# Advances in nonsurgical transverse dimension development and tissue engineering for long-term cosmetic results

*Interview with Dr. Michael Williams*

← OT page 6

Now what this allows is that we go through a period of time in the first phase where the patient is only wearing just a lingual holding arch and the upper appliance whether it be a MAX 2000® or DMAX 2000®. Sometime between the 8th and 14th month we can make a decision to remove the maxillary design. When we remove the MAX 2000® or DMAX 2000® we make an impression to have a Nance holding arch fabricated and placed within fourteen days of the impression appointment. The Nance holding arch is like the lingual holding arch to the lower, the only difference is there is a button of acrylic against the roof of the mouth in the anterior palatine area.

At that point we've made a transverse development and arch form improvement. We've also had arch length improvement as well. We then move to removable orthopaedics with a Fränkel appliance. The Frankel appliance is constructive to be able to be removed or placed with both holding arches in place. So if we have excellent compliance we have the potential for continued development in the areas where we have dental eruptions of first bicuspids and second bicuspids and in the maxilla canines, because the sequence of eruptions is altered in the mandibular arch compared to the maxillary arch. The mandibular arch eruption pattern sequence is central, lateral, canine, first [bicuspids], second [bicuspids]. The maxilla is different; it's central, lateral, first bicuspids, second bicuspids, and then canines. This allows us to have what we call dynamic development, as we maintain the areas that we want to correct.

In the early days of my practice I only used the Fränkel or the Bionator or a combination and so I was at the mercy of non-compliant patients. Consequently, whenever I would do the second phase consultation I would never know whether I was going to able to display improvement or not.

Today with this system, 100 percent of the time I am able to display improvement. The other thing that happens with this system – I find that I extract first bicuspids in my practice less than 2 percent of the time. I have a 98-plus percent success rate with this system.

Now, when phase two comes along, it can be started as early as maybe age 10 on premature eruption cases. So if we have early eruption patterns, we may see some 10-year-old children with all permanent dentition. If that's the case, we don't use the Fränkel appliance on those patients. We place the Series 2000® appliances and two weeks later we simultaneously bracket the system. One of the benefits of the Series 2000® appliance design is that it can be modified to use whatever bracket system or prescription the clinician personally prefers. Because of the fact that we use bands or stainless steel crowns for the appliances, we can have the laboratory weld the clinician's own brackets which will match the other teeth technically allowing a straight wire technique. The sequence of treatment is not altered from having the Series 2000® appliances in conjunction with the full bonded bracket system. So it does not slow down your wire change. In other words, your levelling process is not slowed down as we work with the system.

***Do you start the treatment with the system 2000 at the same time as with the fixed appliance?***

Usually what we do on an adult patient and all permanent dentition cases is delay one to two weeks in bracket placement after cementation of the Series 2000® appliances. Generally, adult patients take a little more time to adapt to the introduction of something new in their oral cavity. We usually cement the Series 2000® appliances and have the patient go for two weeks before we direct bond brackets on. We use this time as a two-week adjustment period. Usually within 14 days they are able to deal with acrylic in the palate, their speech has remodified back to being normal. The palatal acrylic, which maybe a little of a liability initially, has proven through research to be of great benefit in increasing morphological alteration of the osseous anatomy. Then the patient can easily handle the introduction of the fixed brackets on the remaining permanent teeth and the placement of arch wires. However, in the mixed dentitions we're not usually bracketing teeth. The exception would be those cases classified as class-II division 2 malocclusions. A class-II division 2 case indicates that there are retro-inclined maxillary incisors. We would bond brackets on the front four teeth of these cases so as to allow for the advancement of the maxillary incisors and resulting forward reposturing of the mandible. A good number of these cases if we measure them have retrognathic mandibular positions on the cranial base.

***Can you quantify the forces?***

Yes. The forces that we are presently working with is 300 grams of unloading pressure in the maxilla in a low continuous force with dual springs of 150 grams each...

***... Maxilla and mandibular***

In the mandible you have to realize that, transversely, we are using 300 in the first bicuspid area, but it is in a vector form because we have an anterior-posterior spring that goes between the deciduous first molar or the permanent first bicuspid and permanent first molar and a transverse spring between the two first bicuspids or deciduous first molars giving a combination a vector force on the bicuspid area.

But on the molars the force system can be no more than 150 grams. In fact the effective force is little less than that, because you have equal expression of the springs. The way we correct class II or class III malocclusion is by being able to delineate or defer the springs to only activate in one direction, so that the 150 grams can only be expressed in one direction. This is done by freezing the movement of one of the abutment teeth between the springs thus forcing the springs to only effectively move the opposite abutment tooth in the desired direction. That will then allow either molar distalization on the lower arch in class III or bicuspid moving forward to class II and arch development. OT


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## OT About the Author

Dr. Michael Williams is a native of Gulfport, Miss., having graduated from the Gulfport public school system and Gulfport East High School in 1968. Dr. Williams completed his pre-dental education at the University of the South (Sewanee) where he graduated Cum Laude in 1972. He received his D.D.S. degree from Louisiana State University Dental School in 1976, received a U. S. Public Health scholarship and worked for the U.S. Indian Health Service from 1976–78. Dr. Williams received his Certificate in Orthodontics from the University of California at Los Angeles and has been in private practice in his hometown of Gulfport since his graduation in 1980. Dr. Williams is a member of the ADA and the AAO. He is a fellow of the World Federation of Orthodontists. He has served as a past president of the Fifth District Dental Association and the Greater Gulfport Dental Society. Dr. Williams has also served on the MPAC Committee for the Mississippi Dental Association and as the Civilian Consultant to Keesler Air Force Base for TMJ Disorders. Dr. Williams has also served on the Memorial Hospital Sleep Disorders team for obstructive sleep apnea. Dr. Williams was elected to serve as the Delegate for the State of Mississippi to the House of Delegates for the American Association of Orthodontists.

Dr. Williams has delivered numerous presentations to various dental associations on a wide variety of subjects, from airway obstruction disease and abnormal craniofacial development to his latest developments for dentofacial orthopedics and non-extraction orthodontic treatment. Dr. Williams was a featured speaker at this year's AAO meeting in Las Vegas concerning the topic of "CLINICAL ADVANCES IN ORTHODONTICS." He has also been a featured speaker to the American Association of Functional Orthodontists and the American Orthodontic Society. UCLA, St. Louis University, the University of Pennsylvania Department of Orthodontics and Farleigh Dickenson University have sponsored his seminar. Dr. Williams has been invited as a guest lecturer to the University of Peking in Beijing, China to share his revolutionary treatment techniques. Dr. Willliams has also presented multiple table clinics and round table discussions at various orthodontic meetings, as well as fostered research on arch development and molar distalization with nickel titanium coil spring systems. Dr. Williams holds nine U.S. patents and 20-plus foreign patents in the field of Orthodontics and Dentofacial Orthopedics.