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## **Treatment response to maxillary expansion and protraction**

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### **ABSTRACT**

A prospective clinical trial was conducted to determine the skeletal and dental contributions to the correction of overjet and overbite in Class II patients. Thirty patients (12 males and 18 females with a mean age of 8.4+-1.7 years) were treated consecutively with protraction headgear and fixed maxillary expansion appliances. For each patient, a lateral cephalogram was taken 6 months before treatment (T0); immediately before treatment (T1); and 6 months after treatment (T2). The time period (T1-T0) represented changes due to 6 months of growth without treatment; (T2-T1) represented 6 months of growth and treatment. Each patient served as his/her own control. Cephalometric analysis described by Bjork (1947) and Pancherz (1982a,b) was used. Sagittal and vertical measurements were made along the occlusal plane (OLs) and the occlusal plane perpendicular (OLp), and superimposed on the mid-sagittal cranial structure. The results revealed the following: with 6 months of treatment, all subjects were treated to class I or overcorrected to Class I or Class II dental arch relationships. Overjet and sagittal molar relationships improved by an average of 6.2 and 4.5 mm, respectively. This was a result of 1.8 mm of forward maxillary growth, a 2.5-mm of backward movement of the mandible, a 1.7-mm of labial movement of maxillary incisors, a 0.2-mm of lingual movement of mandibular incisors, and a 0.2-mm of greater mesial movement of maxillary than mandibular molars. The mean overbite reduction was 2.6 mm. Maxillary and mandibular molars were erupted occlusally by 0.8 and 1.4 mm, respectively. The mandibular plane angle was increased by 1.5 degrees and the lower facial height by 2.9 mm. Individual variations in response to maxillary protraction was large for most of the parameters tested. Significant differences in treatment changes between male and female subjects were found only in the vertical eruption of mandibular incisors and maxillary and mandibular molars. These results demonstrate that significant overjet and overbite corrections can be obtained with 6 months of maxillary protraction in combination with a fixed expansion appliance.

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