

OP38 THE IMPACT OF FORCE MAGNITUDE ON THE EFFECTIVENESS IN CERVICAL HEADGEAR THERAPY – A CEPHALOMETRIC ANALYSIS

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AIM: To study the impact of different force magnitudes on the effectiveness of cervical headgear (HG) therapy.

SUBJECTS AND METHOD: Subjects with a Class II or end-to-end molar relationship in the mixed dentition with moderate crowding to be treated with HG were recruited for the study. Patients were allocated to a light (L, 300 g) or heavy (H, 500 g) force in the HG. The force magnitude was set while the patient was sitting and looking straight forward. The inner bow of the HG was expanded (3-4 mm) and the long outer bow bent upwards 10-20 degrees in relation to the inner bow. Patients were asked to wear HG for 10 hours/day. HG use was controlled and adjusted every 6-8 weeks until the end of the study at 10 months. Adherence to instructions and force magnitude in HG use was monitored by a Smartgear (Swissorthodontics, Switzerland) module. Lateral cephalograms were obtained before (T1) and after (T2) treatment, and studied with the modified Pancherz analysis with Planmeca Romexis Ceph module (Planmeca, Finland). The present study is based on 40 children (L group n = 22, H group n = 18, mean age 9.73 ± 0.74 years and 9.88 ± 0.73 years, respectively; 15 male, 25 female). The total number of days monitored was 11344. The Mann-Whitney *U* test was used for statistical analysis

RESULTS: Children in the L group used the HG statistically significantly more than in the H group (10.0 ± 1.5 hours and 8.3 ± 2.1 hours, respectively, $P = 0.002$). The only statistically significant difference in cephalometric analysis was the inclination of upper incisors at T1 ($P = 0.010$) 111.3 ± 6.5 degrees and 105.6 ± 6.4 degrees and at T2 ($P = 0.011$) 114.4 ± 7.5 degrees and 108.3 ± 6.7 degrees in the L and H groups; respectively. In both groups reduction in the SNA was found (L group T1 $82.7 \pm 3.6^\circ$, T2 82.0° SD $\pm 3.5^\circ$ and H group T1 $82.6 \pm 4.7^\circ$, T2 $81.5 \pm 4.5^\circ$), but no statistically significant difference between the groups.

CONCLUSIONS: Children with a lower force in the HG seem to adhere better to the instructions for HG use. After 10 months use, however, no statistically significant differences were found in the dental or skeletal outcome, but in the H group the outcome was achieved with less daily use.