Tomographic evaluation of the upper cervical spine in patients with cleft lip and palate

The aim of this study is to perform a bi- and three-dimensional morphometric analysis of the upper cervical (UCS) spine in patients with unilateral (ULCP) and bilateral (BLCP) cleft lip and palate, and in controls without craniofacial anomalies (CON) by means of cone-beam computed tomography (CBCT) in order to identify and compare the presence of malformations or instabilities among the groups. A total of 72 CBCT from adult patients (48 males and 24 females) with Angle Class III malocclusion were distributed into three groups: 1) UCLP (n=29; males: 65.5%; age: 24.2±4.2 years); 2) BCLP (n=18; male: 83.3%; age: 26.4±6.0 years); 3) CON (n=25; male: 56.0%; age: 27.8±9.3 years). The version 11.7 of Dolphin® software (Dolphin Imaging, Chatsworth, California, USA) was used to evaluate the atlantodental, basion-opisithion, hyoid-C3 and hyoid-sella distances, and to estimate the clivus-canal angle and the Torg index. The presence of morphological changes was also registered and described. Data were analyzed using descriptive and inferential statistics ($p \leq 0.05$). No differences were observed regarding morphometric variables among groups. For the UCLP, BCLP and CON groups, respectively, the measurements were: atlantodental interval (2.1±0.5; 2.1±0.4; 2.0±0.3 mm); basion-opisithion (35.9±3.2; 36.4±3.0; 34.7±1.9 mm) hyoid-C3 (34.5±3.7; 34.5±5.2; 35 .3±4.5 mm); hyoid-sella (108.1±9.8; 111.3±9.2; 109.7±10 mm), clivus-canal angle (152.3±13; 150.3±10; 150.7±10º) and Torg index (1.0±0.2; 1.0±0.1; 1.1±0.2). Deformities, spinal canal stenosis and potentially unstable anomalies were more prevalent in the UCLP group (24,1%). Overall, patients with cleft lip and palate had UCS anomalies in (19,1%) of cases. Patients with ULCP presented a higher occurrence of potentially unstable deformities in the upper cervical spine.

Keywords: Craniofacial Abnormalities. Spine. Cone-Beam Computed Tomography.