Acoustic method respiratory rate monitoring is useful in patients under intravenous anesthesia.

J Clin Monit Comput. 2016 Jan 12. [Epub ahead of print]

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Respiratory depression can occur during intravenous general anesthesia without tracheal intubation. A new acoustic method for respiratory rate monitoring, RRa(®) (Masimo Corp., Tokyo, Japan), has been reported to show good reliability in post-anesthesia care and emergency units. The purpose of this study was to investigate the reliability of the acoustic method for measurement of respiratory rate during intravenous general anesthesia, as compared with capnography. Patients with dental anxiety undergoing dental treatment under intravenous anesthesia without tracheal intubation were enrolled in this study. Respiratory rate was recorded every 30 s using the acoustic method and capnography, and detectability of respiratory rate was investigated for both methods. This study used a cohort study design. In 1953 recorded respiratory rate data points, the number of detected points by the acoustic method (1884, 96.5 %) was significantly higher than that by capnography (1682, 86.1 %) ($P < 0.0001$). In the intraoperative period, there was a significant difference in the LOA (95 % limits of agreement of correlation between difference and average of the two methods)/ULLOA (under the lower limit of agreement) in terms of use or non-use of a dental air turbine ($P < 0.0001$). In comparison between capnography, the acoustic method is useful for continuous monitoring of respiratory rate in spontaneously breathing subjects undergoing dental procedures under intravenous general anesthesia. However, the acoustic method might not accurately detect in cases in with dental air turbine.