

EFFICIENCY OF THE FLIP LOCK HERBST APPLIANCE IN MANAGEMENT OF ANGLE'S CLASS II DIVISION 1 MALOCCLUSION ON A CLASS II SKELETAL BASE DUE TO RETROGNATHIC MANDIBLE

BACKGROUND:

Fixed functional appliances are indicated in class II malocclusion in the post-adolescent or non-compliant patients. They are continuous in their mode of action and have a short length of treatment time. The Herbst appliance was reintroduced by Pancherz in 1979, and it has been successfully used in the treatment of class II malocclusion. It is a rigid functional appliance and acts like an artificial joint between the maxilla and mandible and postures the mandible in a forward direction. However there is little or no allowance for lateral mandibular movements. Following its revival, many modifications have come up. The Flip lock Herbst (TP Orthodontics Inc.) is a rigid fixed functional appliance, a variant of the Herbst appliance, introduced by Miller. It is claimed to have better patient tolerance due to its increased freedom for lateral movements in the mandible. Although various studies have reported efficiency of the Herbst appliance, there are no studies on Flip lock Herbst (TP Orthodontics Inc.).

AIM:

To assess the efficiency of the Flip lock Herbst in patients with Angle's class II division 1 malocclusion in active growth period.

OBJECTIVES:

To estimate the skeletal, dentoalveolar, and soft tissue changes in patients treated with the Flip lock Herbst (TP Orthodontics Inc.) and to analyse the skeletal and dental contributions to the overall correction achieved. To analyse the changes in the condylar region and glenoid fossa.

MATERIALS & METHODS:

Four female and four male subjects in their active growth period with class II division 1 malocclusion due to retrognathic mandible were included in the study based on inclusion and exclusion criteria. Hand wrist radiographs were assessed with Bjork, Grave and Brown method and patients within stages 4 and 5 were included. Records were taken at T1 and T2. T1 denotes start of treatment and T2, the end of functional phase. Standardized lateral Cephalometric radiographs (in open mouth position and centric occlusion) were used for evaluation. Skeletal and dental changes were evaluated with Pancherz (SO Analysis). Buschang and Santos-Pinto analysis was used to evaluate change in condylar and glenoid fossa position. Skeletal and dental contributions to treatment changes was assessed with the Pitchfork analysis.

RESULTS :

Paired samples t-test was applied to compare mean values between pre-treatment and post-treatment.

Statistically significant increase in mandibular length (pg/OLp) and effective mandibular length (ar/OLp + pg/OLp) was observed. There was a significant maxillary restraint effect. Highly significant condylar growth in the vertical and sagittal direction was observed along with anterior and inferior relocation of the glenoid fossa. Significant increase in nasolabial angle and reduction of upper lip strain occurred. Dental effects were significant and favourable towards class II

correction except position of lower incisors within the mandible (ii/OLp – pg/OLp) . For molar correction, skeletal changes accounted for 61% and dental changes for 39% of the total correction. For overjet correction skeletal changes contributed to 63% and dental changes to 37% of the total correction. Inter-individual variation existed for mandibular length , vertical and sagittal position of the condyle.

CONCLUSION:

The Flip lock Herbst appliance is efficient in correction of Angle's class II division I malocclusion on a class II skeletal base due to orthognathic maxilla and retrognathic mandible. Significant changes were achieved in both maxilla and mandible. Both skeletal and dental changes occurred with the former predominating (60:40).