The Concept Of Moving Teeth

By Dr. M. Constance Greeley

Some historians report that the ancient Egyptians were aware that they could alter tooth positions. Hippocrates and Aristotle invented ways to straighten teeth and fix various dental conditions. There are some ancient mummified bodies with metal bands on their teeth. They apparently used catgut instead of wire to close gaps between the teeth. So, we are not the only civilization focused on having a great and functional smile!

With the advancement of civilization, a more modern understanding of tooth movement was born from a 19th Century hypothesis. It proposed two mechanisms of force: The first is light pressure and tension applied to the tooth socket (where the periodontal ligament or PDL is). The second is the bending of alveolar bone (where the tooth socket is). The use of the electron microscope, in the early 20th Century, increased our understanding. We saw that both pressure/tension & bone bending occur simultaneously when mechanical forces were applied to teeth. But these are static forces that stop and start depending upon the pressure exerted.

For the purposes of this column, we won't get into the cellular changes that must take place to allow teeth to move. Suffice it to say that tooth movement involves cells of the nervous, immune, and endocrine systems.

Zoom forward to the orthodontic appliance evolution: full metal banding of all teeth, full metal brackets bonded to teeth, ceramic or plastic brackets on teeth, all on the outside of teeth. Then zoom past the concept of hiding braces behind the teeth (your tongue will thank you), and settle into the concept of moving teeth with plastic aligners (See previous columns in this Journal).

Now what? Well, if you can move teeth through bone using any of the entities listed above, then can you move teeth faster? And what could you use to do that?

There's an app for that! And a soft mouthpiece that works with the app! A few companies have developed and designed a convenient instrument to help patients move their teeth faster during orthodontic treatment (see photo). The mechanism of action is known as cylic (as opposed to static) loading or vibration. The devices are small, lightweight, waterproof, wireless, and they operate via bluetooth.

The science behind this has been applied to other areas of the body for some time: to increase the rate of healing fractures; to increase bone density in long bones; or to strengthen muscles and stimulate bone mass quality in patients with osteoporosis. This technology began to be applied to tooth movement in 2009.

A vibrational force is applied to the teeth via the mouthguard attached to the activator. The activator vibrates at 25 grams of force and 30 Hz frequency. Studies show that using the activator for 20 minutes a day can reduce treatment time up to 50 %. Naturally, results depend on the degree of difficulty of the case and on patient cooperation. Admittedly, it is one more thing to do each day. But patients are happy for the opportunity to move their treatment along more quickly.

This is AcceleDent Optima, available from OrthoAccel Technologies through your orthodontist

As more and more research and case studies are undertaken, the results are increasingly encouraging. There is virtually no downside except the time it takes to use it. The mechanisms are portable, safe, and easily cleaned and transported.

So if this is something you'd like to explore, make a complimentary appointment with us to assess your smile and to see if you could benefit from the newest advancements in tooth movement technology.

Give us a call at 484-346-7846 or visit us on the web at www.GreeleyOrtho.com. We look forward to serving you!

Bio

Dr. Connie Greeley went to Temple University School of Dentistry where she received her Doctor of Dental Surgery degree. She earned her certification in Pediatric Dentistry at the University of Maryland and then returned to Temple University for her certification in Orthodontics.

Dr. Greeley is board-certified by the American Board of Orthodontics. She serves on the Cleft Palate Team at A.I. DuPont Hospital for Children. Dr. Greeley is past-president of the Delaware State Dental Society, the Middle Atlantic Society of Orthodontists, and the Greater Philadelphia Society of Orthodontics. She is a member of the ADA and the AAO.

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