

## **Correlation between cervical and craniovertebral parameters with the retropharyngeal space after posterior C1-C2 arthrodesis**

**INTRODUCTION/OBJECTIVE:** The craniovertebral junction is a complex region and, therefore, it must be carefully evaluated, since changes in alignment caused by a surgical approach can affect adjacent structures in a secondary way. The most evident example in the literature is dyspnea or dysphagia after posterior occipitocervical arthrodesis, due to a reduction in the caliber of the oropharynx. This alteration can be identified in the perioperative period by several radiographic parameters that try to predict a possible respiratory complication in the postoperative period. This complication seems to be related to the narrowest oropharyngeal airway space (nPAS) and can also occur in patients in the postoperative period of atlantoaxial arthrodesis (C1-C2), whether using the Gallie, Magerl or Goel/Harms technique. This study aims to correlate the variation in the craniovertebral junction alignment parameters in the pre- and postoperative period of atlantoaxial arthrodesis and the variation of nPAS. **METHODS:** Patients who underwent C1-C2 posterior arthrodesis between 2011 and 2019 at the National Institute of Traumatology and Orthopedics (INTO) were included in the study. Those in which the radiographs did not allow the proposed measurements to be performed or had other levels included in the arthrodesis, were excluded, totaling 27 patients. The parameters evaluated included cervical lordosis, C1-C2 angle, C2 slope, occipito-c2 angle (O-C2), pharyngeal inlet angle (PIA), pharyngeal tilt angle (PTA), occiput and external acoustic meatus to axis angle (O-EAa), cranial transverse motion against c2 angle (C2Ta), axial tilt (AT) and nPAS percentage change. **RESULT:** The investigation of associated factors was performed using multiple linear regression. The clinical-surgical characteristics had no statistically significant correlation ( $p < 0.05$ ) with the %  $\Delta$ mDEO, except for males. As for the radiographic variables, only C1-C2, O-C2, PTA and C2T presented a statistically significant correlation with %  $\Delta$ mDEO. **CONCLUSION:** The change in cervical alignment and craniovertebral junction parameters already defined for occipitocervical arthrodesis surgeries is correlated with mDEO and, therefore, should be evaluated in the pre- and postoperative period of atlantoaxial arthrodesis as a way to predict a possible obstructive complication.