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Association between nasal respiratory obstruction and vertical mandibular position.

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Vertical mandibular position is considered to have an effect on the patency of the upper airway, because mouth opening is associated with a backward and downward displacement of the mandible and tongue. This study was conducted to investigate the nature of mandibular displacement at rest and to determine whether or not different respiration modes and body postures influence the mandibular position. The mandibular position was measured by use of a newly developed system with magnets and magnetic sensors placed on the upper and lower first molars, respectively. Vertical mandibular position was significantly affected by the degree of nasal airway obstruction. The proportion of the duration of mouth opening from 0 to 2.5 mm was about 80% in the sitting and lateral recumbent positions and 55% in the supine position. The amount and duration of vertical mandibular displacement were thus significantly increased by experimentally induced nasal respiratory obstruction. Furthermore, it was demonstrated that the amount and duration of mouth opening were significantly greater in the supine posture than in the sitting and lateral recumbent positions. It is thus shown that nasal respiratory disturbance may be a key determinant for mouth opening and breathing and the resultant vertical mandibular displacement.

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