

Airway dimensions and pathologies of trumpet players vs. non-trumpet players. **KS Kula<sup>1</sup>**, A Imburgia<sup>1</sup>, S Halum<sup>2</sup>, M Van Dis<sup>1</sup>, and AA Ghoneima<sup>1</sup>. <sup>1</sup>Indiana University School of Dentistry, <sup>2</sup>Indiana University School of Medicine, Indiana University Purdue University at Indianapolis, IN

### Abstract

**Objective:** The objective of this retrospective, 3-dimensional cone beam computed tomography study was to determine if there is a significant difference between the most constricted area of the airway, the prevertebral soft tissue thickness and airway dimensions (length and volume) of the nasal cavity, nasopharynx, oropharynx, and maxillary sinuses of university trumpet players versus non-trumpet playing controls. The second objective was to determine significant differences in the prevalence of airway pathologies between university trumpet players and controls.

**Method:** Following IRB approval and consent and reliability studies, measurements of airway parameters and pathology were compared between 66 Caucasian trumpeters and 22 ethnic-matched controls. An analysis of covariance, with age and sex included as covariates, was used to compare the airway measures. Since there was a significant difference in gender and age, comparisons between groups for the presence of any airway pathologies was made using logistic regression including age and sex as covariates. A 5% significance level was used for all comparisons.

**Result:** The trumpet players had significantly smaller nasal cavity volume ( $18028 + 595 \text{ mm}^3$  vs.  $25266 + 1116 \text{ mm}^3$ ;  $p < 0.0001$ ) and significantly greater soft tissue thickness at CV2ia ( $3.29 + 0.10 \text{ mm}$  vs  $2.70 + 0.10 \text{ mm}$ ;  $p = 0.03$ ) and CV3sa ( $4.55 + 0.13 \text{ mm}$  vs  $3.74 + 0.14 \text{ mm}$ ;  $p = 0.005$ ) than the controls. No other airway measure demonstrated a significant difference between the two groups. Trumpeters had significantly ( $p = 0.002$ ) more airway pathology ( $n = 33$ ; 50%) than the controls ( $n = 4$ ; 18%). Antral pseudocysts or polyps composed 52% of trumpeter pathologies as compared with 0% controls.

**Conclusion:** The only significant differences in airway dimensions between trumpet players and controls were decreased nasal cavity volume and some areas of prevertebral soft tissue thickness. Trumpeters were almost three times as likely to exhibit airway pathology when compared with controls.

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