

## Houston Orals

### HO01 EVALUATION OF MASTICATORY MUSCLE ACTIVITY IN PATIENTS WITH UNILATERAL POSTERIOR CROSSBITE BEFORE AND AFTER ORTHODONTIC TREATMENT

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**AIMS:** To detect whether there is an asymmetrical function of the masticatory muscles in subjects with a unilateral posterior crossbite (UPCB) as compared to UPCB-free controls, and whether maxillary expansion could affect the activity of jaw muscles.

**SUBJECTS AND METHOD:** A cohort of 29 children (mean age  $9.7 \pm 1.6$  years) with UPCB (UPCB group) and 40 children (mean age  $10.3 \pm 2.4$  years) UPCB-free controls (control group). Electromyographic (EMG) activity of the left and right temporalis (AT) and masseter (MM) muscles was recorded during maximum voluntary clenching on cotton rolls and in intercuspal position, and during a set of masticatory tasks. Data were collected in the UPCB group before (T0), immediately after (T1) and 3 months after the UPCB correction (T2), and at one time point in the controls (T0). The analysis of the differential EMG signals provided standardised EMG indices (POC, Tc, Ic%Clench, SMI, ASIM) useful to characterize muscle activity during various tasks. Parametric and non-parametric tests for paired and unpaired data and chi square test were performed to test between and within group differences in EMG parameters.

**RESULTS:** At T0, no significant differences were found between the two groups for all the standardised EMG indices. UPCB was not associated with a more asymmetrical activity of the jaw muscles (ASIM,  $P = 0.749$ ). At T1, the overall electrical activity of the muscles in the UPCB group decreased (Ic%clench, T0 = 118%; T1 = 97%;  $P = 0.043$ ), and a greater asymmetric activity of paired muscles was found during mastication (SMI, T0 = 71.7; T1 = 59.4;  $P = 0.044$ ). At T2, data showed a trend toward the values at T0 (Ic%clench T2 = 110.0; SMI T2 = 62.6).

**CONCLUSION:** Standardised EMG indices depicting jaw muscle asymmetry were not different between UPCB and UPCB-free patients. The treatment of UPCB did not affect the baseline EMG indices of asymmetry in static tasks.