



Treatments for snoring in adults

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Summary

Snoring is a symptom and sign of airway obstruction. Treatments for snoring should be based on the degree of associated sleep disordered breathing, symptoms of excessive daytime somnolence and disruption to family and social life. Lifestyle interventions such as weight loss and reducing alcohol intake help. There are many treatments with varying degrees of efficacy. Continuous positive airway pressure is the gold standard treatment for obstructive sleep apnoea, but in some instances a mandibular advancement splint or a surgical approach may be required.

Key words: continuous positive airway pressure, lifestyle modification, sleep apnoea, sleep disordered breathing.

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Introduction

Adult patients who snore are currently classified into four, albeit imperfect, groups including simple snoring, mild obstructive sleep apnoea, moderate obstructive sleep apnoea and severe obstructive sleep apnoea. This excludes more complex conditions such as central sleep apnoea and obesity-hypoventilation syndrome.

Moderate to severe obstructive sleep apnoea is associated with sudden death and significantly increased cardiovascular risk.¹ Effective treatment with continuous positive airway pressure (CPAP) reduces this risk.² There is also some evidence, although less well recognised, for surgery³ and the use of mandibular splints.⁴ To manage complicated cases, a multidisciplinary clinical team may be required.

Simple snoring and mild obstructive sleep apnoea are less likely to be associated with significant adverse cardiovascular events, but are still treated if patients are concerned socially or if they are excessively tired or waking unrefreshed.

Patients presenting with snoring need to be comprehensively assessed. This includes a history (see Box 1), full cardiovascular assessment, physical examination, and sleep study.

Lifestyle modifications

Weight

Obstructive sleep apnoea is strongly associated with obesity and the importance of weight loss is well recognised.⁵ Personal

trainers and dietitians can help patients with weight problems and concomitant cardiovascular risk factors, as well as surgical patients in whom subsequent weight gain or regain would be detrimental. Healthcare plans, such as the Enhanced Primary Care plans, can be highly advantageous in promoting shared care and follow-up of weight loss.

Bariatric surgery should be considered a valuable treatment, particularly when the body mass index exceeds 35 (surgical treatment for snoring is less effective for these patients). It may also be an option for obese patients who cannot tolerate CPAP.

Alcohol and other lifestyle factors

Alcohol consumption exacerbates snoring, and reducing or giving up alcohol should be advised. Other factors increasing cardiovascular risk such as smoking, diabetic control, hypertension and hypercholesterolaemia need to be addressed. Excessive daytime somnolence may relate to other sleep and medical disorders such as hypothyroidism, which can exacerbate sleep symptoms or fatigue.

Positional treatments

Sleeping on the side or in a more upright position rather than supine or prone is sometimes recommended but lacks strong evidence.

Over-the-counter remedies

As a general rule, over-the-counter remedies have limited proven efficacy in the treatment of snoring. Certainly significant

Box 1

Taking a history in patients with snoring

Snoring – loudness, duration, average number of nights per week

Partner witnessed sleep apnoeas

Sleep hygiene – sleep times

Waking refreshed or unrefreshed

Sleeping position – supine, lateral or prone

Daytime somnolence – symptoms

Motor vehicle or industrial accidents

Nasal symptoms, thyroid symptoms

Previous treatments (device, surgical) and outcomes

Weight

Partner or social disruption

Cardiovascular comorbidities, including family history

sleep apnoea needs to be excluded before trialling such remedies. Nasal strips may prove useful in establishing the degree of reversibility of dynamic external nasal valve collapse before pre-phase nasal surgery.

Continuous positive airway pressure

CPAP is the gold standard treatment for moderate to severe obstructive sleep apnoea⁶ and is a viable treatment option in simple snoring and mild obstructive sleep apnoea. It can be applied via a nasal mask (with or without nasal pillows) or full face mask, and a fixed or fluctuating pressure can be used.

A functional nasal airway is an absolute requirement for CPAP, and in many instances medical (usually nasal sprays), immunological (allergy desensitisation)⁷ and surgical treatments for the nose may be necessary.

Compliance

Estimates suggest that 30% or more of patients cannot or will not use CPAP in the long term. These patients can be considered for either counselling to promote CPAP use, contemporary surgical airway reconstruction or a mandibular advancement splint.

Mandibular advancement splint

This is an intraoral appliance designed to improve or cure snoring by increasing the retrolingual airway and, due to the tongue's attachment to the soft palate via palatoglossus and overlying mucosa, may even improve the retropalatal airway (see Fig. 1). A mandibular advancement splint can relieve up to 90% of simple snoring and mild obstructive sleep apnoea cases, but long-term compliance rates are generally only around 50–60%.

A mandibular advancement splint is a viable alternative in moderate to severe obstructive sleep apnoea when CPAP has failed, but success rates are considered less. In some instances, surgery and device use may be combined to improve efficacy, but mostly single modality treatment is preferred. It is appropriate for patients with moderate to severe disease to undergo a sleep study with a fitted mandibular advancement splint *in situ* to establish device efficacy.

Recent evidence⁸ supports appropriate fitting of devices by trained dentists rather than the so-called 'boil and bite' self-fitted splints. Annual follow-up with a dentist to reduce temporomandibular adverse effects is generally advised.

Pre-phase nasal surgery

Pre-phase nasal surgery is designed to facilitate subsequent treatments such as CPAP. It is rarely intended to cure snoring in isolation. It may involve a combination of septoplasty or septal reconstruction, turbinate reduction, functional endoscopic sinus surgery, external nasal valve or tip surgery, rhinoplasty and rarely in adults, adenoidectomy. Many patients require ongoing

Fig. 1

Mandibular splint



A Splint open



B Splint closed

treatment with steroid nasal sprays and salt water rinses, even after nasal surgery, to maintain optimal nasal patency.

Surgical options

Surgery is a valid treatment option in sleep disordered breathing,⁵ although health professionals are often uncertain about when and who to refer (see Box 2).

Surgical treatment options are multiple and often staged, despite patient perceptions that a single procedure will be curative. Tonsil and tongue size have implications for surgery. In

Box 2

When to refer patients with snoring or obstructive sleep apnoea for surgery

- Failed continuous positive airway pressure or device use
- Favourable anatomy for surgery e.g. tonsillar hypertrophy
- Patient desires surgery/unwilling to use device
- Patient requires pre-phase nasal treatment to facilitate further therapies
- Significant craniofacial abnormalities (maxillofacial surgeon)

patients with large tonsils (grade 3 or 4) and favourable tongue size (small – grades 1 or 2), modified uvulopalatopharyngoplasty with bilateral tonsillectomy should be considered, and in my opinion should be considered the gold standard treatment.⁹ Some lesser tonsillar grades and unfavourable tongue sizes may still be considered for modified uvulopalatopharyngoplasty and radiofrequency ablation when device use has failed and where positional snoring manoeuvres and other findings suggest improvement or cure can be achieved.

In patients with less favourable tonsillar size and palatal anatomy, transpalatal advancement with uvulopalatopharyngoplasty has proven efficacious in increasing the size of the retropalatal airway, and reducing critical closing pressure.¹⁰ This will often be combined with multichannel tongue radiofrequency *or* radiofrequency and lingual tonsillectomy *or* tongue reduction (such as submucosal lingualplasty) *or* genioglossus advancement (tongue tensing operation), depending on expert assessment by a specialist trained in contemporary airway reconstruction techniques.

Maxillomandibular advancement, performed by skilled maxillofacial surgeons, remains a surgical option. It may be appropriate in device use failure or rejection where either soft tissue surgical techniques have resulted in incomplete cure *or* significant craniofacial structural anomaly exists precluding soft tissue surgical protocols.

Conclusion

Sleep disordered breathing, including snoring and obstructive sleep apnoea, represents a heterogeneous condition and as such requires multidisciplinary input. It can have significant adverse health consequences and for patients who cannot tolerate CPAP, other treatment options should be offered. Mandibular splints and surgery are valid alternatives.

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Dr MacKay has attended ArthroCare Coblation conferences paid by ArthroCare.

Self-test questions

The following statements are either true or false (answers on page 91)

5. If tolerated, mandibular advancement splints often relieve mild obstructive sleep apnoea.
6. Continuous positive airway pressure is effective for moderate to severe obstructive sleep apnoea.

Dental notes

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There has been a significant rise in the use of intraoral devices for the treatment of snoring and sleep apnoea. Dentists have an increasing choice of mandibular advancement splints to provide for their patients. Currently, no single device has been proven

more effective than another.¹ Success is strongly associated with patient compliance.

Patients with mild to severe sleep apnoea can have good long-term outcomes with these devices. The reduction in the apnoea/hypopnoea index, as measured during sleep studies, can be up to 60%.¹ However, our ability to predict success in any individual patient is limited. Currently there is no individual measure or clinical tool that can be used as a predictor of success. This needs to be clearly outlined to potential users.