnea: a systematic review and meta-analysis Keith Volner<sup>1</sup> • Brandyn Dunn<sup>2</sup> • Edward T. Chang<sup>1</sup> • Sungjin A. Song<sup>1</sup> • Stanley Yung-Chuan Liu<sup>3</sup> • Scott E. Brietzke<sup>4</sup> • Peter O’Connor<sup>5</sup> • Macario Camacho<sup>6,7</sup> *Eur Arch Otorhinolaryngol* DOI 10.1007/s00405-016-4121-3

9. Genial Tubercle Advancement and Genioplasty for Obstructive Sleep Apnea: A Systematic Review and Meta-Analysis Sungjin A. Song, MD; Edward T. Chang, MD, MS; Victor Certal, MD, PhD; Michael Del Do; Soroush Zaghi, MD; Stanley Yung Liu, MD, DDS; Robson Capasso, MD; Macario Camacho, MD DOI: 10.1002/lary.26218

10. Adenoidectomy can improve obstructive sleep apnoea in young children: systematic review and meta-analysis L K RECKLEY<sup>1</sup>, S A SONG<sup>1</sup>, E T CHANG<sup>1</sup>, B B CABLE<sup>1</sup>, V CERTAL<sup>2,3</sup>, M CAMACHO<sup>1</sup> *The Journal of Laryngology & Otology* (2016), 130, 990–994

11. Tracheostomy as Treatment for Adult Obstructive Sleep Apnea: A Systematic Review and Meta-Analysis Macario Camacho, MD; Victor Certal, MD; Scott E. Brietzke, MD, MPH; Jon-Erik C. Holty, MD, MS; Christian Guilleminault, MD; Robson Capasso, MD *Laryngoscope*, 124:803–811, 2014

12. Woodson BT, Steward DL, Weaver EM, Javaheri S. A randomized trial of temperature-controlled radiofrequency, continuous positive airway pressure, and placebo for obstructive sleep apnea syndrome. *Otolaryngol Head Neck Surg* 2003; 128: 848-861.
13. Camacho M, Li D, Kawai M, et al. Tonsillectomy for adult obstructive sleep apnea: a systematic review and meta-analysis. *Laryngoscope* 2016; 126: 2176-2186.
14. Justin GA, Chang ET, Camacho M, Brietzke SE. Transoral robotic surgery for obstructive sleep apnea: a systematic review and meta-analysis. *Otolaryngol Head Neck Surg* 2016; 154: 835-846.
15. Zaghi S, Holty JE, Certal V, et al. Maxillomandibular advancement for treatment of obstructive sleep apnea: a meta-analysis. *JAMA Otolaryngol Head Neck Surg* 2016; 142: 58-66.
16. Certal VF, Zaghi S, Riaz M, et al. Hypoglossal nerve stimulation in the treatment of obstructive sleep apnea: a systematic review and meta-analysis. *Laryngoscope* 2015; 125: 1254-1264.

### **“B” = (large individual cohort and observational or multi-centre studies)**

1. Robinson S, Chia M, Carney AS, Chawla S, Harris P, Esterman A. Upper airway reconstructive surgery long-term quality-of-life outcomes compared with CPAP for adult obstructive sleep apnea. *Otolaryngol Head Neck Surg* 2009; 141: 257-263.
2. Weaver EM, Maynard C, Yueh B. Survival of veterans with sleep apnea: continuous positive airway pressure versus surgery. *Otolaryngol Head Neck Surg* 2004; 130: 659-665.
3. Peker Y, Hedner J, Norum J, Kraiczi H, Carlson J. Increased incidence of cardiovascular disease in middle-aged men with obstructive sleep apnea: a 7-year follow-up. *Am J Respir Crit Care Med* 2002; 166: 159-165.
4. Haraldsson PO, Carenfelt C, Lysdahl M, Tingvall C. Does uvulopalatopharyngoplasty inhibit automobile accidents? *Laryngoscope* 1995; 105: 657-661.
5. Marti S et al *ERJ* 2002; 20(6):1511-1518. Mortality in severe sleep apnoea/hypopnoea syndrome patients: impact of treatment.
6. MacKay SG; Carney AS; Woods C; Antic N; McEvoy RD; Chia M; Sands T; Jones A; Hobson J; Robinson S. Modified uvulopalatopharyngoplasty and coblation channeling of the tongue for obstructive sleep apnea: a multi-centre Australian trial. *J Clin Sleep Med* 2013;9(2):117-124.

### **“C” = (studies supported by International Surgical Sleep Society as providing sufficient evidence of effect, at time of publication)**

Please refer to <https://surgicalsleepp.org/iss-position-statement-on-sleep-surgery/> for referenced studies supporting these operations.

1. Tonsillectomy
2. Adenoidectomy
3. Septoplasty
4. Turbinate reduction (submucous resection of the turbinates, partial turbinectomy, radiofrequency ablation of the turbinates)

5. Nasal valve repair
6. Uvulopalatopharyngoplasty (UPPP) [ Z-palatoplasty (ZPP), uvulopalatal flap (UPF), lateral pharyngoplasty, expansion sphincter pharyngoplasty]
7. Transpalatal advancement pharyngoplasty
8. Hyoid advancement/suspension (either to mandible or thyroid cartilage)
9. Genioglossus advancement/suspension
10. Tongue suspension
11. Maxillomandibular advancement (MMA)
12. Tongue Radiofrequency ablation
13. Midline glossectomy/lingualplasty
14. Lingual tonsillectomy
15. Base of tongue reduction
16. Epiglottoplasty (partial epiglottectomy)
17. Cranial nerve (hypoglossal nerve) stimulation
18. Tracheotomy

## **D: Literature regarding the philosophy and judgement of sleep apnoea surgery**

1. doi10.5694/mja13.10251
2. Judging Sleep Apnea Surgery Sleep Medicine Reviews 14 (2010): 283-285
3. Sleep Med Clin 11 (2016) 331–341 <http://dx.doi.org/10.1016/j.jsmc.2016.04.003>
4. DOI: 10.1177/0194599815621729
5. doi10.5694/mja12.11804 (and 9 supporting references)
6. RESPIRATORY MEDICINE TODAY 2017; 2(2): 31-33

## **E: Categories of Evidence and Consensus**

**Category 1:** Based upon high-level evidence, there is uniform ASA SWGC consensus that the intervention is appropriate

**2A:** Based upon lower level evidence, there is uniform ASA SWGC consensus that the intervention is appropriate

**2B:** Based upon lower level evidence there is ASA SWGC consensus that the intervention is appropriate

**3:** Based upon any level of evidence, there is ASA SWGC disagreement that the intervention is appropriate, but remains option

**4.** Expert opinion only

**5.** Suggested area of future research/current clinical trial setting only

