

Tension Headaches

Headaches are for all practical purposes a hidden epidemic, yet are not considered a serious problem. Each year over 45 million Americans suffer chronic headaches. Pediatric headaches increased from 14% to 50% from 1972 to 1991. Headache sufferers spend over \$2 billion on over-the-counter medications. Statistics shows 48% of women and 38% of men have tension headaches while only 18% of women and 9% of men have migraines.

Even though the tension headache is more prevalent, for a variety of reasons the migraine surprisingly ends up being diagnosed. Some severity bias causes this slanting of diagnosis toward the migraine. The primary reason for miss diagnosis is the Tension Headache is a cross-over headache (dental/medical). Family practitioners can open up their practice to a new huge volume of patients with tension headaches with an understanding of how to deal with cross over headache. The mixed headache should be shared between the orofacial pain specialist and neurologist. A complex migraine headache should still be referred to a neurologist. In many cases the PCP can provide management for the tension headache in the local practice.

Do you know that a large portion of patients suffer from headaches? Do you realize that some of them are so impacted by their headaches that they cannot work nor have a decent social life? Are you aware of the physical suffering, missed work days, lost productivity and income loss that occur due to headaches? Would you be surprised to know that half of female patients suffer from tension headaches?

What if practitioners were able to:

- Diagnose headaches more effectively?
- Reduce patient's suffering from headaches?
- Reduce the time from diagnosis to treatment?
- Increase the success of headache therapy?

Imagine the marketing potential and patient impact of successfully relieving headaches in every local practice. What if the difference in tension and migraine headaches could be determined in the time frame insurance allows for diagnosis – 12.5 minutes? With this knowledge, practices can enjoy helping people become the master of their chronic pain. To help with this task is a little known specialty that successfully treats moderate to difficult tension headaches called orofacial pain.

The effect of headaches on people around the world is tremendous. If headaches were a new phenomena that suddenly appeared in world today, it would be classified as an epidemic. Headaches significantly affect the individual, the work force, the healthcare

industry, and healthcare costs. The following chart provides some statistics about headaches.

Headache Statistics
More than 90% of the population has had a headache at some time or another during the last year. ⁽²⁰⁾
Over 45 million Americans suffer chronic headaches every year. ⁽⁷⁾
Women have 3 times as many headaches as men. ⁽¹⁷⁾
About 90% of women and 70% of men reported a headache in their lifetime. ⁽¹⁷⁾
The headaches are most frequent in the 30 to 39 age range. ⁽¹⁷⁾
In pediatrics, the headache has increased from 14% to 50% from 1972 to 1991. ⁽⁸⁾

Some headaches are transient, benign, and infrequent; but some are frequent or intense enough to impact the quality of life. Many women have been told they have to just suffer, some are told they are stressed out females; others have run the gamut of the “triptan dance”, resigning themselves to a life of pain. In many cases, headache sufferers begin, or are left with, home remedies to manage headaches.

In fact, headache sufferers spend over \$2 billion on OTC medications. Headaches cost American businesses

approximately 150 million days of lost productivity adding up to \$12 billion in direct or indirect costs. Unfortunately, only 5% of patients seek medical care for headaches in the primary care setting; yet 10% of emergency department visits each year are for headaches. Headaches are the seventh leading cause of ambulatory care accounting for over 18.3 million outpatient visits per year.⁽²¹⁾

Most primary care physicians (PCP) will attest that the diagnosis of headaches is difficult. This difficulty is complicated by: third party interferences in healthcare, lack of visual symptoms, patient communication problems, limited curriculum health schools, evolution of headache science, pharmacological influences, medical- dental communications, patient biochemical differences, pain threshold differences, scientific and literature bias, and other items.

Acute vs. Chronic Pain

In a busy practice, it is always difficult to find enough time for all the pathologies and problems that are presented. Most hope that all patients will have easy, classic, straight-forward diseases or pains that can be diagnosed in the limited time allotted. When collecting patient data, symptoms, history, and clues, there is usually only enough time for the acute pains of the world.

Acute pain with its primary sensory presentation (visual clues) described by a good communicator (patient articulates symptoms) is amenable to a quick diagnosis. An acute pain such as a sinus infection, ear infection, abscessed tooth, skin rash, or cough-fever-congestion is amenable to a 12.5 minute diagnosis (time allowed by insurance companies). The primary sensory presentation speeds up the diagnosis. A chronic pain, such as a headache that lacks a primary sensory presentation, requires more time to obtain the history, symptoms, clues, and data. Without a prior relationship with a headache patient it is difficult to identify the level, type, or quality of pain, frequency, duration, location, or any other associated symptoms.



Poor or Limited Clues (Symptoms)

The diagnostic process is complicated by the patient's inability to identify symptoms, relate cause and effect, differentiate reactions, notice changes, and communicate this data effectively. In some cases, patients may have poor observational abilities, are histrionic, have unstable bipolar disorder, have a fragmented mind-body connection, or some hidden agenda. A thorough knowledge of the various pathologies along with an understanding of patient differences and a determination to ferret out the information is required with these patients. Where does it hurt? When does the head begin hurting? What part of the day does it hurt? Describe the pain?

An answer such as "I don't know" frustrates the process when you only have minutes to make a diagnosis. Some of the hidden agendas may include drug seeking, being entitlement driven, or having control issues. These issues color, flavor, or corrupt the information and make the diagnosis difficult. When the patient's agenda is not to get better, the data provided is driven by other purposes. A drug seeker will elevate the level of pain reported in order to obtain more powerful opioids. A patient with entitlement designs will report that nothing works on their pain except a little green pill (money). A spouse, who for years has been abused or neglected, may use guilt and disease to keep the husband (or wife) doting on her.

Even high pain thresholds in certain patients will warp the headache data in favor of a migraine diagnosis due to severity bias (the most prevalent bias in headache diagnosis). Often patients present a few of the classic headache symptoms, but not all of the symptoms. When a limited number of symptoms exist, it creates the need for knowledge of all headache pathologies and the time to consider headache look-a-likes, such as TIC, CPH, osteoarthritis of the TMJ, aneurysm, or tumor. Differential diagnosis of pathologies with limited data almost always requires time for testing, clinical trials, imaging, or great bio-detective work.

Bias in Educational Journey

The educational journey for health care professionals begins long before admission to medical school. Most are bombarded by the media's focus on health articles. What's hot, what's not, what's politically favored, etc. Looking at popular literature such as Readers Digest, People, Family Circle or Woman's Day, migraine information permeates almost all the headache articles, so most people might expect that the migraine-to-tension headache ratio is about 9 to 1, which is totally wrong.

Medical school curriculum is typically influenced by donations to schools, hot trends, politics, and the limited time the school has to develop its students into caring doctors. With government monies drying up for medical schools, corporate sectors donate funds that exert some influence on the curriculum even though it may be subtle. For tension headache there is no corporate economic force selling a champion pharmaceutical, nor is there a force to push tension headache into the medical curriculum at the expense of something else. Sometimes, the medical school curriculum is controlled by hot and trendy aspects, media blitzes, or bandwagon economics.

Even after medical school, scientific journals and post-graduate courses have about a 9 to 1 ratio of migraine-to-tension headache exposure. To find this migraine bias look at the lecture series for the American Headache Society (AHS) or the most recent Headache journal. For example, in the August 2008 issue of Headache, there were 22 migraine articles and 1 tension headache article. With this major informational bias toward migraines, it is no wonder that most headaches are considered migraines. The following table shows the difference between tension headache criteria and migraines according to the AHS.

American Headache Society Criteria		
Symptoms	Tension Headache	Migraine (without Aura)
A. Least number of attacks fulfilling items B - D:	10 attacks	5 attacks
B. Headache duration:	30 minutes - 7 days	4 - 72 hours 2 - 48 hours (under age 15)
C. Has at least 2:	<ul style="list-style-type: none"> • Bilateral location • Pressing, tightening • Mild to moderate pain • Not aggravated by physical activity 	<ul style="list-style-type: none"> • Unilateral location • Pulsating • Moderate to severe pain • Aggravated by physical activity
D. During headache:	<ul style="list-style-type: none"> • No nausea or vomiting • No photophobia and phonophobia 	<ul style="list-style-type: none"> • Nausea and/or vomiting • Photophobia and phonophobia

Inflammation Confusion

Over the years, scientific research has provided a view of headache pathophysiology. However, when only the migraine perspective is used to format, creatively develop, carry out, and write grants for research, the resultant findings normally reflect that perspective. Part of the problem is that anything hurting in the head is labeled only as a headache. The migraine is more biochemical, physiological, and pathophysiological; and therefore, it is exclusively, extensively, and undeniably medical. A tension headache on the other hand is one that typically involves the dental field.

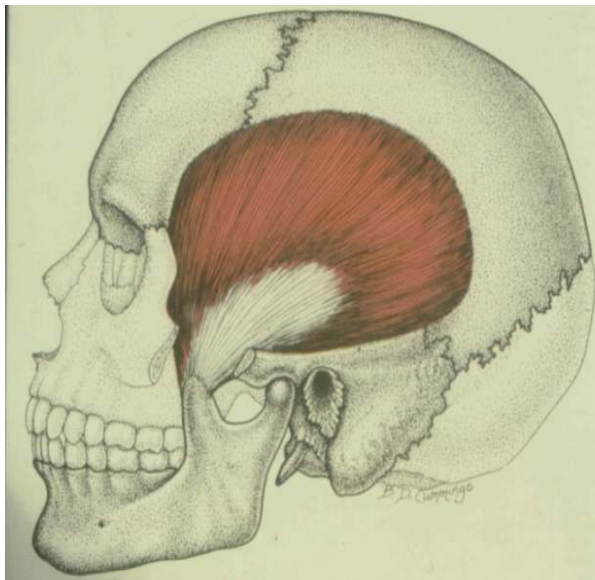
In the last 10 to 15 years, scientific literature has focused on the neurogenic inflammatory process. The migraine is the result from the culmination of various inflammation sources that set off a protective rheostat in the brain to flush the brain of toxins by dilation of the blood vessels. The pain nerves are located around the blood vessels, not in brain tissue. Most of the body's orifices are in the head region with its lymph tissues fighting pathogens and there are two major muscle joint complexes (neck and jaw) producing a lot of inflammation. Each of these entities can create inflammation even if the tissues are normal, but even more if the person has a budding disc, jaw joint osteoarthritis, or over uses the structure – like chewing gum.

The temple muscle is the inflamed muscle that hurts in the tension headache. The other chewing muscles, Medial Pterygoid, Masseter, and supra hyoids, are each capable of producing inflammation. The temple muscle has been singled out as headache pathology because it is on the side of the head. Suboccipital active trigger points and forward head posture are associated with tension headaches (39). Other sources of inflammation are bacteria, virus, and fungal pathogens invading the orifices of head. A hidden and relatively new source of inflammation is chemical sensitivities that can be smelled, breathed, contacted, or ingested. These chemicals do not cause a full blown rash or difficult breathing, but they cause smaller amounts of inflammation. If ingested and enough of the chemical or patient's sensitivity is medium or high, these chemicals can wreak havoc on the amount of inflammation in the system.

The multiple sources of inflammation in the head and neck region make the migraine a complicated headache to diagnose and manage. As such, the obvious, somewhat obvious, and the hidden sources of inflammation have to be ferreted out. The fact that the temple muscle inflammation can be a contributor to the inflammation of a migraine⁽³⁸⁾ increases this confusion. One factor in this confusion is that the pericranial muscles are tender in all tension headaches

and some migraine headaches. ^(22, 23, 24) The pericranial muscle tenderness is positively related to frequency and intensity of headaches. ⁽²⁹⁾

Many people who suffer from migraines also suffer from tension headaches. ⁽³⁶⁾ Pericranial muscle tenderness fails to distinguish tension headaches from migraines without aura. ⁽⁴⁴⁾ Most clinical studies of tension headaches suffer from a selection bias; as, they include patients with more severe headaches. ⁽³⁷⁾ In practice of orofacial pain (chewing system orthopedics), the management of tension headaches, almost always reduces the migraine frequency, intensity, and duration. ⁽³⁸⁾



Temporalis Muscle (Chewing Muscle)

To add further to the migraine vs. tension headache confusion is the new darling of neurology, Botox. Botox injections are now being hailed as a migraine treatment because it reduces headache pain. This new tool gives even more credence to the idea that muscle inflammation is a predisposing factor to the migraine because Botox blocks the motor transmission of the brain to the muscles. By injecting Botox into the chewing muscles, you calm down the muscle activity in chewing muscles which reduces the pain of a tension headache. Unfortunately, it treats the end point of inflammation, pain, just like an opioid, but does not prevent muscle contraction or overuse. So, it is not unusual to have diagnostic and management confusion in the world of headache treatment.

Limited Curriculum Time

Ask how much education was devoted to the temporomandibular joint and its associated structure of any

ENT, Dentist, Neurologist, Physical Therapist, Periodontist, Prosthodontist, or Rheumatologist. Until recently, healthcare graduate schools included very few (if any) courses on the joint muscle complex of the jaw joint. Other than anatomy, there are no pathology courses in any of these curriculums. Medical schools average only 1 hour of pre-clinical and 2 hours of clinical headache teaching (40). Only in the last 5-7 years have small increases in this information been provided by medical or dental schools on how to diagnose or manage chewing system damage. Whether it was the forgotten joint or was assumed to never damage, it was all but ignored. Evidently medical schools thought dentistry was covering the damage chewing system and dental schools thought teeth cause chewing system damage. In the training of dentist today, the typical 4 years of dental school only provides 3 hours of training directly related to pathology of the chewing system. Only in the last couple of years has some of the scientific literature, professional courses, and books begun to cover the chewing system. Yet, much of the past misconceptions still survive without any scientific support.

In managing tension headaches, an orthotic is needed to be used for reducing inflammation in chewing muscles from bite discrepancies and clenching. If the wrong appliance is used in studies, it will set up confusion in the results from a headache study. One such confusion is Las Vegas Institute's (LVI) anterior repositioning therapy (ARS) for jaw joint problems that is based on old concept of teeth relationships causing jaw problems. Even though very little science exists to support this form of jaw joint care, it flourishes due to the power of money. The ARS creates a posterior open bite that must be fixed years later at the cost of \$20,000 to \$40,000 for reconstruction after jaw joint therapy. Unfortunately some treatment decisions are based on economics and not science, especially since jaw joint therapy may be included in tension headache management.

Medical Viewpoint

Years ago when the medical community began to study and classify headaches, they were still in the dark ages when it came to the jaw joint. It seemed logical to call anything that hurt in the head a headache. In those days, the pain of temple muscle inflammation was called a tension headache. Yet in the dental field, inflammation of another chewing muscle, the Masseter, was called myofascial pain dysfunction or jaw pain. To truly understand tension headaches, a grasp of the physiology and anatomy of the chewing system is necessary. ⁽²⁷⁾ For example, patients with a history of tension headaches that were asked to clench for hours

caused 69% of patients with no headache at the start of clenching to have a tension headache. ⁽²⁸⁾

Clenching is a subset of parafunction. Parafunctional habits are destructive habits of the chewing system that damage the joint-muscle-tooth-bone complex and contribute no benefit to life or happiness. Some of these destructive habits are grinding the teeth at night, dyskinesia due to ecstasy intake, tooth bracing (holding front teeth in forward or forward-lateral position), tongue biting, lip biting, pencil biting, pipe smoking, cheek biting, or chewing gum. Grinding, as a parafunction, is a Parkinsonism behavior, a central brain phenomena associated with the sympathetic system (fight or flight system).

Resting muscle tension is found to be higher in tension headache patients. ⁽⁴³⁾ Did you know that stress can increase tension in chewing muscles? ⁽⁴⁵⁾ Did you know that an increase in parafunction at night will increase tension headaches? ^(46, 47) Myofascial pain is the number two pain in the world just after bacteria and viruses. ^(25, 26) In tension headache, there is pain in both temples, but with a migraine there may be pain in almost any part of whole head. Understandably, from a medical viewpoint, a pain in the side of the head sounds like a headache.

A tension headache is truly just an orthopedic structure that gets inflamed from a variety of oral or habitual demands placed on it. Some of the demands are stress (tensing a muscle), clenching, muscle splinting (protecting a damaged joint), jaw muscles bracing for neck contraction, bad bites, and even tearing ligaments from trauma. These factors must be reduced to allow inflammation to decrease and eliminate a tension headache; therefore, the chewing system inflammation can add to a migraine. As logical as this sounds, it requires a change in the way medicine and dentistry are practiced.

Time Crunch: Accepting an Assignment

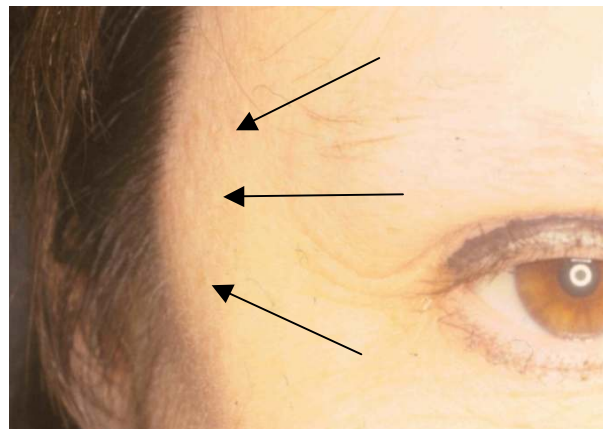
In moderate to difficult cases, it takes time to measure, test, challenge, or tease symptoms to successfully differentiate headaches. Most doctors that accept an assignment when presented with a difficult headache, only have the time for a presumptive diagnosis of a migraine or a referral. Difficult case differentiation requires time, knowledge, and patience to do a diagnostic workup. Third party payers are often “penny wise and pound foolish” causing them to refuse to acknowledge the formidable body research supporting the clinical efficacy and cost effectiveness of multidisciplinary pain management (50).

If time is lacking, a presumptive diagnosis is all that is possible. Sadly, the healthcare industry is being forced into fast, quick, and cheap diagnostics by the power of the insurance companies. Given this limited time, the most common diagnostic tool to distinguish between migraine and tension headache is severity level. When a severe headache presents itself and time is lacking, it is easy to accept the first symptom, especially in face of all the headache confusion. The second sin of third party payers intrusion into medical care is “let’s try this” approach, usually medication. The pharmaceutical approach is often insufficient to treat the multiple pain sources and can perpetuate a patients pain (50).

Presumptive Migraine Diagnosis — the Triptan Dance

A presumptive diagnosis of a migraine begins the “triptan dance” and other migraine headache drug trials. Often, an array of triptans is prescribed until most of the triptan family of drugs is exhausted. If the patient fails these triptans, they are often told they have to live with the pain. It is often implied that you are “stressed out females” or they are “hypochondriac’s and to just go home and suffer.”

The biggest concern with a severe headache getting a presumptive diagnosis of migraine is the impact on children with the triptan dance. Consider the time and money endured by parents and the amount of suffering for the child who fails to respond to each and every triptan or other migraine drug. The knowledge of migraine drugs comes from the adult headache scientific literature and not a child’s perspective. With the “triptan dance”, parents face the difficult decision of having to choose between drug-induced cognitive impairment and headache pain. Even when adults fail the triptan dance, it creates months of suffering, expense, and frustration.



Enlarged Temporalis Muscle

Tension Headache: Chewing Muscle

Of the many types of headaches, the tension headache is by far the most prevalent – with 38% of all males and 48% of all females suffering from this form of headache. ⁽¹⁾ In a neurologic clinic, 41% of all headaches diagnosed were tension headaches. ⁽²⁾ In a university pain center, 62% of all headaches diagnosed were tension headaches. ⁽³⁾ Despite its prevalence, the tension headache is the least studied, the least diagnosed, and the least understood of the primary headaches.

Seymour Diamond describes the tension headache in his chapter “Muscle Contraction Headache” in *Practicing Physician Approach to Headache*, as “chronic, episodic, nonpulsatile, tight-band-like pain in the temporal area, unilateral or bilateral, aggravated by or with stress.” Even though most tension headaches are mild to moderate, they can be severe. The severity of the headache has to do with the impact value of factor, headache duration and longevity, number muscle recruiting factor, and the level of pain threshold.

If a patient is asked to point to where their head hurts and they point to the side of the head as their source of pain, what type of headache would this patient exhibit? Anatomy says there is only skin, temple muscle, and bone in that this area. The most likely pain source is the temple muscle – a power closure muscle of the chewing system. When any muscle begins to hurt, what usually causes the pain is excessive functional movements, ⁽³⁰⁾ tension in muscles from stress, or repetitive and/or posturing actions.

Muscle recruitment factors may be obvious, not-so-obvious, or hidden to either the patient or doctor. Some patients when asked the location of pain will vaguely refer to the periorbital or retrorbital areas, but with further questioning it may be above and lateral to the eye. The temple muscle is a broad and expansive muscle across the side of the head. It can extend forward enough to be above the lateral aspect of the eye, deep to and lateral to zygomatic arch, and back to almost the occipital region. Different parts of the muscle contract when the mandible is doing different actions with its horizontal, oblique, and vertical fibers. As a power closure muscle, it can be involved in most muscle joint complex overuse pathologies.

Muscle Inflammation (Temple Muscle)

Although the Ad hoc Committee of the National Institute of Health (NIH) in 1962 ⁽⁴⁾ called temple pain muscle contraction headaches, not all EMG studies

confirm this description. ^(18, 19) Many use this inconsistent data to state that it is not of muscle origin. The reason for the confusion about tension headache etiology is that it is multi-factorial. Each tension headache patient is different due to the types, number of factors, and the impact value of each factor.

It was assumed when it was called a muscle contraction headache that the skeletal muscles would always be under tension, but if the bigger factor is clenching at night or day, EMG testing may not record any activity if the patient is not clenching. At the end of treatment in chewing system orthopedic therapy, patients may be able to identify the significant factor: jaw posturing, muscle tension (stress, emotional upset), repetitive habits (chewing gum, pencil or object biting, diurnal clenching, nocturnal bruxing), effects of trauma (mostly car accidents), inefficient bite, muscle splinting of a damaged joint, and even reciprocal jaw contraction from the neck, and so forth. Even though a significant factor may be present, it does not mean the other factors are not important to manage. The varied response by headache patients as to which was the most significant factor in tension headache is indicative of the complex and varied nature of muscle recruitment activities.

In addition to muscle recruiters, the patient may have global factors that can set the stage for muscle problems with poor sleep, poor nutrition, poor cardiovascular conditioning, and psychosocial problems (anxiety, significant stress, depression). With so many muscle recruiters, it is not surprising that tension headache is confusing. Some cause constant increased EMG activity, some are intermittent, and some of the factors do not cause increased EMG activity in the temple muscle. No two tension headaches arrive at a pain state from the same set of aggravators, initiators, or perpetuators.

Sources of Chewing Muscle Recruitment
Smooth muscle -- tension in muscles
Cervical muscles -- posture, phone bracing, shrugging; reciprocally activates jaw muscles
Jaw muscles -- chewing, yawning, kissing, talking
Parafunction -- clenching, grinding, tooth or muscle bracing, tongue biting
Damaged joints -- muscle splinting to protect a joint
Bite -- an inefficient meshing of teeth which uses more muscle activity in chewing
Trauma -- a high velocity trauma will tear the jaw joint ligaments, causing the muscles to act as ligaments

The Migraine

Over 90% of the population has a headache at one time or another during the course of a year. Fortunately, most of these are not migraines. ⁽³¹⁾ The second most prevalent headache is the migraine which affects 18% of women and 9.0% of men. ⁽¹⁾ Migraine is a unilateral pulsating severe headache with nausea without aura in over 80% of these headaches. ⁽³¹⁾ Migraine without aura (formerly called common migraine) is the more prominent of the two migraine types. ⁽³⁵⁾ Of migraines with aura, 5-12% have prodromal symptom (formerly called classic migraine). ⁽³⁵⁾ Nearly 90% of auras are visual with many different presentations. ⁽³¹⁾ In fact, the migraine with aura has several different subtypes, most of which are rare.

There are environmental triggers in as many as 15 - 25% of migraines such as food ingestion, smells, or chemical contact. ⁽³²⁾ Most triggers have been discovered through trial and error. Currently, a blood test can determine most of the chemical sensitivities ⁽³³⁾ that a particular person might present with a headache. Some people are migraine prone, which leads to a discussion of genetic versus environmental basis. It is a known fact that certain families have a genetic predisposition to a particular migraine. Many patients with migraines have noticed specific migraine triggers such as caffeine, nitrates, or red wine. Most migraine patients develop nausea, photophobia and/or phonophobia after onset of the headache. These severe headaches usually have other symptoms such as nausea, light sensitivity, or sound sensitivity or even pre-headache visual disturbances.

Diagnosing Headache Types		
	Tension Headache	Migraine
Sides	Bilateral, unilateral	Unilateral
Location	Temple	Any area of head
Quality	Dull, ache	Throb, pound
Quantity	Moderate to severe	Severe
Causes	Chewing muscle inflammation	Neuro inflammation & vasodilation
During headache	None	Light, sound, nausea
Aggravators	Stress, chewing, talking, yawning, opening wide, clenching	Physical activity, smells, hormones, foods

Alleviators	Orthotic, heat, relaxation, sleep, PT, Bio, massage	Triptans, TCA, beta blockers, calcium channel blockers
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Amazingly, the majority of people do not know they have a migraine. ⁽³⁴⁾ With this fact in mind, a practice that achieves success with headaches will get word-of-mouth referrals from patients to their family, coworkers, and friends. Often family practices, internal medicine, and other frontline health fields did not treat headaches in the past so they referred them to a neurologist. But today, the first line medical doctor should be the diagnostic clearinghouse for headaches and they should manage the classic tension headache. The paradigm shift here is to understand the temple muscle as a pain source for tension headache and managing the pain more as a chewing system orthopedic.

When the PCP encounters a difficult migraine, they should still refer to a neurologist. If they encounter a difficult tension headache case, they should refer them to an orofacial pain specialist and use an orthopedic team to manage the tension headache. The most difficult case to differentiate is the mixed headache. For purpose of simplicity, if a mixed headache leans towards migraine then refer to neurology and if it leans toward tension headache then refer to orofacial pain.

A good specialist will recruit the other specialties to help in the management of the mixed headache. For example, if a PCP refers to an orofacial pain specialist and the headache has a migrainous component, the orofacial pain specialist would recruit a neurologist to be part of the management team. This team dynamic is not standard today but it should evolve with time to best meet patients needs.

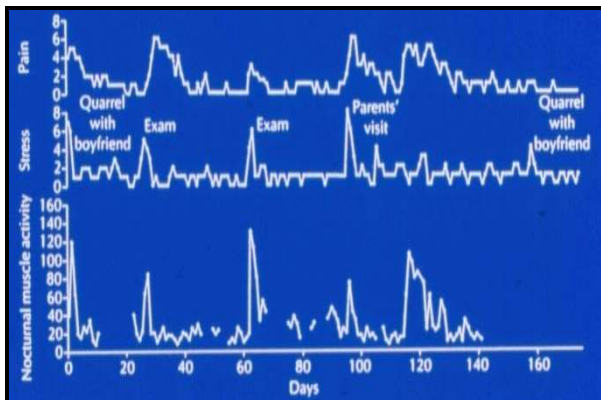
Diagnosis Process

Assume a patient is experiencing almost daily episodes of unilateral, moderate to severe, right temple throbbing, with no eye symptoms, and is not aggravated by physical activity. Begin by collecting the obvious data of frequency, duration, onset, description, pattern, associated symptoms, etc. As an adjunct evaluation to diagnose tension headache, do a modified head and neck examination. Since the temple muscle is part of the chewing system, a quick look at how the jaw works, tenderness of a limited number of chewing muscles, and range and pattern motion might help confirm the temple muscle as the source of pain. Documentation if the muscles and joints of the chewing system are tender, there is deviation on opening, joint noises on function, intermittent locking, parafunction is present (clenching/grinding), and a

stress assessment. Look at the oral cavity for severe wear on teeth, bony outgrowth (tori), or weird wear teeth patterns. Check if chewing muscles are enlarged.

Use a couple of tools to help with the analysis. An accurate screening tool that takes only 5 - 10 minutes is the PARS screening evaluation designed by Dr. Parker Mahan. Also, there is a NTI device that helps differentiate tension headaches from migraines. The NTI is a plastic button that can be used to see if parafunction is a part of the chewing muscle inflammation. (See author contact information to find out more about these tools.) There are other tools such as a clenching lie detector called bite strip. Over time more tools will be developed to help differentiate headache types.

Other problems that present as a headache are a serious concern for managing tension headaches. These cross-over pathologies must be understood so that a tumor or aneurysm is not treated as a tension headache. In the diagnosis of any pathology, it is as important to know what other pathologies act like a tension headache. To manage tension headaches, you will need to coordinate the use of medications, physical therapy, biofeedback, sometimes psychological counseling, nutrition, and orofacial pain for an orthotic.



Long-Term Sleep Data Showing Relationship of Stress and Clenching

Orthopedics: Temple Muscle Therapy

The complex nature of successful tension headache management requires time for management, coordination of treatment, and communication. The secret to treating tension headaches is orthopedic therapy. The chewing system is a joint muscle complex similar to the knee or hip. An orthopedist working on a damaged knee would begin with medications, an orthotic, physical therapy, and other orthopedic therapies. In case of the tension headache, its name implies that stress is the cause of the headache. Stress

is an aggravator and needs it due time and focus by a biofeedback member of the team. The orthotic requires a dentist with special training in oral orthotics that idealizes the function of the chewing system. The medications used are simply muscle relaxants and anti-inflammatory. The classic tension headache will respond to the orthotic, medications, physical therapy, and biofeedback. Thus, the PCP role in tension headache management is team captain and chewing system orthopedist.



Orthotic

Orthopedic Appliance: Orthotic

If the tension headache has inflammation or an overused chewing system muscles, an orthotic (or splint) is needed for muscle recruitment deprogramming, clenching protection, and joint loading and pressure reduction. The purpose of any orthotic, such as a knee or back brace is reduction of muscle recruitment. Just as a back brace sits on the hips, the tension headache orthotic sits on the teeth.

A tension headache orthotic is a device that idealizes the function of the bite. The orthotic protects the person from the ravages of parafunction, and also reduces muscle recruitment, dissipates intra-articular pressure, and stops lubricant destruction. ^(11, 12, 13)

Kemper and Okeson reported in J. Prosthetic Dentistry that the orthotic by itself reduces the headache in 64% of the headache population and stopped the headache in 32% of the headache population. ⁽¹⁵⁾

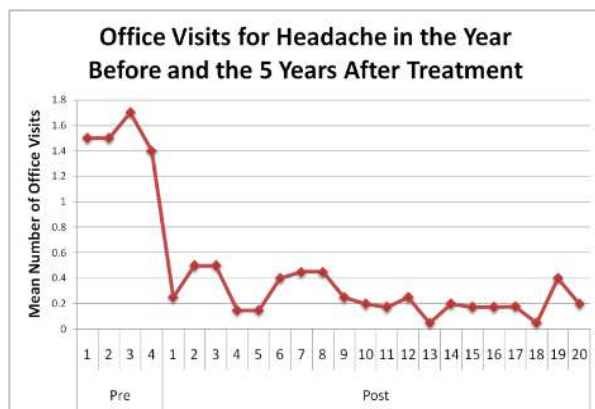
If chewing muscle inflammation is a major contributor to neurogenic inflammation that sets off a migraine, the orthotic reduces the migraine in frequency, severity, or duration. The orthotic will not contribute much to reduce the migraine if the neurogenic inflammation has another major contributor such as neck muscle inflammation, neck joint inflammation, allergies,

chemical sensitivities, or infectious bugs imitating inflammation. The orthotic basically acts as an orthopedic appliance much like a knee brace keeping the muscles from being overused by bite inefficiency or parafunctional activities. The accuracy of the orthotic depends somewhat on the degree of damage and difficulty of the case.

Significant orthotic accuracy is critical in patients with significant jaw joint damage (disc displacement without reduction) or osteoarthritis. Most of the general dental courses for orthotics/splints are weekend courses with little hands-on opportunity. For tension headache management, it is best to use a dentist that has extensive courses and experience in orthotic management. In some cases, the PCP may choose to manage the care but recruit an orofacial pain specialist to provide the orthotic. Otherwise, the orofacial pain specialist can assume the responsibility of being the coach of the pain team.

Pain Management

Designating a head coach or primary care doctor is especially important for pain medications (opioids) because headache patients seeking drugs are difficult to control. Tension headache management can be very time consuming when coordinating the patient's care and communicating with the other team members, insurance defenses, and incorporating variable treatment regimens, such as trigger point injection, nutrition, topicals, abuse counseling, central sensitizations, etc. This extra time can cause a problem with standard insurance policies. Typically insurance will cover shots or pills but not coaching, coordinating, and communicating. These services must be provided for tension headaches when there is anxiety, depression, bipolar disorder, abuse, low health value, hidden agendas, drug seeking, or other management issues.



Medical Utilization After Biofeedback (42)

An orofacial pain specialist is better equipped to handle difficult tension headaches with multiple problems such as sleep issues, being overweight, ergonomics, destructive bruxer, osteoarthritis of jaw joint, neck issues, or fibromyalgia. The treatment of tension headaches can be especially hard to resolve if some muscle tension is from previous abuse. For a patient with a history of emotional, physical, or sexual abuse, the pain team expands from biofeedback, physical therapy, and orofacial orthopedist to adding a counselor and/or psychiatrist. A patient that is a significant bruxer at night or massive clencher during the day will need additional therapy above standard muscle relaxants, NSAIDS, and an orthotic. Para-function is a destructive habit (central brain generated) which is hard to control, manage or reduce. In one report, nearly two thirds of the patients with tension headaches report parafunction as an aggravator to the headache. (9)

There can be many different factors that complicate tension headache management. For instance, joint damage sets up muscle activation that causes inflammation. As with any joint, damage in the joint capsule causes muscles to act as ligaments causing a sustained muscle contraction. Nearly, 70% of patients with disc displacement suffer from tension headaches. (10) Joint damage requires orthopedic therapy to reduce joint inflammation; therefore, reduction in muscle activity. Another way muscles are required to have more activity is the introduction of damage muscle spindles called trigger points. Most tension headaches involve patients with trigger points in the muscles of mastication. Muscles that require a lot of fine tuning or fine motor skills have rheostats (muscle spindles) that keep the brain informed of muscle action. (14)

Overactivity of a muscle can cause a muscle spindle to swell or stay swollen. These swollen muscle spindles are called trigger points. Trigger point therapy consists of removing the causes of trigger points and sometimes even injecting the remaining stubborn trigger points.

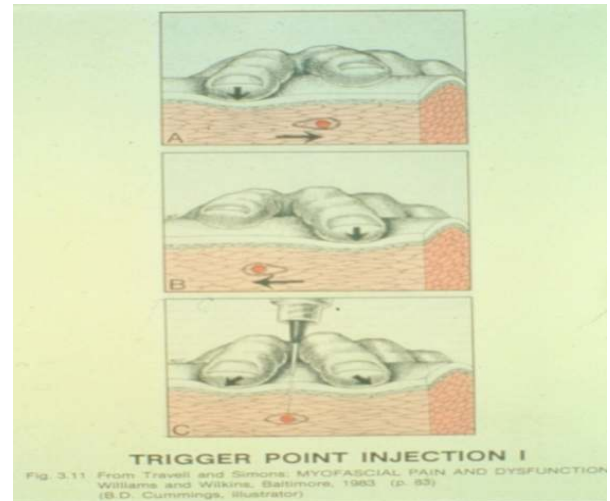
Typically, stress management is essential for tension headache management and biofeedback is essential for reducing tension in muscles. When biofeedback is used as the only treatment modality on the tension headache, it is highly effective on tension headache reduction. It even reduces migraines by reducing neurogenic inflammation. (38) Blanchard and Applebaum reported in the Journal of Headache in 1978, that 78% of tension headaches and 91% of migraines improved with biofeedback. (16) The key to tension headache reduction is the removal or control of all factors that upregulate the use of the muscles.

Summary

Tension headache is a pain that plagues a lot of people. Many patients are simply not asked about their tension headache when they arrive with a cold or backache. Many patients suffer from headaches and the numbers are growing. The larger population of sufferers are adults, but the number of tension headaches in children is growing at an alarming rate. The present state of management of pediatric headaches is at best unsuccessful; mainly due not diagnosing tension headaches. Treating pediatric headaches as migraines leaves a parent in quandary over pain or cognitive impairment. Proper diagnosis will avoid most of these pitfalls in the headache management world. Because of present diagnostic inadequacies, many people with tension headaches:

- Are told they just have to live with it
- Assume they have to ignore their headaches
- Proceed to dangerous and invasive medical alternatives
- Become dependent on opioids or valium medications
- Discover that other chronic pains piggyback on unsolved tension headache
- Suffer for years
- Lose a job due to missing work, make poor grades, or have relationship issues
- Deal with cognitive impairment
- Feel like they are a hypochondriac
- Deal with depression due to a long history of pain
- Socially withdraw due to the unpredictability of pain.

Through proper diagnosis and referral, doctors can reduce suffering from headaches and conserve medical and business resources. By diagnosing and treating tension headaches effectively, PCPs can prevent many patients from becoming chronic pain patients. Also patients feel better, live a better life, derail their journey to chronic pain, reduce healthcare costs, reduce healthcare waste, and reduce frustration with healthcare. Most importantly, the patient knows their PCP cares and keeps up with latest healthcare science.



Damage Areas Muscle Called Trigger Points