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Honoring Our Past and Planning for Our Future

In 2007, during our centennial Alpha Omega Convention in Israel, two new floors were inaugurated at the Hebrew University-Hadassah School of Dental Medicine founded by the Alpha Omega Fraternity. The top floor was dedicated in honor of Alpha Omega and a beautiful exhibition was opened, displaying the history of our first 100 years.

The first exhibit is a black and white photo of 16 young Jewish students from the Baltimore Zeta Mu and Philadelphia Theta Ramach chapters. In 1907 they formed groups with the prime objective of combatting discrimination against Jewish students. Similar groups arose in Minneapolis and Illinois, and the seeds were sown for the creation of the Alpha Omega Dental Fraternity.

These brave students stood up and fought together, not only for Jews but for equal education for all. They were the standard bearers of the values we still hold dear today. For more than 100 years, young Jewish dentists and students have enthusiastically joined an organization founded firmly on core Jewish ideals such as “Tzedaka,” brotherhood, and “Tikun Olam.”

And this is what makes Alpha Omega such a unique dental organization – a fraternity striving to live and act by the eternal values of solidarity, commitment, integrity, family, global health, inclusivity, leadership, and social justice.

Since those difficult early days, our members have always risen to the challenge whenever their financial and moral support was needed.

For example, in 1948, when the State of Israel was born and building a dental school was an imperative, Alpha Omega answered the call. AO became a partner with the Hebrew University and Hadassah to establish the first dental school in Jerusalem in 1953. As Israel’s population grew, Alpha Omega was there again to help build a second school at Tel Aviv University.

Fast forward a few decades. The Soviet Union collapses, the Iron Curtain rises, and hundreds of thousands of Jews flock to Israel to start a new life. Among them are many dental practitioners looking to pursue new careers. How is Israel going to retrain them and familiarize them with western standards? Alpha Omega comes to the rescue and launches the “Adopt-a-Soviet Dentist” campaign to help successfully integrate these dentists into Israel society. Retraining courses are held at the two Israeli dental schools proudly bearing the Alpha Omega name.

And last year, the Alpha Omega International Dental Fraternity and Henry Schein Cares launched the Holocaust Survivors Oral Health Program, which provides pro-bono dental care to needy Holocaust survivors across nine North American metropolitan areas. The program focuses on helping survivors served by the network of Jewish Family and Children’s Service agencies and partner organizations, as well as individuals of any faith who were victims of Nazi persecution and meet the program’s eligibility requirements.

Times are changing.

On the one hand, fewer Jewish students – in both America and Europe – are choosing dentistry as a career. On the other, our membership is ageing. This will undoubtedly impact the size of Alpha Omega, which in turn will affect the organization’s strength and stability. And since our influence on young Jewish students’ choice of career is limited, we must find ways to meet this new challenge.

Another question is why thousands of Jewish dentists all over the world have never joined Alpha Omega. Is it possible no one ever suggested it to them? Were they properly approached? Are they even familiar with our story? Or is being a member of a 100-year-old organization advocating traditional values and having a broad vision just not attractive to today’s youngsters?

These are the facts we must address. Let us understand what is happening and propose solutions. Now. Before it may be too late.

We have already begun this task. At our last European convention in London, we elected a strategic task force to plan Alpha Omega’s future. Four teams were formed to address issues such as brand value, marketing, programs, and publications.

Dear Fraters, I write these lines just before Rosh Hashanah, a perfect time for some refreshing change and to express the hope that Alpha Omega will continue to grow from strength to strength. AO
Lions, Tigers, and Alpha Omega - Oh My!

The phrase, “opportunity only knocks once” is a fallacy, as opportunities come to us when we are open to them. Involving ourselves in a variety of experiences and circumstances allows the possibilities of achieving those amazing moments that shape our lives, both personally and professionally.

Although I was heavily involved in AO in dental school, I did not continue as I began my career. As most, the money, time, and young family responsibilities had me pulled in so many directions, that AO was not even on my list. Out of the blue, an AO friend asked me to chair the study club for the Boston Alumni chapter and I took on the small responsibility. At that time, I didn’t see the opportunity that, over the years, gave me a platform to contact some of the best speakers in dentistry. This small commitment gave me the opportunity to sit and converse with many amazing individuals to and from the airport: John Kois, David Hornbrook, Stephen Chu, Vincent Kokich, and others.

Other opportunities I have been fortunate enough to take part in have led me to my never-in-my-wildest-dreams job, as seen in the photo. How did I end up taking a photo with a tiger and his paw over my shoulder? At the age of 5 if you asked me what I wanted to do when I grew up, I would have answered in all seriousness a lion/tiger tamer or a veterinarian – and that was my path through college. I studied in the animal science program as an undergraduate and had planned to apply to veterinary school. At the same time time, my uncle – an AO member – asked me to spend the summer with him to try out dentistry. In the long run I found my passion and my profession. I would be missing the animals, but I loved the dentistry.

Fast forward a few years to a conversation with a patient about a mission trip I attended with AO students from Tufts University School of Dental Medicine to the Dominican Republic. Having been a patient for a long time, knowing my love of animals, and my undergrad background, he asked if I had heard of the Peter Emily International Dental Veterinary Foundation. I had not, and he explained that PEIDVF is a group of dentists and veterinarians working together organizing dental mission trips treating exotic animals in wildlife sanctuaries and zoos. As this opportunity would mesh my two passions, I looked into it immediately and have since treated animals such as the tiger in the photo, lions, bears, monkeys, birds, camels, and many other animals in need of dental care throughout the world.

Although not so obvious, this, to me, relates directly to Alpha Omega as our foundation is based on three fundamentals: philanthropy, professionalism, and a base of Jewish values. In AO, dentistry binds us professionally and our Jewish values bind us in caring for others. Our directive of Tikun Olam, repairing the world, translates to our considering all in need, whether carried on two legs or four. As members of Alpha Omega, we all continually look into ways to help heal the world one mouth at a time. Whether we give our care through initiatives such as the Alpha Omega-Henry Schein Cares Holocaust Survivors Oral Health Program that will provide pro-bono dental care to a total of 250-300 Holocaust survivors in the first year, or to our local community through our individual offices, we care and we help. In our next journal, I would like to share some of what we do, as individuals and as an organization, to help heal our world.

If you would like to share your stories, send them to Heidi Weber at hweber@ao.org or to myself at drspitz@smileboston.com.

Smile always,
Steven Spitz
Look Great, Feel Great, Sleep Great

It is truly an honor to be asked to be the guest editor for this edition of the Alpha Omegan journal. My personal thanks to my good friend and an outstanding prosthodontist and dental clinician Dr. Steven Spitz, who is the international editor for Alpha Omega, for allowing myself and the American Academy of Facial Esthetics (AAFE) this opportunity to contribute and share our knowledge with the readers.

As president of the AAFE representing more than 9,000 dentist members (in addition to medical healthcare members), I am excited to share new and innovative evidence based diagnostic and treatment options that will enable you to offer your patients better esthetic and treatment outcomes than ever before.

I am joined by some of our outstanding faculty members, all practicing clinicians with successful practices, as we demonstrate the best ways to integrate the areas of facial pain, facial esthetics, and bruxism/dental sleep medicine into every dental practice.

It is important to note that all dental esthetics is truly facial esthetics; all dental pain is facial pain and vice versa. There is no differentiation between the two, as you will see in the articles in this journal, they are truly all one and the same.

As an example, in the past, dental professionals would give lip service (pun intended) to the soft tissue structure around the mouth while often having to go to dramatic and highly invasive surgical lengths to correct smile and lip lines. With 85% of TMJ and orofacial pain coming from the head and neck muscles, trigger point muscle therapy is the best place to start before any irreversible dentistry is accomplished. Often, these muscle trigger points will refer pain to the teeth resulting in phantom dental pain on virgin teeth which frustrates those dental clinicians who have not been trained to treat trigger points.

Botulinum toxin (Xeomin, Botox) and dermal fillers have now been routinely used by dental professionals for the last 8 years. These pharmaceutical agents are not procedures in themselves; they are simply tools for dental clinicians to use for treating patients. In addition to the nearly 200 live patient training courses the AAFE teaches in the United States and worldwide, the AAFE also has partnered with the ADA Annual Meeting, the Hinman Dental Meeting, and other universities and dental societies to bring the latest highly successful techniques for treating facial esthetics, facial pain, trigger point therapy, and bruxism/dental sleep medicine.

The Most Common Dental Disease

It is well known that a third of patients exhibit some kind of bruxism, making it one of the most common dental diseases. Yet it is the only one that we have not been able to quantify in any kind of meaningful way that could help patients. The frustration every dentist has when recently placed dentistry fails due to breakage is something we all share and truly dislike.

Replacing the dentistry then results in failure again – many dentists like to blame the laboratory or the dental materials when in truth, even when the occlusion is impeccable, the destructive forces caused by bruxism is the unseen and untested disease that in the past we could not identify or control. New technology is now available so that every single dentist can monitor the patient’s bruxism by establishing the patient’s Bruxism Episodes Index (BEI) to create a treatment plan. To quote my mentor Dr. Gordon Christensen, “Bruxism monitoring is one of the most important concepts in dentistry today.”

I often hear from dentists that we are only then treating the symptoms, not the cause. Where does this bruxism come from? Here is where the well-established link to obstructive sleep apnea (OSA) is the primary reason why every dental practice
needs to incorporate dental sleep medicine. As an example, with 40 million patients in the United States having OSA and 90% of those largely undiagnosed, this is the direct link to dental bruxism which will determine the prognosis of dental treatment performed on these patients. OSA is a medical condition that requires a physician’s diagnosis. Dentists should never be testing a patient only for OSA as this falls outside of the dental scope of practice. Combining bruxism and dental sleep testing is the best way to integrating this into every dental practice and staying with the dental scope of practice. This type of training is an AAFE exclusive and is demonstrated in this journal.

Circle of Treatment
The AAFE Circle of Treatment is made up of the areas of facial pain, facial esthetics, and bruxism/dental sleep medicine (Figure 1). If you think about this circle, every single patient that comes into your practice is really coming for treatment in one of these areas, whether it is for esthetics, pain, bruxism or sleep related issues in the oral and maxillofacial areas. Once a patient enters into this treatment circle, they should be evaluated for all of these areas as part of their initial examination and evaluation as most of the time, all of these areas are completely inter-related. It is for this reason that the AAFE frequently uses the adage that we make patients “look great, feel great, and sleep great!” It is often not necessarily in that order but once a patient has been evaluated properly, they will get improvement in all three areas.

We Are Not Teeth Mechanics
It is high time for dentists to stop being “teeth mechanics” and start being the oral physicians that we truly are. Stop being afraid of bruxism and TMJ patients. The AAFE has trained more than 10,000 dental professionals to treat these areas of facial esthetics and facial pain with botulinum toxin, dermal fillers trigger point therapy, bruxism monitoring, and oral sleep appliances. These are all minimally invasive, non-surgical, and highly productive techniques that every dentist has the skill set to learn.

Today, with more control and better results, every dentist has the capacity to deliver much better care for their patients than ever before with procedures that are much more cost effective for patients. Start practicing total dental and facial esthetics and give your patients the best possible esthetic and therapeutic treatment outcomes. Skill based, live patient training is the best investment you can make with the highest possible ROI as you then have these skills for the rest of your career.

It is my hope that this outstanding journal will motivate you to make the best investment a dental professional can make – invest in yourself and your dental practice. Get trained today! AO

Call for News
The Alpha Omegan needs your help! Please send any news items about events or members to AO Executive Director Heidi Weber at hweber@ao.org.
Frontline TMJ/Orofacial Pain Therapy for Every Dental Practice

By Lisa Germain, DDS

The control of pain, as well as the diagnosis and treatment of its causes, is an important obligation for dental professionals. Yet many patients who report that they suffer from chronic orofacial pain can be easily dismissed, misdiagnosed, and/or treated incorrectly as the etiology for their symptoms remains shrouded in mystery. This leaves the patient frustrated; disappointed; and, worst of all, still in chronic pain.

Orofacial Pain

By definition orofacial pain is associated with the hard and soft tissues of the head, face, and neck. When any of these tissues receive noxious stimulation, impulses are sent through the trigeminal nerve to the brain. Brain circuits primarily responsible for processing complex behavior interpret these signals as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.”

The density of the anatomical structures in this region of the body makes diagnosis a complex process. It is quite common for patients to describe the site where they are feeling pain and be totally unaware that the source is elsewhere. The referred pain phenomenon is caused by the convergence of multiple sensory nerves that carry input to the trigeminal spinal nuclei from cutaneous and deep head and neck tissues.

Toothache pain is among the most common forms of orofacial pain. Once toothache pain is ruled out, however, TMDs and headaches rise to the top of the list. Many times, these can all occur together in a comorbid situation. In addition, if a patient has fibromyalgia, chronic fatigue syndrome, or anything else that presents with chronic pain, it will further complicate our ability to determine the causality. Diagnosis in these cases is complicated but is best achieved like “peeling an onion” – eliminating the symptoms one layer at a time.

The Temporomandibular Joint

The temporomandibular joint (TMJ) is a complex joint that provides both rotational and gliding movements of the mandible. Structurally, it is composed of the mandibular condyle designed to fit into the glenoid fossa of the temporal bone. An articular disc made of dense fibrocartilage separates the bones from making direct contact. Blood vessels and nerves are not present in the anterior portion of the disc. However, the posterior portion of the disc has rich innervation and is quite vascular. The joint is lubricated by synovial fluid.

The muscles of mastication are responsible for the movement of the TMJ. They are one of the major muscle groups in the head-the other being...
the muscles of facial expression. There are four muscles of mastication – the masseter, temporalis, medial pterygoid, and lateral pterygoid.¹³

Temporalomandibular Disorders

Temporomandibular disorders (TMD) are a group of musculoskeletal and neuromuscular disorders that predominantly involve the functional joint, muscles, and disc of the TMJ. TMD should be considered in every differential diagnosis of facial pain because it is the most common cause of non-dental pain.

Proper diagnosis requires a detailed history of onset, duration, what makes it better, and what makes it feel worse. Besides persistent jaw pain, patients will commonly report earache, headache, and diffuse facial pain. In addition they may complain of radiating pain or stiffness in the face, jaw or neck, limited movement or locking of the jaw, painful clicking, popping or grating in the jaw joint when opening or closing the mouth, and possibly changes in the way that their teeth fit together. These can be worse when they awaken in the morning or gradually get worse throughout the day.

Threshold, localization, and description of pain vary greatly from patient to patient due to both genetic and environmental factors. This fact, coupled with the complexity of the pain mechanism itself, highlights the importance of proper diagnosis and treatment of each patient’s specific case.⁶

Since one of the essential keys of problem solving in this arena is the history of the illness, the patient interview needs to be performed by the treating dentist. This gives the patient a chance to tell his story and will undoubtedly reveal many factors that influence the manifestation of the condition. This is also a way to casually observe patient lip and jaw habits, facial expressions, posture, and can reveal a lot about the patient’s emotional status. It gives the patient a chance to vent frustration and by validating concerns, you will build rapport and trust.

Historically we have come to believe that malocclusion is a primary cause of TMD. However, recent studies have shown that there is actually a low incidence of cases that result from poor occlusion.²⁸⁹

There are many classification systems for TMD disorders. In simple terms, the pain is either arthrogenous or myogenous. Arthrogenous (joint and disc) TMD are most commonly caused by disc displacement or occur secondary to degenerative disc diseases, ankylosis, dislocation, infection or neoplasia. The underlying cause for myogenous TMDs are muscular hyperactivity and dysfunction secondary to bruxism, hypermobility, or external stressors. Patients with myogenous TMD will report more comorbid disorders and more severe pain than patients with arthrogenous TMD.¹⁰ Hence, Frontline TMJ Therapy focuses on the treatment of the hyperactivity in the muscles of mastication.

Myofascial Pain Syndrome

According to The National Institute of Dental and Craniofacial Research, the most common form of TMD is myofascial pain syndrome (MPS).¹¹ This inflammatory disorder is a chronic condition that affects both muscle and fascia. Repetitive motions, injury to muscle fibers, and excessive strain on ligaments and tendons are the primary causes. Patients with this chronic syndrome also frequently report depression or fatigue as well as may exhibit behavioral changes.

What differentiates TMD related MPS from other muscle pain syndromes is the presence of trigger points (TrP) that have the ability to refer the pain to other areas of the head and neck.

Trigger Points (TrP)

TrP are the result of excessive muscle contraction and dysfunction of the motor endplate. This type of muscle spasm in a muscle is different from the entire muscle being tight. Because of the localized over-contraction, the blood flow to the immediate area stops. This in

![Figure 1. Masseter attachment trigger points near the upper musculotendinous junction of superficial layer and central trigger points of superficial layer with referred pain patterns to lower jaw, teeth, and gum area.](image)
turn results in a restriction of the blood supply (ischemia). The accumulation of metabolic waste products and toxins sensitizes the trigger point causing it to send out pain signals and further increase contraction. Thus the physiology of a trigger point involves a vicious cycle of a metabolic crisis.

Clinically, TrP can be identified by examining signs, reproducing symptoms and by manual palpation. Firm palpation of the muscle belly usually results in the location of one or more sore, nodular areas within a tight band of muscle fibers. A twitch response is often elicited when pressure is applied followed by the spread of referred pain.\textsuperscript{12}

**Masseter Muscle**

The masseter is the major muscle of mastication and derives its name from the Greek word “to chew.” The mandible is the only bone of the skull that is actually moveable while the maxilla remains fixed, so the masseter is constantly in use. Located on each side of the face in the parotid region at the back of the jaw, these muscles are easily visible or palpable when you clench your jaw, as they contract strongly just in front of the lower portion of the ears.

The average human can bite down with a force of 150 pounds and bites of more than 250 pounds are within the norm. The masseter achieves these seemingly impossible forces because it has the mechanical advantage of a lever arm that is much shorter than other muscles.

Because it is highly active, the masseter is likely to tense when we are in emotional distress, when we are concentrating, or when we are angry. When the tension goes on for extended periods of time, the development of MPS TrP is common.

In general, masseter TrP cause pain in the eye, face, jaw, and teeth. An unexplained earache can be a result of masseter trigger points, and it is reported in Travell and Simons\textsuperscript{12} that TrPs of the masseter can even cause that annoying itch deep in the ear that you can never quite scratch. TrP in the deep layer of the masseter may also be a cause of tinnitus (ringing noise in the ear with no cause). Figures 1, 2, and 3 illustrate trigger points in masseter muscle and the common referral patterns (shown in red).\textsuperscript{12}

**Temporalis Muscle**

The temporalis muscle is a large, thin fan-shaped muscle located in the side of the skull above and in front of the ear. Although the masseter is the more powerful muscle the temporalis is a large and important chewing muscle. It starts at the temporal bone of the skull but passes all the way down beneath the zygomatic arch (cheek bone), attaching to the mandible, enabling it to assist the masseter in closing the jaw but also to retract the mandible.

If you place your fingers just above your ear while clenching and unclenching your jaw you will be able to feel the temporalis at work. If you clench your jaw very tightly you will feel a very powerful contraction in the temporalis. Figure 4 illustrates how significantly temporalis trigger points can...
refer to the upper teeth as well as the head, cheek, eye, and ear area. Often when this is mistaken for odontogenic pain, root canals are performed, but a patient’s pain persists because of the incorrect diagnosis as well as the incorrect treatment.

**Treating Myofacial Pain with Botulinum Neurotoxin A (BoNT-A)**

In the spirit of “do no harm,” non-invasive and reversible modalities should be used as frontline treatment. There are many palliative treatments that can be used to manage TMD pain alone or in combination with each other. These include (but are not limited to) splint therapy, massage, physical therapy, bio-feedback, acupuncture, chiropractic therapy, spray and stretch with ethyl chloride, antidepressants, narcotics, and NSAIDs. However, the use of BoNT-A has proven to be extraordinarily successful and should be seriously considered. In addition to its well-publicized cosmetic uses, BoNT-A (Botox, Dysport, Xeomin) has been approved by the FDA for painful conditions potentially related to TMD, such as cervical dystonia and migraine.

BoNT-A is an injectable pharmaceutical agent derived from the bacterium clostridium Botulinum. Given in small doses, this purified protein can be used to selectively relax the strength of skeletal muscles by interfering with the release of acetylcholine at the neuromuscular junction. Hence, the muscle will not be able to contract with the same intensity since the amount of available neurotransmitter has been reduced. As stated above, the constant, sometimes dysfunctional, contraction of the muscles of mastication can be the primary cause of the TrP in MPS related TMD. When BoNT-A is placed in several spots in the belly of the muscles, it will reduce the hyperactivity in the muscle and in turn reduce the patient’s pain.

Treatment with BoNT-A for TMD has many advantages over other therapies. While it takes a week or so to work, it will last from 3 to 4
months. It will then begin to wear off without any negative consequences. Normal functions such as speaking, swallowing, and biting are left unaffected. The only major change is the reduction in pain and discomfort. Unlike systemic medications that affect the patient’s entire body, this treatment can focus on the source of the problem. Both active and latent TrPs respond well to these injections, and the patient will periodically report immediate pain relief from the injection itself because it has a “dry needling” effect. While there is no cure for TMD, patients who are treated regularly with BoNT-A find that the effects become longer lasting as time goes by. This therapy has been used successfully on many patients who have not responded to any other treatment.

It is essential for a practitioner who is considering using BoNT-A for frontline TMJ therapy and orofacial pain to take a course with one on one mentored live patient training. The American Academy of Facial Esthetics (AAFE) has been instrumental in developing new protocols in trigger point therapy with BoNT-A for dental clinicians to use in every day dental practice. In addition, this course should include the anatomy, physiology, pharmacology, adverse reactions and potential complications involved with these treatments. Before using BoNT-A, it is also imperative that each practitioner take responsibility for following the regulations set by the board of dentistry and laws of the state where they practice.

**Masseter Hypertrophy**

When you examine a patient for TMD related MPS caused by bruxism, it is common to find TrP in the masseter muscles. The patient will frequently present with such severe hypertrophy of the masseter muscles that the bulge in the muscle causes facial distortion.

Massetetic hypertrophy can be treated with BoNT-A injections using the same protocol used to treat TMD pain in the masseter. The injections will decrease the intensity of the contractions and as the muscle begins to relax the patient will not be able to clench with the same force. In addition to pain reduction, the end result is a desirable slenderizing of the face as the masseter loses its hypertrophic appearance (Figure 5).

**Obstructive Sleep Apnea (OSA)**

OSA occurs when there are repeated episodes of complete or partial blockage of the upper airway during sleep. During an obstructive sleep apnea episode, the diaphragm and chest muscles work harder to open the obstructed airway and pull air into the lungs. A patient with OSA is likely to suffer from TMD and nocturnal bruxism. The American Academy of Dental Sleep Medicine classifies sleep bruxism as a sleep related movement disorder. A home bruxism and sleep study monitor (STATDDS™) is a cost effective way for a dentist to obtain data on the patient’s sleep apnea and diagnose bruxism (Figure 6). The information that you will collect from this test includes oxygen levels, masseter muscle placed on teeth during functional habits is 20–80 psi (0.14–0.55 MPa), but the pressure can range from 300 to 3,000 psi (2.07 to 20.7 MPa) while bruxing. This in turn places significantly more stress on the muscles of mastication; and, as they are overworked, MPS and the formation of TrP ensues.

**Bruxism and Dental Sleep Medicine**

Oral parafunction is the habitual use of any part of the mouth, tongue, and jaw that is unrelated to eating, drinking, and speaking. The most common parafunctional habit is bruxism – also known as clenching and grinding. These destructive forces have been linked with TMD for several reasons. The amount of pressure placed on teeth during functional habits is 20–80 psi (0.14–0.55 MPa), but the pressure can range from 300 to 3,000 psi (2.07 to 20.7 MPa) while bruxing. This in turn places significantly more stress on the muscles of mastication; and, as they are overworked, MPS and the formation of TrP ensues.
activity for bruxism, pulse, airflow, snoring, chest movement, and body position during sleep.

Once the data from a bruxism/sleep study confirms that your patient has sleep apnea, you can intervene. For patients with mild or moderate obstructive sleep apnea, dental appliances or oral mandibular advancement devices that prevent the tongue from blocking the throat and/or advance the lower jaw forward can be made. These devices help keep the airway open during sleep. In many cases, the patient will no longer suffer from nocturnal bruxism once treated.24

Headaches

The association between sleep, bruxism, TMD, and headaches has long been recognized.25 Headaches afflict a large portion of the population and with varying severity can result in discomfort, disruption of daily activity, lost days at work, and occasionally debilitating pain. Although about 30% of headache sufferers are periodically functionally impaired, many do not seek medical care.26, 27 It is common for patients to report various headache symptoms in conjunction with a dental exam.

Tension Type Headaches (TTH) and Migraine

TTH is the most common primary headache and most of the population will experience this at least once in their life.28 Examination generally reveals pain generating from the masticatory musculature can be episodic as well as chronic and may be indistinguishable clinically and therapeutically from migraine. It is likely that some tension-type headaches and correspondingly some TMD represent a variant form of migraine or they have a migraine-like component to them.29,30 In fact, there is a somewhat overlapping diagnosis of headache attributed to TMD in accordance with the DC/TMD criteria and the IHS International Headache criteria.31, 32

The relationship between TMD and headache is well recognized in the literature. Patients diagnosed with either migraine or tension-type headaches, which may be caused by myalgia of the temporalis muscle, will have signs and symptoms consistent with TMD. Strengthening this relationship between TMD and headache is the fact that patients who have undergone treatment for TMD report a decrease in symptoms of headache. Recent evidence suggests that patients who have a diagnosis of vascular or migraine headache have a higher prevalence of TMD, as a contributing cause of their pain than the general population. In addition to the trigeminal nerve, the facial nerve and muscles of facial expression are intricately involved with the headache/TMD continuum.33, 34, 35
On October 15, 2010, the U.S. Food and Drug Administration approved botulinum toxin (BoNT-A) injections to prevent headaches in adult patients with chronic migraine. The treatment protocol involves selective relaxation of hyperfunctional muscle of mastication and facial muscles with BoNT-A. The idea is to administer the smallest, effective dose necessary to relieve the pain and the dosage is based on each patient’s individual response to the therapy. Again, it is imperative that dentists who are considering administering BoNT-A injections, take an appropriate hands on training course as well as follow the rules of the state where they practice.

The mechanism with which the BoNT-A relieves migraine pain is not clearly understood. It is thought that since it controls unconscious jaw movement, it lessens the load on the muscles and thus alleviates grinding-related headaches. However, the release of neuropeptides, and particularly calcitonin gene-related peptide (CGRP), is considered an integral component in the pathophysiology of migraine.

Cervicogenic Headaches

Neck pain and cervical muscle tenderness are common symptoms of primary headache disorders. A diagnosis of cervicogenic headaches (CGH) is made when head pain arises from bony structures or soft tissues of the neck. This can be a perplexing pain disorder that is refractory to treatment if it is not recognized. The condition’s pathophysiology is likely referred from one or more muscular, neurogenic, osseous, articular, or vascular structures in the neck. It is often a sequel of head or neck injury but may also occur in the absence of trauma. The clinical features of cervicogenic headache may mimic those commonly associated with primary headache disorders such as tension-type headache, or migraine and as a result, distinguishing among these headache types can be difficult.

The diagnosis of CGH can often be made with a careful history and physical examination. The criteria for diagnosis may include one or more of the following symptoms: moderate to severe pain reported in the occipital, frontal, temporal, orbital, neck, and back regions, intermittent or chronic pain generally deep and non-throbbing, head pain triggered by neck movements, or restricted range of motion in the neck. Patients with CGH will usually present with a forward head posture. Muscular TrP are usually found in the suboccipital, cervical, and shoulder musculature. These TrP can also refer pain to the head when manually or physically stimulated.

Studies indicate that 44.1% of patients with CGH have MPS related TMD. In addition, it has been shown that patients with CGH who receive TMD therapy had increased range of motion in the neck. Upon palpation, TrP are usually found in the suboccipital, cervical and shoulder musculature. When manipulated, these areas often refer pain to the head, even though the neck musculature is the source of the pain. Like other MPS related pain, this area responds well to BoNT-A injections.

Conclusion

TMD is a collection of clinical entities that are often very painful and disabling. Yet they are self-limiting and usually respond to conservative therapy such as injection with BoNT-A. Basic principals of management to reduce pain and restore range of motion will reduce disability and often contribute to reducing primary headache disorder if it coexists.

In addition to controlling TMD, serious dental problems such as destruction of the teeth or restorations, tooth mobility and periodontal disease, all caused or exacerbated by bruxism, can be avoided. Other benefits of TMD treatment include elimination of nocturnal bruxism, reduction in jaw tension and decreased chronic neck and shoulder pain. Dentists who suspect a TMJ or bruxism condition should have the patient tested with a home bruxism/sleep monitor test before any treatment is performed in order to have a baseline reading of the patient’s bruxism episodes index and apnea/hypopnea index.

Patients with chronic orofacial pain will often seek the help of their dentists when symptoms arise. Didactic and hands on education is recommended to become proficient in the treatment of TMD and orofacial pain in everyday dental practice.
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Bruxism Therapy and Obstructive Sleep Apnea Therapy for Every Dental Practice

By Suzanne M. Haley, DMD

Dr. Suzanne Haley has been practicing general and cosmetic dentistry on the coast of Georgia for over 22 years. She graduated from the University of Georgia, Medical College of Georgia School of Dentistry with honors. Dr. Haley’s practice on St. Simons Island concentrates on cosmetic and sedation dentistry, sleep dental medicine, and TMJ therapeutics. Dr. Haley is a member of the ADA, GDA, AAFE, AADSM, DOCS, and SEDS. She is on the faculty of the AAFE and is committed to being involved in dental technology and techniques to provide the best treatment for her patients.

Bruxism is a condition in which a person grinds or clenches his teeth. People who have bruxism may unconsciously or consciously clench their teeth together during the day or clench and grind them at night. Signs and symptoms of bruxism may include: sounds of grinding or clenching; teeth that are flat, fractured, or chipped; teeth that have abfractions present; increased tooth sensitivity; jaw or facial pain; tight and sore facial muscles; sore jaws; periodontal tissue damage; and indentations on the tongue. The cause of bruxism is unknown but is linked to such factors as stress, anxiety, fatigue, snoring, and sleep apnea. People who clench or grind their teeth during sleep are more likely to have some degree of apnea present.

Obstructive sleep apnea (OSA) is the most common form of sleep apnea. Sleep apnea occurs when the muscles in the back of the throat fail to keep the airway open despite efforts to breathe. Sleep apnea is a medical condition in which breathing is briefly and repeatedly interrupted during sleep. An apnea occurs when the muscles fail to keep the airway open and there is a physical obstruction such as the tongue, pharyngeal muscles, epiglottis, and uvula that blocks the airway. This obstruction causes the patient to stop breathing during sleep. An apnea is an event where the patient stops breathing for a minimum of 10 seconds during sleep. A hypopnea is an event where the patient has significantly reduced airflow because of a partially blocked airway for at least 10 seconds during sleep.
seconds while sleeping. Patients with obstructive sleep apnea will have multiple apneas/hypopneas every night while they sleep, with the potential to severely impact their health. There are three different types of obstructive sleep apnea.

These classifications depend on the number of apneas and hypopneas, divided by the number of drops in oxygen saturation. OSA deprives the body of oxygen and untreated is a potentially deadly sleep disorder. OSA can increase an individual’s risk for a heart attack, stroke, hypertension, and cardiac disease.

Dentists have a unique position and can play a major role in their patient’s health because many patients are seen several times in a year. As dentists we have familiarity and access to the oral cavity, airway, and neck. As dentists we examine and focus on the head and neck of our patients. We can view the patient’s airway, soft tissue, and dentition. We observe the tongue size, tongue shape, soft palate area, the patient’s neck size, periodontium, and the wear on the patient’s dentition. In the dental office, bruxism is seen in one out of every three patients. Two out of every five of these patients has undiagnosed or untreated obstructive sleep apnea. It is important to realize that patients who demonstrate bruxism often have obstructive sleep apnea. Sleep bruxism is considered a sleep related movement disorder. People who clench or grind their teeth during sleep are more likely to have other sleep disorders, such as snoring, pauses in breathing, and sleep apnea. Mild bruxism may not need to be treated. However, in some patients, bruxism can be frequent and severe enough to cause jaw disorders, damage to teeth, and headaches. Dentists can screen for teeth grinding and can tell if a patient is grinding their teeth at night. Bruxism can be treated with an appliance made to prevent grinding and/or clenching. Dentists can refer patients to their physicians for the diagnoses of sleep apnea and then dentists can treat sleep apnea patients with oral appliances as well.

<table>
<thead>
<tr>
<th>Bruxism Overview</th>
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<tbody>
<tr>
<td><strong>Count</strong></td>
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<td>------</td>
</tr>
<tr>
<td><strong>Bruxism Episodes:</strong></td>
</tr>
<tr>
<td>Phasic Episodes:</td>
</tr>
<tr>
<td>Tonic Episodes:</td>
</tr>
<tr>
<td>Mixed Episodes:</td>
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<tr>
<td>w. Tooth Grind:</td>
</tr>
<tr>
<td><strong>Bruxism Bursts:</strong></td>
</tr>
<tr>
<td><strong>All Bursts:</strong></td>
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</tbody>
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**Bruxism Episodes Index:** 7.2 /h  
**Apnea to Bruxism Index:** 0.6 /h  
**Bruxism Bursts Index:** 22.5 /h  
**Arousal to Bruxism Index:** 0.0 /h

**AHI 7.4**  
**ODI 5.0**  
**Snore Index 7.4%**

AHI is the number of Apneas and Hypopnea per hour. ODI is the number of oxygen desaturations per hour. Snore Index is the percentage of time spent snoring versus the total time spent in bed.

Figure 1. A unique type III medical grade home testing unit that measures bruxism and sleep disorders (STATDDS).

Figure 2. Objective data from a bruxism/sleep test shows a high rate of bruxism and OSA.
However, because there is a link seen between grinding and sleep apnea, dentists need to play a larger role and have a relationship with a sleep physician and other medical doctors. Dentists can diagnose and provide the therapy needed for bruxism and provide the therapy for obstructive sleep apnea, once a physician diagnoses the apnea which is a medical condition requiring a medical diagnosis.

Dental sleep medicine is a fast growing area of dentistry. There are approximately 40 million people in the United States with obstructive sleep apnea (OSA), with 90% of those undiagnosed. One in four patients with OSA suffer from nighttime teeth grinding. The ending of an apneic event may be accompanied by a number of mouth phenomena, such as snoring, gasps, grunts, and mainly teeth grinding. Teeth grinding occurs because of the significant attempts to open the mouth to breathe. Bruxism usually occurs after an apnea event. One of the ways the brain tries to reopen the airway, in an unconscious state, is by grinding and clenching the teeth. Teeth grinding is a major indicator that you are struggling to keep your airway open at night and might suffer from obstructive sleep apnea. When the airway collapses, breathing becomes compromised. This is where you get snoring, which is just the sound that’s made when air is getting forced through a partially obstructed airway. Once the brain senses that breathing is dangerously compromised, it exits the deepest stage of sleep to regain control of the jaw muscles and reopen the airway – to keep a person breathing and alive. These sleep apnea cycles can occur from five to up to 70 times per hour during sleep. These events prevent one from entering the deepest stages of sleep where the brain and body tissues can repair themselves from the wear and tear of the day.

A dentist’s role in this process is to provide screening, therapy for bruxism, and therapy for obstructive sleep apnea when diagnosed. Dentists are not only qualified to provide the necessary dental treatment for this life threatening disorder but are uniquely in a position to screen and refer our own patients for sleep apnea diagnosis.

Another screening application the dentist can provide is the Epworth Sleepiness Scale (ESS) to all patients. ESS is a scale, which measures a person’s average level of daytime sleepiness. The scale consists of eight different routine life situations. Each question is rated from zero to three, with three having the highest chance of falling asleep. If a patient scores nine or above and demonstrates excessive daytime sleepiness this needs to be discussed and researched further for explanation on why the patient is excessively sleepy.

When it is determined that a patient is a grinder/clencher, snores, and has an ESS score of 9 or above, the patient is a prime candidate for a sleep test. Patients may be referred to a sleep physician, pulmonologists, or their personal primary physician for a sleep study. The home
The bruxism/sleep test (STATDDS Bruxism/Sleep Monitor) is typically used to diagnose bruxism and sleep apnea (Figure 1). In the dental office, dentists can administer a home test to measure the patient for bruxism and at the same time receive the apnea/hypopnea index which measures obstructive sleep apnea. The AHI can be shared with the patient’s physician. The dentist can work with the patient’s physician as co-primary healthcare providers and come up with a treatment plan together that can address the bruxism and the obstructive sleep apnea. As dentists, we only diagnose the activities occurring during sleep that are related to the clenching and grinding. Heightened bruxism events occur more frequently at the end of an apneic episode. The results of the bruxism/sleep study are sent to a certified sleep physician who gathers the information and provides a diagnosis determined by the total number of pauses that occur per hour of sleep. If the patient has only grinding/clenching issues and no apneic events or drops in the oxygen saturation then a night guard is treatment planned for the patient. Dentists should not be fabricating and placing dental appliances without objective data from a bruxism/sleep test and a proper diagnosis, to avoid creating an obstruction in the patient’s airway with the appliance for grinding/clenching (Figures 2 and 3). Moreover, if the study is returned with a diagnosis of mild or moderate obstructive sleep apnea, then a proper dental sleep appliance should be one of the recommendations for treatment. A mandibular advancement sleep appliance can be fabricated for that patient and can be titrated based on post testing with the home bruxism/sleep monitor.

There are several types of sleep appliances for the treatment of obstructive sleep apnea (Figures 4 and 5). The devices move the mandible and tongue forward allowing the airway to remain opened. There are appliances for a patient who is a bruxer and an OSA patient. There are oral appliances for an OSA only patient. Also, for severe sleep apnea sometimes a patient will wear a combination of an appliance with positive airway pressure therapy. Furthermore, for severe OSA who cannot tolerate a CPAP type device, an oral appliance is recommended as it is better for the patient to have some means of opening the airway and alleviating obstructive sleep apnea.

Oral devices to treat obstructive sleep apnea must be prescribed by a physician and fabricated and fitted by a dentist. Dental oral appliances are a convenient form of sleep apnea treatment. The compliance rate is higher than CPAP treatment with OSA patients. The devices offer the benefits of a significant reduction in apnea for mild to moderate OSA patients. Also, the elimination and or reduction in both grinding, clenching and snoring. Dental practices have the unique advantage of seeing their patients frequently and access to the oral cavity to identify potential sleep apnea patients.
Sleep Bruxism: Are Dentists Harming Patients?

By Vesna S. Sutter, DDS; and Louis Malcmacher, DDS, MAGD

ABSTRACT

Sleep bruxism (SB) is a known parasomnia in sleep medicine reported by approximately 8% to 15% of the adult population. It has been recognized for many years that a relationship exists between Nocturnal Bruxism (NB) and Obstructive Sleep Apnea (OSA), but why and how direct is yet unknown. The purpose of the study is to establish if there is a direct link between OSA severity and SB severity, and, if yes, how strong. Random patients were divided into three categories of OSA: mild, moderate, and severe. Their sleep studies were analyzed for correlations between OSA severity and Sleep Bruxism severity. The results showed that there was no direct linear correlation, but the research did show that close to 80% of the OSA patients had SB. This is a much higher relationship than currently thought.

Method

One thousand subjects’ home sleep tests (HST) using the STATDDS Home Bruxism and Sleep Monitor were divided into three categories of sleep. Those with an Apnea/Hypopnea Index (AHI) below five episodes per sleep hour were eliminated from the study. The three groups were: mild, moderate, and severe. The criteria for the categories was:

1. Mild is AHI of 5 to 15
2. Moderate is 15 to 30
3. Severe is 30 or higher

Then 15 subjects were selected from each category, totaling 45 subjects included in the analysis. Once the subjects were selected, the Bruxism Episode Index (BEI) and the Bruxism Burst Index (BBI) were calculated.
For this study, the BEI was used to categorize each group of subjects into two sub-categories:

1. **Significant Bruxism having BEI 2.5/hr but < 4/hr**
2. **Diagnostic Criteria for Bruxism having BEI > 4/hr**

**Results**

The following graph shows the data that was collected and the definitions used to score the bruxism episodes.

From the graph it can be concluded that bruxism severity and OSA severity are not linearly related. The more severe the OSA is does not mean that the more severe the bruxism episodes will be. However, the data does show that the percentage of OSA patients that also exhibit SB is much higher than expected. In
the mild group of the 15 subjects, 86% had a significant BEI; in the same group, eight subjects showed diagnostic BEI greater than 4/hr. In the severe grouping the percentages were very similar to the mild, 86% had a significant BEI. The moderate category in this random selection of subject showed a slightly lower percentage of 66%, but that figure is still higher than currently thought.

How does this new information affect dentists across the country? Since the presence of OSA is so high in bruxism patients, all patients that are prescribed a night time bruxism appliance should first have a diagnostic sleep study done to see if OSA is present. In the United States alone, some 1.6 million splints (AKA nightguards, biteguards, occlusal splints, biteplates, removable appliances, or interocclusal orthopedic appliances) are annually prescribed by dentists in an effort to combat bruxism. According to our study, that would mean that approximately 80% of those patients, totalling 1.28 million, may also suffer from or have OSA. These patients very well may have a bruxism appliance that may not only be the correct or proper appliance to treat their SB/OSA condition, their bruxism appliance could be very harmful by blocking their airway and exacerbate their OSA. The authors combined have 75+ years of experience in dentistry and not once have we ever seen a patient die of bruxism. Patients do suffer from life threatening OSA or other severe medical conditions that are made worse by OSA. We, as dentists treating bruxism, need to see this correlation and accept that we can make a huge impact on patient’s health by working with their physicians in screening for bruxism ad OSA before fabricating an occlusal splint.

You can see in the figure below how the AHI and BEI cluster together. Of course, not all patients that exhibit clenching and teeth grinding have OSA, but the correlation is high enough that they should be properly evaluated before any kind of treatment.

What is bruxism and why do people do it? The word bruxism is taken from the Greek word brychein: gnashing of teeth. No standard terminology yet exists. Bruxism can, perhaps, be best defined as the involuntary, unconscious, and excessive grinding or clenching of teeth. When it occurs during sleep, it may be best referred to as sleep bruxism. A few people, on the other hand, brux while they are awake, in which case the condition may be referred to as wakeful bruxism. Awake bruxism is thought to have different causes than sleep bruxism, and is more common in females, whereas males
and females are affected in equal proportions by sleep bruxism.²

Sleep bruxism is a type of sleep-related movement disorder that is characterized by involuntary masticatory muscle contraction resulting in grinding and clenching of the teeth and is typically associated with arousals from sleep.²³

According to the International Classification of Sleep Disorders revised edition (ICSD-R), the term “sleep bruxism” is the most appropriate diagnosis code since this type occurs during sleep specifically rather than being associated with a particular time of day, i.e., if a person with sleep bruxism were to sleep during the day and stay awake at night then the condition would not occur during the night but during the day. The ICDS-R defined sleep bruxism as “a stereotyped movement disorder characterized by grinding or clenching of the teeth during sleep”⁸ classifying it as a parasomnia. The second edition (ICSD-2) however reclassified bruxism to a “sleep related movement disorder” rather than a parasomnia. Jerald H Simmons, MD, recognized the relationship of these conditions, with Ron Prehn, DDS, they studied more than 700 patients with OSA and came to the conclusion that night time bruxism is an attempt to bring the jaw and tongue forward. Bruxism stops the back of the tongue from blocking the airway and is the brains way of preventing obstruction. This masseter muscle activity can be seen on EMG during a polysomnography.

Current research being done by the STATDDS clinical support team reveals that an occlusal splint in an OSA patient can worsen the OSA in some case. For this reason alone, all dentists should be testing their occlusal splint patients for OSA. We need to know what condition we are treating before making an appliance and not put our patient’s health at risk. Of the 14 patients evaluations post splint therapy, more than 50% of their OSA worsened. Dentists providing occlusal splint therapy to their bruxism patients, who may have undiagnosed OSA, could be seriously harming their patients by closing their airway while trying to improve
their bruxism. Closing the patient’s airway with a bruxism appliance puts the patient and the dental clinician at enormous risk from a health and liability standpoint.

Conclusion

The etiology of bruxism is controversial and uncertain. At present, the causes are suspected to be many, to overlap each other, and to vary from one patient to another. Some causes include stress, personality types, allergies, nutritional deficiencies, malocclusion, dental manipulations, introduction of foreign substances into the mouth, central nervous system malfunction, drugs, deficient oral proprioception, and genetic factors. Even though the etiology of bruxism is uncertain, its correlation to OSA is certain. It is evident that only during a specialized sleep study in which a bruxism EMG sensor is used can we diagnose if the airway is being compromised either as a baseline study or with the patient wearing any kind of dental appliance. Possible airway obstruction during sleep is a highly comorbid condition with bruxism and dentists need to work with physicians to help improve patient health. This article shows that the wrong bruxism appliance can seriously and negatively affect the patient’s health and it is the dentist’s responsibility to have evaluated the patient’s airway with a home bruxism/sleep monitor (STATDDS) before any appliance or other treatment is rendered. AO

REFERENCES

Journey to POLAND

Alpha Omega

POLAND
Back to Our Jewish Roots
Exploring the Heritage of 1000 Years of Jewish Life in Poland

MAY 23 - 29, 2016
In 2014, The Alpha Omega International Dental Fraternity and Henry Schein Cares launched the Holocaust Survivors Oral Health Program, which provides pro-bono dental care to a total of 250-300 Holocaust survivors across nine North American metropolitan areas.

The program focuses on providing oral care to the most economically vulnerable Holocaust survivors who are served by the network of Jewish Family and Children's Service agencies and identified partner organizations, as well as individuals of any faith who were victims of Nazi persecution and meet the other eligibility requirements of the program. Alpha Omega now presents an educational journey to Poland to visit the sites that were so significant in the history of the Jewish people, and to learn about one thousand years of Jewish heritage in Poland.

This educational journey will also present a great opportunity to know more about the Holocaust survivors. It is now for us, second and third generation to those millions who perished in the Holocaust and to those heroes who went through hell and survived, to preserve this tragedy and at the same time to warmly embrace and help the survivors, as we do through our unique Holocaust Survivors Oral Health Program.

Why a Journey to Poland?

Monday, May 23rd - Warsaw

Arrival in Warsaw.

Exploring the Jewish Heritage sights of Warsaw: the Cemetery at Okopowa Street, (one of the largest Jewish Cemeteries in Europe), Janusz Korczak's Orphanage House, Grzybowski Square with Nozyk Synagogue and the Jewish Theater.

In the afternoon, Warsaw Ghetto walking tour - remains of Ghetto Wall at Zlota Street, Adam Czerniakow's house at Chlodna Street, the Court House at Ogrodowa Street, Krasinski Gardens and visit to Warsaw Old Town.

Dinner and overnight in Warsaw.

Tuesday, May 24th - Tykocin, Treblinka

After breakfast, departing to Tykocin (a small town in North East Poland) and visiting its beautiful Baroque Synagogue and Market Square. After that, visiting Lopuchowo Forest, where in August 1941 most of the residents of Tykocin were executed by SS Commando.

In the afternoon, visiting Treblinka, the German Nazi extermination camp, located North-East of Warsaw.

Dinner and overnight in Warsaw.

Wednesday, May 25th - Kazimierz Dolny, Majdanek

Early morning, traveling to Kazimierz Dolny – one of the most beautifully situated little towns in Poland, with its well-preserved Renaissance urban plan and appearance.

Then Lublin – visiting Yeshiva Chachmei, Jewish Cemetery and Old Town.

In the afternoon visiting Majdanek – concentration and extermination camp built by Nazis on the outskirts of Lublin.

Drive to Krakow for dinner and overnight.
Thursday, May 26th - Auschwitz - Birkenau

In the morning visiting Auschwitz – Birkenau Concentration camp, a major site of the German Nazi “Final Solution” to the “Jewish question,” where from early 1942 until late 1944 at least 1.1 million prisoners died.

After a visit back to Kraków and meeting with a righteous person, the group will have dinner and stay overnight in Kraków.

Friday, May 27th

The Wieliczka Salt Mine includes dozens of statues and four chapels that have been carved out of the rock salt by the miners. The oldest sculptures are augmented by the new carvings by contemporary artists. About 1.2 million people visit annually the Wieliczka Salt Mine.

The Ojców National Park in Kraków County, a karst topography of soluble bedrock characterizes the park, which in addition to two river valleys contains numerous limestone cliffs, ravines, and over 400 caves.

The Rakowicki cemetery contains graves of Jewish soldiers who fought in the British army during WWII and perished or were murdered in concentration camps in Poland.

Kabbalat Shabbat and prayer with the Jewish community at Kuppa synagogue.

Dinner and overnight in Kraków.

Saturday, May 28th

Kraków Tour

Kraków Tour - starting at Jewish Quarter - Kazimierz, with its remarkable synagogues.

- Tempel - the largest synagogue in Kraków, now used during high holidays and for special events, Isaac Ramah- synagogue, Kuppa - the Kazimierz town’s kehila and the High Schul.

- Visiting the Galicia Museum, which commemorates the victims of the Holocaust and celebrates the Jewish culture of the Galicia region of Poland. Continue to visit Podgorze - the site of the former Ghetto - Tadeusz Pankiewicz Pharmacy and the Schindler’s Factory, which tell the story of the city and its citizens during the German Occupation.

Dinner and folklore show in Kraków; overnight in Kraków.

Sunday, May 29th - Warsaw

In the morning, drive to Warsaw. Upon arrival visiting the new Polin Museum, showing the history of Polish Jews, and continuing with the Heroism Trail of Ghetto Fighters with the memorial of the bunker at Mila 18 and the Ghetto Heroes Monument – the Rapaport Memorial.

Transfer to Chopin International Airport for the return flight.
Gesher Tours is a Private owned company operating 40 years in the tourism market with a worldwide agent network.

The company specializes in the following fields: educational organized tours for school students to Poland and all over the world, organized tours worldwide, professional and educational tours and worldwide land arrangements for the individual traveler. Gesher Tours offers large scale projects in Poland, with a total of 20,000 passengers per year:

- March of The Living, since 1992: This important and unique project takes place in Poland every year. It involves handling the flights and land arrangements services for participants from all over the world.
- Youth Educational Journeys to Poland, since 1990: A Ministry of Education project – involves handling flights and land arrangements services for approximately 20,000 high school students per year.

Gesher Tours has its own travel agency in Warsaw, Poland, working throughout the year to ensure our clients will receive the best services.

**About Gesher Tours**

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Fax: 972-3-5320506

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**Dental Continuing Education**

Dentist attendees may attend a lecture on Lasers in Dentistry during the Journey. Date to be determined. There is a $100 registration fee per dentist.

**Price Does Not Include:**

- Flights to Poland and back *(see registration form)*
- Insurance
- Personal expenses
- Anything not mentioned in the "Price Includes" section

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**Journey Starting Point:**

Participants will be able to choose one of two options:

**OPTION 1 - PARIS**

Arriving in Paris on Sunday, May 22 (or before) in order to participate in a special preparatory seminar on the subject of WWII and the Holocaust. The seminar will take place on Sunday afternoon followed by dinner with Alpha Omega members from the Paris chapter. Choosing this option will allow time to arrive in Paris either before the Journey to Poland or to stay in Paris after Poland and enjoy Paris.

Cost Per Night: 180€ (includes 2 breakfasts). Contact hotel directly to make a reservation.

**Added Flights:**

- May 23, 2016 – Paris to Warsaw
- May 29, 2016 – Warsaw to Paris

Cost: Roundtrip USD $400 (subject to change)

**OPTION 2 - WARSAW**

Arriving directly in Warsaw by noon on Monday, May 23 to join the group at the designated hotel, and going back home (or continue somewhere else after the journey), from Warsaw on Sunday, May 29. The preparatory seminar will be presented in the evening or the next day for those who could not attend it in Paris.

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**Price Includes:**

- Accommodation: 2 nights in Warsaw, Hotel Marriott (5 star hotel) or similar, 4 nights in Krakow, Hotel Sheraton (5 star hotel) or similar.
- Bus: Deluxe bus, air-conditioned, equipped with DVD with 2 screens.
- Meals: Breakfast at the hotels, 5 packed lunch boxes, dinners at hotels or at local restaurants.
- Local English-speaking guide (driver)
- Entrance fees to the Jewish sites.
- Folklore show
- Wieliczka salt mines
- Tips
- Porterage at hotels
- Mineral water (bottle per person per day).
- Flowers and candles for the ceremonies.

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**Back to Our Jewish Roots – Exploring the Heritage of 1000 Years of Jewish Life in Poland**

**Information**

**Prices:**

The prices are based on having a group of 50 participants.

Price per person in twin room USD $1,465

Single supplement: USD $550

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**Price Includes:**

- Accommodation: 2 nights in Warsaw, Hotel Marriott (5 star hotel) or similar, 4 nights in Krakow, Hotel Sheraton (5 star hotel) or similar.
- Bus: Deluxe bus, air-conditioned, equipped with DVD with 2 screens.
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- Folklore show
- Wieliczka salt mines
- Tips
- Porterage at hotels
- Mineral water (bottle per person per day).
- Flowers and candles for the ceremonies.

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**Price Does Not Include:**

- Flights to Poland and back *(see registration form)*
- Insurance

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**Journey Starting Point:**

Participants will be able to choose one of two options:

**OPTION 1 - PARIS**

Arriving in Paris on Sunday, May 22 (or before) in order to participate in a special preparatory seminar on the subject of WWII and the Holocaust. The seminar will take place on Sunday afternoon followed by dinner with Alpha Omega members from the Paris chapter. Choosing this option will allow time to arrive in Paris either before the Journey to Poland or to stay in Paris after Poland and enjoy Paris.

Cost Per Night: 180€ (includes 2 breakfasts). Contact hotel directly to make a reservation.

**Added Flights:**

- May 23, 2016 – Paris to Warsaw
- May 29, 2016 – Warsaw to Paris

Cost: Roundtrip USD $400 (subject to change)

**OPTION 2 - WARSAW**

Arriving directly in Warsaw by noon on Monday, May 23 to join the group at the designated hotel, and going back home (or continue somewhere else after the journey), from Warsaw on Sunday, May 29. The preparatory seminar will be presented in the evening or the next day for those who could not attend it in Paris.

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**MILLIONIUM HOTEL PARIS Opéra**

12 Boulevard Haussmann
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Web: www.millenniumhotels.com/milleniumparis/
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Ground Tour Prices
Price per person in twin room - USD $1,465
Single supplement - USD $550
Deposit USD $250 at registration time.
All payments must be made by May 1, 2016.
• One payment
• Four payments: October 1, 2015
January 1, 2016
March 1, 2016
May 1, 2016
Continuing Education Registration Fee - USD $100
Lecture: Lasers in Dentistry

Paris-Warsaw Flights
Roundtrip USD $400
Paris to Warsaw – May 23, 2016
Warsaw to Paris – May 29, 2016
*Prices subject to change

Cancellation Policies
Ground Trip Cancellation Policy
Before February 25 - No cancellation fee
Between February 26 - March 25 // $250 fee
March 26 - April 25 // $400 fee
After April 26 // $600 fee

Paris-Warsaw Flights Cancellation Policy
Before February 15 – No cancellation fee
February 16 - April 15 // $100 fee

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Helly Peled
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*No online registration at this time
The Therapeutic and Esthetic Uses of Botulinum Toxin in Dentistry

By Peter T. Harnois, DDS

ABSTRACT

Over the past decade, facial therapeutic and esthetic procedures have become more commonplace in dentistry and oral and maxillofacial surgery. An increasing number of patients continue to seek minimally invasive procedures. One of the most requested procedures is treatment with botulinum toxin type A (BoNT-A). Treatment of dynamic rhytids and lines with BoNT-A is effective and produces high rates of improvement with rapid onset and long duration of action. Based on eight years of continued study and use of BoNT-A in a general dentist’s office, this paper discusses the history and pharmacology of this neurotoxin and focuses on the treatment of different facial areas with BoNT-A. It also presents clinical guidelines on the esthetic uses of BoNT-A to treat the glabellar complex, the frontalis muscle, peri-orbital lines, and peri-oral lines as well as therapeutic uses to treat gummy smile, bruxism, clenching, and TMJ. A sound knowledge about the mechanisms of action and the ability to use BoNT-A as an adjunctive treatment are mandatory for those working with commercially available botulinum toxins.
Overview

A rapidly growing number of dentists are now providing BoNT-A (Botox, Dysport, Xeomin) treatments for their patients for both esthetic and therapeutic uses. Many dental journal articles have been written about the use of BoNT-A for esthetic purposes, and more recently the therapeutic benefits have motivated many dental clinicians to become properly trained to offer these services to their patients. What is also interesting to note is that the esthetic use of BoNT-A will often lead to a therapeutic benefit of facial head and neck pain as well. This will be discussed as this article covers the clinical guidelines for the muscles listed above.

BoNT-A works by inhibiting the release of acetylcholine at the neuromuscular junction. Acetylcholine depolarizes the motor end plate of the muscle and will cause a muscle contraction. By inhibiting the release of acetylcholine, BoNT-A effectively will either reduce the intensity of the contraction of the muscle or will eliminate the contraction altogether, depending on the dosage used. Essentially, BoNT-A neurotoxin interrupts the contraction process of the muscles and causes a temporary muscle paralysis. This can last usually anywhere up to 3 to 4 months as the muscle initiates new acetylcholine receptors and the growth of branches from the neurons to form new synaptic contacts. Gradually the muscle returns to its full function and with no side effects whatsoever.

What is important to keep in mind is that when BoNT-A is injected into a muscle it does not affect the synthesis or storage of acetylcholine. What it does affect is how much is released and that is dose dependent. Proper understanding of dosages and the anatomy of where the BoNT-A is injected can lead to successful, predictable results. Because of this mechanism of action, it takes 3 to 5 days for the effects on BoNT-A to begin and up to 2 weeks to reach its full effect.3

When one properly understand this, and when one learns how to use BoNT-A neurotoxin properly, it can be used for a number of dental therapeutic procedures that can relieve pain and can retrain muscles which can certainly enhance dental treatment plans as well as help some serious disorders that have been frustrating to the dental practitioner for many years. The use of BoNT-A opens up an entirely new list of services a dentist can offer to their patients for both therapeutic and esthetic results.

History and Background

Botulinum toxin is a manufactured injectable medication used therapeutically to reduce the strength of targeted muscle tissues. In 1989, the FDA approved botulinum toxin for strabismus and blepharospasm, and the following year botulinum toxin was granted FDA approval for cervical dystonia.

The FDA approved a BoNT-A (Botox Cosmetic) in 2002 for the temporary improvement of glabellar lines (wrinkles between the eyebrows, known as frown lines), in adults. The FDA approved use of BoNT-A as a primary treatment for chronic migraine in February 2011. In September of 2013, the FDA approved a new use for BoNT-A (Botox Cosmetic) for the temporary improvement in the appearance of moderate to severe lateral canthal lines, known as crow’s feet, in adults.

No definitive serious adverse events of distant spread of toxin effect associated with dermatologic use of botulinum toxin at the labeled dose of 20 units (for glabellar lines) have been reported to date.”

FDA on label uses include only FDA approved indications. FDA approval is a lengthy and expensive procedure and pharmaceutical companies only need a single indication to release a drug. Healthcare professionals need not obtain FDA approval for every possible legitimate use of the drug as long as it is within the standard of care. Any licensed physician or dentist can legally prescribe a FDA approved medication for ‘off-label’ use in any way that is considered standard of care and of benefit to the patient.

Mechanism of Action

Most lines on the face are caused to a large degree by the repetitive creasing and folding of the skin by underlying muscles which originate on bone and insert on skin or soft tissue. These lines are referred to as “dynamic” wrinkles or “wrinkles in motion”. As we age muscles of facial expression become hyper-dynamic as a result of habit. By relaxing selected muscles we are able to allow skin to “recover” since skin’s natural state is smooth.

Cumulative effect of long-term, regular use of botulinum toxin obtains best results and often patients will note longer duration of action in part caused by mild atrophy of the hyper-dynamic muscles and skin regeneration. As the effect wears off, strength gradually returns (along with the wrinkles caused by movement) but wrinkles are not any worse than baseline.2,3

Another important fact to keep in mind when evaluating your patients is that the skin bends/ wrinkles perpendicular to the muscle fiber orientation.
All of the above physical mechanism of action applies to pain caused by muscles which are relieved by BoNT-A in exactly the same way which includes the duration and the cumulative effect.4

The bottom line is that if pain or rhytids are caused by the muscles, an effective dosage of BoNT-A will relieve these conditions once the dental clinician has been properly trained in the pharmacology, physiology, anatomy, dosaging, and proper injection techniques of delivery of BoNT-A.

Reviewing all of the facial muscles is beyond the scope of this article. The following will give the reader an idea of how some of the facial muscles that are commonly treated with BoNT-A helps with both dentofacial esthetic and myofascial pain conditions. It can’t be stressed enough that anatomy is the key to successful treatment with BoNT-A. One more very important item to note is that when treating the facial muscles, both the esthetic and therapeutic effects of BoNT-A occur simultaneously. Many times a patient is treated for rhytids and then expresses that their headaches have disappeared. Similarly, a patient treated for TMJ and orofacial pain will realize the esthetic effects of smooth skin in the areas where BoNT-A has been delivered. Indeed, this helps with follow up treatment by letting the treating clinician know if the BoNT-A is working and if the patient is still exhibiting symptoms which would indicate that the patient’s condition is originating from something other than the muscles.

**Frontalis Muscle**

Let’s look at the frontalis muscle. The origin is the galea aponeurotica and the frontalis inserts into the skin of the eyebrows. The frontalis muscle provides lift to the forehead as it raises the eyebrows. The fibers of the frontalis muscle run vertically so when the patient is asked to look surprised and cause the frontalis to contract, the wrinkles are horizontally orientated on the forehead.

The frontalis is also one of the muscles involved in headaches, facial pain and migraines. Delivering BoNT-A into the frontalis would be with intramuscular injections using a 31 gauge, 8mm specially designed BoNT-A Comfortox syringe (STATDDS) inserted at a 45 degree angle to be able to slide through the skin into the muscle and avoid hitting the periostium and bone. Injections are spread across the frontalis to comprehensively treat the entire muscle.

One can see in Figure 1 a baseline of a patient contracting her frontalis and in figure 2 that same patient two weeks later. Repeated treatments every 3 to 4 months can allow a patient’s skin to relax, recover, and repair the damage caused by these hyper dynamic muscles.

The dosing range for the frontalis muscle with BoNT-A is from 4 to 14 units for a woman and 10-20 units for a man. It is a very pleasant surprise when you first start treating these muscles on your patients and they report a marked decrease in facial pain and headaches when you have them back for an evaluation 2 weeks after injecting them. At two weeks the BoNT-A has reached its maximum effect and will last 3 to 4 months. If there are rhytids or pain remaining, enhancement injections can be performed to further relax this muscle if necessary. A post-op photo is taken with the patient in repose and contraction and stored in their digital file.

The frontalis muscle often works in conjunction with the glabellar complex which consists of the procerus and corrugator muscles.
This area is commonly referred to as the “frown lines.” The glabellar complex is typically dosed between 10 to 25 units. Knowing the anatomy in this region is crucial to avoiding the complication of eyelid ptosis (drooping) which can be entirely avoided with precision placement technique and training.

**Orbicularis Oculi Muscles**

Its origin is the medial orbital margin and lacrimal sac and its insertion is the lateral palpebral raphe. This muscle is a round muscle similar to the orbicularis oris which dental professionals are familiar with. The purpose of this muscle is to close the eyelids. This muscle is responsible for the lateral eye rhytids commonly referred to as “Crow’s Feet.” What surprises many dental clinicians is this muscles role in TMJ and orofacial pain. The lateral portion of this muscle is the widest part of the muscle and it extends past the lateral orbital rim and can end close to the temporomandibular joint. This part of the muscle also covers the insertion of the temporalis muscle into the coronoid process. Its proximity to the TMJ and the temporalis muscle easily puts this muscle within the orofacial pain spectrum. Many dental clinicians report success with BoNT-A injections into the lateral orbicularis oris for TMJ and orofacial pain treatment.

BoNT-A delivery into this muscle include subcutaneous injections aimed 30 degrees away from the eyes at 1/3 the 8mm Comfortox needle depth. Dosages can range from 4 to 16 units depending on muscle mass and intensity of contraction.

One must be careful to have all these injections take place at least one centimeter lateral to the orbital rim to avoid affecting the levator palpebri superioris and possible eyelid ptosis. It is also important to stay above the most lateral aspect of the zygomatic arch to avoid affecting the zygomaticus major and minor muscles leading to possible lip ptosis. Once again, knowledge of the anatomy is the key to good patient outcomes. Figures 3 and 4 show before and after photos of a patient treated for orofacial pain with the accompanying esthetic result and symptom relief.

**Masseter Muscles**

The masseter muscle is so important to treat in a variety of dental treatment plans including bruxism, TMJ, orofacial pain, implant, restorative, and esthetic dentistry cases. Its origin is in the anterior two thirds of zygomatic arch and zygomatic process of maxilla and its insertion is into the lateral surface of angle and lower ramus of mandible.

The action of the masseter muscles during bilateral contraction of the entire muscle is to elevate the mandible, raising the lower jaw and bringing the teeth together. The masseter parallels the medial pterygoid muscle. The temporalis works in conjunction with the masseter muscle to close the jaws. These three muscles of mastication always work together bilaterally. The temporalis and masseter muscles are most always injected bilaterally.

Delivery of BoNT-A into the masseter muscles are at near full needle depth at 90 degrees into the thickest part of the belly of the masseter or in the main area that the patient exhibits pain. The patient is instructed to clench their teeth and the area that bulges out the furthest laterally is marked for injection. Depending on muscle mass and intensity of contraction, anywhere from 10-30 units of BoNT-A may be delivered to the site. Injecting the masseter requires sound anatomical knowledge of the surrounding muscles, especially
the risorius muscle. Figures 5 and 6 show the same patient as in some of the earlier figures with an improved esthetic appearance along with the elimination of her TMJ and orofacial pain.

**Orbicularis Oris Muscle**

This is certainly a muscle that every dental professional should be intimately familiar with but often we forget the particular anatomy. It is actually made up of the buccinator and other muscle fibers that cross at the modiulus. The orbicularis oris muscle will narrow the orifice of mouth, purses lips and puckers the lip edges. It has a substantial role in speaking, eating, drinking, and swallowing. The dentist is well advised to treat this muscle very conservatively with BoNT-A to preserve full lip competence while reducing the intensity of contraction to achieve the desired results for esthetic and therapeutic lip and smile line corrections.

BoNT-A delivery into the orbicularis oris are intra-muscular or sub-Q with ½ the needle depth at 45-90 degrees. Woman in particular seek out dentist’s for this treatment as they dislike the radial lip lines that form around the mouth as this muscle becomes more hyper dynamic. Anywhere from 3.5 to 7 units of BoNT-A are delivered into this muscle.

Figure 7 shows before and after results of using BoNT-A in the orbicularis oris to achieve a no filler lip enhancement.

**Levator Labii Superioris Alaeque Nasi Muscle (LLSAN)**

The LLSAN is one of the upper lip elevators along with the levator labii superioris and the
zygomaticus major and minor. Its origin is at the root of nasal process of maxilla and its insertion is in the orbicularis oris muscle of upper lip. Its primary purpose is to elevate the upper lip in the area of the midline.

Our final muscle involving therapeutic treatment really emphasizes why patients are seeking out the use of BoNT-A by dentists for minimally invasive procedures. As an alternative to lip lengthening surgery or osseous surgery with veneers to fix the gummy smile, two quick BoNT-A injections every 3 to 4 months are all that is required to relax a muscle that can give a patient who has deficient smile and lip lines and correct that discrepancy quickly and easily. The AAFE has developed specific protocols relating measurements taken from the bottom of the upper lip in a full smile to the gingival margin in the affected area to the amount of BoNT-A to be delivered to the LLSAN to achieve an esthetic lip line. Generally, \( \frac{1}{2} \) the needle depth at 90 degrees using \( \frac{1}{2} \) to 4 units depending on the severity of the amount of gingival tissue being displayed is all that is required to tame this muscle.

Figures 8, 9, and 10 demonstrate this therapeutic technique to correct excessive maxillary gingival display otherwise known as gummy smile. Figures 11 and 12 show a complicated asymmetrical gummy smile case treated with BoNT-A and
dermal filler therapy. As the reader can see, these non-surgical minimally invasive procedures can deliver as good if not better therapeutic and esthetic treatment than conventional dental treatment. As dental clinicians, it is our moral, ethical, and legal responsibility to offer all of the available treatment options to patients. There is no question that at this point in time, it is incumbent on every dental professional to be trained in the use of botulinum toxin.

Many Other BoNT-A Uses

Now that dental professionals have been using BoNT-A for the last 9 years on a regular basis, there are now many other uses for BoNT-A in every day dental treatment planning. These include but are not limited to the following – orthodontic retention, trigeminal neuralgia, oromandibular dystonia, sialorrhea, dentofacial abnormalities, facial asymmetries, removable prosthodontic retention, angular chelitis, and orofacial dyskinesia. With the creativity and further use of BoNT-A by more and more dental professionals, there will most certainly be further uses in the future.

Conclusion

The safety and efficacy of BoNT-A has been well established for more than 20 years. From this general dentist’s perspective, having been properly trained with my first of many American Academy of Facial Esthetics courses in 2007, the change in the nature of my dental practice has energized my own practice to a level I did not think possible. The key to professional success in dentistry is education and training. Botulinum toxin treatment will add new treatment options for your patients. Once you are properly trained, you will be able to deliver the best possible esthetic and therapeutic treatment outcomes.
REFERENCES

Dear AO Members:

The new dues season started on July 1. Thank you in advance for paying your dues and for being a valuable part of AO!
**The Therapeutic and Esthetic Uses of Dermal Fillers in Dentistry**

By Jordan “Jake” T. Hester, DMD

**ABSTRACT**

Minimally invasive esthetic procedures have increased over the past decade in part due to advances of the products used. Dental professionals have a foundation of extensive knowledge of orofacial anatomy. Recent studies of age related volume loss show the association of atrophy of distinct fat pads affecting facial folds and wrinkles in different areas of the face. Dermal fillers can esthetically enhance smile lines, downturned oral commissures, and establish proper lip lines. Theoretically, dermal fillers are used in the treatment of stubborn cases of angular cheilitis, volumizing interdental papilla loss (black triangles), and others. Dermal fillers have had a long history of use in facial esthetics. Currently, the temporary options available to practitioners for patients vary from hyaluronic acids, calcium hydroxylapatite, and poly-L-lactic acid. With advanced training, experience, and maintaining proper injection technique, the safety of dermal fillers has a long track record of outstanding patient outcomes.

Demand for minimally invasive esthetic treatments such as dermal fillers are increasing in this age of medical consumerism. Recent advances in the properties of multiple dermal filler products provides patients with a safe alternative to cosmetic surgery for the correction of changes in facial contours resulting in volume loss, facial folds, and wrinkles. Depending on the type of filler and area treated results from dermal filler injections can last from four months to two years. Although the use of dermal fillers has been around for decades, the therapeutic and esthetic uses of dermal fillers for dental patients are an innovative paradigm in the field of dentistry. With additional training and experience, dentists have joined other healthcare providers as primary providers of dermal filler therapy in the oral and maxillofacial areas. Dental professionals undergo thorough training in orofacial anatomy, dentofacial esthetics, and administer local anesthetic injections daily so they already possess many of the necessary skills to successfully accomplish this therapy.

The signs of facial aging are evident by visible lines around the mouth, peri-oral region, shadows or dark circles under the eyes, deep nasolabial folds, marionette lines, lips, and other changes. Fifty years ago, Gonzalez-Ulloa and Flores stated that the complex multifactorial process of aging we see is related to changes in skin, muscles, fat, and bone. Studies over the last 8 years have reinforced this theory refuting previous dogma of age related changes due to the gravitational pull of tissues. In 2007, Lambros used photographs of 130 subjects taken at two different time points ranging from 10 to 56 years apart finding that the midface tissue did not descend with age due to the support of a fibrous network of the cheek that is immobile inferiorly. At the same time, Rohrich and Pessa published studies of dissections using methylene blue injected into hemifacial cadavers proving that facial fat is divided into distinct but closely related superficial and deep compartments. Clinical evidence shows that these compartments age independent of one another. During this time a theory emerged concerning the fat loss of these different deep and superficial compartments. With time the atrophy of the deep fat compartments causes sinking and loss of convex facial shapes notably in the mid-facial region; however, folds develop from the differences in thickness of adjacent superficial fat compartments such as: the nasolabial fold, the labiomental fold above the chin, the submental crease, and the preauricular fold. With these new findings the term “pseudoptosis” has been applied to describe the loss of volume in one area that could result in folds developing in another area.
Moreover, the smile lines of the nasolabial folds, the marionette lines, lips, and downturned oral commissures are all common areas of concern for many patients presenting for dental treatment. Dermal fillers can treat these areas to soften the folds. Nevertheless, Rohrich and Pessa showed with their cadaveric studies that refilling the deep medial cheek fat pad located deep to the upper lip elevators not only added volume to the midface, but also indirectly improved the appearance of the nasolabial fold, oral commissure, and even a hollow tear trough. Additionally, treatment to correct the effects of temporal wasting, due to volume loss at the lateral temporal-cheek fat compartment, can easily be overlooked at a consult because the effects of temporal wasting may not be as obvious to the patient or provider. Moradi and associates report volumizing the temporal area can affect the upper and midface areas. Combination therapy to treat temporal wasting has been proposed. This process calls for using dermal filler to replace superficial fat loss and a botulinum neuromodulator in the maser muscles to reduce the muscle activity of the masseters. The compensation and increase in the activity of the temporalis results in an increase of the size of the temporalis. The varying superficial and deep fat compartments are separate, but they are influenced by the volume changes of different compartments of the face as described by the concept of pseudoptosis.

Full lips with anterior projection and a well-defined vermillion border are commonly seen in the media today. The vertical rhytids radiating from the upper and lower lips develop from hyper-functional movements and volume loss. Replacing this lost volume may improve the youthful convex shape of the lips, create an ideal amount of incisor display of two to three millimeters at rest, and increase the show of the wet dry line. Enhancing the lips can not only reestablish the esthetic contours, but also aid phonetics, retain dental prosthesis, add support to downturned oral commissures, and establish proper lip lines after esthetic dental cases. Also, dermal fillers can be used intra-orally in a deficient papilla to treat black triangles and restore gingival contours without resorting to aggressive treatment. Downturned oral commissures are a common comorbidity of edentulism and decreased vertical dimension of occlusion. The deepening of a normal fold of skin at the corners of the mouth could be a contributing factor for 11% of angular cheilitis in elderly patients and up to 18% of angular cheilitis in patients with dentures. Angular cheilitis is inflammation at one or both vermillion commissures beginning as erythema with the potential to progress to painful ulceration, scaly dermatitis, and involvement of the entire surface of the upper and lower lips. The etiology of angular cheilitis is multifactorial with local irritants accounting for about 22% of cases. One of the most common local irritants is the assault of enzymes from saliva pooling at anatomically deep folds at the corners of the mouth. Identifying the etiology is important to determine the correct treatment of a multifactorial disease. If conventional treatments do not resolve angular cheilitis caused by a local factor, then dermal fillers may be used to correct deep folds at the corners of the mouth and prevent salivary pooling.

The concept of repairing tissue defects and replacing lost volume has existed for over a hundred years. Auto-grafting fat was the first form of soft tissue augmentation as described by Dr. Neuber in 1893. This autologous use of fat has waxed and waned over the last century with a recent interest of fat as a source of stem cells. Paraffin was used in many industrial products with multiple medical uses even as a dermal filler in the late 1800s and early 1900s. However, there are numerous problems associated with paraffin injections including inflammatory reactions, tissue necrosis, embolism, migration, and solidification within the needle. Dr. Robert Gersuny, an early pioneer of paraffin use, warned practitioners to only inject sterile paraffin, to avoid intravascular injections, and to inject small incremental quantities over intervals of one month or more if considerable amounts of correction were needed. These concepts are still in use today, but the use of paraffin led to serious consequences for many patients including the Duchess of Marlborough once deemed the most beautiful woman in the world. Collagen based fillers gained FDA approval in 1981, and many practitioners reported successful treatment using collagen fillers for acne scars, areas of atrophy, fine lines, residual cleft lip scars, and Mohs surgery scars. Dr. Arnold Klein promoted the idea of three-dimensional volume correction of the lip using collagen during this era. Medical grade silicone was introduced in 1959 by the Dow Corporation with reports of paraffinoma-like granulomatous reactions occurring. Other studies reported the safety of silicone using the microdroplet technique and a fine-bore needle. Currently, liquid silicone or silicone gel is not FDA approved for filling wrinkles or augmenting tissues anywhere in the body.

Today, patients and practitioners have many different options for non-surgical injectable soft tissue fillers. The portfolio of hyaluronic acid products are derived from non-animal or bacterial sources and the animal sources of hyaluronic acid are no longer accessible. Depending on the type and amount of cross-linking of the hyaluronic acid polymers the application varies from filling fine lines in the perioral area to replacing lost volume at the deep medial fat compartment. Also, hyaluronic acid is a naturally
occurring polysaccharide in human extracellular matrix tissues, and these fillers are reversible with hyaluronidase. Poly-L-lactic acid (PLLA) arose from the demands required to volumize facial atrophy associated with HIV/AIDS and protease inhibitors. Subsequent FDA approval was granted for treating nasolabial folds and facial wrinkles with PLLA. Treatments of PLLA require reconstitution of the filler prior to the patient’s appointment as well as a series of three injections over several months. Calcium hydroxylapatite is a filler composed of essentially the mineral component of teeth and bone and is suspended in a sodium carboxymethylcellulose gel. Normally patients can expect to see volume correction of a 1:1 ratio after these treatments, followed by some loss of volume due to the sodium carboxymethylcellulose gel being resorbed, and a subsequent revolumization due to collagensis. Polymethylmethacrylate (PMMA) is an extremely long lasting to essentially permanent filler made up of PMMA and bovine collagen, which requires an allergy test. Use is currently limited to patients with profound and deep facial wrinkle lines.

For more than a decade the use of temporary dermal fillers has gained significant popularity in the US and around the world as safe and minimally invasive procedures. Common localized reactions are bruising and swelling. These adverse events can be minimized by avoiding blood thinners, NSAIDs, and supplements like vitamin E, ginger, ginseng, ginkgo biloba, and fish oils for 7 to 10 days prior to the procedure, yet patients on blood thinners should not stop these drugs until cleared by the patient’s physician. Recently, the US Food and Drug Administration released statements concerning the effects of unintentional injection of dermal fillers into blood vessels of the face. An intra-vascular injection is rare but side effects can be serious blocking blood vessels, restricting blood supply to tissues, and embolization. Dr. Carruthers and colleagues recently reported a review of blindness caused by inadvertent injections into vessels finding that many of the cases of blindness involved the use of autologous fat and patients experiencing this complication from hyaluronic acid injections had substantially better visual outcomes. Multiple factors are important for preventing intra-vascular injections including anatomically based comprehensive training, using small needles or cannulas, use of smaller syringes of 0.5 to 1.0 cc to reduce the pressure needed on the plunger, withdrawing before injecting and injecting slowly, never injecting into a previously traumatized area, knowing where the tip of the cannula or needle is relative to the anatomical plane and depth, stop injecting immediately if the patient complains of pain or vision loss and immediately refer to an ophthalmologist, know the anatomy of the area injected including the vasculature, and do not inject soft tissue fillers without adequate training and experience. Additionally, having hyaluronidase available should an emergency arise is important. Determining the number of adverse events associated with dermal filler injections is difficult due to the lack of an organized database and under-reporting of such occurrences. Still, data from 2010 to 2011 shows that among approximately 4.6 million dermal filler

Figure 1: Top photos are repose and bottom photos are smile views. Left photos are before the initial treatment session. Center photos are four weeks after treatment with neuromodulators and before dermal fillers. Right photos are two weeks after treatment with dermal fillers.
treatments performed by healthcare professionals in these 2 years there were only five reported cases of severe complications in the US during that time.21

Case Presentation

A couple of years ago, a patient presented with a chief complaint of headaches, deep smile lines (nasolabial folds), and formation of a pre-jowl sulcus. This patient had treatment with botulinum neuromodulators and fillers about 6 months prior. After a thorough exam, the clinical findings consisted of some areas of muscle myalgia, myofacial pain, and volume loss of the deep fat pads. The treatment plan was presented and accepted. The treatment was broken into two sessions with a botulinum neuromodulator used at the first session to alleviate the muscle myalgia, myofacial pain, and relax the following muscles: frontalis, glabella, orbicularis oculi (lateral and infra-orbital area), nasalis, levator labii superioris alaeque nasi, depressor anguli oris, mentalis, and masseters. The second session consisted of using dermal fillers at the cheeks, temporal area, tear troughs, nasolabial folds, marionette lines, and pre-jowl sulcus. The before and after photos can be viewed in Figure 1. Overall she was very satisfied with the results. Filling the temples, cheeks, and infra-orbital hollows helped soften the nasolabial folds decreasing the amount of filler ultimately needed to correct the nasolabial folds. She reported relief at most of the areas of myalgia and myofacial pain with slight myalgia remaining at the left masseter.

The advances in the safety of dermal fillers and novel theories about the effects of volume loss has widened the scope of treatment options for patients seeking correction of age related facial changes. These changes have dramatic effects on the smile and dental esthetics. With extensive training and experience dental professionals have an opportunity to educate their patients about the therapeutic and esthetic use of dermal fillers in dentistry.  

REFERENCES

God Showed Us the Way –
A Wartime Childhood Memoir

By Noah Stern
Jerusalem Chapter Members

I was born in 1935 in Bratislava, the capital of Slovakia. As a 9-year-old child, I escaped with my parents to a remote village where the Matula family hid us from the invading Germans.

The following excerpt from my memoirs records two particular incidents that occurred while we were in hiding.

October 1944. Just before sunrise, we would wake from our slumbers on the Matula’s kitchen floor, quietly fold our blankets, steal out through the door to the ladder, and climb up to the hayloft.

Father had prepared the area in advance. He had cut a hole about 80 centimeters (30 inches) wide in the part near the roof, about two meters from the floor, and fashioned a sort of tunnel about three meters long. He then flattened an area of perhaps two square meters for six people to squeeze into. The idea was for all of us to climb up the ladder and, once safely inside, to block the loft off from inside with bales of hay. Anyone coming up to the loft would merely see a wall of hay. They would never guess that six Jews, only a few meters away, were holding their breath in absolute fear.

And there we would sit, whispering and listening. We would pass the time by trying to make out the surrounding sounds and voices. A cow-drawn wagon coming into the yard… the old farmer and his son unloading hay… the farmer once again, this time carrying pails on his way to milk the cows. We could also hear sounds from the center of the village. After all, there were no more than 50 houses. We would hear the local town crier beat his drum and announce the village council’s
instructions to the gathering crowd. Since we had no newspapers or books and were in no mood for social games, our main pastime was deciphering the sounds of the world around us.

One day, we heard the sound of a vehicle, which we later learned had been an army truck. It was the Germans paying their first visit to the village. The Matulas told us the soldiers had come right up to the hayloft and stabbed the bales with the tips of their bayonets. We hadn’t felt a thing and they hadn’t found us. Miraculously.

Over time, I adopted my own defensive custom. When the German soldiers came to the village, strutting around and speaking loudly, I would hole up in my own little corner of the loft, close my eyes, put my fingers in my ears and whisper a prayer. Even though we spoke Slovakian among us, I whispered my prayers in Yiddish German, as if God would understand the language of the Jews better than the language of the Slovaks. “Ich bitte dich hakodesh borchu, das die shlime soldaten zoln uns nicht treffen,” I would murmur. “O please God, help us get over this and may the wicked soldiers never find us.”

It was the prayer of a small boy, a prayer of innocence. And this is how I still pray, for a prayer of a child is a prayer of purity and truth.

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…We suddenly heard the familiar sound of the drum. We cupped our ears with our palms so we could hear better. Sounds were hard to make out because a strong winter wind was blowing that afternoon. But we didn’t have to hear the town crier. The expression on my parents’ faces told us it was bad news. It wasn’t long before Mrs. Matula came up to the hayloft. She was hysterical. The crier had told the villagers there were Jews in the Matula’s hayloft! The next time the Germans came to the village they would take the Jews together with the Matulas.

With tears streaming down her face, Mrs. Matula made us swear to say – if we were ever caught – that it was she, and she alone, who was responsible for our staying in the house. We were never to report her family.

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…We spent the days and nights that followed in different hideouts. One of our stops was an isolated, rundown hut in the middle of an open field. Here, we lay deep in the hay so a quick glance could not discern us. This thick, fragrant covering also served to keep us warm.

Once, between the shrieks of the wind whistling through the tree trunk-lined walls, we heard the sound of a cow-drawn cart rumbling along the path. Cautiously, we peeped through the walls. Three men were on board the cart, which eased to a stop directly in front of the entrance to the hut. The youngest of the three jumped down and entered.

Father got up and calmly explained that we only wanted to stay the night here and would be moving on the next morning. In return, he learned who these folks were. A villager, with his son and grandson, had come to collect some hay from their hut to take back to their village, not far from Povraznik.

Father continued talking with all three men and soon the villager agreed to let us stay there as long as we wanted. Father also asked him for food, for which he would pay generously. A deal was concluded, with Father proffering an advance and the villager sending his son off for the provisions.

As we sat in the hut and waited for the farmer to return with the food, I watched as Father looked heavenwards. I listened as he spoke to God. “Master of the Universe, here are three generations of farmers – father, son and grandson, living quietly and safely, working their land for years, and yet me and my son, hardly two generations, are fleeing for our lives. Is there no savior in sight?”

Perhaps in answer to my father’s prayers, we were able to survive the war and immigrate to Israel in 1949. My father had been a successful dentist in Bratislava, and it was only natural for me to follow his example. After graduation, I joined the Hebrew University-Hadassah School of Dental Medicine in Jerusalem. In 1967, I studied in Boston through the Alpha Omega Fellowship Exchange Program and later became a professor of Prosthetic Dentistry in Jerusalem. I have been an Alpha Omegan since 1960 and served as local president and Regent in 2011-2012.

And whereas the farmers were three generations, my first great-granddaughters were born in Israel early this year.

Like my children and grandchildren, I hope they, too, will continue to tell my stories.

Please note:

- Members must be in good standing prior to the start of convention.
- All Payment Plans must be completed by December 1, 2015.
- Spouses Event (if applicable), Welcome and Farewell Breakfasts, CE, Frater and Spouse*
- CE Only Members
- Young Alum Only*
- Young Alum Frater & Spouse*
- Frater Only*

After November 1st – each category increases by $100.

**NO ONLINE REGISTRATION AT THIS TIME**

Members must be in good standing prior to the start of convention.

Full registration includes:
- CE, Welcome Dinner, Shabbat Dinner, Honors Night Dinner, Spouses Event (if applicable), Welcome and Farewell Breakfasts, Special Museum Tour, and Hospitality.

Please note:
- Prices reflect payments made BEFORE November 1, 2015.
- After November 1st – each category increases by $100.
- All Payment Plans must be completed by December 1, 2015.

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**Hotel Information**

Renaissance Washington, DC Downtown Hotel

999 Ninth Street NW • Washington, DC 20001 USA

Phone: 202-898-9000 • Fax: 202-289-0947

- **$139.00** Standard Room (1 King or 2 Doubles)
- **$164.00** Oversized Guestrooms (1 King or 2 Doubles plus a pull out sofa)
- **SUITES:** 50% of rack rate (call hotel to inquire)
  - Rates are valid from December 21 - January 1. Rates do not include tax.
  - To book two or more rooms and/or to specify room type (king or double), please contact the hotel directly.

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**Convention Registration**

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**Oversized Guestrooms**: (1 King or 2 Doubles plus a pull out sofa)

**SUITES**: 50% of rack rate (call hotel to inquire)

- Rates are valid from December 21 - January 1. Rates do not include tax.
- To book two or more rooms and/or to specify room type (king or double), please contact the hotel directly.

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**Hotel Website**:

- **Reservations By Phone**: 800-468-3571

**Reservations by Phone**

- General Hotel Website
- 800-468-3571

**CONVENTION SCHEDULE**

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**Sheraton Grand Washington DC Hotel**

- **Address**: 50 W. Edmonston Drive, Suite 206, Rockville, MD 20852
- **Phone**: P: 301-738-6400 or 877-368-6326, F: 301-738-6403

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**Points of Interest**

- **Lafayette Square**
- **Monument Square**
- **Washington Square**
- **National Mall**
- **Pennsylvania Avenue**
- **Independence Avenue**
- **Chinatown**
- **Ford’s Theatre**
- **Holocaust Memorial**
- **U.S. Capitol**
- **National Portrait Gallery**
- **Verizon Center**
- **5th Street, NW**
- **3rd Street, NW**
- **13th Street, NW**
- **16th Street, NW**
- **14th Street, NW**
- **12th Street, NW**
- **New York Avenue, NW**
- **I Street, NW**
- **K Street, NW**

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**Constitution Avenue**

- **Congressional Club**
- **Mount Vernon Place**
- **National Museum of Women in the Arts**
- **National Museum of African American History and Culture**
- **United States Institute of Peace**
- **The Newseum**
- **International Spy Museum**
- **National Portrait Gallery**
- **National Museum of the American Indian**
- **National Air and Space Museum**
- **Smithsonian American Art Museum**
- **Smithsonian National Museum of African Art**

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**Name on Credit Card**: ____________________________________________

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**Signature**: __________________________________________ **Total Amount**: ____________

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