

Article Feature:

Dental (Mandibular) advancement splints for Obstructive Sleep Apnoea

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Obstructive sleep apnoea (OSA) is a potentially life threatening breathing disorder characterised by periods of apnoeas (cessation of air flow) and hyponeas (shallow breathing affecting blood oxygen level) during sleep.

There are various treatment modalities for this condition:

1. Conservative measures like weight loss, a change in sleep position and avoidance of alcohol/sedatives
2. Medications which has shown little success
3. Nasal continuous positive airway pressure (nCPAP) is the "gold standard" of treatment approaches and it uses a machine to supply a continuous flow of air under pressure to maintain airway patency
4. Mandibular advancement splint (MAS) is a device that holds the mandible in a forward position, increasing airway size and reduce its laxity/collapsibility
5. Tracheostomy (a surgery to open a lumen in the windpipe at the base of the neck) which is highly successful as it completely bypasses any pharyngeal obstruction but is associated with a high degree of morbidity
6. Surgery. There is a plethora of procedures that are customised according to the patients' airway anatomy to treat their problem

Mandibular advancement splints (MAS)

Mandibular advancement splints (MAS) are viable alternatives to other established therapies for OSA treatment. Their principle of action is through the forward positioning of the mandible (lower jaw), which in turns draws the tongue and soft palate forward and away from the back of the throat, thereby widening the airway and reducing its collapsibility during sleep. The decrease in laxity of the tissue also frequently lessens the severity of snoring.

Clinical studies have demonstrated the effectiveness of MAS therapy with increases in the airway dimensions and reduction in the severity of OSA. However, CPAP is the most universally effective in the treatment of OSA and MAS does not have the same efficacy. Therefore, a follow-up polysomnography after MAS fitting is advised because of the risk of residual silent OSA even when there is subjective improvement of symptoms and snoring. The existence of MAS is primarily because of problems associated with other forms of treatment. MAS treatment has shown little long term or permanent side effects and has the advantage of being far less cumbersome than CPAP despite some initial discomfort. The side effects associated with MAS therapy include: night-time discomfort, dry lips, tooth discomfort, and excessive salivation. Permanent changes in the position of the teeth have occurred in some cases of long-term use.

In view of this, periodic check-ups are advised. The overall compliance rate for MAS is good and has been shown to be comparable if not better than nCPAP.

MAS therapy should only be provided following confirmation of OSA and when MAS is deemed to be of benefit. The use of polysomnography (sleep study), nasoendoscopic examination and airway radiography can be helpful in the assessment. They are most indicated for mild to moderate OSA.

MAS therapy should be performed by experienced dental professionals. They are manufactured specifically to fit individual patients and are retained by the upper and lower teeth. They keep the mandible in a protruded (forward) position (of a predetermined amount) and with minimal vertical opening. The amount of mandibular protrusion is usually determined by patient comfort, but it is commonly taken as 75% of the patients' maximal protrusion.

