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## **Effects of mouth opening on upper airway collapsibility in normal sleeping subjects.**

**Meurice JC, Marc I, Carrier G, Sériès F.**

Unité de recherche, Hôpital Laval, Université Laval Québec, Sainte-Foy, Canada.

We investigated the influence of mouth opening on upper airway (UA) collapsibility in six healthy sleeping volunteers. UA collapsibility was measured during continuous negative airway pressure trials that consisted of the progressive decrease in pressure in a nasal mask, with simultaneous recording of esophageal pressure and instantaneous flow. Measurements were made under two experimental conditions: mouth closed (MC), and mouth open (MO). Cephalometric measurements were obtained with subjects awake in the same position for both experimental conditions. UA critical pressure ( $P_{crit}$ ) was derived from the relationship between the breath-by-breath values of the maximal inspiratory airflow and the corresponding mask pressure.  $P_{crit}$  was significantly less negative during MO than during MC (MO,  $-12.7 \pm 4.8$  cm H<sub>2</sub>O; MC,  $-16.4 \pm 6$  cm H<sub>2</sub>O, mean  $\pm$  SD;  $p = 0.03$ ). Mouth opening was associated with a significant increase in the total respiratory resistance (MO,  $3.8 \pm 1.6$  cm H<sub>2</sub>O/ml/s; MC,  $3.0 \pm 1.6$  cm H<sub>2</sub>O/ml/s-1,  $p = 0.03$ ). Besides an increase in the distance between the teeth and a reduction in the distance between the hyoid bone and the mandible, no significant changes in cephalometric parameters were found between MO and MC. We conclude that mouth opening increases UA collapsibility during sleep and that mouth opening may contribute to the occurrence of sleep-related breathing abnormalities.

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