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Positive Effects of Nasal Breathing

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We have long been involved in sleep disordered breathing in dentistry, and in this office specifically, because so many of the signs associated with breakdown of the breathing system show up in the oral cavity. Because of that, dentists who pay attention often discover the patients at risk before the physician can. It is a part of our concept of Wellness Integration to make these observations and serve our patients in a positive manner expanding the beneficial reach of your visit to the dentist. This information will serve you well and should be shared with your physician.

Whether you've been diagnosed with a sleep disorder or not, you've some signs in your mouth or you have shared some symptoms that are related to a breathing problem. Historically these breathing problems have been diagnosed as sleep disorders. Today some of that thinking has shifted. Rather than having a problem only at night when you sleep, you likely have a problem 24 hours a day – albeit one that is exaggerated at night. Today it is more appropriate to identify this as an airway disorder. One of the key sources of this problem – at night or during the day – is overbreathing which blows off too much CO₂ and negatively impacts the transfer of oxygen in our blood to the tissues where it is needed. Blowing off too much CO₂ shifts the pH of our cells.

When we do not maintain proper CO₂ balance our tissues lack the oxygen they need and we, resultantly, breathe faster solve the problem. This shifts our body's sympathetic/parasympathetic ratio toward an inappropriate sympathetic dominance. This creates a cycle that only makes matters worse. While you're sleeping, if the body detects we have blown off too much CO₂ it responds with a breath hold to build up CO₂. At night that results in a collapsed airway, a decrease in the oxygenation of the blood and an apnea occurs. The subsequent gasp of air at the end of an apnea overshoots these O₂ and CO₂ levels and we repeat the process in cycling.

This is where the change of oral versus nasal breathing becomes clarified. Mouth breathing moves more air than nose breathing but has NOTHING to do with 'getting more oxygen'. Mouth breathing blows off too much CO₂ resulting in overbreathing which is a form of hyperventilating. While we breathe at a faster rate with mouth breathing, our tissues don't actually get the oxygen they need. Every time we inhale, the hemoglobin in our blood binds roughly 5% of the oxygen available in the air (O₂ is about 20-21% of our air) - leaving around 16% oxygen in exhaled breath. So oxygen transfer to our tissues isn't about getting enough air, it's about getting rid of the correct amount of CO₂ so that the Bohr Effect can occur.

Apart from heartbeat, we breathe more times per day than any other body function. Doing that properly will have a huge impact on your overall wellness. The definition of functional breathing at rest includes: 8-10 breaths per minute; 4-5 liters of air per minute; diaphragmatically driven with no involvement of secondary breathing muscles; silent and nasal route only.

The beneficial outcomes we will experience with nasal breathing include:

- Efficient filtration of the inhaled air through the nasal process.
- Improved oxygen release through the Bohr effect – achieved by proper CO₂ control.
- Effective vasodilation through the presence of CO₂ and Nitric Oxide (NO).
- Humidification and temperature control of inspired air via sinuses and turbinates.
- Improved control over virus and bacterial infection of the upper respiratory tract through activity of the lysozyme enzyme in the mucus & the NO produced in the paranasal sinuses.
- Final micro-filtration of the inspired air through our adenoids and tonsils.

So the question becomes, how can I control my breathing? The problem with most people is that the brainstem response has been denatured through a lifetime of dysfunctional breathing and secondary breathing is triggered at an inappropriate level resulting in hyperventilation and blowing off too much CO₂. Unfortunately, simply breathing through your nose is simply not enough. We can still hyperventilate through nasal breathing with many of these negative ramifications. And, at night, hyperventilation with nasal breathing simply moves the snoring from the mouth to the nose. Since our body was initially wired properly, it is only a process of re-establishing the proper sympathetic- parasympathetic ratios associated with a short inspiration and extended exhalation. There are simple breathing exercises that can correct this during the day – and we must start there.

The Address Stress app is a wonderful place to begin. It is available on your phone and has a 14 day program that works effectively to begin reprogramming the disordered daytime breathing. This app has training exercises that are meant to reduce your breathing rate and reduce your breathing volume while it resets the brainstem to the proper levels of retained CO₂.

Dr. Jennifer Hobson runs a course on breathing training. She is a myofunctional therapist and will teach you the ideal tongue position along with the breathing methods. Her office is located at 122 South Michigan Avenue just a couple of blocks south of our office. Her four meeting course is \$300 – well worth the time and cost. Dr. Hobson will introduce you to the concept of Buteyko breathing that was introduced by a physiologist in the 1950s in Russia to treat asthma, apnea and other breathing disorders. The iBook Close Your Mouth is \$10, explains the technique well and has many exercises to aid this process. Breathing Well is another app that is excellent for daytime breathing exercises mentioned in the Close Your Mouth book as well as Dr. Hobson's breathing courses. Completing ALL of these steps will help reset your sympathetic-parasympathetic ratios and allow you to improve your daytime breathing.

Coincidental to this daytime training is ensuring you breathe through your nose when you sleep.

Nasal breathing is compromised by nasal congestion. Oddly enough, we can't breathe through our noses because we don't breathe through our noses! Nasal breathing reduces the inflammation and congestion through many mechanisms. One powerful mechanism is the production of Nitric Oxide (NO). NO is only produced by our body when breathing through the nose. Nitric oxide acts as a vasodilator – opening up the entire process. Taping your mouth closed to ensure we use nasal breathing can be a daunting exercise, but after only a few minutes the NO pops open the nasal airway and we're capable of slow, controlled nasal inspiration. Consistent nasal breathing will reduce mucosal inflammation as well as the size of our tonsils and adenoids. Over time it becomes easier and easier to breathe nasally because of the larger nasal airway that develops as the inflammation of the mucosa shrinks along with the tonsils and adenoids.

Simple things we can do to improve our nasal airway:

Nasal Strips – Breathe Right is a brand. They are very effective of providing the sensation of a wide open nasal passage. However, they don't have enough clinical impact if used on their own.

Decongestants – over the counter versions like pseudoephedrine and phenylephedrine are beneficial. Speak with your physician and use them as directed until you get your sinus congestion under control, then decrease dose to maintain control. My physician recommends taking one dose per day – every morning.

Allergy medicine – continue to use your OTC allergy medicine, but consider switching to a non-decongestant version to couple with the decongestants noted above.

Neti Pot – this is, by far, the most effective solution. Use it daily to get under control, then every other day to maintain control. Allergy sufferers will notice a huge reduction in symptoms. This is a challenge for most patients; however, those that overcome the difficulty will get the best results from everything else you add to the process. This is the base for maintaining an open nasal airway and reducing inflammation of the mucosa, tonsils and adenoids. Neil Med available at Walgreens is an excellent option. The pot with gravity is preferred over the bottles with pressure.

Saline Spray – these are fairly worthless. Maybe a slight benefit before blowing your nose, but they are not an alternative to the Neti Pot. They are light years apart from each other.

Decongestant Nasal Spray – Afrin is a vasoconstrictor like decongestant oral meds mentioned above. It is recommended here only as a mechanism to achieve Neti Pot usage during times of heavy congestion. Long term use of these decongestant nasal sprays is not recommended.

Steam showers – these not nearly as effective as the Neti Pot, but better than nothing. Clear your nasal passages immediately upon completion of the steam shower.

As noted above the benefits of nasal breathing are numerous. This includes a better control of CO₂ expiration and a reduction in over-breathing through proper balance of the sympathetic-parasympathetic ratios. Nitric Oxide is produced only through nasal breathing resulting in vasodilatation of the cardiovascular system. Nasal breathing increases diaphragmatic breathing that effectively pumps our lymphatic system helping to filter toxins throughout the body. Nasal breathing will reduce and can eliminate snoring when daytime overbreathing is corrected. Ultimately, nasal breathing improves your sleep pattern and should eliminate waking during the night as well as decreasing daytime tiredness by keeping you in the deeper reparative and regenerative levels of sleep. That alone is why all this is so beneficial to us – waking with energy, feeling well rested, less irritable and ready to address the day that faces us.

Regardless of what treatment methods are necessary to open the nasal passage, ensuring usage of the nasal airway rather than the oral airway during sleep is imperative. What can you do to ensure you breathe appropriately through your nose at night when you're asleep?

Answer: _____

Instructions for Nasal Breathing

- 1.) If using this overnight is daunting to you, try the tape now – while you're awake – for 10 minutes and observe how your nasal sinuses pop open after a few minutes allowing you to breathe easily through your nose.
- 2.) Use 3M Micropore paper tape. Generic brands don't adhere well enough to use.
- 3.) Cut or tear the strips into an appropriate sized piece for you. Use every night while sleeping unless you are sick to your stomach with the chance of vomiting.
- 4.) Fold a tab on both ends for easy removal.
- 5.) Tackiness of the tape increases after application. To reduce this effect, apply the strip to your bed shirt once or twice before applying it to your mouth.
- 6.) Apply either vertically, diagonally or – what I find best – horizontally as desired.
- 7.) Most people will have the best night sleep when they wear the mouth tape.
- 8.) Remove the mouth tape by gently pulling from one side. Do not rip off quickly. Wash your face with warm water to remove the adhesive residue completely.
- 9.) If you wake and notice that the tape has been removed during the night this is a sign that you continue to overbreathe and more daytime training is required. Follow the fourteen day Address Stress protocol and then try again.
- 10.) Continued failure may be a sign of blocked nasal passages. Let us know and we can make an appropriate ENT referral for you to have this evaluated.
- 11.) Continued snoring through the nasal passages is also a sign that additional daytime training is necessary. It may also be a sign of nasal blockage and referral to an ENT is indicated here as well.
- 12.) Discontinue use if a skin reaction occurs.
- 13.) Retraining your body to breathe properly at night may take at least six months. Many patients feel more comfortable with the tape than without well beyond the six months treatment time. I've used it for years now.
- 14.) Continue to address your nasal passages with the Neti Pot, decongestants, allergy medicine, breathe right strips and the daytime Buteyko breathing exercises and myofunctional therapy noted from Dr. Jennifer Hobson, Close Your Mouth book and the apps: Address Stress and Breathing Wellness. All of this together will make a huge improvement in your wellness and the quality of your life.
- 15.) Know that your physician will be initially surprised by the concept of nasal breathing through mouth taping. However, they have been doing this for years in medicine with chip straps as a supplement for CPAP treatment of sleep apnea for the same effect.

References to Share with your Physician:

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