

Treatment Options Chart

The following chart lists options that involve treatment and follow-up by a medical or dental professional. The information presented here describes general differences between available treatments for snoring and sleep apnea.

Treatment Options	Description	Typical process for treatment	Benefits	Drawbacks	AASM Recommendation ¹
Thornton Adjustable Positioner® (TAP®) Oral Appliance	<ul style="list-style-type: none"> • Non-invasive therapy • Patient wears a device in the mouth at night • The device snaps on the upper and lower teeth and holds the lower jaw in a forward position with an adjustable hook mechanism • The more the lower jaw is pulled forward, the more open the airway will be • The design is based on the principles of the jaw-thrust maneuver used in CPR 	<ul style="list-style-type: none"> • At-home sleep study for diagnosis and baseline or overnight sleep study in a lab for diagnosis, patient choice • Impressions and custom fitting by dentist • At-home sleep study for follow-up • Annual at-home sleep study to monitor treatment, optional 	<ul style="list-style-type: none"> • Most patients wear all night, 7 nights a week • Reduction of symptoms • Patient in control of treatment and can adjust appliance at home • Appropriate treatment for both snoring and sleep apnea • Easy to travel with 	<ul style="list-style-type: none"> • Not appropriate for patients with unhealthy or missing teeth • May be some jaw pain in the morning until patient gets used to the device • Rarely, device has moved teeth 	<ul style="list-style-type: none"> • Indicated for primary snoring • Indicated for mild to moderate sleep apnea • Recommended for severe sleep apnea, if patient has tried and failed treatment with CPAP
Constant Positive Airway Pressure (CPAP)	<ul style="list-style-type: none"> • Non-invasive therapy • Patient wears a mask that is connected to a machine that blows air into via mouth, nose or both to keep the airway open at night • The amount of air pressure is determined by the severity of the disease and number of apneic events per minute • The air pressure inflates the airway like a balloon to keep it open enough for air to pass through into the lungs 	<ul style="list-style-type: none"> • Overnight sleep study in a lab for diagnosis • Overnight sleep study in a lab for CPAP-titration • CPAP provided by durable medical equipment company 	<ul style="list-style-type: none"> • Reduction of symptoms • Appropriate treatment for sleep apnea, not used to treat snoring 	<ul style="list-style-type: none"> • Average use is 4-5 hours/night • Residual sleepiness in some patients • Patient must return to sleep lab for adjustment to pressure levels • Straps around the head can feel claustrophobic • Pressure sores around the nose and mouth • Skin irritation from mask • Leakage of air if mask shifts position • Bulky machine may be difficult to travel with 	<ul style="list-style-type: none"> • Indicated for moderate to severe OSA • May be used as treatment for mild OSA, but there is inconclusive or conflicting evidence or conflicting expert opinion
Bi-level Positive Airway Pressure (BiPAP)	<ul style="list-style-type: none"> • See CPAP • 	<ul style="list-style-type: none"> • Overnight sleep study in a lab for diagnosis • Overnight sleep study in a lab for BiPAP-titration • BiPAP provided by durable medical equipment company 	<ul style="list-style-type: none"> • May improve patient adherence to use of device • May improve mask comfort 	<ul style="list-style-type: none"> • See above 	<ul style="list-style-type: none"> • May be used as an alternative therapy to CPAP in OSA
Surgery	<ul style="list-style-type: none"> • Invasive therapy 	<ul style="list-style-type: none"> • Overnight sleep study in a lab for diagnosis 		<ul style="list-style-type: none"> • Irreversible 	<ul style="list-style-type: none"> • None available
Genioglossus tongue advancement	<ul style="list-style-type: none"> • Designed to improve the airway behind the base of the tongue 	<ul style="list-style-type: none"> • Inpatient procedure • Local, intravenous sedation or 	<ul style="list-style-type: none"> • Usually successful for patients with base of tongue 	<ul style="list-style-type: none"> • Risks of surgery apply 	<ul style="list-style-type: none"> • None available

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	<ul style="list-style-type: none"> Segment of bone containing genioglossus (main tongue muscle) is pulled forward and stabilized to open the airway space behind the tongue Procedure does not move the teeth or the jaw 	general anesthesia <ul style="list-style-type: none"> Hospital stay (1-2 days), often with the first hospital day in the intensive care unit 	obstruction, severe OSA, morbid obesity and failure of other treatment ⁱⁱ		
<i>Hyoid suspension surgery</i>	<ul style="list-style-type: none"> Designed to improve the airway behind the base of the tongue Hyoid bone (bone in the neck where some tongue muscles attach) is pulled forward in front of the voice box to open the airway space behind the tongue 	<ul style="list-style-type: none"> Local, intravenous sedation or general anesthesia Hospital stay (1-2 days) 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> No controlled studies evaluating this procedure for the treatment of OSAⁱⁱ Risks of surgery apply 	<ul style="list-style-type: none"> None available
<i>Laser-assisted uvuloplasty (LAUP)</i>	<ul style="list-style-type: none"> Designed to open the airway behind the palate For patients with simple snoring or mild sleep apnea Requires multiple procedures where the laser cuts the palate and the area heals by scarring 	<ul style="list-style-type: none"> Outpatient procedure Local anesthesia 	<ul style="list-style-type: none"> May relieve subjective snoring 	<ul style="list-style-type: none"> Invasive procedure No controlled studies evaluating this procedure for the treatment of OSAⁱⁱ Risks of surgery apply 	<ul style="list-style-type: none"> Not recommended for the treatment of sleep-related breathing disorders including OSA Not recommended as a substitute for UPPP in the treatment of sleep-related breathing disorders including OSA
<i>Mandibular and Maxillary Repositioning Surgery or Maxillomandibular Advancement Surgery (Upper and Lower Jaw Surgery)</i>	<ul style="list-style-type: none"> Designed to open the airway behind the palate as well as behind the base of the tongue Bone of the upper and lower jaw is cut; these structures are then pulled forward for a permanent repositioning of the jaws Usually performed only when other treatments or procedures have failed 	<ul style="list-style-type: none"> Inpatient procedure Hospital stay (2 days) General anesthesia 	<ul style="list-style-type: none"> Usually successful for patients with base of tongue obstruction, severe OSA, morbid obesity and failure of other treatmentⁱⁱ 	<ul style="list-style-type: none"> Risks of surgery apply 	<ul style="list-style-type: none"> None available
<i>Nasal surgery</i>	<ul style="list-style-type: none"> Designed to improve nasal obstruction of any kind <i>Nasal polypectomy</i> – removes nasal polyps from nasal cavity. <i>Nasal valve surgery</i> - prevents the collapse of the nostril area called the nasal valve <i>Septoplasty</i> - Fixes a deviated septum <i>Turbinates reduction</i> - reduces the size of large nasal bones called turbinates 	<ul style="list-style-type: none"> May be inpatient or outpatient surgery Local or general anesthesia 	<ul style="list-style-type: none"> Can reduce obstruction in nasal airway and improve airflow 	<ul style="list-style-type: none"> <i>Septoplasty</i> – no controlled studies that evaluate long-term effect on OSAⁱⁱ <i>Turbinoplasty</i> – no studies showing beneficial effect on OSAⁱⁱ Risks of surgery apply 	<ul style="list-style-type: none"> None available
<i>Palatal Implants (marketed as Pillar procedures)</i>	<ul style="list-style-type: none"> Small plastic rods are injected into the soft palate at the back of the throat Designed to stiffen the tissue and prevent collapse of 	<ul style="list-style-type: none"> Oral examination Outpatient procedure Local anesthesia 	<ul style="list-style-type: none"> May resolve some snoring Small, short-terms studies have shown these devices may treat 	<ul style="list-style-type: none"> Only successful in selected patients Long-term effectiveness 	<ul style="list-style-type: none"> None available

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	soft palate		mild OSA in selected patients ⁱⁱ	unknown <ul style="list-style-type: none"> • Symptoms can return as early as 12 months after surgery • Variable results treating mild sleep apnea • Not recommended for moderate or severe OSA • Not covered by insurance 	
<i>Radiofrequency (RF) Procedure (marketed as Somnoplasty)</i>	<ul style="list-style-type: none"> • A procedure for treating nasal obstruction, snoring and in some cases, sleep apnea • Radio wave energy is used to reduce the size of the soft palate 	<ul style="list-style-type: none"> • Local anesthesia • Out-patient procedure 	<ul style="list-style-type: none"> • May reduce snoring 	<ul style="list-style-type: none"> • No controlled studies demonstrating efficacy in the treatment of OSAⁱⁱ 	<ul style="list-style-type: none"> • None available
<i>Tracheotomy</i>	<ul style="list-style-type: none"> • Designed to provide an airway by bypassing the areas of upper airway obstruction • AN incision is placed in the neck below the voice box and a plastic or metal tube is placed into the windpipe through the incision • Used as a last resort to treat severe obstructive sleep apnea when other treatments have failed 	<ul style="list-style-type: none"> • Local, intravenous sedation or general anesthesia • Hospital stay (3 days) 	<ul style="list-style-type: none"> • Will prevent patient from developing respiratory distress and other serious medical complications 	<ul style="list-style-type: none"> • Extremely invasive • Social stigma due to tracheostomy tube and associated care 	<ul style="list-style-type: none"> • None available
<i>Uvulopalatopharyngoplasty (UPPP)</i>	<ul style="list-style-type: none"> • Designed to open the airway behind the palate • Lasers or a knife is used to remove excess tissue, including the uvula, from the soft palate and back of the throat; if tonsils are present they are also removed • Incision is closed with sutures 	<ul style="list-style-type: none"> • In-patient procedure • Hospital stay (1-2 days) • General anesthesia 	<ul style="list-style-type: none"> • May reduce snoring • May treat sleep apnea 	<ul style="list-style-type: none"> • Complications during surgery – hemorrhage • Dryness of the mouth • Difficulty in swallowing • Discrete speech disturbances • Feeling of a lump in the throat • Compulsive clearing of the throat • Intensive post-surgery pain • Approximately 50% of patients with mild to moderate OSA improveⁱⁱ • Does not help some patients at all or it helps only partially • Patient may still need to use the C-PAP machine due to scar tissue 	<ul style="list-style-type: none"> • None available

References:

ⁱ Gay P; Weaver T; Loube D et al. Evaluation of positive airway pressure treatment for sleep related breathing disorders in adults. *SLEEP* 2006;29(3):381-401. www.aasmnet.org

ⁱⁱ Institute for Clinical Systems Improvement. Diagnosis and Treatment of Obstructive Sleep Apnea in Adults. Fifth ed., 2007:1-55. <http://www.icsi.org/>