

# The Benefits of CPAP in the Post-Operative Environment

Chris Campbell

The impact of obstructive sleep apnea (OSA) is a subject that is gaining traction in today's media, with more and more outlets and publications raising awareness about how it is affecting the population.

The effects of OSA range from the annoyance of snoring for a spouse desperately trying to sleep to the more serious impact of dozing off while driving a vehicle, as well as the long-term and catastrophic health problems associated with the condition.

A more specific area impacted by OSA is when a person needs or elects to have surgery, with evidence is showing that OSA results in a raft of post-operative complications.

The good news is a growing list of studies and articles reveals that post-operative care is improved through the use of continuous positive airway pressure, known simply as CPAP.

Using CPAP in a hospital, however, isn't as easy as it sounds due to some hospital policies and the fact that, according to the evidence, most people with OSA don't even know they have it.

## The Impact of OSA on Surgical Patients

Staff with the Department of Anesthesiology at the University of Rochester (Suzanne Karan, Shira Black and Falan Mouton) addressed this issue with an article published in 2011 in the *Open Anesthesiology Journal* called *Perioperative Implementation of Continuous Positive Airway Pressure: A Review of the Considerations*.

According to the article, "OSA occurs when a compromised airway collapses, disrupting the flow of air during sleep. With the ensuing hypoxia and hypercarbia, the respiratory drive is stimulated, a stronger inspiratory effort is made, and the cycle repeats itself throughout the night."

The article says that people with OSA are affected in a profound way when it comes to surgery due to the effects of anesthesia.

"Post-operative changes amplify the disease.<sup>1-5</sup> Residual anesthetics weaken the muscles of the upper airway<sup>6,7</sup> and depress the respiratory drive.<sup>8,9</sup> Thus, a mild pre-operative case of OSA can easily become a severe post-operative one. OSA patients require more monitoring, oxygen therapy, and unplanned ICU admissions.<sup>10</sup> When compared with controls, OSA

patients have longer hospital stays and more adverse events than non-OSA patients.<sup>11</sup> Additionally, an OSA diagnosis is associated with increased post-operative complications, including, but not limited to: airway obstruction, cardiac arrhythmias, hypoxemia, encephalopathy and death.<sup>10,12</sup> Adverse outcomes related to respiratory events remains the largest class of injuries reported in the American Society of Anesthesiology Closed Claims study—in cases involving general anesthesia, sedation and monitored anesthetic care (MAC)."<sup>13</sup>

## The Benefits of CPAP

According to the article, the use of CPAP can "reduce" some of the post-operative complications.

"In an unblinded study by Squadrone et al. (*Continuous Positive Airway Pressure for treatment of Post-operative Hypoxemia: A Randomized Controlled Trial*, 2005), CPAP application to treat hypoxemia after major abdominal surgery significantly reduced re-intubation rates, and correlated with a reduction in ICU length of stay, post-operative pneumonia, infection, sepsis, and death. Another review of 16 cases<sup>14</sup> reported a reduction in post-operative complications in patients who used CPAP therapy pre-operatively, upon extubation, and nearly continuously for 24 to 48 hours after surgery."

The article quoted the 2006 American Society of Anesthesiology (ASA), saying that the society's guidelines "regarding the perioperative care of OSA patients state that patients who use CPAP at night should use CPAP post-operatively."

In an article on obese patients and ambulatory surgery by Dr. Girish P. Joshi of the University of Texas, in the August 2013 edition of the ASA journal, it says that "patients with a known diagnosis of OSA (who are typically prescribed CPAP pre-operatively) may be considered for ambulatory surgery if their co-morbid medical conditions are optimized and they are able to use a CPAP device in the post-operative period. It appears that post-operative CPAP use may be protective against opioid-induced respiratory depression."

## People with Undiagnosed OSA

CPAP, however, is often not used in hospitals because most people are not diagnosed with the condition.

John Davies, a clinical research coordinator at Duke University Medical Center, wrote about the issue in the May 2010 edition of the *AARC Times*. Davies warned about the risks of OSA

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Chris Campbell is the Senior Editor of *Respiratory Therapy*.

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