

Horizontal Growth The Key to Facial Beauty and Optimal Patient Health

All evidence supports the concept that forward growth of the face produces the most attractive faces.

The driving force for the forward growth of the face is the tongue.

Gram for gram the tongue is the strongest muscle in the body.

It has been calculated that it can produce 500 grams of force against the anterior teeth.

This force needs to be directed up and forward into the anterior part of the upper jaw in order to:

1. create the correct shape and size of the upper jaw with room for all the adult teeth.
2. drive the forward or horizontal growth of the face.

It has been estimated that 75% of young Australians have crooked teeth. It begs the question why this is so and what can we do about it!

In addition to the crowded teeth the predominant direction of growth is vertical or downwards.

The muscles of the lips and tongue push the teeth into the correct or incorrect position.

We require five patterns for health growth of the jaws and face.

- **Lips together at rest**
- **Teeth in or near contact**
- **Tongue resting in the roof of the mouth**
- **Breathing through the nose**
- **No muscle movement around the mouth on the subconscious swallow.**

Research also shows that much of the orthodontic treatment to correct the position of the teeth will further lengthen the face.

Research shows that lengthening the face will produce a less attractive face.

Expanding the upper jaw.

There is much research and clinical experience to show that when the jaws are expanded the jaw usually returns to its original shape and size after a few years.

However, this does not always happen.

I attended Dr Skip Truitt's series of lectures about twenty five years ago.

Using the techniques and the appliances he taught I started to expand the jaws to provide room for the teeth.

I am showing you the first case I treated by expanding the jaws. I expanded the upper and lower jaws with an upper Schwarz Plate and a lower Jackson Appliance. I would use neither appliance today. I corrected a bilateral cross bite in about eighteen months. Many years later, I saw the patient again. He had no further treatment. I recorded that not only had the jaws maintained the expanded size but the occlusion had improved.

In the early days, this was not always the case!

In most cases where I expanded the jaws, they returned towards where I started over a few years.

When the upper arch is expanded it moves forward within the cranium.

This is particularly true when the child is less than eight and a half years old.

I often use a forward pull face mask to bring the upper jaw further forward.



Before and after eighteen months of arch expansion starting at age 7.
When the upper arch expands the width of the nasal passages increases.



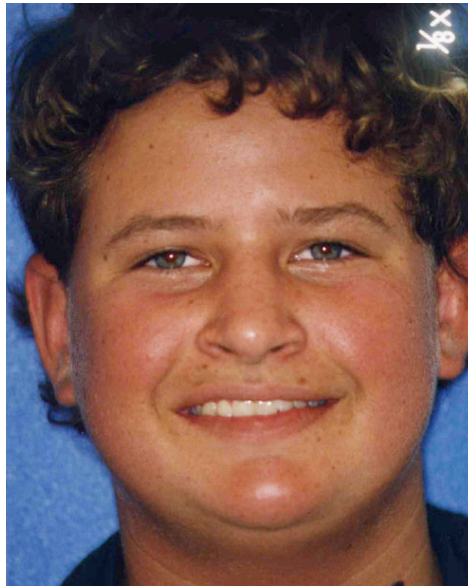
I ask myself why, in this first case, does the improved jaw size remained stable?
It was not any special skill that I had!
Nor was it the particular appliances I used.

I now realise that the reason that the upper jaw size remained stable and the occlusion improved was because, after expanding the upper jaw, the tongue learned to rest and function in the palate.

We have a paradox: when we see a narrow upper jaw there is not enough room for the tongue to rest and function there. Once we have expanded the upper arch, unless the tongue does learn to rest and function there, the jaw size will return towards its original size.



During jaw expansion the maxillae moves forward within the cranium.
This is best done before age eight and a half.



The upper arch form remains stable into adult life when the tongue supports the new jaw size.

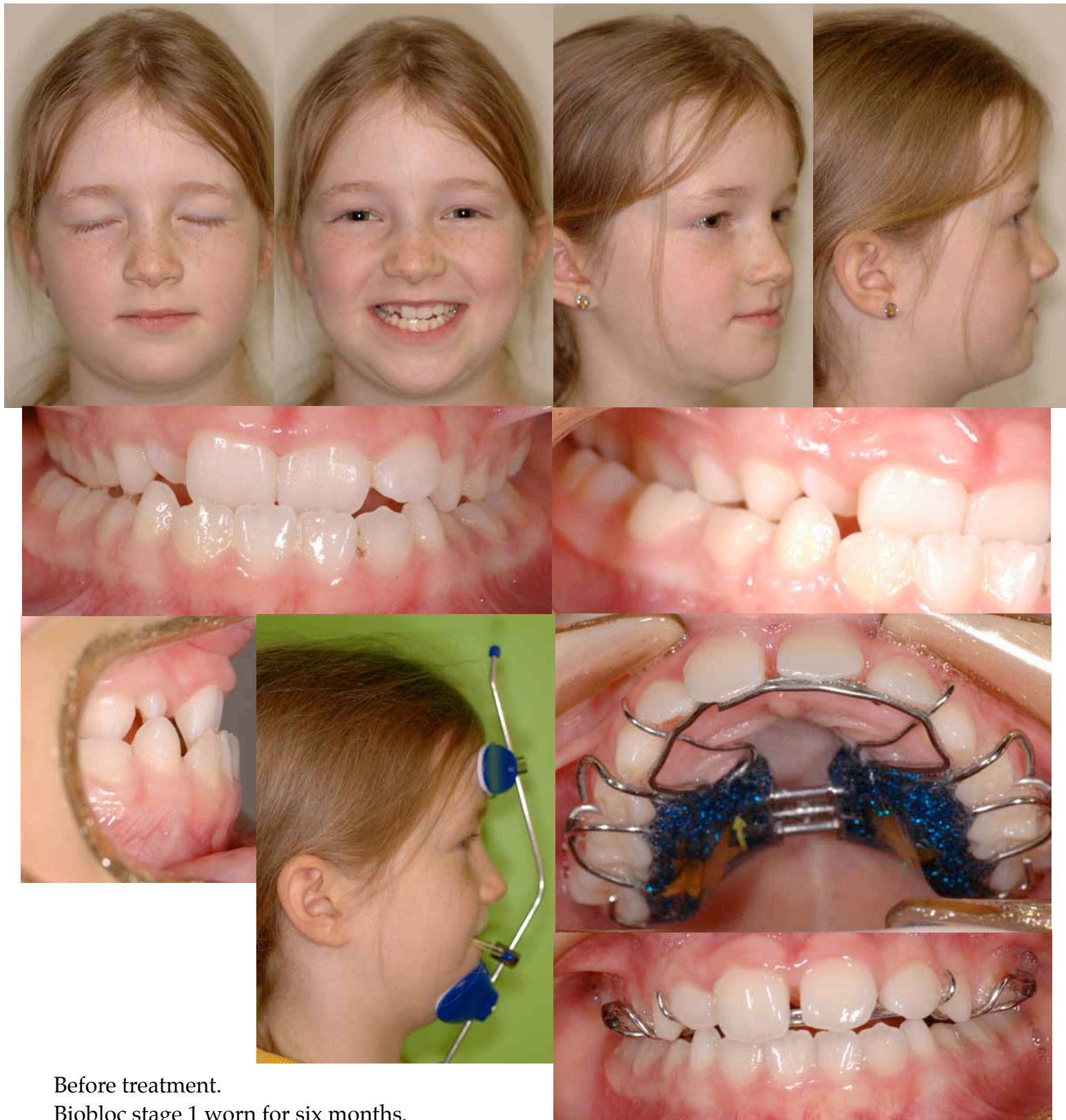
First, we need a good jaw size for correct muscle function.

Second, we need good muscle function to maintain the jaw size.

This is the paradox!

I suspect the patient was doing a lot of mouth breathing before arch expansion. By expanding the upper jaw the width of the nasal passages would also have increased. The increase in the nasal passages makes it easier to establish nasal breathing.

In the twenty five years since I treated this case I have learned a lot of things. I now know that we cannot assume, once the arch is developed, the tongue will learn to rest in the palate nor that nasal breathing will automatically start. This rarely happens! Which is why relapse is so common after expanding the upper jaw.



Before treatment.
Biobloc stage 1 worn for six months.
Face mask worn 12 hours a day.
Cross bite corrected.



After six months of expansion an i3Trainer was fitted. This was worn for one year.

This is a case that I started eighteen months ago in September 2007. I noted anterior and posterior cross bites. This was not as a result of a large, prognathic mandible, rather it was an underdeveloped, retrognathic upper dental arch. The tongue never rested and functioned in the palate. The girl was an habitual mouth breather.

I expanded the upper dental arch with a Stage 1 Biobloc appliance.

This is an appliance worn twenty four hours a day. It is removed only to clean the teeth and turn the screw.

The screw is turned one eighth of a turn every day expanding the arch by potentially seven eighths of a millimeter a week.

This is semi rapid expansion, opening up the midline suture but not snapping it.

Turning the screw at this rate will lead to less buccal tipping of the teeth and more development at the suture.

In order to turn at this rate well-constructed Crozat cribs are needed to hold the appliance secure on the teeth.

While I expanded the upper arch the girl wore a forward pull facemask twelve hours a day, mostly overnight while sleeping.

Once I had developed the upper jaw, creating room for the tongue to rest in the roof of the mouth, I started to correct the myofunctional patterns.

I fitted an Trainer supplied by Myofunctional Research Company called an i3.

This was worn all night every night and an hour a day every day with the lips together for one year.

In addition the patient also completed my "Postural Correction and Breathing Retraining Programme".

For more information about this programme visit my website.

<http://orthodonticearlytreatment.com/index.php?downloads> is a direct link to an article that was published in the journal of International Association for Orthodontics.

I have spent the last fifteen years working on helping children to breath through the nose. Unless the child learns to breath through the nose the tongue cannot rest in the palate and support the new jaw shape and size.



The Breathing Well Programme.
Nasal Breathing is essential for
good cranial development



The dental and facial pattern after one year with the i3



Profile change after arch expansion and then after myofunctional training

About fifteen years ago I looked at a lot of alternatives to help children improve the muscle patterns of the lip and tongue to achieve the five patterns I have described. I tried many different techniques. They required a great deal of cooperation from the child and parent. On the rare occasion when they did the exercises I saw substantial benefits.

About twelve years ago I started to use appliances designed and manufactured by Myofunctional Research Company in Queensland. They are called Trainers. These are prefabricated appliances worn in the mouth that will improve muscle patterns. Trainers do not move the teeth and jaws. Trainers change the muscles of the lip and tongue and it is the new muscle pattern that makes the changes, just like in normal growth.

At The Orthodontic Early Treatment Centre I have developed a programme to support children while they improve muscle patterns, jaw posture and nasal breathing.

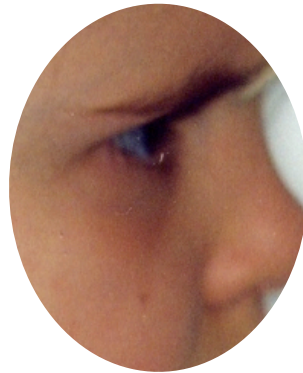
In 2001-2004 I cooperated in a research project using these appliances with the University of Belfast. The results were used in a study that was published:
Dimensional Changes in Dental Arches After Treatment with a Prefabricated Functional Appliance.
The Journal of Pediatric Dentistry Volume 31, Number 4/2007.

I am showing you one of the children in the study to demonstrate that it is possible to help the maxillae grow forwards without using a plate in the mixed dentition. The tongue, once trained to function in the palate, can redirect growth upwards and forwards. The children in the study were instructed to wear a Trainer, T4K, all night every night and an hour a day every day with the lips together for one year. You can see from the photographs the maxillae and mandible moved forward within the cranium bringing the orbit forward with it.

In Conclusion

Over the past twenty years I have come to understand and recognise the health issues related to poorly directed growth and development. I have come to understand and recognise the importance of facial structure for more aesthetic results. I can recognise the deficiencies in facial form when developing a correct diagnosis. I understand the importance of horizontal growth in younger patients and have the knowledge to treat accordingly. As a result, I have the knowledge and confidence to diagnose growth irregularities in young children and treat patients to a far higher level.

The single most important thing that you can do to improve a child's health is to establish nasal breathing.



Facial and profile changes showing forward growth of the maxillae after one year using only a Trainer