

How does open-mouth breathing influence upper airway anatomy?

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OBJECTIVES/HYPOTHESIS: Open-mouth breathing during sleep may increase the severity of obstructive sleep apnea (OSA) and complicate nasal continuous positive airway pressure (CPAP) therapy in patients with OSA. The aim of this study was to assess the effect of open-mouth breathing on upper airway anatomy using lateral cephalometry and fiberoptic nasopharyngoscopy. **STUDY DESIGN:** This was a cross-sectional study. **METHODS:** Lateral cephalometry and fiberoptic nasopharyngoscopy were carried out on 28 subjects with a mean age of 36.7 years. We compared the effect of the mouth being open or closed on the results in lateral cephalometry (pharyngeal length, distance between the mandible and hyoid bone [MP-H], angles from the sella-nasion to mandibular points A and B [SNA, SNB, respectively], retropalatal, retroglossal, and hypopharyngeal distance) and fiberoptic nasopharyngoscopy (retropalatal and retroglossal cross-sectional area). **RESULTS:** On lateral cephalometric measurements, retropalatal distance ($P = .000$), retroglossal distance ($P = .000$), and MP-H ($P = .002$) were lower with mouth open, and pharyngeal length ($P = .000$) was greater. However, there were no significant differences in SNA and hypopharyngeal distance. On fiberoptic nasopharyngoscopy, retropalatal ($P = .005$) and retroglossal ($P = .000$) cross-sectional areas were significantly reduced with the mouth open. **CONCLUSIONS:** Open-mouth breathing is associated with reduction of the retropalatal and retroglossal areas, lengthening of the pharynx and shortening of the MP-H in the upper airway. We suggest that knowledge of these anatomic changes improves our understanding of the increase of OSA severity and the low adherence to nasal CPAP therapy in mouth breathers.

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