Section 1: Effects of mandibular advancement appliances on the upper airway dimensions

Section 2: B. Finkelmeier[1], K. Kula[2], G. Eckert[3], A. Ghoneima[4]
Section 3: [1]IU School of Dentistry; [2]Department of Orthodontics, IU School of Dentistry; [3]IU School of Dentistry; [4]Department of Orthodontics, IU School of Dentistry

Section 4: Purpose: The aim of this retrospective cephalometric study was to investigate dentoskeletal and airway dimensional changes in a group of orthodontic patients with deficient mandible using Herbst vs. MARA appliances. **Methods:** Pre-treatment and post-treatment lateral cephalometric radiographs of 34 subjects with deficient mandible (aged 9-22 years) were selected from the postgraduate orthodontic clinic archives. The cephalograms were classified into 2 groups . Group 1 (n=17) consisted of cephalograms from individuals treated with a Herbst appliance and group 2 (n=17) consisted of cephalograms from individuals treated with a MARA appliance. Each cephalogram was traced manually and the selected dentoskeletal and airway parameters were recorded for all subjects. Intraclass correlations (ICC) were performed on duplicate measures of 10 cephalograms to assess reliability. Paired t-tests were used to differences in the airway parameters from pre-treatment to post-treatment within groups. Statistical significance was set at $P < 0.05$. **Results:** ICC values were >0.90 for all measurements. Significant changes were recorded in ANB, N-S, ANS-PNS, Go-Gn, Overbite, Overjet, Co-ANS, Co-Gn, TFH, AFH, and LAFH for both Herbst and MARA groups. Airway parameters such as soft tissue thickness of the posterior pharyngeal wall (Ba-ad1 and Ba-ad2), anteroposterior dimension of bony nasopharynx (Ba-PNS, AA-PNS and AA-ptm), and width of the nasopharyngeal airway space (PNS-ppw1) showed statistically significant decreases in both groups. The Herbst group also showed statistically significant decrease in the sagittal depth of pharyngeal lumen at the nasopharynx and oropharynx (ptm-ad1, PNS-ad1, and PNS-ppw2) while the MARA group demonstrated a statistically significant decrease in the angle represents the anteroposterior dimension of the nasopharynx (AA-S-PNS). **Conclusion:** Using mandibular advancement appliance decrease significantly the upper airway dimensions. The amount of the change in the upper airway size was variable between Herbst and MARA appliances.

Section 5: Mentors: Ahmed Ghoneima, Department of Orthodontics, IU School of Dentistry