



## *Born Beautiful* It is Never Too Late

**Anne-Maree Cole, B.D.Sc, MScMed, LVIM**

Eleven years ago, our daughter met a young boy. At the age of 14, one assumes that these relationships will be transient so I tried not to look too closely at his smile which structurally had certainly gone awry. But the years went by and the whole family grew to love Casey and it became apparent that he was going to stay around, so I had to have a closer look at that smile. **(Figure 1)**



**Figure 1 Before**

When Casey smiled, you saw the gums above the upper molars, but you could not see the molars. He had a vertical maxillary excess that was much worse in the posterior. He had a triangular arch form vertically, transversely and sagittally. The teeth were rotated and lingually inclined. He had a Class III anterior relationship and an anterior open bite. He was congenitally missing seven permanent teeth - 3 wisdom teeth, 2 lower second molars and 2 lower second premolars. The lower Es were retained, he had a tongue tie, and inter-molar distance at the first molars was 31mm (normal 38mm). Facially, he had a dished-out profile due to the lack of midface development. His airway at the narrowest point was 144mm<sup>2</sup>.



Figure 2



Figure 3

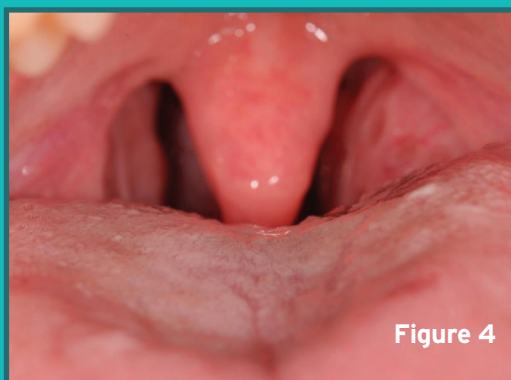


Figure 4

Casey was a life-long sleep walker. Sleep walking is a parasomnia triggered by arousals in NREM sleep. Was something contributing to this sleep disturbance? Why did his midface fail to develop? How much of a role did the tongue tie play? It did not take long to find another significant contributor- two giant healthy tonsils blocking his airway.

**(Figures 2,3,4)**

Where do you even start with a case like this? Surgically, we had his airway unobstructed and his tongue tie released but Casey was no longer a child. By now he was 22 and the foundation needed to be corrected. I love doing porcelain veneers but porcelain veneers on his corrupted foundation would potentially draw even more unwanted attention. Fortuitously, I was introduced to the techniques of Controlled arch Braces and Anterior Growth Guidance Appliances by the developer of these techniques, Dr. Steve Galella. **(Figure 5)**



Until the day  
we die, we  
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bone.

These methods work physiologically with nature to stimulate the body to lay down bone. Aberrant function is the cause. The solution lies in corrected function and tools that direct the stimulus appropriately. Until the day we die, we never lose the capacity to "grow" bone. If we couldn't grow bone at any age, we would never heal following a fracture or surgery. The problem is that people equate growth with a change in vertical height but growth is 3-dimensional, not linear, physiologic not mechanical. What we need to "grow" bone is an appropriate stimulus, trauma or micro-trauma. The orthodontic techniques mentioned above, along with well-directed oral function and nasal breathing provide that stimulus.

The cranio-facial system is a complex system. The parts that make up that system are heterogenous, independent yet interdependent and there are flows of information between the parts. What makes it complex is that it adapts or more correctly mal-adapts. Changes in the soft tissue signalling away from physiologic norms through aberrant function change the trajectory of growth. These epigenetic influences can markedly alter the expression of the genetic template such that the phenotype (how we turn out) varies significantly from the genetic blueprint.

**Typical Result  
Phase 1  
Early Arch Redevelopment**

Anterior Growth Guidance Appliance  
4 months treatment  
Anne-Maree Cole

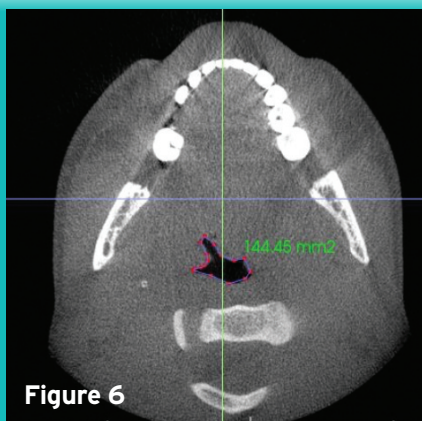


Figure 5

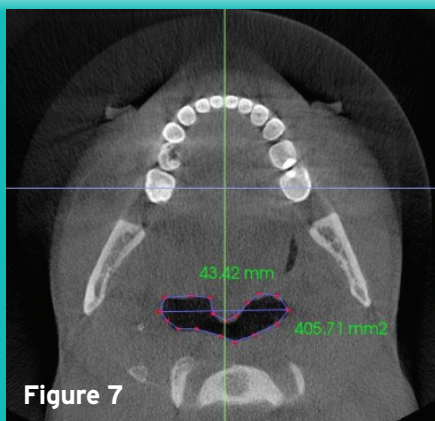




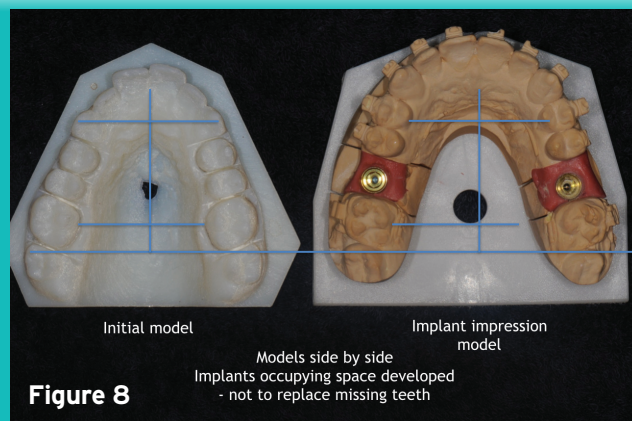
*It is kind of fun to do the impossible.*



**Figure 6**



**Figure 7**



**Figure 8**

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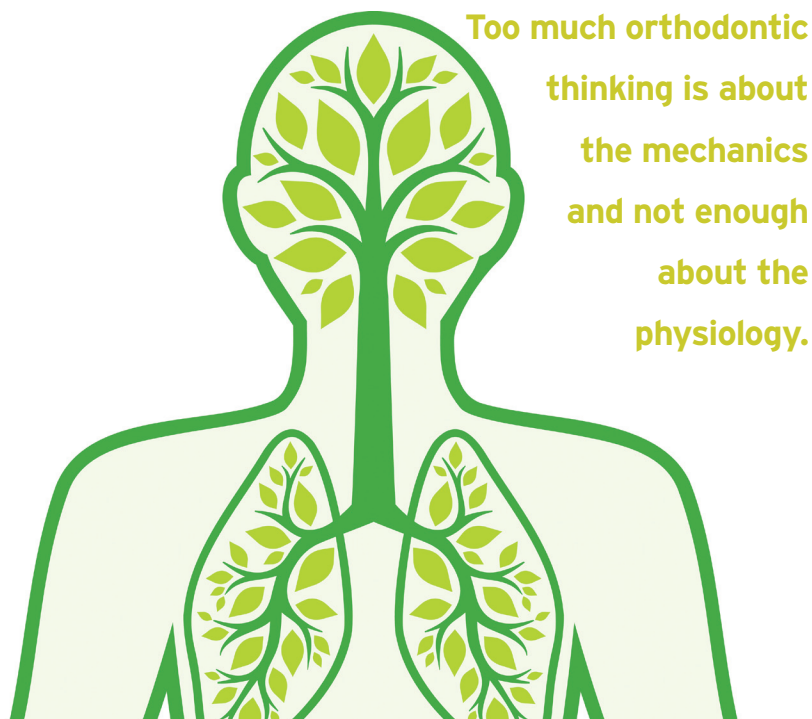
#### ADVANCED ADDITIONS

Angle, Ratio or Distance	Norm	Actual
Upper Incisor to Palatal Plane	110 - 113°	110°
Upper Incisor to Optic Plane	110 - 113°	109°
B Perpendicular Distance	6 to 8mm	7mm
Premaxilla Length	12-15mm	18mm
Dental Alveolar Comp.	32.5mm	36mm
Position of Maxilla to Anterior Arc	-2 to 2mm	-7mm
Skel Vert (menton to age adj arcs)	-1 to 1mm	9mm

**Figure 9**

Guidance Appliances by the developer of these techniques, Dr. Steve Galella. **(Figure 5)**

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The cranio-facial system is a complex system. The parts that make up that system are heterogenous, independent yet interdependent and there are flows of information between the parts. What makes it complex is that it adapts or more correctly mal-adapts. Changes in the soft tissue signalling away from physiologic norms through aberrant function change the trajectory of growth. These epigenetic influences can markedly alter the expression of the genetic template such that the phenotype (how we turn out) varies significantly from the genetic blueprint.

Sleep-disordered breathing is largely an outcome of deficient cranio-facial anatomy. This is well recognized in the medical field. It is an epigenetic outcome that starts from birth through dysfunctional habits such as mouth breathing, low tongue posture, lack of lip seal, bottle vs breastfeeding, tongue and lip ties, failure to correct the infantile swallow, allergies, and failure to chew fibrous tough food, all of which stimulate the bone to grow to its genetic potential. Nasal breathing, a lip seal and a proper tongue posture on the roof of the mouth at rest and in function are essential to proper jaw development. With jaws developing to their genetic potential, there is more than enough room to house the 32 teeth our genetic blueprint dictates.

What is interesting though is that unless there is a genetic syndrome at play, the genes for a perfect jaw remain. If we understand the biology of growth and use tools that stimulate the expression of bone in an environment of corrected function (nasal breathing, lip seal and correct tongue posture on the roof of the mouth at rest and in function) we can redirect the direction of growth in a child and remodel the existing jaw structure in adults. Too much orthodontic thinking is about the mechanics and not enough about the physiology. Tools that work with nature rather than mechanics which oppose it are essential to achieving physiologic outcomes which optimize the airway through redeveloping jaws of the correct size, shape and position. **(Figure 6, 7)** Significant arch redevelopment is possible with the controlled arch technique. Space can be closed through protraction of the posterior teeth or the addition of implants. Note the space developed in **(Figure 8)** was occupied by the addition of molar implants. The sagittal development achieved corrects for the position of the maxilla being -7mm posterior to the anterior arc on the Sassouni Plus analysis. **(Figure 9)**

Dentists and orthodontists must recognize that extraction and retraction orthodontics adversely impact facial appearance, but also the greater evil of compromising the airway, potentially contributing to obstructive sleep apnea and temporo-mandibular disorders, OSA and TMD.

Happily, eleven years after Casey came into our lives, he married our beautiful daughter, Megan. At the wedding he smiled a beautiful smile with a big broad arch and a face that was no longer dished out. He was unequivocally handsome. His minimal airway changed from 144mm<sup>2</sup> to 405mm<sup>2</sup>. The sleep walking has taken a sabbatical. We did eventually place some minimal prep porcelain veneers but not until we had corrected the foundation with orthopedic orthodontic tools that worked alongside nature to develop the jaws out from under the cranium where they belong. The purpose is health. The added side benefit is a good looking face! **(Figure 10)**

As Walt Disney once said: "It is kind of fun to do the impossible." But there is a bigger message here. Something has gone awry big time. OSA and TMD have reached epidemic proportions. We have to understand it, find it, fix it and most of all prevent it. I concur most whole-heartedly with Dr. Bill Hang's 2014 Cranio editorial. The time has come to look at old problems with new eyes. If it is being done, it is probably possible. These paradigm shifting orthodontic concepts and techniques are now being taught at LVI.

For references visit [www.lviglobal.com/contributor-bios](http://www.lviglobal.com/contributor-bios)



**Figure 10 After**