

# ACCELERATED TOOTH MOVEMENT TECHNOLOGY

by Jonathan L. Nicozisis, DMD, MS

Eighteen months ago an adult patient presented to my office for an Invisalign consult. After being told he was an excellent candidate, he chose not to begin treatment. Last month this patient revisited my website, saw the PROPEL Orthodontics logo and clicked on the link to learn about how it can be used to facilitate tooth movement and decrease length of treatment. He returned to my office for a second consult and had his impressions taken that day. The patient stated that had it not been for the possibility of getting the PROPEL treatment and learning about it from my website, he would not have returned for orthodontic care.

This affirmed for me the huge potential benefit of PROPEL. The treatment attracts patients who are unwilling to accept a prolonged treatment time. PROPEL has increased my practice's bottom line by shortening treatment time, allowing me to treat additional patients, finishing challenging or "stuck" cases and attracting patients who would not otherwise accept treatment.

## Background

Micro-Osteoperforation stimulates cytokine activity accelerating alveolar bone remodeling. This new device developed and patented by PROPEL can be used in a simple, in-office procedure to stimulate alveolar bone remodeling. The PROPEL device was developed from research out of the NYU Department of Orthodontics and has been commercially available since fall 2012. In using a patient's own biology to facilitate tooth movement, PROPEL does so by creating micro-osteoperforations. This treatment stimulates the local inflammatory response, which induces cytokine activity, thereby stimulating faster bone remodeling.<sup>1</sup> An increase in bone remodeling allows teeth to be moved to the desirable location at a faster rate. Research shows that this increased inflammatory response returns to normal levels in six to eight weeks, therefore, the patient must be re-treated every six to eight weeks<sup>2</sup> until desired tooth movements are achieved. PROPEL is an FDA Class 1, 510k-exempt medical device to be disposed of after a single use.

1. Teixeira CC, Khoo E, Tran J, Chartres I, Liu Y, Thant LM, et al. (2010). Cytokine expression and accelerated tooth movement. *J Dent Res* 89:1135-1141

2. Khoo E, Tran J, Raptis M, Teixeira CC, Alikhani M (2011). Accelerated Orthodontic Treatment

The treatment is performed chairside with a potent topical gel or a few drops of a local infiltrative anesthetic. These micro-osteoperforations are created through the mucosa and the cortical plate into cancellous bone.

## Advantages

The PROPEL System has several tangible advantages. Given its FDA designation, it can be used with any appliance or clear aligner system. Secondly, the treatment does not have to be referred out to other specialists, increasing the likelihood of acceptance by patients. Additionally, unlike more extensive and expensive surgical techniques, there is no recovery time. As a result, patients can go about their daily activities with no downtime or disruption to their usual routines.

PROPEL can be applied in a targeted, doctor-controlled fashion rather than acting on the whole dentition. Doctors maintain control of treatment mechanics and do not need to monitor any additional patient compliance. Because it is a targeted treatment there is no concern of loss of anchorage or TADs loosening from vibration pulses. Likewise, if trying to correct an occlusal cant to the smile, doctors can target the teeth that are off the occlusal plane and in need of correction. In such cases, being able to “soften” the alveolar bone by differentially increasing the bone remodeling in the desired area helps eliminate the unwanted intrusion of the “good” side in these cases with occlusal cants. Stubborn rotations are also an excellent indication to use PROPEL.

In my PROPEL/Invisalign cases I have patients switch their aligners weekly, instead of biweekly. There is no need to modify the rate of tooth movement on ClinCheck. I have relied on the optimized velocity as prescribed by Align and use routine clinical judgment to modify attachment design and the path teeth take to get to their final positions.

The PROPEL system is reasonably priced. In volume, the devices cost about \$100 each. While each case is different and might require a different number of treatments, an average case can be expected to require one to three treatments. My experience has shown a four first bicuspid extraction case treated with braces required five devices, while closing down an anterior open bite with aligners required four. When targeting an occlusal cant or single rotation, you might only need one or two devices. This is an increase in overhead of \$100-\$400. This incremental cost can easily be passed along to the patient. Most orthodontic patients spread out their total case fee into monthly payments over the course of treatment. In my experience, little resistance to this additional fee has been seen.

## Applying These Tangible Benefits to the Bottom Line

Simply said and easily understood, faster treatment means reducing overall chairtime for each case. That can easily be translated to more profitability per visit.

The reality is that over 90 percent of offices surveyed by the McGill Advisory Newsletter in May, 2010, are not operating at full capacity. Openings in the schedule can be seen as opportunities as orthodontists utilize multiple internal and external marketing strategies to drive new patients to the practice as well as increase case acceptance.

The trend since 2004 is that orthodontists are spending an average of three percent of their gross revenue in practice promotion to help fill these holes in the schedule. It could be argued that part of the PROPEL expense is not only the device itself, but also a marketing expense because the orthodontist can use PROPEL's cutting-edge technology to attract new patients and help convert otherwise reluctant patients.

## Profitability Examples

**For the Doctor:** A patient presented with a 10mm molar space that he wanted to close in order to avoid an implant. This case was completed in five months with five visits instead of the usual 12 visits this type of case would normally have taken. Five months is roughly the same time it takes an implant to heal and integrate with the bone before the need to uncover and heal prior crown fabrication, which takes an additional two to three months.

Using conservative estimates of \$200 per visit instead of the industry standard of \$300 per visit, the doctor has saved \$1,400 (seven saved visits x \$200/visit).

The patient received three micro-perforation activations using PROPEL. PROPEL cost \$100 each for a total cost of \$300. Without charging the patient for the device the doctor saved \$1100. If the doctor had included a \$500 additional case fee, the profit would increase to \$1,900.

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**For the Patient:** The ability to close this space in a predictable manner, where the patient can avoid a bone graft and implant allows the patient to avoid costly and painful dental work. The cost of a bone graft, implant and restoration could range from \$4,000 to \$10,000. Having the patient pay an additional case fee of \$500 will still save the patient thousands of dollars.

Reducing treatment time for patients has been an industry goal due to patient and orthodontist demand. Besides the cost of treatment, patients take time from work and school to attend mul-

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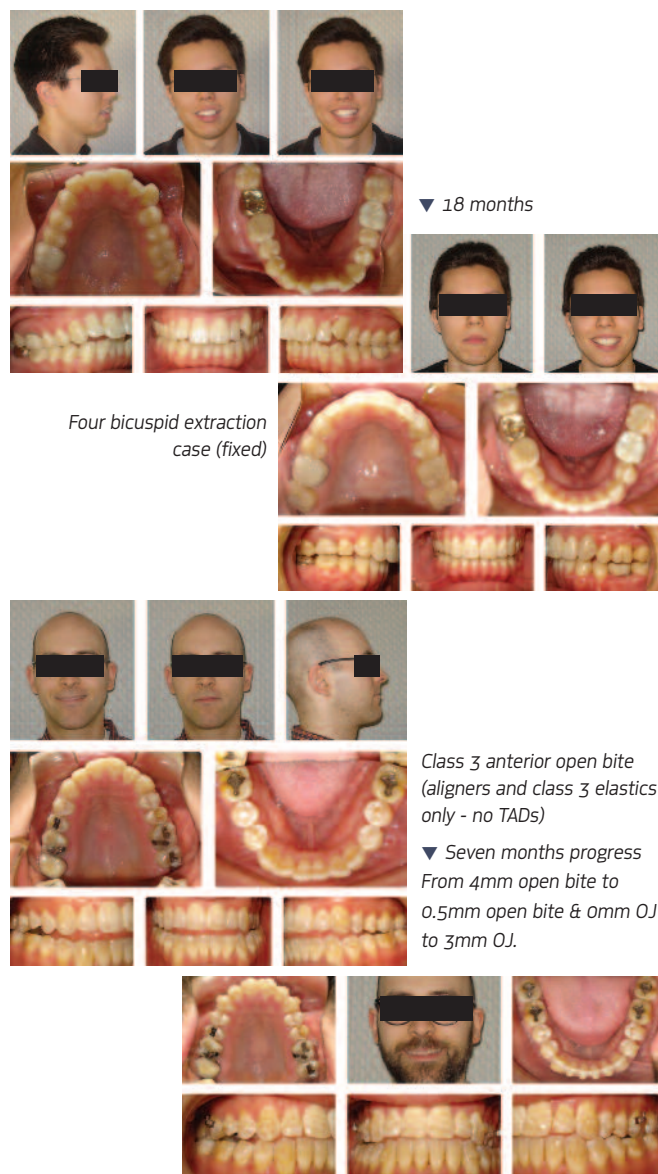


multiple appointments. These appointments incur significant indirect costs. Patients spend an average of \$654 additional dollars traveling to and from their appointments during a two-year treatment.<sup>3</sup> Reducing the number of these multiple office visits by 50-60 percent will save both time and money.

There are three main ways to manage the incremental cost of adding PROPEL to your armamentarium. First, the clinician can choose to not charge because of the savings in chairtime and the inherent value in improving the predictability of simple and difficult cases; second, implement two case fees, a regular case fee and a premium for an accelerated case fee; or third, simply charge the patient per PROPEL treatment. Orthodontists can use all of the revenue options depending on the clinical scenario or individual patient.

The PROPEL System augments a patient's own biology to facilitate tooth movement. PROPEL bridges the gap between the basic science of orthodontic tooth movement and application of this science in the private practice setting to address the patient's

needs and desires. It is this sound foundation that has allowed PROPEL's easy acceptance into private practice with doctors quickly realizing the clinical and profitability benefits. ■



▼ 18 months

Four bicuspid extraction case (fixed)

Class 3 anterior open bite (aligners and class 3 elastics only - no TADs)

▼ Seven months progress  
From 4mm open bite to 0.5mm open bite & 0mm OJ to 3mm OJ.

3. Richmond, Stephen. "Guest Editorial The Need for Cost-effectiveness." *Journal of orthodontics* 27.3 (2000): 267-269.



Crowding (aligners) [courtesy of Dr. Ben Miraglia] 10.5 months



## Author's Bio

**Dr. Jonathan Nicozisis** has been in the specialty practice of orthodontics since 1999 in Princeton, New Jersey. He completed his dental education at the University of Pennsylvania before attending Temple University for his orthodontic residency. Dr. Nicozisis is a member of the Angle Society and Invisalign National Speaker's Bureau and Clinical Research Network. He is also the founding orthodontist and former scientific advisory board member of BAS Medical (now Corthera), a development stage company founded in 2003 with a mission to develop and market a novel technology to accelerate and improve the stability of orthodontic treatments. Dr. Nicozisis' master's research on the use of the hormone Relaxin as a therapeutic adjunct was the basis for BAS Medical's innovative research. In February of 2010, Corthera was acquired by Novartis. Dr. Nicozisis is also on the Scientific Advisory Board of Propel Orthodontics, a start-up company developing novel technologies to facilitate tooth movement. Most recently has been named as a consultant to Smile Assist.