

Weight Loss in the Management of Sleep Apnea



Sanjay R. Patel MD, MS

Obesity has long been recognized as an important risk factor for obstructive sleep apnea (OSA). Analyses from the Wisconsin Sleep Cohort study suggest that nearly 60 percent of all cases of moderate to severe OSA in the United States could be prevented by eliminating overweight/obesity. An increasing number of clinical trials have evaluated the role of weight loss in OSA. In one study of mild OSA, those able to lose just five percent of body weight had a 70 percent cure rate. With more severe diseases, the chance of a cure with behavioral weight loss is much lower but there are still improvements in disease severity. In the SleepAHEAD study, the apnea hypopnea index (AHI) fell by 10 events per hour with behavioral weight loss. A concern regarding weight loss interventions is that weight often rebounds after six to 12 months. Fortunately, several studies have shown the initial improvement in AHI persists long term despite partial weight regain.

In addition to treating OSA, weight loss helps address common comorbidities in this population. OSA is an independent risk factor for the development of cardiovascular disease as well as diabetes. Over five years, 15 percent of severe OSA patients will develop type 2 diabetes. There is very strong evidence that even a five-pound weight loss can lead to a substantial reduction in this risk. A recent trial comparing continuous positive airway pressure (CPAP), behavioral weight loss, or their combination found that both CPAP and weight loss alone reduce blood pressure, but the greatest reduction was in those receiving both treatments. In addition, weight loss, but not CPAP, improved insulin resistance and serum triglycerides.

Given that CPAP remains the mainstay of treatment for OSA, it is important that weight be addressed in the care of overweight or obese OSA patients because CPAP therapy itself causes weight gain. CPAP initiation is associated on average with a 1.1-pound weight gain compared to placebo. By preventing airway collapse, CPAP dramatically reduces the work of breathing during sleep. So aggressive weight loss interventions are needed to prevent weight gain when starting CPAP. Fortunately, studies suggest that CPAP does not interfere with the effectiveness of weight loss interventions.

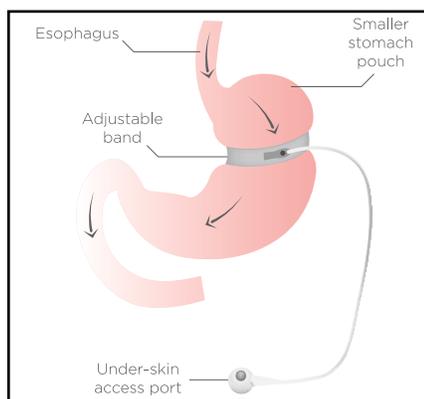
Behavioral Weight Loss

A wealth of clinical trial data has demonstrated that physicians can aid patients in losing weight. Guidelines for the management of overweight and obesity were published by the American College of Cardiology and the American Heart Association in 2013 and provide evidence-based recommendations on how to facilitate weight loss. Patients commonly want to know which diet works best. The evidence suggests that the key requirement for producing weight loss is creating a caloric deficit. A simple recommended weight loss prescription is to target dietary intake to 1200-1500 kcal/d for women and 1500-1800 kcal/d for men. There is no good evidence to support one type of diet (e.g., low fat, high protein, low carbohydrate, low glycemic load, Mediterranean diet) over another at a population level. At an individual level, patient preferences and ability to remain adherent will determine the most effective diet.

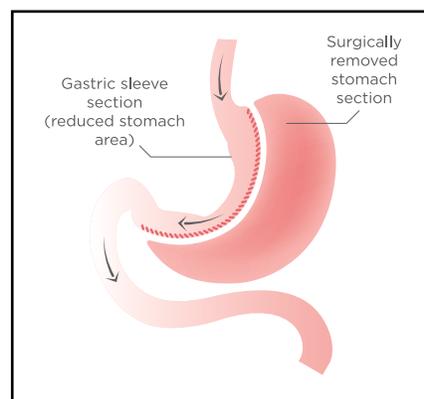
(Continued on Page 10)

Types of Bariatric Procedures

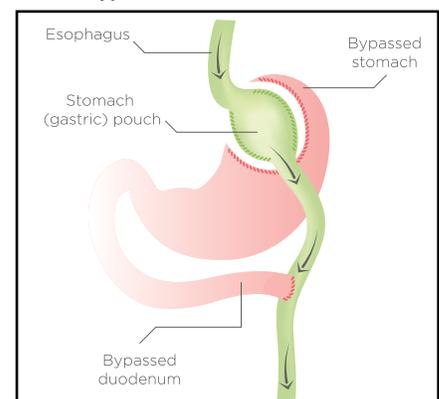
Gastric Band



Gastric Sleeve



Gastric Bypass



New Frontiers in the Treatment of Sleep Apnea *(continued from page 3)*

After the Implant

Following implantation, there will be a follow-up visit with the ENT and a one-month visit to the sleep medicine physician to activate the device. Reassessment of the device's settings may occur one to two times before a sleep study is performed to verify and/or adjusting the settings. It is estimated that 80 percent of patients will need only one study after the device is implanted. Patients have a routine follow-up every three to four months for a year and then every six to 12 months.

Other Stimulator Devices

In addition to Inspire, other companies are now going through the process of development and clinical trials toward an FDA application. There are likely to be more options in the future.

References:

1. Jordan, A.S., D.G. McSharry, and A. Malhotra, Adult obstructive sleep apnoea. *Lancet*, 2014. 383(9918): p. 736-47.
2. Kezirian, E.J., et al., Electrical stimulation of the hypoglossal nerve in the treatment of obstructive sleep apnea. *Sleep Med Rev*, 2010. 14(5): p. 299-305.

Upper Airway Stimulation



Figure 1

3. Strollo, P.J., Jr., et al., Upper-airway stimulation for obstructive sleep apnea. *N Engl J Med*, 2014. 370(2): p. 139-49.

Weight Loss in the Management of Sleep Apnea *(continued from page 5)*

In addition to diet, physical activity is a key component to an effective weight-loss plan. Although exercise is not as effective as diet in producing weight loss, regular aerobic exercise helps prevent weight regain. In addition, exercise has cardiovascular benefits beyond effects on weight. Similarly, OSA severity improves with exercise independent of any weight loss effects. The most effective behavioral weight-loss programs combine diet and exercise with behavior change counseling. Randomized trials have demonstrated that the optimal plan should include in-person counseling sessions with a trained interventionalist meeting individually or as a group. The frequency of meetings should be weekly at first. Weight loss will be maximized if meetings continue (even though less frequently) beyond six months.

Pharmacologic Therapy

Medications are increasingly being utilized to facilitate weight loss and recent data suggest they may help with OSA as well. Randomized trials have found both phentermine-topiramate (Qsymia) and liraglutide (Saxenda) improve but do not cure OSA. Among moderate to severe OSA patients, phentermine-topiramate and liraglutide produced AHI reductions of 15 and six events/hr respectively beyond that obtained from diet and exercise alone. Clinicians can also facilitate weight loss by reviewing medications and replacing commonly used sleep medications such as quetiapine, doxepin, mirtazapine, and gabapentin which promote weight gain with alternatives such as topiramate, zolpidem, or pramipexole.

Surgical Therapy

Bariatric surgery is growing in popularity as procedural complication rates have diminished and it has become clear that long term weight loss outcomes are substantially larger than with behavioral

or medical therapy. In addition, longitudinal studies demonstrate bariatric surgery reduces the incidence of diabetes, heart disease, cancer, and all-cause mortality. It is clear that obese OSA patients want to learn more about bariatric surgery. A recent study found that 35 percent of OSA patients presenting to sleep clinics would like to meet with a bariatric surgeon to learn more about surgical options. The most common bariatric operations currently are the gastric band, gastric sleeve, and gastric bypass procedures (see Figure). The gastric band is the least invasive and typically results in loss of 40 percent of excess weight at two years, while the gastric bypass is the most extensive procedure, typically resulting in loss of 60 to 70 percent of excess weight but also associated with more side effects. The gastric sleeve is the newest of the three procedures and provides an intermediate option with about 50 percent excess weight loss. Bariatric surgery can produce significant reductions in OSA severity, although some residual disease commonly persists. In one meta-analysis, the mean AHI fell from 55 to 16 events/hr with surgery. Two randomized trials have compared gastric banding to an aggressive dietary weight-loss program. Both studies found no statistically significant improvements; however, they were limited by small sample sizes. Further research is needed to better understand the potential role of the gastric sleeve and gastric bypass in OSA management.

Conclusions

Chronic disease management involves not just acute care but also treatment of underlying risk factors and prevention of common comorbidities. Just as we provide evidence-based treatments for smoking cessation to our patients with chronic obstructive pulmonary disease, we need to provide proven weight loss therapies as part of comprehensive sleep apnea care.