



ALIGNER CARE

Has Dentistry Developed the First Cure for Tinnitus?

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For those with primary, persistent, and bothersome tinnitus, this might be music to your ears. A novel dental remedy, advanced tinnitus-focused sequential aligner therapy, is showing great promise. Some have already had their highly annoying private noises greatly diminished.

Another unanticipated benefit, this special dental process may have reduced the likelihood of tinnitus occurring in some who, based on their medical history, would have been expected to eventually be burdened with it.

How good has it been? How does being nearly tinnitus-free for nine years and counting sound?

Another Empty Promise?

Over the past 40 years, scientific and consumer headlines have boasted “this” or “that” will cure tinnitus; ‘take ginkgo biloba,’ ‘drink more beverages with caffeine’ or, ‘try nerve stimulation therapy.’^{1,2,3}

Sadly, none provided relief beyond what would be expected from a placebo. While some have been fortunate to have their tinnitus subside without help, most have not. If there was a bona fide solution, it would already be in use by the tens of millions challenged by tinnitus every day.

Simply put, there is no long-term remedy. That is, apparently, until now (Figure #1).



Figure 1.

The unique dental aligner design at the heart of an advanced tinnitus-focused sequential aligner tooth movement therapy.⁴

Why is there such optimism surrounding this dental cure for tinnitus?

It was a casual comment during a routine dental visit that sparked this potential revolution in dental, orthodontic, and tinnitus treatment. On his own, without prompting, a patient shared that his tinnitus was no longer bothering him. I had been unaware that he was enduring progressively worsening tinnitus.

At his next visit, he completed two Tinnitus Functional Index (TFI) surveys to measure how it was impacting his life.⁵ One documented how he was feeling now, the other how he felt a year earlier. The comparisons were remarkable. His quality of sleep improved because tinnitus was no longer impeding his ability to fall asleep or remain asleep. Tinnitus was no longer dulling his ability to remain alert during meetings or straining his ability to concentrate throughout long conversations.

When the excitement of his progress was shared with another patient, she realized for the first time that her tinnitus was eliminated during her advanced aligner therapy. For decades, starting as a child, she suffered for prolonged periods every day.

At age 3, when she first started hearing those sounds, she remembered calling out, "Mom, are you sure there's no one using the vacuum cleaner?"

Now, her recovery (Figures #2-7) is believed to be the longest of any patient who received this advanced tinnitus-focused care, recently celebrating nine years of near-complete freedom from those aggravating noises.⁶



Figure 2.



Figure 3.

Troubles from her roller-coaster bite diminished as her teeth were moved to healthier positions. Unbalanced and excessive forces that were negatively impacting her tinnitus (Figure #2) became evenly distributed and greatly cut down on the number of episodes triggered (Figure #3).



Figure 4.



Figure 5.

Dramatic changes to her tooth positions (Figure #4) helped to reduce, and eventually nearly eliminate, tinnitus (Figure #5).



Figure 6.



Figure 7.

As her tinnitus went from rampant (Figure #6) to tamed, the shape of her lips, especially the Cupid's Bow in the middle of the top lip, and both corners, also improved (Figure #7) Intelligent movement of most of her teeth made this possible. The reformulated supporting bone and soft tissues, including her lips, made everything healthier, stronger, and more esthetic.

Since there has yet to be a dozen patients confirmed to have experienced dramatic tinnitus progress, it is fair to ask, *"why is there such optimism with, and such confidence in this solution?"*

If it had not been brought to my attention by patients, I would never on my own have come up with the notion that removable aligners could relieve and exacerbate tinnitus. I don't remember the concept of a tinnitus-braces connection ever being broached in dental school, post-graduate courses (seminars, workshops, lectures), or journal articles (professional, peer-reviewed).

Tinnitus exclusive (American Tinnitus Association [ATA]) and non-tinnitus exclusive (Facebook, Reddit) websites have public and private support groups where orthodontics is a topic of posts.^{7, 8, 9, 10}

Across all groups, not one tinnitus sufferer shared experiencing relief while wearing orthodontic aligners. Every post described how they either acquired tinnitus or had their existing tinnitus worsen with aligners. Although as with most areas for online expression, that is not a surprise. User gripes and harsh stories tend to outnumber compliments and good news.

That is why the designing, programming, and monitoring of tooth movements, as well as the qualitative and quantitative monitoring of tinnitus, have become indispensable components of the process currently referred to as Tinnitus-Focused Sequential Dental Aligner Tooth Movement Therapy.¹¹

While the aligners' ability to impact tinnitus was being validated, the wear, care, and usage protocols all continued to make steady progress. The unwavering goal, to ensure every patient obtained maximum relief.

An explanation for how these curated tooth movements can effect tinnitus:

Tinnitus-focused intraoral aligners minimize the deleterious forces transmitted by teeth through to the supporting bone. Lingering reverberations in the top jaw (maxilla) and bottom jaw (mandible) from undesirable bite (occlusal) forces are sufficient to initiate or exacerbate tinnitus. As important tooth repositioning progresses, bad bite forces are gradually diminished until they become barely perceptible or imperceptible (subclinical).¹²

During the early phase of care, teeth responsible for adverse impacts are changed from being solidly in place (stable), to not as solidly in place (less stable). This transient destabilization provides an important benefit, allowing teeth to be moved with greater efficacy and predictability to more appropriate locations. As that happens, *tinnitus will sometimes become more annoying*. While that's not desirable, patients are prepared for that possibility, should it occur.

Why has a tinnitus cure, or some help, been so elusive?

It is not your imagination that tinnitus is mentioned more often in news reports and is part of more conversations than it was 35 years ago. That is because so many more are now dealing with tinnitus or know someone who is.

Texas Roadhouse and Bubba's 33 has held National Tinnitus Awareness Week fundraisers to benefit ATA research efforts. It also honored the vitality and memory of their founder Kent Taylor, whose yearlong struggle with post-COVID debilitating tinnitus led him to take his own life in 2021.^{13, 14}

I first presented evidence of the relationship between tinnitus and orthodontics in 2023.

Of the more than 200 documented comorbidities, the most prominent link between dentistry and tinnitus had always been temporomandibular joint dysfunction (TMD, TM disorder, TMJ, TMJD).¹⁵ And orthodontics is just one way to develop TMD.¹⁶

McFerran's (2019) "*Why is There No Cure for Tinnitus?*" described challenges faced by researchers (audiology, mental health, otolaryngology (ENT), pharmaceutical, sleep).¹⁷ Some reasons for such little progress: ambiguity of causes, multiple explanations for exacerbation, what defines

improvement, and *'looking in all the wrong places.'* Knowing now that the orthodontics-tinnitus link was never investigated, the bleak amount of progress is not surprising.

Since tinnitus is not within the scope of practice for dentists, no tinnitus-dentistry or tinnitus-orthodontic research has ever been conducted or received funding.

Whenever clinicians (orthodontists, general dentists, prosthodontists, periodontists) decide to move teeth, or are responsible for treating patients in the post-movement period, a TFI or comparable gauge should be used to monitor their tinnitus status (asymptomatic, symptomatic).

ENT, primary care physicians [PCP], psychiatrists, psychologists, social workers, sleep physicians, and audiologists should determine whether their tinnitus patients are currently undergoing or have a prior history of orthodontics. As this remedy becomes more widely available, a consultation with a dental professional could help determine whether they would be likely to benefit from tinnitus-focused aligner therapy.

Why did it take so long for the potential connection between tinnitus and orthodontic therapy to be made?

In medicine, it is not unusual for it to take longer and be more costly than expected to determine what causes a disease, condition, or ailment, or what makes it get worse.

Searches in 2023 using the Discovery System (American Dental Association [ADA]) and Google Scholar for "tinnitus', 'dentistry', 'orthodontics'" yielded dozens of scientific articles. All, with one lone exception for orthodontics, centered around TMD.¹⁸

Viewing healthcare visits for tinnitus and orthodontics side-by-side added to my already piqued interest. Over 30+ year periods, those who received care from a board certified or board eligible orthodontist (American Association of Orthodontists [AAO]) or sought treatment for tinnitus (PCP, ENT) grew at rates that far exceeded the amount at which the US population increased (more than six times).^{19, 20, 21}

It is common for disparate entities to have comparable growth patterns. That is why statistical similarities alone are insufficient and should not be used to confirm interdependent or cause and effect relationships.

Because orthodontics involves changes to teeth, muscles, joints, soft tissues, sinuses, bones, and 'things happen' when portions of human anatomy are repositioned, the assertion that it could affect tinnitus is certainly plausible.

Together, these facts support the premise that a dental treatment (orthodontics) can have a significant influence on a medical ailment (tinnitus):

1. The ears and oral cavity are in close proximity.
2. Moving teeth leads to changes in the muscles, gums, joints, sinuses, and bones.
3. Tooth movements will have a neutral and/or positive and/or negative impact upon tinnitus.
4. US healthcare visits with orthodontists and for tinnitus had similar large increases over 30+ year time periods (> 600% when compared with US population growth).

Further research into this association would be prudent. Until it is determined that orthodontic treatments have no connection with undesirable tinnitus consequences, there would seem to be little downside to following cautious, simple, and cost effective steps expected to reduce the negative impact from moving teeth (Figure #8).

Why does tinnitus-focused aligner therapy yield helpful tinnitus results while traditional/aligner orthodontics yield neutral and adverse tinnitus results?

While dentists are highly skilled and capable of recognizing and providing care for diseases in the head, neck, mouth, and teeth, auditory conditions receive scant attention.

How little consideration is paid by dentists and orthodontists to tinnitus? Few dental-medical registration questionnaires specifically ask whether one has tinnitus.

Figure 8 highlights distinctions between tinnitus-focused and non-tinnitus focused aligner care.

Some features of Orthodontic Aligner Care and Tinnitus-Focused Aligner Care:

Topic	Orthodontic Aligner Care	Tinnitus-Focused Aligner Care
Reasons for Therapy	Malocclusion (based on classification, asymptomatic, symptomatic), smile dissatisfaction, facial asymmetry.	Periodontal disease, ²² TMD, tinnitus*, sleep apnea, malocclusion (symptomatic), facial asymmetry.
Aligner Design	Shapes, materials, and temporary protrusions on teeth have been used for decades.	Materials have been used for decades. Shape and design are unique and have a patent pending.
Improvement Goals by the End of Therapy	Smile improvement, bite health, asymmetry reduction.	Gum health, sleep health, tinnitus health, TMD health, bite health, asymmetry reduction, smile improvement.
Enamel Replacement²³	Has never been a part of treatment. Excessively worn and chipped enamel, dentin, and fillings are infrequently repaired during treatment.	Missing dentin and excessively worn and chipped enamel and fillings are reinforced during treatment. Diminishes thermal and occlusion force sensitivities.
Extractions of Healthy Teeth	Not uncommon. Entire healthy teeth (no infection, no decay) are routinely extracted by an oral surgeon or general dentist at the request of the orthodontist.	Healthy teeth are never extracted. The supporting bone is modified to make room for each part of every tooth.
Irreversible Removal of Portions of Teeth	Interproximal Reduction (IPR), the irreversible removal/shaving down of healthy tooth structure, is performed about half of the time.	IPR is not a part of this therapy because it impedes maximum bone reformulation and optimal tinnitus benefits from being achieved.
Retention Goal	To keep teeth in their current locations after the active phase of care has been completed and final settling has occurred.	Subtle, but valuable tooth movements during the post-active, passive movement/retention phase help ensure a stable result.
Retention Methodology	Options include permanent/semi-permanent glued splints and/or removable retainers.	Removable retainers additionally, albeit slightly, guide teeth to ensure long-term stability. Glued splints would inhibit obtaining the top result so they are not used.

Figure 8.

1. Efficacy has been shown in the treatment of:
 - a. bothersome tinnitus
 - b. persistent tinnitus
 - c. primary tinnitus

2. Tinnitus-focused aligner therapy has not knowingly been used to treat, and may not be as effective when the likely cause of tinnitus is:
 - a. COVID-19
 - b. persistent tinnitus
 - c. primary tinnitus
 - d. Non-dental traumatic injury

Parallels to peptic ulcers, gastritis, and antibiotics:

There may be parallels between the discoveries of the tinnitus-orthodontic connection and the role of *Helicobacter pylori* in gastritis and ulcers.²⁴ For more than a century, physicians believed that lifestyle choices, such as spicy foods, stress, or a poor diet caused those problems.

After Dr. J. Robin Warren astutely observed that there was always inflammation in the gastric mucosa whenever colonies of bacteria were present (1979), Dr. Barry J. Marshall successfully cultivated the previously unknown microorganism, *Helicobacter pylori* (1982). Because of their collaboration, gastric ulcers are no longer classified as a chronic illness as they are predictably and affordably treated with antibiotics and acid secretion inhibitors.²⁵

For their joint discovery, Drs. Marshall and Warren were awarded the Nobel Prize in Physiology or Medicine (2005).²⁶ Unfortunately, many PCP and gastroenterologists remained skeptical (or stubborn). That led to a lot of unnecessary suffering which would have been avoided had their regimen been accepted and adopted more quickly.²⁷

Conclusion

While the discovery of the connection between orthodontic therapy to tinnitus is wonderful, valuable, and helpful, it was unplanned.

Dentists, orthodontists, ENT, PCP, sleep physicians, psychiatrists, psychologists, and audiologists should incorporate a thorough review of tinnitus history and orthodontic history into their patient evaluation processes.

Protections which ensure the efficacy of this advanced tooth movement procedure and longevity of results have been enshrined within the tinnitus-focused sequential aligner protocol.

As tinnitus-focused aligner therapy becomes widely utilized, more are expected to avoid acquiring tinnitus, and for those already suffering, they are expected to experience significant relief from chronically disturbing noises.

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