

Bioesthetics, Oral Beauty, Function and Temporomandibular Dysfunction (TMD)

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Aesthetics and function are closely related. The famous architect Frank Lloyd Wright's teacher, Louis Sullivan said "Form Follows Function." This also holds true of teeth and their related structures. A dentist who is trained in Bioesthetics* can readily differentiate between those persons who have healthy oral function and those who don't. For instance, wear of the front teeth is one of the many indicators of dysfunction. The following will describe the relationship of the teeth, jaw joints and surrounding structures, and how a Bioesthetic dentist diagnoses disharmonies between them.

Bioesthetics is defined as ***"The study or theory of the beauty of living things in their natural forms and function"*** - Dr. R.L. Lee.

Dr. Robert L. Lee was a practicing dentist and held degrees in biology as well as dentistry. He researched hundreds of people, some well into their eighties and nineties with attractive teeth and healthy function who had need for little, and sometimes no dentistry performed during their lives. He discovered that, without exception, they all shared common attributes. These attributes became the guiding principles of Bioesthetics. A Bioesthetically trained dentist, through understanding how healthy, aesthetic oral systems appear and function, also understands the problems inherent in unhealthy oral systems. He is able to diagnose, prevent and treat dentally induced symptoms such as head and neck pain, migraines, tooth wear, bruxism (teeth grinding/clenching), ringing in the ears and vertigo.

The following section encompasses the rationale of diagnosis, prevention and treatment of an imbalance of the oral (orognathic) system that may include any or all of the above symptoms.

Pathologic (unhealthy; diseased) tooth wear is very prevalent in mankind, so common that even most dentists may think it to be normal. It is not normal, as there are many people who have little or no discernible tooth wear who are into their eighties and nineties. Just as high blood pressure is prevalent to some degree in almost one half the U.S. adult population, it would not be considered to be "normal." In our office, we realize that the mouth (teeth, jaws, jaw joints (TMJ's), muscles, nerves and ligaments) are interrelated within an intricately balanced system. An understanding of the relationship between natural beauty and healthy function is important before we can attempt to diagnose a system that is out of balance. Dr. McBride's training and teaching experience in Bioesthetics with Dr. Robert L. Lee allows our clients with pathologic symptoms to obtain a treatment plan to develop their oral system to one of natural beauty and healthy function. This is accomplished by integrating the principles that lie behind the natural beauty and functional health inherent in those who have been blessed by Mother Nature with healthy oral systems.

Orognathic (mouth/jaw system) Dynamics

The following will describe the relationship of the teeth, jaw joints and surrounding structures and how we diagnose and treat disharmonies that exist between them.

The Temporomandibular (jaw) joints (TMJ's) connect the lower jaw to the skull, and their positions (along with those of the surrounding structures - muscles, ligaments, nerves, disks), are dependent on how the teeth interrelate upon contact during chewing and swallowing, which can be well over 2000 times per day. When a bite is off due to an uneven contact between the upper and lower teeth, the joints along with their disks, attached muscles, nerves and ligaments are strained out of their normal positions to accommodate the "off bite." As indicated above, this causes stress and trauma to the TMJ's that may involve a combination of some or all of the following symptoms: joint pain, popping/clicking noises, head and neck pain, migraines, ringing in the ears (tinnitus), vertigo, tooth wear (especially the front teeth), clenching and grinding (bruxism). We now know that most of the grooves that develop on the sides of teeth at the gum line aren't from the toothbrush. They're called "abfractions," and are caused by horizontal chewing shear stress from an "off-bite" that sets the stage for tooth corrosion and decay at these areas of the teeth.

It has been demonstrated that up to one-half ton pressure per square inch can be exerted onto the back teeth from the jaw muscles. If there are uneven biting surfaces, the brain gets a message to move the jaw out of the way of these areas automatically to prevent their heavy, traumatic contact. The jaw automatically moves forward, and the upper and lower front teeth also become engaged during the chewing cycle. Now the load is partially transferred to the front teeth, as there is much less pressure at the front of the mouth. This induces wear of the front teeth - they "pay the price" in contacting and wearing during chewing to take the load off the back teeth and jaw joint structures. It is an automatic protective process, but paid for by a shortening of the front teeth.

Some persons have TMJ's that are extremely adaptable and go through life with "off bites" and stretched joints without any discomfort, but many have excessive tooth wear and possible bone support loss around the teeth. Others may adapt for quite a while and then at some time experience either mild symptoms (slight clicking, muscle discomfort, headache, jaw starting to "lock"), or possibly severe symptoms such as mentioned above. Sometimes these events are episodic and the symptoms go away, while there are times when it continues to worsen - a true case of acute TMD (Temporomandibular Dysfunction).

Recognized causes of TMD:

- Trauma to the TMJ's from accidents, "off bites" or both
- Genetic predisposition
- Stress
- General state of health

- Changes in the way the teeth fit together due to:
 - sleeping on one's face
 - Missing teeth with resultant tooth shifting
 - Improperly placed fillings, crowns, etc.
 - Improper orthodontics

Three Phased Diagnosis

Phase I - Initial Diagnosis

Our approach to this problem consists first of developing an initial diagnosis. This includes collection of functional data such as models of the teeth and inter-jaw records for their precision placement on a jaw simulator (articulator). Through this it can be seen how the teeth and mal positioned joints currently relate to each other and function without the heavy influence of the protective jaw muscles. The mouth is a poor place to diagnose the dynamics of pathologic function, and accurate placement of the models on an analogue jaw simulator assists the Bioesthetically trained dentist to learn the exact nature of the functional problems, similar to an auto mechanic using an oscilloscope to assess the internal workings of an engine - he doesn't just look at and listen to the engine in developing his diagnosis. Also performed is a muscle palpation examination, measurement of jaw movements, and photographic images of the teeth in their functional relationships. State of the art jaw joint x-rays (corrected tomograms or laminograms) are taken at a laboratory that show the joint positions at various jaw openings in order to view the disk space between the "ball and socket" and see if there are any bony changes such as arthritis, due to trauma from either an accident or an "off-bite." The above records, together with a complete history will assist the Bioesthetic dentist in developing an initial diagnosis and some idea of a future dental treatment plan.

Phase II - Treating The Problem: Stabilizing the TMJs and Achieving Neuromuscular Release - Head and Neck Relaxation

The initial diagnosis only gets us "in the ballpark" in determining the relationship between the TMJ's and the upper and lower teeth. Depending on the severity of the bite discrepancy or trauma, the jaw joints and their surrounding structures may have been programmed into their unhealthy positions for quite some time. This is why after the initial diagnosis, the first treatment step is the construction of a removable precision orthotic device, or splint known as a "MAGO," which covers the biting surfaces of the upper teeth. It is designed to contact all the lower teeth evenly with the joints in their most located positions. The MAGO is worn full time (excepting for removal during oral hygiene) and only soft foods are eaten - this is a major commitment. As the jaw joints move into healthier positions, the lower teeth will contact the MAGO differently, requiring its adjustment periodically to keep up with the changes.

Phase III - Definitive Diagnosis

The definitive diagnostic process will begin once the person is free from pain and the joints are quantifiably stabilized through jaw joint tracking instruments. Besides eliminating symptoms, the purpose of MAGO treatment is the repositioning of the TMJ's to healthy, quantifiably stable positions to let the dentist discover and the client to learn, what type of definitive dental care will be needed to maintain these healthy positions after MAGO treatment. These positions will not be sustained without continuing to wear the MAGO orthotic, so it is important to know what type of dental treatment will be needed to allow a discontinuance of its wear. This dental treatment can consist of any one or a combination of the following:

- 1 - Precision Bite Adjustment (PBA - re-shaping of teeth biting surfaces).
- 2 - Restorative treatment such as crowns, veneers, bonding etc.
- 3 - Orthodontics
- 4 - In cases of extreme jaw discrepancy, orthognathic (jaw repositioning) surgery
- 5 - A combination of the above procedures

Review:

MAGO treatment is the first treatment step in order to:

- Eliminate pain, malfunction, and hopefully - popping/clicking
- Develop stable, healthy jaw joints before commencing any of the above dental treatment. In other words, since the joints and teeth have an influence on each other, the final treatment of the biting surfaces of the teeth should be dictated by joints having been treated to a healthy and quantifiable "end point," not the other way around in treating the teeth first.
- Determine whether the symptoms are all or in part due to the bite discrepancy. It is important to understand that many times, along with a bite discrepancy as described above, other factors can contribute to the symptoms such as physical and emotional health, muscle tension caused by stress, general attitude and habits.
- Have a reversible, non-invasive treatment to test our initial diagnosis.

If MAGO treatment alone is unsuccessful, other diagnostic measures and treatment modalities can be instituted such as MRI to actually see the soft tissues of the jaw joints; an evaluation of blood chemistry; biofeedback; stress management; acupuncture, etc. At any stage during this active phase of treatment, discontinued wearing of the MAGO device will result in the joints assuming their original positions - it is a reversible process. However, with sustained wear, the jaw joints may remodel to new healthy positions. This is a good thing for the jaw joints, however if the teeth correction measures are not undertaken, and for some reason it is elected not to wear the MAGO, there is a possibility that the teeth will not mesh in a manner that they did prior to MAGO treatment. One could be "in limbo" with their bite. This is why, prior to the beginning of treatment during the consultation phase, it is important to understand that once MAGO treatment is instituted, it is both a jaw joint treatment and diagnostic process, not an end-result. It is a

process that is intended to continue through and including treatment of the teeth by means of the above methods so that they can ultimately be in harmony and sustain the new, healthy jaw joint positions without need for continued wear of the MAGO orthotic.

Some people find that after the resolution of their symptoms, night time or partial MAGO wear without dental treatment will either eliminate the symptoms or lessen them enough to be adequate without further treatment.

TMJ dysfunction has come to light within the last 15-20 years, because people are living longer and many are keeping their teeth for a lifetime. It is important for the dentist to have a sound, tested and workable philosophy in dealing with these problems. It is also important that the patient understands the rationale behind these steps prior to taking the first step.

Our goal is to develop a comprehensive plan before we take the first step, so that our road can be paved with mutual understanding, improved health and function.