Presented here are two cases of vastly different clinical applications of PROPEL. Patients entering orthodontic treatment demand real finish dates, so in order for me to deliver accelerated finishes in a predictable fashion, I have incorporated PROPEL into my clinical practice.

PROPEL can be completed in minutes by orthodontists in their office during a patient’s regularly scheduled office visit, and does not require advanced surgical training. The PROPEL treatment yields very little discomfort for the patient as there is no downtime required and the patient can immediately resume her normal daily activities.

The results of both animal and clinical studies have demonstrated that using the system to create micro-osteoperforations decreases orthodontic treatment time by 50-60 percent or more in combination with any type of orthodontic force. The micro-osteoperforations created by PROPEL harness the body’s own biology to stimulate the cytokine effect that induces bone remodeling and allows teeth to be moved into the clinically desired position in a predictable and faster pathway. The induction of the cytokine cascade is modulated and controlled by the materials and design of the device itself. Basic bone biology research, animal studies and controlled clinical trials have demonstrated the safety and efficacy of the treatment. The PROPEL system will allow more patients the ability to attain their desired results and their orthodontists to achieve the predicted results with less side effects than a non-accelerated case.

PROPEL is uniquely designed to perform micro-osteoperforations as an FDA-registered 510(k) exempt Class I medical device designed for single-use only (Figs. 1 and 2). The device is made with a surgical stainless-steel micro leading edge uniquely designed and patented to be used to atraumatically perforate the alveolus directly through keratinized gingiva as well as movable mucosa. The device is designed to maximize the remodeling process, while reducing soft-tissue damage, and enabling any orthodontist the ability to shorten treatment time and deliver more predictable finishes.
**Case 1**
A 40-year-old male presented with three impacted cuspids, the two maxillary as well as the mandibular left side. The position and angulation of these teeth makes this a challenging and unpredictable case (Fig. 3 and 4).

After four months of initial leveling and aligning, the patient was referred to a local oral surgeon for surgical exposure of the impacted maxillary right and left cuspids (Fig. 5).

PROPEL was used to initiate tooth movement. TADs were placed for absolute anchorage to assist in the eruption and movement of the cuspids. Micro-osteoperforations were made circumferentially around the exposed tooth four weeks after exposure (Figs. 6-9).

In one month, the tooth has moved into the arch and is actually touching the archwire (Figs. 10-13). This tooth is now ready to be bracketed and tied into the archwire for final level and aligning (Fig. 14).

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**Fig. 3**
**Fig. 4**
**Fig. 5**
**Fig. 6: April 30, 2013**
**Fig. 7: May 5, 2013**
**Fig. 8: Initial – notice the distance between the archwire and the tooth**
**Fig. 9: One-week post PROPEL – notice the bodily movement of the tooth toward the correct arch placement**
**Fig. 10: One month after PROPEL the mandibular arch after initial exposure and movement without PROPEL treatment**
**Fig. 11: The mandibular arch after initial exposure**
**Fig. 12: Day of PROPEL treatment**
**Fig. 13: Five months of the total cuspids exposure and alignment completed**
**Fig. 14: Day of PROPEL treatment – note the upper lateral brackets were released so that root resorption would be at a minimum**
By September 2013, after just five months of treatment, the lower cuspid is fully in the arch and the gingival height and contour of the gingival tissues is excellent (Figs. 15-26).

- Mandibular impaction completed in two months with PROPEL (Fig. 27)
- Total time for mandibular cuspid exposure was five months

- Lower left cuspid has very good attached gingival (Fig. 27)
- Using PROPEL expedited and predictably accelerated treatment (Fig. 28)
- Maxillary impactions completed in five months with PROPEL (Figs. 27 & 28)
Case 2

Upon clinical examination, this 30-year-old patient was diagnosed with bi-maxillary protrusion and anterior and posterior vertical maxillary excess (VME). The treatment plan was to place TADs to reduce her protrusion and to correct the anterior gummy smile. Micro-osteoperforations were placed on the buckle side of the anterior pre-maxilla area. In one month, there was a dramatic change. The VME was reduced and her gummy smile dramatically improved. This type of movement and improvement typically takes at least eight months. These mid-treatment photos were taken one month after a single PROPEL treatment. This patient originally had very bulbous bone in the anterior 2-2 region, which after intrusion of the anterior 2-2 always requires periodontal surgery to contour the bone. PROPEL appears to have improved this area, without surgery.

- Using PROPEL expedited and predictably accelerated treatment (Fig. 30)
- Maxillary cuspids have good attached gingival and the tissue has been very responsive for healing (Fig. 30)

The bi-maxillary protrusion and VME has been reduced with a dramatic improvement to her profile in approximately five months after using PROPEL.

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Author’s Bio

Dr. Karen Guinn is a clinical leader in her area, expanding her clinical practice and consistently involved in clinical education as both the teacher and the student.