



## **AAO42: Obstructive Sleep Apnea: Improvement of Obstructive Sleep Apnea after a Corrective Surgical Procedure**

**High Priority Status:** Yes / Outcome  
**CBE Number:** N/A

### **Measure Description:**

Percentage of patients aged 18 years and older who have a diagnosis of obstructive sleep apnea and received a corrective procedure for the obstructive sleep apnea and had an improvement in their post-operative sleep study results (i.e., Apnea-Hypopnea Index [AHI], Respiratory Disturbance Index [RDI]) compared to their pre-operative results)

### **Instructions:**

This measure is to be submitted **each time** a patient underwent a corrective surgical procedure for obstructive sleep apnea during the performance period. This measure may be submitted by clinicians based on the services provided and the measure-specific denominator coding.

### **Denominator:**

1. Hypoglossal Nerve Stimulation Procedure: All patients aged 18 years and older who have a diagnosis of obstructive sleep apnea and received a corrective procedure for the obstructive sleep apnea.
2. Turbinate Procedure: All patients aged 18 years and older who have a diagnosis of obstructive sleep apnea and received a corrective procedure for the obstructive sleep apnea.

### **Denominator Exclusion:**

Patients without a documented post-operative sleep study.

### **Denominator Criteria:**

Patients aged 18 years and older  
**AND**  
Diagnosis: [Obstructive Sleep Apnea](#)  
**AND**  
Procedure: [Hypoglossal Nerve Stimulation](#)  
**OR**  
Procedure: [Turbinate Procedure](#)  
**AND NOT**  
Absence of Post-Operative Sleep Study

[For a list of codes that qualify as denominator eligible visits, reference Addendum attached.](#)

### **Numerator:**

1. Patients who had an improvement\* in their AHI post-operative results compared to their pre-operative results.
2. Patients who had an improvement\* in their AHI post-operative results compared to their pre-operative results.
3. Total patient performance weighted average of the two above components

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\*To meet this outcome measure, there must be documentation of an AHI that shows a post-operative score below 20 or half of the pre-operative score (or equivalent value and test supported by evidence and/or guidelines)

**Denominator Exceptions:**

None

**Measure Classifications**

Submission Pathway: Traditional MIPS

Measure Type: Outcome

High Priority Type: Outcome

Care Setting(s): Ambulatory Care: Ambulatory; Ambulatory Care: Clinician Office/Clinic; Ambulatory Care: Hospital; Ambulatory Surgical Center; Hospital Outpatient; Office Based Surgery Center; Outpatient Services

Includes Telehealth: No

Number of Performance Rates: 1

Inverse measure: No

Continuous measure: No

Proportional measure: Yes

Ratio measure: No

Risk Adjusted measure: No

**Clinical Recommendation Statement:**

The following evidence statements are extracted from the referenced guidelines: AASM Clinical Guideline for the Evaluation, Management and Long-term Care of Obstructive Sleep Apnea in Adults (2009):

The diagnosis of OSA should be established prior to surgery and the severity determined by objective testing (Consensus). In addition to the general sleep evaluation described above, patients should be evaluated for eligibility for surgery. This evaluation should include an anatomical examination to identify possible surgical sites, an assessment of any medical, psychological or social comorbidities that might affect surgical outcome, and a determination of the patient's desire for surgery (Consensus). The patient should be counseled on the surgical options, likelihood of success, goals of treatment, risks and benefits of the procedure, possible side effects, and complications and alternative treatments (Consensus). Surgery may also be considered as an adjunct therapy when obstructive anatomy or functional deficiencies compromise other therapies or to improve tolerance of other OSA treatments (Consensus). Maxillary and mandibular advancement can improve PSG parameters comparable to CPAP in the majority of patients (Consensus). Most other sleep apnea surgeries are rarely curative for OSA but may improve clinical outcomes (e.g., mortality, cardiovascular risk, motor vehicle accidents, function, quality of life, and symptoms) (Consensus). Laser-assisted uvulopalatoplasty is not recommended for the treatment of obstructive sleep apnea (Guideline).

The frequency of post-surgical follow-up will be determined by the type of surgery but should include a surgery-specific evaluation as well as a general OSA-related evaluation. Surgery specific outcomes to be evaluated by the surgical team include wound healing, assessment of anatomical result, side effects, and complications (Consensus). For patients undergoing multi-step procedures, sleep specialist evaluation may be considered between surgeries for an intermediate sleep study to assess response or reconsideration of all non-surgical therapies, if indicated. After the surgical team determines healing is completed, a final general OSA outcome evaluation is indicated (Consensus). Sleep specialist follow-up is recommended for long-term follow-up after surgical treatment is completed (Consensus). Following adjunctive surgery, patients should be evaluated to assess the effect of surgery on PAP or OA tolerance, adherence, and symptom resolution (Consensus).

The parameters, settings, filters, technical specifications, sleep stage scoring and event scoring should be done in accordance with the AASM Manual for the Scoring of Sleep and Associated Events. The

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frequency of obstructive events is reported as an apnea + hypopnea index (AHI) or respiratory disturbance index (RDI). The definition of this index has varied over time. When an index is reported in this guideline it was taken directly from the specific practice parameter and the reader is referred to the source document for the definition. Every sleep study should be reviewed and interpreted by a qualified physician, as defined in the AASM Accreditation Standards (Consensus). Interscorer reliability assessment and other quality assurance measures should be performed on a regular basis. Formal written policies should be in place for all procedures. The most accepted measure of quality is sleep center or laboratory accreditation by the AASM (Consensus).

Consensus-based recommendations were developed to address important areas of clinical practice that had not been the subject of a previous AASM practice parameter, or where the available empirical data were limited or inconclusive.

**Rationale:**

Obstructive sleep apnea (OSA) is a complex disorder characterized by the collapse of the upper airway during sleep. Downstream effects involve the cardiovascular, pulmonary, and neurocognitive systems. OSA is increasingly recognized as a major contributor to cardiovascular morbidity including systemic and pulmonary arterial hypertension, heart failure, acute coronary syndromes, atrial fibrillation, and other arrhythmias. Pulmonary manifestations include the development of chronic thromboembolic disease, which can then lead to chronic thromboembolic pulmonary hypertension (CTEPH). Neurocognitive morbidities include stroke and neurobehavioral disorders.

A 2012 review was undertaken to assess surgical therapy for obstructive sleep apnea. Surgery may be used as a primary treatment option in select patients who have identifiable anatomical problems (e.g., enlarged tonsils) or it may be used as a “salvage” treatment option for patients who are not compliant with CPAP. Despite a variable cure rate, surgery has been shown to routinely decrease OSA severity and increase subjective quality of life. The main objective of OSA surgery is to improve or eliminate the airway collapse that occurs during sleep while preserving the normal function of the upper airway and related structures, such as speech and swallowing. In the literature, surgical success has been traditionally defined as a reduction of the AHI by 50 % and AHI < 20 after surgery. The criteria for a treatment cure are defined as an AHI < 5 after treatment. Other goals of surgery include normalization of sleep quality, improvement of the AHI and oxygen saturation levels

Abbasi A, Gupta SS, Sabharwal N, Meghrajani V, Sharma S, Kamholz S, Kupfer Y. A comprehensive review of obstructive sleep apnea. *Sleep Sci.* 2021 Apr-Jun;14(2):142-154. doi: 10.5935/1984-0063.20200056. PMID: 34381578; PMCID: PMC8340897.

Carvalho B, Hsia J, Capasso R. Surgical therapy of obstructive sleep apnea: a review. *Neurotherapeutics.* 2012 Oct;9(4):710-6. doi: 10.1007/s13311-012-0141-x. PMID: 22915293; PMCID: PMC3480570.

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## Addendum

| Hypoglossal Nerve Stimulation               |           |        |   |
|---|-----------|--------|---|
| Measure Element                             | Code Type | Code   | Code Description  |
| Denominator - Hypoglossal Nerve Stimulation | CPT       | 64582  | Open implantation of hypoglossal nerve neurostimulator array, pulse generator, and distal respiratory sensor electrode or electrode array                                       |
| Denominator - Hypoglossal Nerve Stimulation | CPT       | 64583  | Revision or replacement of hypoglossal nerve neurostimulator array and distal respiratory sensor electrode or electrode array, including connection to existing pulse generator |
| Denominator - Hypoglossal Nerve Stimulation | CPT       | 64584  | Removal of hypoglossal nerve neurostimulator array, pulse generator, and distal respiratory sensor electrode or electrode array   |
| Obstructive Sleep Apnea                     |           |        |   |
| Denominator - Obstructive sleep apnea (OSA) | ICD10CM   | G47.33 | Obstructive sleep apnea   |
| Turbinate Procedure                         |           |        |   |
| Denominator - Turbinate Procedure           | CPT       | 42145  | Palatopharyngoplasty (eg, uvulopalatopharyngoplasty, uvulopharyngoplasty)   |
| Denominator - Turbinate Procedure           | CPT       | 21193  | Reconstruction of mandibular rami, horizontal, vertical, C, or L osteotomy; without bone graft  |
| Denominator - Turbinate Procedure           | CPT       | 21194  | Reconstruction of mandibular rami, horizontal, vertical, C, or L osteotomy; with bone graft (includes obtaining graft)  |
| Denominator - Turbinate Procedure           | CPT       | 21195  | Reconstruction of mandibular rami and/or body, sagittal split; without internal rigid fixation  |
| Denominator - Turbinate Procedure           | CPT       | 21196  | Reconstruction of mandibular rami and/or body, sagittal split; with internal rigid fixation   |
| Denominator - Turbinate Procedure           | CPT       | 21198  | Osteotomy, mandible, segmental  |
| Denominator - Turbinate Procedure           | CPT       | 21199  | Osteotomy, mandible, segmental; with genioglossus advancement   |

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|                                   |     |       |   |
|-----------------------------------|-----|-------|---|
| Denominator - Turbinate Procedure | CPT | 21206 | Osteotomy, maxilla, segmental (eg, Wassmund or Schuchard)   |
| Denominator - Turbinate Procedure | CPT | 21685 | Hyoid myotomy and suspension  |
| Denominator - Turbinate Procedure | CPT | 42950 | Pharyngoplasty (plastic or reconstructive operation on pharynx)   |
| Denominator - Turbinate Procedure | CPT | 21142 | Reconstruction midface, LeFort I; 2 pieces, segment movement in any direction, without bone graft   |
| Denominator - Turbinate Procedure | CPT | 21143 | Reconstruction midface, LeFort I; 3 or more pieces, segment movement in any direction, without bone graft   |
| Denominator - Turbinate Procedure | CPT | 21145 | Reconstruction midface, LeFort I; single piece, segment movement in any direction, requiring bone grafts (includes obtaining autografts)  |
| Denominator - Turbinate Procedure | CPT | 21146 | Reconstruction midface, LeFort I; 2 pieces, segment movement in any direction, requiring bone grafts (includes obtaining autografts) (eg, ungrafted unilateral alveolar cleft)                                |
| Denominator - Turbinate Procedure | CPT | 21147 | Reconstruction midface, LeFort I; 3 or more pieces, segment movement in any direction, requiring bone grafts (includes obtaining autografts) (eg, ungrafted bilateral alveolar cleft or multiple osteotomies) |
| Denominator - Turbinate Procedure | CPT | 21244 | Reconstruction of mandible, extraoral, with transosteal bone plate (eg, mandibular staple bone plate)   |