

# **Jaw orthopedics: a solution for Fibromyalgia**

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Hypothesis: Trigeminal hypertonicity from jaw malalignment is the cause of a high percent of fibromyalgia.

Clinical experience has shown that precise orthopedic correction of jaw malalignment is highly effective at eliminating fibromyalgia symptoms. As a dentist whose practice is limited to pain management and jaw orthopedics, I see a very large number of pain patients with a prior diagnosis of fibromyalgia. The treatment protocol that I have developed over the years is successful in approximately 85% of the cases at substantially diminishing their pain. My clinical experience in conjunction with 1) an analysis of the pathologies associated with fibromyalgia, and 2) an analysis of the neurology of the trigeminal system and 3) research evidence, strongly suggests that most fibromyalgia is due to trigeminal system disturbance (bite or otherwise). The fact that the trigeminal disturbances often go undetected, by both the medical and dental professions, is what has made this disease so perplexing.

Definition: Jaw malalignment exists when occlusion is not coincidental with a fair arc of closing, and the teeth are not meeting evenly. Closing on a fair arc is rarely present in modern humans. Research suggests that multi-generational nutritional deficiencies are a possible cause of this degeneration. The dental profession generally does not know how to assess this type of dysfunction, though dental “neuromuscular concepts” recognize it to a degree.

Over 90% of the population when allowed to function on a fair arc of opening/closing will posture with the front teeth end on end, a tooth arrangement which is considered abnormal (class III malocclusion) by the dental profession. This occlusal arrangement is typically found in aborigines and primitive skulls. This position is functionally more ideal in that it postures the mandible with the least range of motion in function ( jaw function meets the standard orthopedic requirements: i.e. the mandible will have minimal translation, and mostly rotation in function). Fair arc of open/close can be easily assessed visually or measured on the kinesiograph.

Assessment as to whether the teeth are meeting evenly without torquing the jaw is very difficult to assess without proper training and the use of low frequency TENS. This function can be measured with surface electromyography. Hence, the typical dental exam fails to perceive the presence of any covert dysfunction. Orthodontic treatment which is designed to fix bites, in fact, leaves the mandible with substantial dysfunction and accommodation in a high percentage of cases.

With mandibular malalignment, the trigeminal nerve tonicity level increases, as well as stimulation of trigeminal proprioceptors. This in time leads to elevated substance P and other neuropeptides, thus causing in some cases a generalized hypersensitivity syndrome. In cases of extreme dysfunction, temporomandibular joint symptoms can arise (TMD is a condition known to occur frequently with fibromyalgia). TMD is known to be associated with a wide variety of medical disorders and elevated medical utilization, as well as being much more common in females. Many articles have pointed out the high correlation of TMD with fibromyalgia, but none, to my knowledge, have suggested they have a common origin: jaw malalignment.

Note: a substantial segment of the dental profession believes TMD is primarily caused by psychological factors. This perspective is contrary to my extensive clinical experience. Psychological distress is a factor in some cases of TMD, but more often than not, the musculoskeletal dysfunction is causing the psychological disorder (somatopsychic dysfunction).

The associated pathologies of fibromyalgia support the fact that fibromyalgia is due to trigeminal nerve disturbance. The following table lists a few of the known associated pathologies with explanation as to how the trigeminal nerve is involved.

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| Body pain, often worse on rising                     | Trigeminal nerve modulates pain perception. The jaw often displaces while unconscious, necessitating special nighttime appliances.   |
| Sleep disturbance                                    | The trigeminal nerve has a major influence on the activity level of the brain in reticular activating region   |
| Chronic headaches                                    | Trigeminal nerve is the only pain fibers in the anterior 2/3 of the brain (dura mater). Upper cervical supplies posterior 1/3 of brain. Trigeminal and upper cervical send their pain fibers to same nucleus (i.e. strongly influence each other). |
| Multiple chemical sensitivity                        | Chemoreceptors in the nose are from the trigeminal nerve.  |
| Elevated substance P                                 | The trigeminal nerve has 100 times more dense C fibers than any other nerve; C fibers produce substance P. Grinding of teeth is associated with elevated nerve growth factor secretion.  |
| Autonomic dysregulation                              | Trigeminal tonicity is known to have a major influence on sympathetic tone.  |
| Cognitive dysfunction, difficulty with concentration | Trigeminal controls blood flow to the brain (trigeminovascular complex). Trigeminal  |

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|   | stimulation known to effect recall                             |
| Irritable bowel syndrome, interstitial cystitis, skin disorders | Conditions known to be caused by elevated substance P levels.  |
| Hormone imbalance   | Biomechanical distress known to have effect on hormone balance |

Multiple aspects of the neurology of the trigeminal system further supports the hypothesis that fibromyalgia is caused by trigeminal disturbance. Various aspects of the trigeminal nerve are known to have the ability to modulate multiple sensory inputs, including hearing, smell, visceral, and somatic. Trigeminal proprioceptors are known to have the ability to modulate muscle tension systemically through their influence on the Golgi tendon apparatus. Trigeminal hyperactivity is associated with increased sympathetic nervous system activity as well as hypothalamic-adrenal axis dysregulation. Trigeminal nerve is also known to have ability to regulate levels of nutrients in the blood. Trigeminal is known to modulate input into limbic component of the brain, hence having the ability to modulate immunity and emotions.

Elevated levels of substance P are thought to account for a considerable number of the symptoms associated with fibromyalgia. The trigeminal, with its high density of C fibers, has ample ability to produce substance P. Clinically, as a general rule, substance P related disorders readily resolve with appropriate jaw orthopedic therapy, and return if the bite becomes imbalanced. Perhaps substance P from the trigeminal is being transported via retrograde axonal transport, or its production is stimulated by the trigeminal through other mechanisms. Research has shown that injection of irritant into the masseter muscle on rats causes peripheral hypersensitivity for 28 days.

Many fibromyalgia patients are often hypersensitized, hence their treatment has to be much more precise than most dentist are accustomed to delivering. Consequently, traditional splint therapy as delivered by most dentists, will have limited success at impacting fibromyalgia in the presence of hypersensitivity. Fibromyalgia patients need very precise orthopedic positioning and occlusal balance. This will need to be done with more sophisticated appliances; appliances that control jaw alignment better: like twin block splints and neutral bionators for nighttime.

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