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Mandible position and activation of submental and masseter muscles during sleep.

[Hollowell DE](#), [Suratt PM](#).

Department of Internal Medicine, University of Virginia Health Science Center, Charlottesville 22908.

Movement of the mandible could influence pharyngeal airway caliber because the mandible is attached to the tongue and to muscles that insert on the hyoid bone. In normal subjects and patients with obstructive sleep apnea (OSA) we measured jaw position during sleep with strain gauges, as well as masseter and submental electromyograms, airflow, esophageal pressure, oximetry, electroencephalograms, and electrooculograms. Jaws of patients with OSA were open more than those of normal subjects at end expiration and opened further at end inspiration, particularly at the termination of apneas when the masseter and submental muscles contracted. Masseter activation occurred only in patients with OSA and in a pattern similar to that of submental muscles. Jaw opening at end expiration could narrow the upper airway, whereas opening at end inspiration could reflect efforts to expand the airway with tracheal tug and with submental muscle activation and efforts to open the mouth to allow mouth breathing. Masseter contraction does not close the jaw but may serve to stabilize it.

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