Good Vibrations

With vibration technology, aligner patients are partners in their own progress—and cut their treatment time significantly.
I recently sat down to reflect on my nearly two decades of practicing orthodontics and how innovation, practice development, customer service, access to orthodontic care and most importantly, clinical skill, have influenced the patient experience. It struck me that there’s still much to learn about practicing orthodontics, despite incorporating most major advancements ranging from self-ligating brackets (Damon System), aligner therapy (Invisalign) and laser treatment (AMD/Biolase) to TADs (Vector TAS), sleep apnea (Great Lakes) and accelerated orthodontics (manual osteoperforation, or MOP, using Propel Orthodontics’ Excellerator drivers).

How is it, with all of this technology, I still feel every new patient could present a potential problem with treatment outcome? Why does access to orthodontics seem more out of reach for the millions of Americans who could benefit from a beautiful, functioning smile? When potential patients actually seek orthodontic care, do they shy away from modern options? I wonder if empowering patients while simultaneously offering them advanced technology might answer some questions.

**Accelerated orthodontics**

For decades, accelerated orthodontic options primarily involved open-flap corticotomy or invasive treatment techniques pioneered by the Wilckodontics masters, Tom and Bill Wilcko. More than 30 years ago, the Wilcko brothers’ groundbreaking techniques paved the way for doctors to speed up traditional nonaligner orthodontic treatment while reducing the chances of serious complications.

Most recently, Propel Orthodontics realized that New York University’s ongoing scientific research on accelerated orthodontic treatment using MOP procedures might revolutionize orthodontics through “bone poking” and bring in a new era of accelerated orthodontics. The Excellerator device may help reduce treatment time by up to 62 percent and significantly increase predictability.¹

Since I adopted the use of MOP, it has revolutionized my practice and how I treat patients. The goal of my practice has always been to offer the latest techniques that optimize treatment outcome, reduce chair time, increase profitability and assure patient satisfaction. However, not every patient is thrilled about the idea of drilling holes into their head.

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**by David R. Boschken, DMD**

David R. Boschken, DMD, graduated from the University of California, Berkeley, with a double major in biology and anthropology. He received his DMD from the University of Pennsylvania Dental School (where he also earned his orthodontic certification), and completed a residency at Guy’s and St. Thomas Hospital in London. Boschken is recognized as an Elite Invisalign Top 1 percent provider and has been a member of the Align Technology speakers’ bureau for 16 years, training primary care dentists and orthodontists in North and South America, Europe and Asia. He has served on the clinical advisory board at Propel Orthodontics and has been one of its key opinion leaders since the company was founded. Boschken owns orthodontic offices in Los Altos and San Jose, California.
Despite my trained treatment coordinators offering the latest MOPs techniques and emphasizing their clear advantages, we often design a treatment plan that doesn’t involve any accelerated option. This seems counterintuitive to me and my team.

Empowering your patients

Offering vibration technology allows patients to participate in their treatment and eliminates certain hesitations related to invasive techniques. These hesitations or challenges can include issues related to anesthetizing tissue, MOP procedure, medical contraindications and post-treatment soreness. After simple training on the device and support—when necessary from my office team—patients can self-administer vibration treatments at home and feel that they have a positive involvement in their treatment.

I offer patients the VPro5 high-frequency vibration device with an oscillator mouthpiece to use for five minutes a day to better seat their aligners. The mouthpiece is simple for patients to maintain and keep clean, and the device is equipped with intuitive light notifications that allow patients to easily self-administer treatment. VPro5 has allowed some of my Invisalign patients to switch out aligners every 5–7 days just by firmly biting down on the mouthpiece. It seems that consistently well-seated aligners alone can benefit my patients’ aligner therapy.

While not performed on the VPro5 itself, vibration research on the effects of bone treatment have been concluding that high-frequency acceleration (HFA) accelerates bone healing in the tooth extraction socket, preserves the alveolar bone and promotes bone healing through intramembranous ossification. The study concluded that applying HFA on a daily routine for five minutes may lead to future procedural advantages in tooth extraction, implant and bone grafting integration, and post-orthodontic retention.²

I’ve been using VPro5 for nearly a year while still incorporating my Excellerator devices into treatment. I now offer full-service acceleration, allowing me to cater to patients who prefer at-home over chairside treatment. Either option allows my office to achieve excellent treatment outcomes, improve office efficiency and increase profitability.

On a few occasions I have integrated both techniques into a case, delivering MOP with the Excellerator power driver to isolated teeth (such as severe rotations and anterior open-bite cases), while including HFV with VPro5 as an adjunct aligner seater treatment to manage difficult movements and reduce treatment time. This dual treatment allows me to explore unlimited approaches.

Empowering your practice

I’ve offered Invisalign aligner therapy in my offices for more than 17 years, to more than 3,000 patients, with an evolving level of clinical skill and results. While I can safely say I’ve treated a vast array of orthodontic malocclusions and skeletal dysplasias with aligner therapy, some cases didn’t achieve my standards of acceptable final results, whether because of patient noncompliance, difficult movement, periodontal issues or just plain old stubborn teeth. I strive toward achieving acceptable results for all my cases, and I’m not willing to negotiate my clinical values or lower the bar of excellence.

Four years ago, when I initially began incorporating MOPs using the disposable Excellerator, my Invisalign cases generally saw a reduction in treatment time of about 50 percent, resulting in 12- to 18-month treatment plans finishing in less than 6–12 months.

Adding VPro5 as an adjunct ensures aligners are fully engaged, resulting in better expression of aligner prescription. Furthermore, I routinely advise my VPro5 patients to continue using the device for five minutes each day postorthodontics for an additional 3–6 months, to ensure retainers are fully seated and to reduce relapse potential.

Propel products are well designed, and are meant to offer various cost-effective options. The lower-cost approach allows for healthy profit margins and justifies the investment to offer accelerated treatments.

Figuring out what to charge for your time and experience often depends on your financial goals for each patient. I routinely charge an additional $500-$1,000 to add acceleration for MOPs using the disposable Excellerator ($100 wholesale) or HFV using the VPro5 ($300 wholesale).
Case Presentation 1

A 12-year-old patient with a Class I dental occlusion presented with moderate upper and lower crowding (3mm), 30 percent overbite, 2mm overjet, fluorosis stains on teeth #24 and #26 facial, and lower midline shifted 1mm to the right (Fig. 1).

Treatment was initiated with Invisalign and VPro5 to establish an ideal functional alignment. After constructing a ClinCheck to achieve arch expansion (1–2mm) and anterior alignment, her final number of aligners were 23 upper and 23 lower.

The first aligner was delivered with the Invisalign patient cooperation and instruction acknowledgement contract and an in-house form, and the patient was instructed to wear the first aligner for two weeks.

Fig. 1
Aligners 2–12 were delivered two weeks later with attachment placement and initiation of VPro5. The patient was instructed to use the VPro5 for five minutes in the morning or night with the aligners in the mouth, while wearing the aligners 20 hours per day and switching out every seven days. Aligners 13–23 were delivered 12 weeks later with the continual progression of seven days per aligner.

Her treatment was completed without a case refinement in less than six months, compared to the normal 12 months needed for switching out aligners every 14 days.

Not every case will have this impressive result, but VPro5 provided an opportunity for my patient to accelerate her orthodontic treatment plan (Fig. 2).
Case Presentation 2

A 25-year-old patient with a Class I dental occlusion presented with mild upper and lower crowding (1–2mm), 20 percent overbite, and 2–3mm overjet. She had a history of trauma on upper centrals, resulting in a shortened root on tooth 9 (Fig. 3).

As with Case 1, treatment was initiated with Invisalign and VPro5 to establish an ideal alignment and overjet reduction. Patient requested accelerated orthodontics to achieve her goal of finishing treatment in six months, before her wedding.

After constructing a ClinCheck to achieve arch expansion (1–2mm), anterior alignment and upper slenderization (IPR) to reduce the excessive overjet, her final number of aligners were 24 upper and 24 lower. Aligners 1–12 were delivered along with the cooperation and instruction acknowledgement contract (in-house form). Because of a wedding time constraint, I placed her attachments and delivered VPro5 at the first appointment.

My usual protocol is to deliver the first aligner and then see the patient two weeks later for attachment placement. This allows the patient to gradually get into treatment without creating an overwhelming situation of aligner delivery, IPR and attachment placement. (Clearly, this is a personal preference for my offices.)

The patient was instructed to switch out every 5–7 days, using VPro5 for five minutes in the morning or night with the aligners in the mouth, while wearing the aligners 20 hours per day. Aligners 13–24 were delivered 12 weeks later with the continual progression of 5–7 days per aligner.

Her treatment was completed without a case refinement in just under six months, compared to the normal 12 months needed for switching out aligners every 14 days. She was thrilled to finish treatment a week before her wedding, becoming a wonderful referral source championing this accelerated orthodontic technique (Fig. 4, pg. 60).
Conclusion

As the accelerated orthodontic market evolves and becomes a standard of treatment, so does our expansion into more difficult cases.

I’ve been using VPro5 for less than a year, but I’ve seen firsthand the incredible patient acceptance and compliance, resulting in shortened treatment times, coupled with potential retention benefits helping ensure proper aligner seating. With that said, I prefer to deliver MOP with the power tip driver, immediately addressing a challenging movement, or for faster clinical results. I’ve refined my protocol to include MOP in all four quadrants coupled with high-frequency vibration for five minutes per day using VPro5, subsequently reducing the need for refinements or supplemental techniques.

Current social norms lend credibility to the desire for getting products and services right away, so waiting 12–18 months for results can be frustrating to patients. When people can get lunchtime Botox, whiten teeth, and undergo some surgeries in less than two hours, having long wait times are barriers to orthodontic interest. Reducing excessive treatment times and removing uncertainty in quality results will be one of my continual challenges going forward in my professional career.

As our clinical hunger grows, I can only hope this technology will increase access to orthodontic care to more people who really need it. Through knowledge and clinical skill expansion, we can empower patients to help remove stigmas and advance orthodontics. Accelerated orthodontics is quickly becoming a cornerstone in orthodontics, especially among adults who want fast and reliable results.

References