There has been a paradigm shift in the treatment of Class II malocclusions

Dr Jessica Waller

Diagnosis and treatment of a Class II malocclusion is largely influenced by cephalometric analysis and the patients' facial profile.

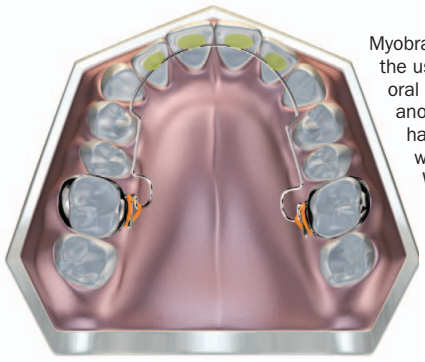
By Dr. Jessica Waller, B Oral Hlth (Dent Sci), Grad Dip Dent (Griffith)

Traditionally, orthodontics has focused on the treatment of teeth as a separate entity compared to the patient as a whole and the patient's facial profile. The traditional orthodontic approach being to wait until all the adult teeth had erupted, jaw development completed and then to move the teeth in accordance to that existing framework. Orthodontics is now moving away from this traditional view and adopting a myofunctional and orthopaedic component; treating patient's earlier to work with their growth potential, treating the person as a whole, treating the face, the function and the overall health in the process.

Jefferson recognised the need for this paradigm shift and explained it well in the Jefferson Cephalometric Analysis he created for diagnosing the face to achieve optimal overall health and harmony. Jefferson's analysis is simplistic and describes a universal standard for facial beauty regardless of age, sex or race. The analysis caters to the individual's facial characteristics and determines the ideal developmental outcome for the patient. It uses the patient's own anatomical landmarks to create custom arcs which serve as suggestive growth markers for normal development in that particular patient.

By treating faces and profiles based on the Jefferson Analysis, patients will achieve optimal health. The analysis places the maxilla and the mandible to their ideal physiologic position.[1] The divine proportion according to Jefferson is achieved when the maxilla (Anterior Nasal Spine) and mandible (Pogonion) lie on the anterior arc (+/-2mm) achieving a Skeletal Class I, with both maxilla and mandible in normal A-P position and the vertical should also be correct (+/-2mm) in relation to age, achieving a normal lower facial height. By treating this way, there is improvement in the face, TMJ, pharyngeal airway, head and body posture along with other benefits.[1]

Furthermore, mode of treatment is dependent on timing. Research of Baccetti, Franchi and McNamara showed that if the upper arch is developed at the appropriate age, the vast majority of Class II correction occurs with natural growth. The ideal maxillary growth occurs between Cervical Vertebral Maturation (CVM) 2-3. Following upper jaw development in Class II patients, it was found that waiting until CVM 3-4 to work on the mandible translation and positioning was effective.[2]



Myobrace treatment involves the use of removable intra-oral appliances to treat the anomalous myofunctional habits, often in combination with a fixed Upper Bent Wire System to assist in developing the arch form. This mode of treatment was implemented for Cases 1 and 3 below. Case 2 was treated using only removable appliances.

Historically, practitioners looked at Class II malocclusion as an A-P problem. However, upon analysing Lateral Cephalograms, it is apparent most Class II malocclusions are accompanied by a normal Class I mandible.

Subtelny, You and Fishman demonstrated that the majority of Class II patients presented the same size mandible as Class I patients. Therefore, the majority of Class II malocclusions are retrognathic, not micrognathic.[3] Hence, we need to develop the upper jaw to 'unlock' the lower jaw. If a narrow upper jaw is developed early, the patient must masticate in a more forward position, which allows for the natural forward development and positioning of the lower jaw.

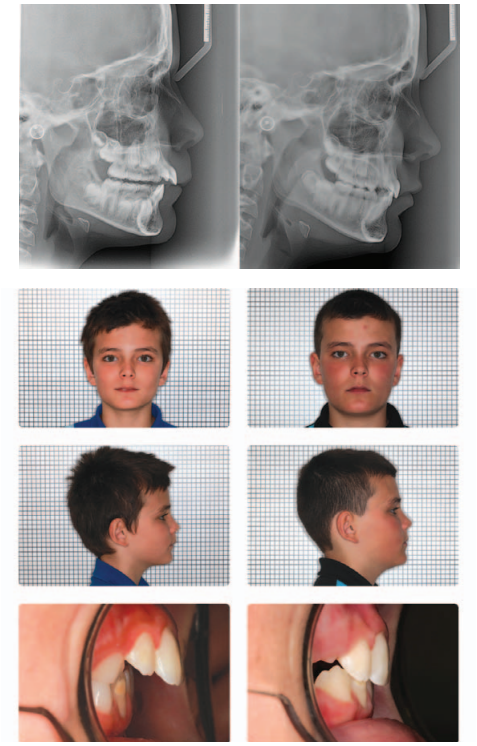
McNamara and Moyers described that approximately 80% of Class II malocclusions have retrognathic mandibles. This is clinically significant, as it means most Class II cases require forward development of the lower jaw as opposed to applying mechanics that retract the maxilla.[4] In terms of mechanics, transverse movement is required early, transverse expansion of the upper jaw encourages the lower jaw translation – hypothesis put forward by McNamara.

Studies indicate that in skeletal Class II subjects, the constricted maxillary bone impedes physiological sagittal mandibular growth. When the maxillary bone cannot develop normally in the transverse plane as a result of an anomalous function (low tongue posture, mouth breathing etc), it enhances development in the vertical plane, with a consequent backward and downward position of the mandible, as well as insufficient and abnormal growth of the nasal septum, which is often deviated.

Palatal expansion increases transverse maxillary diameter and releases the mandible, which gains a correct sagittal position. In addition, the vestibular movement of the upper incisors also permits a greater amount of mandibular advancement.[5]

Once correct diagnosis is established, taking a rounded approach to treatment will ensure the patient receives the best overall result. Class II treatment encompasses all dimensions; transverse, vertical and sagittal. Timing of treatment is also an important factor to consider in treatment planning, along with correction of the myofunctional habits for stability.

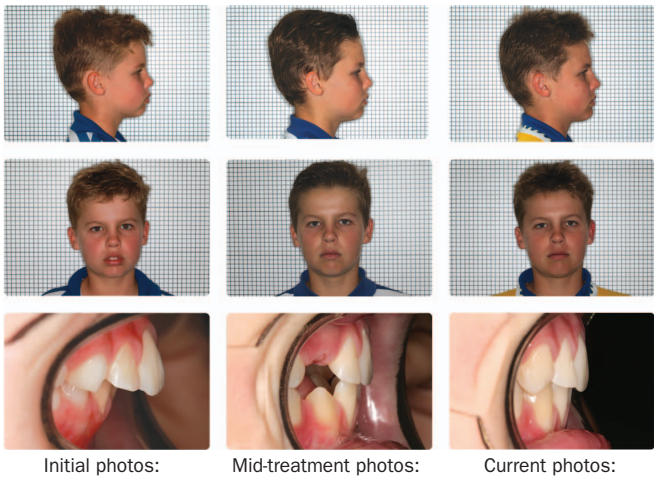
When diagnosing and treatment planning, it is important to look at the 'whole picture'. Early intervention is ideal to be able to correct the patient's myofunctional problems and to develop the upper jaw to allow the natural forward movement of the lower jaw. Below are three cases where early myofunctional treatment was applied with great success.



Initial photos: 12-07-16 | Current photos: 20-08-18

Case 1:

The main concern of patient A's mother was the facial appearance of 'bucked' and crooked teeth. The patient was a mouth breather with subsequent lowered tongue posture and a reverse swallowing pattern. He was treated with the Myobrace for Kids appliances, along with the Upper Bent Wire System to develop the upper arch form, which allowed the mandible to translate forward, providing significant reduction in overjet, together with an improved, more harmonious facial profile.



Initial photos: 25-07-14 | Mid-treatment photos: 15-09-16 | Current photos: 09-08-18

Case 2:

Patient B was referred by a Dentist for incorrect jaw development and incorrect function. The patient presented with a large overjet, open mouth posture with a lip trap and was treated using only Myobrace Appliances. The initial phase of active treatment began with the Myobrace K1, then progressing to the Myobrace K2 along with Myobrace Activities to correct the function. Following active treatment, the patient went into a retention stage with 6 monthly reviews, using the Myobrace T4 – the retention appliance for teens.

Initial photos: 14-01-16 | Update photos: 17-01-17 | Current photos: 24-01-18

Case 3:

Patient C presented with crowding and incorrect jaw development, as well as gum recession on a lower incisor. The gum recession had been picked up by her family Dentist who assumed it was an oral hygiene issue, however even with improved brushing the recession would not subside. On review, she had presented with a large overjet, deep overbite along with a traumatic bite on the lower incisor causing the gum recession. Furthermore, there was significant orofacial muscle tension with lips together. Patient C was treated using the Myobrace Appliances and the Upper Bent Wire System; treated similarly to Patient A. The gum recession improved within the first 3 months and remains stable, while facial tension has softened, allowing for a more balanced facial profile. ◆

References:

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