



Disordered Breathing Detected During Ambulatory Surgery Using an Alar Sensor

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Introduction

The nasal ala is an attractive site for monitoring because it can provide several measurement parameters: respiratory rate (RR), respiratory effort, oxygen saturation (SpO₂) and pulse rate. The authors hypothesized that respiratory patterns could be characterized to include normal, hypopnea, bradypnea, apnea, obstructive, and ataxic patterns during monitored anesthesia care in spontaneously breathing patients.

Methods

The study included 19 subjects – 6 male and 13 female of variable skin tone. Subjects were aged 49.6 ± 13.1 years and presented at an adult ambulatory surgical center (Florida Surgical Center, Gainesville, FL) for upper extremity surgery. Assurance® Alar Sensors containing a thermistor (Xhale Assurance, Inc., Glastonbury, CT) were placed on either nasal ala. High resolution raw data was collected, supplemented by real-time observations from clinical research nurses. A proprietary algorithm calculated SpO₂ and RR from the thermistor signal and photoplethysmography (PPG) parameters.

Results

Mini-desaturations (defined as a decrease of >3% from baseline SpO₂) were observed in 12 subjects (63%). Desaturations (SpO₂ ≤ 90%) were present in 6 subjects. Six subjects experienced apnea of >30 seconds. 11 subjects (58%) developed hypopnea (defined as a progressive decline over several breaths leading to apnea). Seven subjects (37%) exhibited periods of ataxic breathing, and 9 subjects (47%) developed airway obstruction.

Conclusions

The alar sensor is useful not only to monitor SpO₂ and heart rate, but can also provide information into respiratory patterns, including apnea and other breathing patterns, in spontaneously breathing patients undergoing monitored anesthesia care.

This summary was created by Xhale Assurance, Inc. based on the original report by the authors referenced.



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