

# CONTINUING EDUCATION

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## Learning Objectives

After completion of this exercise, the participant will be able to:

1. Summarize current philosophies regarding treatment of patients with obstructive sleep apnea (OSA).
2. Discuss the screening and treatment of children and adults with sleep-disordered breathing in orthodontic practices.
3. Describe a “surgery first” approach for OSA treatment involving postsurgical lingual appliances with miniplate anchorage.
4. Compare the use of clear aligners with other orthodontic modalities in “surgery first” treatment of adult Class III patients with OSA.

## Article 1

Chmura, L.: *Obstructive Sleep Apnea and the Orthodontist* (pp. 9-22)

1. In adults, an apnea-hypopnea index (AHI) or respiratory disturbance index (RDI) between 5 and 15 indicates:
  - a) normal breathing
  - b) mild OSA
  - c) moderate OSA
  - d) severe OSA
2. The percentage of children with attention-deficit/hyperactivity disorder who have OSA is estimated to be:
  - a) 2-3%
  - b) 5-15%
  - c) 25-26%
  - d) at least 95%
3. Benefits of nasal breathing include:

- a) filtration of inspired air by the nasal hairs
  - b) enhanced transfer of O<sub>2</sub> and CO<sub>2</sub> in the lungs
  - c) release of nitric oxide
  - d) all of the above
4. The most predictably effective orthodontic-related solution for sleep apnea is:
    - a) a combination of orthodontics and maxillo-mandibular surgical advancement
    - b) a mandibular-advancement appliance
    - c) extraction treatment
    - d) rapid maxillary expansion

## Article 2

Keim, R.G.; Graham, J.W.; Palomo, J.M.; Shoaf, S.C.; and Tanguay, D.: *Obstructive Sleep Apnea Treatment in Orthodontic Practices* (pp. 23-33)

5. Exacerbating factors for pediatric OSA include:
  - a) lymphoid tissue hyperplasia
  - b) growth-related changes in upper airway dimensions
  - c) autism spectrum disorder
  - d) both a and b
6. The most commonly used OSA risk-assessment questionnaire for children is the:
  - a) Epworth Sleepiness Scale
  - b) Pediatric Sleep Questionnaire
  - c) STOP-Bang questionnaire
  - d) body mass index
7. While adults with OSA generally report daytime somnolence, children are more likely to have:
  - a) snoring problems
  - b) obesity problems
  - c) behavioral issues
  - d) nasal obstruction

8. Orthodontist-prescribed oral appliances used in treatment of OSA patients include all of the following except:

- a) CPAP
- b) MARA
- c) dreamTAP
- d) D-SAD

**Article 3**

Pereira, P.G.O.; Bellini-Pereira, S.A.; Nanda, R.; Garib, D.; and Janson, G.: “*Surgery First*” Approach for Obstructive Sleep Apnea Treatment (pp. 34-45)

9. The software used by the authors for virtual planning of this surgical procedure was:

- a) Mimics
- b) Dolphin 3D
- c) 3-matic
- d) Materialise ProPlan

10. Miniplates for postsurgical anchorage were inserted in the buccal shelves of the mandibular first molar regions and:

- a) in the maxillary retromolar regions
- b) near the midpalatal suture
- c) in the infrazygomatic crest between the maxillary first molars and second premolars
- d) the palatal side of the maxillary first molars

11. In this case, the forward displacement of the mandible from a genioplasty increased the diameter of the airway by advancing the:

- a) genioglossus muscle and hyoid bone
- b) thyroid cartilage
- c) larynx and pharyngeal arch
- d) soft palate and base of the tongue

12. This patient’s body mass index was reduced

from 31.35kg/m<sup>2</sup> to a near-normal:

- a) 28.53kg/m<sup>2</sup>
- b) 26.34kg/m<sup>2</sup>
- c) 17.1kg/m<sup>2</sup>
- d) 5.6kg/m<sup>2</sup>

**Article 4**

Azami, N.; Chen, P.J.; Steinbacher, D.; and Uribe, F.: *Maxillomandibular Advancement with a “Surgery First” Approach and Invisalign for Treatment of Obstructive Sleep Apnea* (pp. 49-58)

13. The first line of treatment for patients with OSA is:

- a) maxillomandibular advancement
- b) uvulopalatopharyngoplasty
- c) continuous positive airway pressure
- d) rapid palatal expansion

14. The software used by the authors for virtual planning of this surgical procedure was:

- a) Mimics
- b) Dolphin 3D
- c) 3-matic
- d) Materialise ProPlan

15. This patient’s RDI was reduced from 25 to:

- a) 15.4
- b) 10.6
- c) 7
- d) 2

16. The frequency and duration of apnea/hypopnea events increase during the:

- a) REM stage of sleep
- b) N1 stage of sleep
- c) N2 stage of sleep
- d) AHI stage of sleep