

OP43 EVALUATION OF THE EFFECTS OF FUNCTIONAL APPLIANCE THERAPY ON UPPER AIRWAY DIMENSIONS AND SLEEP-RELATED BREATHING

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**AIMS:** To investigate, in a randomized controlled trial, changes in upper airway dimensions and sleep-related breathing disorder (SRBD) following functional appliance therapy with the Herbst or Twin-Block (TB) appliance.

**SUBJECTS AND METHOD:** Twenty-six adolescents (9 males, 17 females, aged  $13.1 \pm 1.5$  years) with a Class II malocclusion deemed to require functional appliance therapy were randomized to receive either Herbst or TB appliances. Magnetic resonance images were obtained before and after treatment (in the awake state). Parents completed the 22-item SRBD scale at baseline and after treatment. Changes in upper airway dimensions (width, depth and area) and SRBD scores over time were determined and compared between appliances.

**RESULTS:** Increases in upper airway dimensions, width, depth and area, were observed for most parameters and several reached statistical significance ( $P < 0.05$ ). A decrease in SRBD scale scores was observed ( $P < 0.05$ ). There was significant but weak/moderate correlation between the change in the depth of the retropalatal oropharynx and improvement in SRBD scores ( $r < 0.5$ ). No statistical significance in airway dimensions or SRBD scores were evident comparing the outcomes of Herbst versus TB appliances ( $P > 0.05$ ).

**CONCLUSION:** The size of upper airway can be increased three-dimensionally by one-year's growth and functional appliance therapy. In addition, some improvements in sleep-related behaviour is evident; and significantly correlated to airway dimension changes. No significant difference in airway dimensions or sleep-related behaviour comparing Herbst or TB appliances was evident.