

Buzzing Through Treatment

High-frequency vibration device helps reduce treatment time for passive self-ligation patient

by Dr. Bill Dischinger

Dr. Bill Dischinger earned his degree from the Oregon Health & Science University School of Dentistry and his certificate in orthodontics at Tufts University in Boston.

Dischinger, an adjunct professor in the orthodontics department at the University of The Pacific in San Francisco, is one of 12 certified Damon instructors who have taught and lectured extensively on passive self-ligation with the Damon System. He has lectured nationally and internationally on subjects including functional jaw orthopedics, indirect bonding and practice management from a team approach. Dischinger has been published in *Orthodontic Products*, *Orthotown* and *Ormco's Clinical Impressions* and is involved in national study clubs that address the latest treatment techniques. He is also a member of the American Association of Orthodontists, the Pacific Coast Society of Orthodontists, the American Dental Association and orthodontic professional associations that enable him to participate in continual education and remain current on advances in orthodontic treatment.



This patient came into our office not long after his wife had begun treatment with clear aligners. [Editor's note: Dr. Dischinger discussed her case in "The Buzz on HFV," which was published in the June 2019 issue of *Orthotown*.] He presented with a Class I canine and molar relationship with moderate anterior overbite and mild to moderate crowding.

One area that I took particular note of was his lingually inclined mandibular canines. It had already been recommended that he receive gingival grafts for the recession present on both canines, but the periodontist was concerned about the prominent roots and ability for long-term success with the grafting. Basically, the No. 1 objective for this case was to upright the mandibular canines, torquing the roots lingual into better bone, to help the periodontist be successful with the grafts.

Bob initially came into our practice with the intent of also being treated with Ormco Spark Aligners, which his wife was using. A challenge I have faced with clear aligner therapy, though, is the uprighting of mandibular canines—specifically, canines that have very prominent, buccally positioned roots. That is not to say it can't be done, but I do feel more confident in the movement with braces. Achieving lingual root torque on these canines is difficult with any system, but aligners have proven less effective in my hands.

If you look at the patient's initial panoramic radiograph (Fig. 1), another "fun fact" is that interesting radio-opaque mess overlaying the root of his lower left canine: The patient has three supernumeraries present, which I verified on some cross-section images from our iCat cone beam machine.

In our consultation, the patient and I discussed the concerns I had with uprighting the canines; the uncertainty I had with the supernumeraries, which he said he had no plans to remove; and my lack of confidence in using clear aligners to achieve the canine movements. I pointed out the position of his canines and suggested that using passive self-ligation brackets might help me better torque them. My worry was that after treatment, when he would be getting his gingival grafts, if the roots weren't in a more lingual/upright position the periodontist would struggle to get full coverage with the graft.



Fig. 1: Initial photos and X-rays.



Fig. 2: After 19 weeks.



Fig. 3: After 25 weeks.

The patient agreed, and we started his treatment with Ormco's Damon passive self-ligation system because it allows us to use variable torque on multiple teeth, and I need to have a very high torque bracket for these canines.

Adding high-frequency vibration

Because the patient's wife had used the Propel VPro high-frequency vibration device to accelerate her aligner treatment, he inquired about using it with his treatment early in the process. I often recommend this device for an improved orthodontic experience, whether bracket or aligner therapy, because high-frequency vibration (HFV) breaks down the bone during treatment, builds bone in retention, can get a retainer vibrated back into place (retention guarantee), and it works very well in increasing predictability and aiding discomfort, particularly in adults. It also allows me to get to that

ideal smile a bit faster, which is always a plus for my patients.

While this patient wouldn't be able to see the acceleration benefit of HFV quite as strongly as his wife did with the shortened aligner intervals, I did recommend it for a more predictable and comfortable treatment, to which he agreed.

Treatment

Because I had confidence that the patient's movements would express quickly and predictably, I decided to shorten his appointment intervals from my normal eight weeks down to six weeks, and eventually five weeks. I did the normal amount of appointments, over a much shorter time. As an adult, the patient appreciated that he had braces on for the least amount of time possible. After this, I went back to a standard three-month timeframe in the finishing stainless steel wires.

As you can see in his treatment photos, his case progressed at a fast rate. At just under five months of treatment, the teeth are well-aligned, the arches developed and the occlusion is articulating well.

The advantage I had with the shortened appointment intervals is quite evident at 19 weeks (Fig. 2, p. 54). Because of decreased appointment intervals, I was into rectangular wires much earlier than in cases not undergoing accelerated treatment. Remember, my No. 1 objective in this case was to upright the mandibular canines. Rectangular wire is required to express torque in our high-torque-value canine brackets, so the sooner we can get into rectangular wires, the more time we have to achieve that main goal.

Notice the change in torque in the canines, particularly the right canine. The left canine is not expressing the torque at quite the same rate, but still has uprighted significantly in just 19 weeks. As we progress to the pictures shown at 25 weeks in Fig. 3 (p. 55), I obviously needed to continue to work on the torque of those lower canines, but the progress in just 25 weeks was very encouraging.

By the time we finished with our three months of finishing wires (Fig. 4), there was a distinct positive change in their positioning. The periodontist will now be able to place highly successful grafts.

Conclusion

Patient treatment was finished in 37 weeks with a total of eight appointments (Fig. 4). Today's patients want treatment times that are less than that of previous orthodontic generations. By only seeing this patient eight times over his course of treatment—we typically see our patients 14 times—we were able to increase our production per visit by 42%. With this patient, we saved four months of treatment.



Fig. 4: Final, after 37 weeks.

With HFV, we were able to achieve this without any increased overhead for our practice, in fewer appointments, and with less time in braces for the patient—a win-win for everyone involved.

Increased competition and pressure from corporate orthodontics to control our fees force orthodontists to be as efficient as possible. By incorporating high-frequency vibration and passive self-ligation in my braces cases, I can be far more efficient, and patients are very grateful to have a quality, orthodontist-delivered finish in a shorter

period of time with reduced discomfort, as well as a bit of an insurance policy for retention.

From a practice economics standpoint, incorporating technologies like this into our treatment plans allows us to finish cases faster and more predictably, opening up our schedules to take on a higher volume of new patients without any disruptions to our flow. I believe with advancements such as passive self-ligation and high-frequency vibration, the future of orthodontics is bright for both patients and orthodontists. ■