Treating Obstructive Sleep Apnea with CPAP and Oral Appliances

An article written with Millbrae Dental Care

Over the course of the past decade, millions of people have become aware of the medical condition known as “sleep apnea”. Though most assume this is simply an underlying cause of snoring, it is actually much more and much worse.

The term apnea has its origins in the Greek language and means “without breath”. This choice of words describes the symptoms of the condition accurately because it often forces the patient to stop breathing repeatedly during a “typical” night of sleep.

Although there are three types of sleep apnea - obstructive, central, and mixed – it is the obstructive variety that is the most common. It is known as OSA (obstructive sleep apnea) and it causes the upper airway to repeatedly collapse upon itself, and leads to inadequate breathing (hypopnea).

Is it a rare condition? No, it affects around 5% of the population in the United States, which translates to roughly 18 million people. While a bit of snoring and snorting during the night might seem like a mild issue for this portion of the population to live with, OSA actually comes with some serious health risks.

The long term effects of the condition can lead to such problems as hypertension, stroke, cardiac arrhythmias, and myocardial infarction. Sleep apnea has even been linked to diabetes as the one of the body’s response to the apnea event is to release insulin into the blood stream. Even the short term effects are bad and can include serious daytime drowsiness, poor concentration or judgment, morning headaches, and an overall lower quality of life.

Are there any treatments for obstructive sleep apnea? Yes, and one of the most common treatment is known as CPAP, or the Continuous Positive Airway Pressure.
What is CPAP?

CPAP describes a range of devices, but is basically a machine that is connected to a nose or face mask and which pushes or forces air into the airway at a level enough to prevent OSA from occurring.

It counteracts the natural failure of the soft palate and base of the tongue that can lead to blocked airflow. The machines create a sort of air “splint” that gently holds the airway open. The machines are adjustable to allow settings to match the needs of the patient, but for most it is usually a higher, uncomfortable amount of pressure required for success.

All CPAP devices will attempt to provide the appropriate amount of airflow to keep a steady flow of oxygen heading into the lungs. This stops the vicious cycle of sleep apnea from occurring and allows a patient to get the deep sleep that they need.

It is essential to understand that the process of REM (rapid eye movement) sleep is usually going to leave a sleeper’s muscles nearly paralyzed. This can often allow the mouth and jaw to set in a position quite likely to allow OSA to begin. If nothing is done about this scenario, the sleeper is going to repeatedly awaken and suffer from sleep fragmentation.

While there are CPAP machines available to combat the problem, oral appliances are also now available help you get a better night of sleep.
How does CPAP work?

CPAPs are prescribed by a physician who understands the needs of the patient. These needs are often determined through a sleep study or polysomnograph (PSG) at a specialized clinic. We also offer home sleep tests for patients who don’t want to sleep in a lab or hospital. Additionally, patients will then need to be tested for the appropriate pressure for their CPAP equipment.

For instance, some devices use a single kind of pressure, while others (such as a Bi-PAP machine) will use two types of pressure. Additionally, some machines require the use of a mask, and others demand a nasal device instead. There are some that use warm air humidifiers and some that rely on cool air.

All of the CPAP devices, however, operate simply by pumping air pulled from the room, through a filter and into a small compressor. This compressor is connected to a hose which is joined to the mask that is worn by the patient. This system can be used throughout the entire night or for a pre-arranged period of time.

The Pros and Cons of CPAP

Are there any negatives to using CPAP? Yes, many. Though CPAP treatment itself is viewed as one of the best ways of managing obstructive sleep apnea it is not well tolerated by patients. One aspect that physicians like about the modern CPAP machines is the ability to record sleep data which can then be used by a sleep lab or clinic to ensure that settings are at optimal levels. However there are some significant downsides or cons as described by many of our patients:

The “downside” to CPAP includes such issues as:

- **Difficulty in fitting the mask** – this is the most essential factor in using CPAP correctly, but is also very problematic because a small air leak can lead to discomfort and often this means wearing a mask very tightly to the face.
Many people cannot tolerate the pressure created by a properly fitted mask, or the inability to sleep in any position they require because of the mask’s presence on the face.

Physical side effects – many patients using CPAP devices complain of contact dermatitis (irritated skin and rashes) from the tightness of the mask.

Nasal congestion and runny nose OR Dry mouth, dry throat and irritated airways

Dry eyes

Overall discomfort because of the difficulties in sleeping with a device on the face.

Failure in patient participation – for CPAP to deliver its benefits, the patient has to actively wear the equipment on a nightly basis. This is actually a leading disadvantage to the remedy because even a single night of discomfort often leads a patient to abandon regular use of the device.

Travel - very difficult to travel with a CPAP machine

Many different kinds of CPAP Machines

There are not many differences between the four types of machines with the exception of how the airway is maintained. This is usually done through a different type of controlled pressure. For example:

CPAP – this style of machine relies upon a single pressure regardless of the cycle in the breathing pattern and tends to be the most common style utilized;

APAP – the Adjustable Positive Airway Pressure machines can adjust on a “breath by breath” basis creating the ideal respiratory environment for the sleeper;

Bi-PAP – the Bi-Level Positive Airway Pressure machines use two different pressures with one for the inhalation process and another for the exhalation process in order to give the sleeper the support needed; and

Travel Machines – these are smaller-sized devices with the built-in capabilities for adjusting to the needs of altitude as well as offering some stand alone power options. These can be found in all of the varieties listed above.
The only way to know the right machine for your needs is to work with the physician, and a sleep clinic, to diagnose the breathing requirements of a sleeping patient. It is also a wise idea to invest in the devices that have downloadable programming since these record all breathing incidents and can really help to keep the patient’s needs met to the best levels possible.

Why People say the Hate Their CPAP

If a machine is helping you to breath, reduces health problems, and leads to a better way of life, what’s not to like about it? Actually, there are many patients who cannot come to terms with their CPAP equipment. This has mostly to do with the tightly-fitted masks attached to their face throughout the night. Not only that, but the need to sleep in a single position will also present some difficulties as well.

Additionally, the general side effects such as runny nose, dry skin and eyes, contact dermatitis, dry throat and mouth, coughing, and minor congestion can all make patients extremely unhappy with CPAP equipment too.

Many patients also complain of the expense of running the machines, the need to transport them whenever they travel, and the difficulties in maintaining the devices to keep them clean and efficient.

Most patients feel that they have no other options for combating their OSA, but that is not the case, and a qualified sleep apnea dentist is able to provide a very simple and comfortable solution. This is in the form of oral appliances known as Sleep Apnea Oral Appliances or a Mandibular Repositioning Devices (MRDs) or Mandibular Advancement Devices (MADs).
Alternative Treatments For Sleep Apnea

How can the sleep apnea dental device work in the same way as the CPAP? The answer is, it doesn’t. Instead of using an electronic device and air pressure to keep an airway open, the oral appliances (MADs) use oral appliances to keep the jaw in a position that prevents the airway from ever getting blocked in the first place.

Remember, it is the soft palate at the base of the tongue which lacks the rigidity to keep things in place during REM sleep. During the day, the patient is in an upright and alert position. This means that the muscles controlling the area are working to keep the airway clear of any type of obstruction. Once they lie down to sleep, however, the lack of cartilage and bone, combined with the complete relaxation of the muscles, allows the soft palate to collapse back on itself and obstruct the air passage.

How do Oral Appliances for Sleep Apnea Work?

The oral appliances fabricated by a sleep apnea dentist is created by taking a mold of the patient’s teeth. This is done in a way very similar to standard mouth guards used by athletes. The mold is then converted into the two-part upper and lower mouth piece with the mold for the lower set of teeth set a bit forward from the upper teeth. This moves the jaw of the patient into the proper position and prevents the traditional “collapse” or obstruction from occurring.

Many patients visit their dentist to get oral appliances as a way of curing snoring, while many physicians are also referring patients for oral appliances as a reliable and more comfortable method for treating sleep apnea as well.

The trick is to work with a dentist who has experience in providing this alternative to traditional CPAP therapy. Dr. Sherry Tsai of Millbrae Dental Care is a unique provider of sleep apnea dentistry. She has been trained in TMJ and neuromuscular dentistry and uses a combination of muscle relaxing and jaw repositioning to help patients avoid the need for CPAP equipment.
Deciding on Oral Appliances

A quick appointment with Dr. Tsai will allow a patient to understand if they are a candidate for an oral appliance for sleep apnea. A consultation will allow the dentist to review any results that a patient might have from an earlier sleep test, take a few necessary measurements, and then assess the teeth and gums to see if they are in good condition for the use of oral appliances.

The patient will then get to see the different types of apnea mouth guards available, and learn which of the designs is most likely to help them with their condition. The patient can then discuss any concerns or fears they might have with the dentist.

Interestingly enough, the two most common concerns about oral appliances relate to the initial discomfort associated with wearing them, and excessive salivation. Both issues tend to appear and disappear rapidly within the first days of use, and never become an ongoing problem.

Using sleep apnea and neuromuscular dentistry techniques, Dr. Tsai is able to help patients to find the solution they need for their symptoms. She is able to provide sleep apnea sufferers with a more natural and holistic approach to treating their condition without the need for electronic equipment and uncomfortable face masks.

For more about Dr. Tsai’s training and experience, please click here.

Please feel free to call Dr. Tsai and her team to discuss your symptoms or questions at (650) 583-5880.

or visit our website:

www.millbraedental.com/sleep