Sleep Apnoea

Dr.Sahil Singh
P.G student

Dr. Charushila Sardar
Professor and P.G Guide

Dr.Gurang Mistry
H.O.D

Dr.Omkaar Shetty
Dean

Department of Prosthodntics
D.Y Patil School of Dentistry
Navi Mumbai

Introuction

Sleep apnoea is one of the common sleep disorders. It is a condition in which breathing stops for more than ten seconds during sleep. It is a major, though often unrecognized, cause of daytime sleepiness.

Sleep Apnoea is defined as the cessation of airflow, a complete obstruction for at least 10sec with a concomitant 2 to 4% drop in arterial oxygen saturation. Hypopnea is a reduction in airflow of at least 30 to 50% with a drop in oxygen saturation.The Apnoea hypopnea index (AHI) is the average number

of apnoea and hypopnea per hour of sleep[1]

The severity of OSA is classified on the basis of the patient's AHI index into three categories:[2]1.Mild OSA (5 to 15 events per hour) 2.Moderate OSA (15 to 30 events per hour) 3.Severe OSA (more than 30 events per hour)

There are various treatment modalities to correct sleep apnoea:-

1. Self-help treatment - which include lifestyle changes like-Lose weight, Quit smoking, Avoid alcohol and sleeping pills, Maintain regular sleep hours.

2. Medical modalities: it includes- Treating the underlying condition, Using supplemental oxygen while you sleep , Breathing devices:- like nasal continuous positive airway pressure which has been proven very effective

Although the nasal continuous positive airway pressure provides the most reliable therapeutic modality and is the most widely used method to treat sleep disordered breathing today it is also the most cumbersome one.[3]

3. Dental devices and surgery, two basic types recognized are: A) Mandibular advancement device, B) Tongue retaining devices.

Surgeries a) orthognathic surgeries like maxillo-mandibular advancement, b) genial advancement with or without hyoid suspension, c) septoplasty d)turbinate reduction.

4. Soft tissue surgeries like a)uvulopalato-pharyngoplasty, b)laser assisted uvulopala to pharyngoplasty, c)tracheostomy.

Forms or Types of Sleep Apnea

There are three forms of sleep apnoea:- 1.Obstructive sleep apnoea (OSA) 2.Central sleep apnoea (CSA) 3. Mixed sleep apnoea (MSA)

Symptoms of sleep apnoea

OSA and CSA cause similar symptoms. The most common symptoms are: Daytime sleepiness, Morning headaches, Snoring, A feeling that sleep is not restful, Disorientation upon waking, Poor judgment, Personality changes, Nocturia (4)

Consequences of sleep apnoea: Risk of traffic accidents, Hypertension, Cardiovascular mortality and morbidity, Sudden death

Treatment

The management of these patients are carried out by multidisciplinary approach which includes :-

Oxygen and drug therapy

Supplemental night time oxygen can be useful for some people with either central and obstructive sleep apnoea.

The treatment of choice for moderate to severe obstructive sleep apnoea (OSA) is continuous positive airways pressure (CPAP) via a mask during sleep.

- Progestogens
- Acetazolamide
- Theophyllines
- Anti depressants

Mechanical ventilation

Surgery

The surgeries which can be performed are following:- Tracheostomy, Uvulopalatopharyngoplasty, Hyoid suspension surgery, Genioglossus advancement, Septoplasty and turbinate reduction, Orthognathic surgery

Tracheostomy was the first successful surgical treatment for OSAS and has virtually a 100% success rate because it bypasses the obstruction of the upper airway completely. In tracheostomy, a small hole is made into the trachea (windpipe) just below the voice box. A tube is inserted, and the air will flow through the tube into the lungs. In this way the obstruction in the upper airway is bypassed.(5)

There is small opening all the time. The tube is worn permanently. The opening can be surgically closed later, when you can apply for another therapy.

Laser-assisted Uvulopalatoplasty

Genioglossus advancement: Genioglossus advancement surgery can be used in patients whose examination and cephalometric analysis are consistent with abnormalities of the craniofacial skeleton.

Septoplasty and Turbinate Reduction

Orthognathic surgery: Advancement of the mandible repositions the anterior belly of the digastric, mylohyoid ,genioglossus, and geniohyoid muscles forward.

This, in effect, pulls the tongue upward and away from the pharynx. Advancing the maxilla pulls the soft tissue of the palate forward and upward. This also pulls the palatoglossal muscles and increases tongue support. .Riley et al. evaluated patients and concluded that there is an excellent chance of correcting the obstructive process using orthognathic surgery. It proved to be as effective as CPAP.(6)

Hyoid suspension surgery

In the event of sever OSA, HSM is performed in conjunction with TS. This method inhances the anterior superior repositioning of the tongue base, enlarges the airway in a lateral dimension, and partially separates the tongue base from the lower airway by an infrahyoid myotomy.

Oral appliances

Oral appliance therapy was first endorsed as effective management of obstructive sleep apnoea by the American Academy of Sleep Medicine in 1995. In 2005, the Standards of Practice Committee of the AASM updated the practice parameters for the use of oral appliances as appropriate first line therapy for snoring, mild and moderate obstructive sleep apnea.

Most patients with narrowed airways will have increases in the volume of the airway and decreased resistance to airflow when the mandible is advanced. This is the fundamental principle of airway management, utilized in cardio-pulmonary resuscitation (CPR), where the tongue is moved from the airway by head and mandibular posture.

The first type of oral appliance is known as a tongue retaining device or TRD. The second type is variously called an oral protrusive device (OPD) or mandibular advancement splint (MAS), because it holds the mandible, or lower jaw, forward during sleep. These oral devices appear to work best for patients with mild-to-moderate OSA, and in some cases can postpone or prevent the need for surgery. Their rate of patient compliance is about 50%; most patients who stop using oral appliances do so because their teeth are in poor condition. (7)

Mandibular splint or Mandibular Advancement Splint (MAS) also known as "mandibular advancement devices," "sleep apnea oral appliances," and "sleep apnea mouth guards." The splint treats snoring and sleep apnea by moving the lower jaw forward slightly, which tightens the soft tissue and muscles of the upper airway to prevent obstruction of the airway during sleep. The tightening created by the device also prevents the tissues of the upper airway from vibrating as air passes over them – the most common cause of loud snoring.

Mandibular Advancing Splints

Where appropriate, they are considered a good therapy choice as they are non-invasive, easily reversible, quiet, and generally well accepted by the patient. The focus of improvement in appliance design is in reducing bulk, permitting free jaw movement (i.e., yawning, speaking, and drinking)

The method of treatment selected is dependent upon the site of the obstruction and may involve one or more combinations of the above treatment modalities. The examination prior to determining the treatment approach should exclude pathologic entities of upper airway (e.g. neoplasm, cysts) as well as identifying the site of obstruction.

In view of the range of management options, patients with this condition require a multi-disciplinary approach to determine the most appropriate treatment plan, targeted at relieving the site of obstruction. Ideally clinicians from the specialties of chest medicine, ear nose and throat surgery (ENT), orthodontics and oral and maxillofacial surgery should work collaboratively.(*8)

Conclusion

Sleep apnoea is one of the major sleep disorders, which commonly occurs in male gender and middle age. Out of its two major forms, obstructive sleep apnoea is most common.OSA occurs due to obstruction in airway while CSA occurs due to problem in conduction of impulses from higher centre to respiratory centre. Its symptoms are daytime sleepiness, morning headaches, snoring, disorientation upon waking, poor judgment, personality changes, nocturia. It is commonly associated with the obesity, traffic accidents, hypertension, cardiovascular morbidity and mortality.

Clinician can diagnose it on the basis of symptoms and some tests like polysomnography and other respiratory tests, fibreoptic endoscopy, neurophysiologic tests. A dentist may also help in diagnosing by seeing the following signs; greater neck circumference, excess fat deposition in palate and tongue, retropositioned maxilla and mandible. Lateral cephalometery taken on intercuspation of teeth, also aids in diagnosis.

Treatment of sleep apnoea requires multidisciplinary approach which include, life style changes, oxygen and drug therapy, mechanical ventilation, uvulopalatp-pharyngoplasty, orthognathic surgery, and occlusal appliances like mandibular advancing splints, tongue retaining device. These oral devices appear to work best for patients with mild-to-moderate OSA, and in some cases can postpone or prevent the need for surgery. Their rate of patient compliance is about 50%; most patients who stop using oral appliances do so because their teeth are in poor condition.

Since in completely edentulous patients mandibular splints cannot be worn, so implant retained splints have been discovered. Besides this Kurthumulus et al discovered a new appliance which acts by increasing the vertical dimension and , the method of retention for the MTAS included friction grip from a rigid material. ,.

Its prognosis varies according to its severity and its complications, only medicinal treatment cannot cure the sleep apnoea, so multidisciplinary approach is required for the better prognosis. (9)

Therefore, as dental professionals, we have a significant role to play in the early diagnosis, management and care of patients suffering from sleep Apnoea.

References

References are available on request at editor@healtalkht.com