Nasopharyngeal morphometry in adults with cleft lip/palate and obstructive sleep apnea: analysis by cone beam computed tomography and 3D reconstruction.

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**Background:** Obstructive sleep apnea (OSA) is characterized by intermittent obstruction of the upper airways. Nasopharyngeal geometry in OSA is still poorly known. Individuals with cleft lip and/or palate (CL/P), due to an altered nasopharyngeal morphophysiology, constitute a group specially prone to OSA development.

**Aims:** To evaluate nasopharyngeal airway (NPA) morphometry internal dimensions, such as volumes, perimeters, cross sectional areas (CSA), depth and width, of the inferior and superior segments of adults with cleft lip/palate (CL/P); verifying its correlation with obstructive sleep apnea (OSA) severity, and comparing the findings to those with CL/P without OSA (N-OSA) and with OSA without craniofacial anomalies (N-CL/P).

**Methods:** Three groups, not matched by age/sex, were constituted: G1) CL/P OSA (n=6, 3♂, 38.70±10.20years); G2) CL/P N-OSA (n=11, 8♂, 24.80±3.00years); G3) NCL/P OSA (n=13, 4♂, 50.40±9.70years). Cone-beam computed tomography (CBCT) images were used for 3D reconstruction and morphometric analysis. **Results:** Volume of NPA (8624/2744mm³) was larger in G1 than in G3 (p=0.03). Length (1.79±0.51cm), inferior (3.24±0.44cm) and superior (1.33±0.18cm) width, inferior depth (2.77±0.41cm), inferior (4.86+1.18cm²) and superior (4.79+1.47cm²) areas, and inferior perimeter (1.01+0.14cm) of G1 NPA did not differ from G2 or G3. Whereas, superior perimeter (1.33±0.18cm) of G1 NPA differed significantly from G3 (p=0.01). Severity of OSA did not differ between G1 (median=8.90 apnea-hypopnea index events/h) and G3 (median=15.50 oxygen desaturation index events/h). Morphological NPA variables and OSA severity did not correlate. **Conclusion:** The NPA volume of CL/P OSA patients is increased when compared to the OSA without CLP group. Nasopharyngeal dimensions in patients with CLP do not seem to constitute a
risk factor for OSA in this special group of patients. Despite differences found among the groups regarding NPA, no morphological characteristics was correlated to OSA severity. **Keywords:** Cleft Palate. Nasopharynx. Sleep Apnea, obstructive. Cone-Beam Computed Tomography.