

## ORAL SYSTEM BIOLOGY

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Suppose someone told you that tongue function not only affects breathing, swallowing, speaking, and digestion, but also the musculoskeletal system of the head, neck, shoulder, chest, and back, as well as the cardiovascular, endocrine, nervous, and immune systems? Would that seem far-fetched to comprehend that normalizing oral function could result in disappearance of symptoms of hoarseness, speech problems, poor posture, neck, head, back, and shoulder pain, anxiety, depression, autoimmune diseases, several neurological diseases, high blood pressure, irregular heart rhythms, atrial fibrillation, congestive heart failure, and, of course, snoring, sleep apnea, and insomnia?

Thirty years ago Dr. Farrand C. Robson, D.D.S., a Seattle area dentist, felt frustration at not having answers to many problems that his patients had with temporomandibular joint (TMJ) dysfunction and the accompanying pain in head and shoulders, eating problems, suffering, and disturbed quality of life. He searched and prayed and asked for an answer to this question. The idea came into his mind from somewhere that the tongue, with its multiple, complex, dynamic functions, many of which are out of our conscious control, could be a key to these many problems.

He explored that concept further and discovered that the tongue constantly seeks optimal position and comfortable contact with teeth, gums, and other oral structures. When this is not available because of a misshapen mouth, the tongue muscle loses its normal tone, becomes flaccid, and falls backward down into the throat, narrowing the airway. This misshapen mouth occurs (in my opinion) in a large portion of Western industrialized societies, due to pre- and post-natal nutritional and other congenital factors, and dental work, including some orthodontic work.

Dr. Robson worked on shaping oral appliances that would direct the tongue forward by giving it the proper contact it is seeking. The appliances he developed (trademarked as Oral System Biology) actually worked. They trained the tongue to develop more normal tone and to stay positioned in the mouth where it felt more comfortable in its natural position.

He demonstrated with a lateral X-ray photo that the airway became more open. Later he was to show that for some people the oxygen saturation improved. This was not just during sleeping but during daytime wakeful activities as well.

So why would it make any difference if the airway is narrowed and the body has to work harder to get the air in and out? We usually don't call it "choking" unless the airway is completely obstructed or causing wheezing or raspy breathing, as in croup, epiglottitis, whooping cough, allergic laryngospasm, or foreign object obstruction.

Well, voila! When the airway was opened up with normalized tongue structure and function, those problems that his patients had been having disappeared. Not only TMJ problems, but, to his surprise, all manner of seemingly unrelated strange things began to

happen. People with symptoms of esophageal reflux, M.S., fibromyalgia, high blood pressure, anxiety, depression, autoimmune diseases, cardiovascular disease, and a constantly lengthening list of symptoms and conditions were improving or disappearing entirely with the improvement of oral function. The symptoms would return when the appliance was removed, and they would go away again upon re-inserting the appliance. This phenomenon was documented to occur repeatedly.

For the last 30 years Dr. Robson has improved the techniques of designing, testing, and adjusting the appliances and the art of gradually making further improvements in tongue function, making changes in the appliances as the jaw and mouth structures change and as the body systems make adaptation to these changes. The optimal tongue position and function cannot be accomplished all at once, although in most cases patients do notice some improvements in their conditions within minutes or hours of first inserting the appliance.

So why would all these conditions naturally improve by opening the airway? The posture naturally improves, with the head coming back and taller and with the neck becoming straighter, because the person does not have to move the head and neck forward to open the airway. When I was in training in emergency medicine, I remember that to insert a breathing tube into the trachea (windpipe), the head and neck had to be pulled forward with the laryngoscope to get a straight shot at the opening of the trachea. This demonstrates how the forward head and neck position straightens the airway for better flow of air. So for many people there is a very good reason for their bad posture. A host of musculoskeletal problems then occur as a result of poor posture.

Why do many other health problems result from a narrowed airway? The person may or may not consciously feel as if he or she is choking, but the message that the throat, tongue, lungs, and chest cavity send to the brain is an alarm call, "I'm choking!" With some people the oxygen saturation in the blood is also decreased. Forward neck posture, sighing, pressurized talking, etc., can all be responses to this alarm call.

What happens with any alarm signal that the body experiences? Immediately the endocrine system pours into the blood adrenalin, a major stress hormone. The nervous system initiates the "fight or flight" response, and the autonomic nervous system goes into "sympathetic overdrive," shutting down many parasympathetic functions. The hematological system increases the tendency of the blood to clot to prepare for bleeding injuries. The muscles tense up for maximal exertion. The digestive system shuts down to give blood to the muscles. The immune system goes into over-activation to fight possible infection that could result from injury.

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Our bodies were designed from beginning to respond to danger, and throughout ancient history, dangers came infrequently but severe. The body can respond to this with the fight and flight response, affecting every system in the body, only temporarily, to do

what the situation calls for immediately. Then it needs to calm down quickly when the danger is over so all these systems can go back to normal function again, because the body does not tolerate extended time in stress. Animals in the wild likewise experience these same changes in response to infrequent dangers, but they spend most of their time in relatively stress-free circumstances with parasympathetic and sympathetic systems in balance, with mostly parasympathetic dominance. This is the natural way for our bodies to function. It is the chronic stress that causes disease, contributed to by a narrowed airway, hectic lifestyle, sleep loss, catastrophic thinking, and many other factors that cause frequent alarm signals. Then when acute stress occurs on top of already present chronic stress, this is when heart attacks often occur. There is probably no health problem that cannot be made worse by chronic stress, and it is well documented in the literature that stress management is very effective for a host of major health problems.

So then, is it any surprise that if the body is in a constant alarm state from experiencing a choking sensation, all manner of health problems could result from this chronic stress? Remember the ABC's of first aid – “Airway, Breathing, Circulation.” Airway is always first priority. Air is more basic to survival than water, food, sleep, etc. Is it any wonder that the body easily gets into a “survival mode” over airway compromise? Should it be any wonder then that if the stress resulting from airway narrowing is reduced or eliminated, that many health problems could also be eliminated? Of course the effects of other lifestyle – produced stressors should not be minimized, but this airway situation appears to be a major factor.

Dr. Robson has been carefully studying the physiology of all this over many decades, documenting measures of many body functions which change when these appliances are inserted and adjusted with “fine tuning.”

In the last few years he has used echocardiograms and electrocardiograms in addition to vital signs measurement to demonstrate these changes in response to tongue function.

I visited his clinic recently (November 2014) and witnessed changes in my electrocardiogram and echocardiogram while I was hooked up for 2 hours, repeating the tests several times, once with each adjustment of my appliance. The parasympathetic tone improved, the premature ventricular contractions disappeared, and subtle changes in the echocardiogram occurred such as the position of the heart, the size of the chambers, etc. Another dentist was tested the same afternoon with the same equipment. He had had an enlarged aortic root, an aneurysm of the proximal aorta, the main artery that arises from the left ventricle, taking blood out to the body. The aortic valve was also leaking blood backward into the left ventricle from the aorta. This had been severe enough to require surgery, and he had seen an aortic valve surgeon at the Cleveland Clinic. After wearing the appliances, the size of the aortic root diminished and the leakage had improved, and so he postponed his surgery. On the day we were both there, his echo showed that his valve function had improved further, and the aortic root diameter had decreased further, to the extent that he told me he was no longer planning surgery.

The nurse who was applying my electrodes had had atrial fibrillation herself. This was so severe and unresponsive to medications and 3 surgical ablations, with a too rapid heartbeat and one cardiac arrest, that it was decided to burn the node that conducts electrical signals to the ventricles (the chambers that contract to push blood out through the aorta), so the ventricles had no signal to beat. A pacemaker was inserted to give signals to the ventricles to function again. After she began using the oral appliances, the atrial fibrillation gradually stopped, and the node that had been scarred from being burned out eventually recovered function, so that now she no longer needs a pacemaker and no longer needs anticoagulants or other medications for the heart.

This all sounded too good to be true along with the other fantastic, unbelievable results people were reporting, which sounded like “make-believe” to me. When I first visited the clinic, I started out being skeptical, looking for manifestations of sloppy thinking, gullible personalities, signs of drawing unwarranted conclusions about the effect of these OSB treatments, signs of hyperbole, showmanship, pumped up persuasion techniques, deceptive use of data or logic, etc., but I could find none of these.

What I did witness was staff and dentists who were sincere, dedicated, relaxed, intelligent, who thought logically and carefully. I observed in them gratitude for how each person and their loved ones had been helped by these methods, and compassion for others who may be suffering conditions that could benefit from this work. These did not seem to be people prone to gullibility, falsification, or exaggeration. After seeing the results of OSB first hand, I became convinced of its validity.

Dr. Robson has written several articles about OSB, and a prominent physician in the Seattle hospital system who was previously a public detractor of Dr. Robson’s work now sends him patients and speaks highly of him.

Skeptics may still contend that there have been no large randomized prospective double blind trials to prove the effectiveness of this treatment. (Most of our common medical and surgical procedures haven’t either.) In the first place, OSB treats only oral function and does not treat diseases of the body. It is unfortunate that dentistry and medicine have been separated as if unrelated disciplines (like, “The teeth are not part of the body.”) Dentists do not have licenses to practice medicine, and the legal ramifications of such studies would be problematic. Secondly, Dr. Robson would consider it unethical to use placebos when such profound benefits, including saved lives, have been already so obviously demonstrated in case studies, with the physiologic effects so aptly demonstrated and documented with sophisticated instrumentation, patients acting as their own controls with and without the appliances, over and over again. Thousands of patients over 30 years demonstrating these changes and their accompanying benefits should count for a high degree of scientific validity.

The classic prospective, randomized, double blind, placebo controlled trial is not the only standard for scientific validity. It is a very reductionist method, which has much difficulty in controlling all the variables that could affect the outcome. Even the most rigorous and well-designed study always has some weaknesses. Hence, often meta-

analyses of many studies are needed to give more certainty that the results are not due to random effects.

These kinds of trials and meta-analyses are needed for chemical drugs, which are rife with adverse effects. Drugs are approved for use when the effect is statistically significant, when sometimes only a small percentage of patients benefit, with the number needed to treat (NNT) being 50-100 patients in order to result in benefit for one patient by probability.

With many natural treatments that are generally safe, such as dietary measures, supplements, herbal medicine, homeopathy, and oral appliances, their scientific validity should not be limited to the kind of randomized trial previously described. Oral appliances are safe when designed properly by carefully trained technicians and when adjusted by carefully trained professionals.

When the medical community exhibits extreme skepticism about anything outside its own sanctioned treatments, that attitude is in itself unscientific. Science requires curiosity and openness to new hypotheses when new data appear that do not fit old hypotheses. I have witnessed an enormous skepticism in the medical profession regarding diet, lifestyle, herbs, supplements, and chelation therapy, a refusal to consider a plethora of data demonstrating benefits. I have known of a number of patients whose doctors were not curious about why they had “spontaneous remission” from cancer and about what the patients did to recover. The Oral System Biology is an example of new data that may not conform to old hypotheses and requires new thinking.

There needs to be more coordination of care between medical doctors and dentists, especial with OSB. For one example, medication dosages may need to be adjusted downward for hypertension, diabetes, heart failure, etc. The medical doctor needs to be made aware of these changes.

The beneficial results of OSB therapy are multitudinal and phenomenal, and in my opinion, they have been demonstrated with abundant documentation over decades, to be considered scientifically valid data. A very small % of people approximately 5-10% who have given OSB a good try do not get some benefit, the NNT (number needed to treat) approximating 1.08. (1.08 people treated for one person to benefit.)

What about the cost of the treatment? It requires several visits for adjusting the appliances and ongoing maintenance, very highly skilled technicians for adjusting them, and highly technical precision manufacturing of the appliances by a machinist whose main business is making parts for the aerospace industry. This could range from hundreds to low thousands to get an OSB treatment plan well established, and then more minor costs for ongoing monitoring and maintenance.

Skeptics could point to any treatment in this cost range as primarily profit-driven and a way to get people to empty their pocketbooks. The OSB treatment requires such a high degree of technology and skill and professional training that the expense is all

legitimately accounted for and the work is not highly profitable. Dr. Robson's compassion for people who are suffering is the driving force behind his work. He spends hours with each patient and incurs considerable office expense for an excellent team of staff people, for the training of dentists, for his equipment, and for the manufacturing of the appliances. Considering all the research and services he provides, it is surprising that he can make a profit without charging more for his services. He had to have his \$100,000 special Echo equipment donated by a Swiss banker who was grateful for what Dr. Robson had done for her family. The machinist who makes the appliances also has done a lot of pro bono work for him out of gratitude for how OSB has helped his family, and out of a dedication to wanting to help others. Dan, one of the dentists with whom we were dining one evening, said about 10% of his practice is OSB and about 1% of his income.

All in all, the OSB is a remarkable accomplishment that deserves recognition, and for anyone with the health problems mentioned above or other related problems, at the very least an initial interview to see if this treatment is appropriate would be valuable.

There are many dentists who are using appliances for snoring and related sleep problems, devices that simply pull the jaw and tongue forward without restoring normal tongue function. They can be bulky and uncomfortable and have a significant failure rate even for snoring.

As OSB becomes more popular, there will likely be copycats who try to do the same thing without doing the proper training and education, just as "green-washing" has become common now for products capitalizing on customers' desire to be ecologically responsible, but not delivering on that quality. People who are looking for OSB are advised to see only the dentists who have been properly trained by Dr. Robson.

Information about dentists trained in this method can be obtained by visiting Dr. Robson's website, [www.oralssystembioloy.com](http://www.oralssystembioloy.com). In the Fredericksburg, VA area Dr. Wayne Whitley's website is [www.drwaynewhitley.com](http://www.drwaynewhitley.com).