

Management of obstructive sleep apnea using oral appliances: A Review (Part II)

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Abstract

There are various treatment options for obstructive sleep apnea (OSA) ranging from simple lifestyle modifications to surgical options. Some treatments are cumbersome in nature which makes tolerance and compliance less than optimal. This gives rise to the need for other alternatives that are equally effective and more tolerable. Dentists play a vital role in the treatment of OSA. There is growing interest in the use of oral appliances (OAs) to treat OSA. Wide ranges of appliances are available and are well tolerated by the patients. This second part of our review article focuses on various appliances their mechanism of action and effects on oral cavity.

Key words: Oral appliances (OAs), Dental appliances, Mandibular advancement appliances (MADs), Obstructive sleep apnea (OSA)

Introduction

Dentists have recently begun to play a role in the management of obstructive sleep apnea (OSA) with the use of various oral appliances (OAs) or dental appliances. These appliances can reposition the tissues by lifting up the soft palate, bringing the tongue forward, or lifting the hyoid bone. As they reposition, some appliances also stabilize these tissues, preventing airway collapse. Appliances can also increase muscle tone. Specifically, there is an increase in pharyngeal and genioglossus muscle activity¹.

These appliances are usually inexpensive, well tolerated by the patients and the side effects if any are thought to be reversible². There are a large and diverse designs that have been used in clinical practice and research studies. It is important to consider these design features when choosing a device, as they may influence the retention of the oral appliance within the oral cavity during sleep, the degree of advancement of the mandible, and the range of movement of the mandible that is permitted. As a result, variations in design may affect clinical efficacy, adverse effects, and patient compliance^{3,4}.

Historical aspects of oral appliances

George Cattlin was probably the first person who seriously thought that the route of breathing may influence sleep quality and daytime function⁵. He pointed out that breathing through the nose promotes more restful and better quality sleep, which translates into better daytime function and better general health. However, modern published clinical work began in 1903, when Pierre Robin first described a device, called the "monoblock", for the treatment of glossoptosis. It took almost another 50 years to start using oral appliances for the treatment of snoring and sleep apnea when Cartwright and Samelson described the tongue retaining device in 1982. This work stimulated further investigations⁵.

Types of oral appliances

There are abundant variety of appliances available and all these oral appliances may be divided into three general groups: soft palate lifters (SPLs), tongue retaining devices (TRDs), and mandibular advancement devices (MADs) also known as mandibular advancement appliances (MAA) or mandibular advancement splints²⁶.

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