Providing options

Neel Kothari discusses how clinicians can provide options for patients to reduce the impact from snoring

In the second part of this mini-series on snoring and the dentist’s role I will be looking at ways in which dentists can provide their patients with options to help reduce the impact that snoring has on not only the quality of their own lives, but their partners too.

Mandibular advancement splints (MAS)

Mandibular Advancement Splints (MAS) are appliances which posture the lower jaw forwards in order to assist in opening the patient’s airway. This maintains the patency of the airway by replicating the effects of a mandibular jaw thrust and holds the jaw in the recovery position. As discussed in the first part of the series, during sleep the tongue drops back, the muscles below the jaw relax, which leads to a restriction of air flow. As air passes through the smaller aperture its velocity increases and in some people this causes the soft tissues to audibly vibrate, giving rise to the snoring sound. The snorer has to work extra hard to overcome the air resistance, often depriving the individual of oxygen.

No matter what approach is adopted or materials used, best practice principles should be maintained. These include minimal encroachment into the tongue and freeway space, forward protrusion without excessive vertical opening, tooth rather than soft tissue borne, the use of biologically compatible robust materials and that the jaw joints are not held in a fixed position for a protracted time.

The role of MAS in the management of snoring is widely recognised (SIGN guidelines, 2003), provided that the diagnosis and treatment are provided by a suitably trained GDP with obstructive sleep apnoea having been excluded by a definitive diagnosis by a chest physician. In the primary care setting there is a range of MAS options open for dentists, each presenting various advantages and disadvantages. Whilst the concept of using teeth as a source of anchorage in both arches to help posture the jaw forwards is much the same, the materials used to make these and their relative costs remain varied.

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Many of the earlier mandibular advancement splints made using thermoplastic materials suffered with issues relating to retention, comfort, compliance and long term viability. As such, the use of rigid ‘custom-made’ materials is now regarded to have a more positive outcome for the patient. A recent study comparing an acrylic custom-made and a thermoplastic proprietary intra oral appliance for the treatment of mild sleep apnoea (Vandervyken OM et al Am J Respir Crit Care Med, 2008) found the acrylic custom-made appliance to be more effective, but with this also comes an increase in costs. Many sleep centres around the UK do currently use thermoplastic moulded mandibular advancement splints to varying degrees of success and, whilst there are alternative materials available, the short term financial advantages in their usage is considerable.

Non-adjustable mandibular advancement splints

One piece mandibular advancement splints, as shown in Fig 1, posture the jaw in a fixed position to open the airway. The main advantage compared to semi-adjustable or adjustable appliances is the cost, which is considerably lower, but in the longer term they may need more frequent replacement. The dentist’s role here is to take impressions of both arches, as well as communicate with the laboratory the degree to which the mandible needs to be advanced. The vibration of the soft tissues that result in snoring can differ from time to time. For example, many patients anecdotally mention the increased impact of snoring with alcohol consumption and in this particular situation the lack of adjustment can be considered a disadvantage.

Adjustable mandibular advancement splints

Two piece appliances such as the ‘Sleepwell’ device, shown in Fig 2, allow the patient to adjust the position of the mandible for ideal effectiveness and can also be adjusted at a later date...
to suit the wearer if their needs change.

Appliances like the ‘Sleepwell’ are also supported in the literature (Barnes et al., 2004 Am J Respir Crit Care Med) for the treatment of mild to moderate sleep apnoea. However an accurate diagnosis is needed for which a sleep study confirms the definitive diagnosis.

Adjustable cobalt chrome mandibular advancement splints

Appliances such as the ‘Somnowell’ device, as shown in Fig 3, use a skeletal frame on both arches linked with a piston-rod connector which gives freedom of jaw movements except in the posterior direction. The benefits of using CoCr for MAS appliances were described in the literature (S.P Ash & A.M. Smith J of Orthod 2004). The use of CoCr means that the laboratory fees are higher and the provision of this type of appliance also require a facebow recording and a higher degree of clinical accuracy.

However, in the longer term it presents with excellent durability and longevity in the oral cavity, as well as having additional benefits such as improved oral hygiene and minimal intrusion into the tongue and freeway space. Given that that CoCr does not absorb moisture, it is far harder for micro-organisms to colonise the material and its relative high strength helps to keep the bulk down, compared with alternative materials. For many years CoCr has established itself as the standard for partial denture construction and its clinical advantages are well documented.

CoCr is not currently in widespread usage for MAS and the relatively higher production costs may discourage many practitioners from exploring this option. That being said, how much would you be prepared to pay for a good night’s sleep?

For the purposes of this article I have presented only a few of the many options currently out there. For those dentists who wish to offer MAS to their patients or even wish to help their own snoring issues, an understanding of sleep related breathing disorders is essential and a structured training programme offers the best way to carry this out. Remember that even though MAS may be effective for mild to moderate sleep apnoea, the SIGN 2005 guidance only supports their usage for snorers with mild sleep apnoea with normal daytime awareness. As such, whilst we as a profession may be in a position to help simple snorers, we are not always in the best position to diagnose and treat the more moderate to severe forms of sleep apnoea, which is a potentially a life threatening condition.

Fig 1 Adjustable Mandibular Advancement Splints (courtesy of Somnowell)

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Fig 2 Adjustable Mandibular Advancement Splints. Figure 2 (courtesy of Somnowell)

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Fig 3 Adjustable Cobalt Chrome Mandibular Advancement Splints. Figure 3 (courtesy of Somnowell)