

**Obesity and Obstructive Sleep Apnea:
Pathophysiology and the Impact of Regional Anesthesia and Acute Pain Management**

2016

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Dr. Alan Jay Schwartz: Hello. This is Alan Jay Schwartz, Editor-in-Chief of the American Society of Anesthesiologists' 2016 *Refresher Courses in Anesthesiology*, the latest research and education information. The focus of the new online format of the *Refresher Courses in Anesthesiology*'s CME program, and the modules featured, is to educate learners on current developments in the science and clinical practice of the specialty of anesthesiology, critical care medicine and pain management. For the first time ever, we will be speaking directly with individual authors to learn about their expertise, perspective and insight regarding their featured module.

Today, we are pleased to present the following one-on-one conversation with fellow *Refresher Courses in Anesthesiology* Editor, Dr. Amanda Burden, and author Dr. Girish Joshi. They will be highlighting the module titled, "Obesity and Obstructive Sleep Apnea: Pathophysiology and the Impact of Regional Anesthesia and Acute Pain Management."

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Dr. Amanda Burden: Hi. I'm Amanda Burden, Associate Professor of Anesthesiology at Cooper Medical School of Rowan University, and I'm one of the Associate Editors of the American Society of Anesthesiologists' anesthesia refresher

course lectures publication, which highlights and publishes select lectures from the Annual Meeting.

With us today is Dr. Girish Joshi. Dr. Joshi is Professor of Anesthesiology and Pain Management at the University of Texas Southwestern Medical School in Dallas, Texas. Dr. Joshi is here to discuss his *Refresher Course* lecture titled, “Obesity and Obstructive Sleep Apnea: Pathophysiology and the Impact of Regional Anesthesia and Acute Pain Management.”

In this lecture, Dr. Joshi provides us with an in-depth exploration of the perioperative challenges posed by obese patients and patients with sleep apnea. Dr. Joshi’s work explains the concepts of preoperative evaluation and assessment of risk in patients who have sleep apnea and obesity. He describes a variety of perioperative management strategies that are aimed at reducing the risk of complications in this patient population. He also presents the benefits of evidence-based, procedure-specific pain management in improving perioperative pain relief in this patient population, and specifically discusses the role of regional anesthesia.

Dr. Joshi, welcome, and thank you so much for shedding light on this important and timely subject; and we look forward to hearing you highlight some of the critical educational points in this module.

Dr. Girish Joshi: Thank you, Dr. Burden. A couple of key points about this module. And the first important point I want to make is that patients who are morbidly obese have significant number of comorbid conditions, including sleep apnea. About 70% of patients who are morbidly obese have sleep apnea; and more importantly, 70% of those have undiagnosed sleep apnea. That means they would come for a surgical procedure, not knowing that they have sleep apnea.

Therefore, our first obligation is to basically ask potential questions which would allow us to determine if the patient has sleep apnea. Therefore, every preop investigation or preop assessment should include a tool, and a commonly-used tool is the so-called STOP-BANG criteria, which has eight criteria to determine if the patient has possibility of sleep apnea.

Once we have assigned a patient as having a possibility of sleep apnea—or, it's also called potential sleep apnea—then obviously the next step is to emphasize reduction in opioid use. There's a good correlation between postop complications and high opioid use. That's where regional anesthesia comes into play. As far as possible, avoiding opioids, avoiding the residual effects of anesthetics and muscle relaxants together, will decrease the potential of postop obstruction and complications related to sleep apnea. So, as much as possible, we should use local and/or regional anesthesia to avoid general anesthesia.

In addition, for pain management point of view, again, we should use non-opioid analgesic, and obviously regional anesthesia plays a major role as part of that non-opioid analgesic techniques.

In addition, we use other analgesics such as acetaminophen and a COX-2-specific inhibitor or an NSAID, or nonsteroidal anti-inflammatory drug, in combination, which would decrease opioid requirement significantly. That in itself will decrease the potential risk associated with sleep apnea.

There are other pathophysiological situations which also needs to be kept in mind, and that is, postoperatively, the administration of supplemental oxygen. Patients who are morbidly obese and have sleep apnea are very sensitive to high concentrations of oxygen, and that may decrease their respiratory effort. Therefore, if you have a patient in the recovery room who is hypoxic, rather than increasing oxygen concentrations, maybe a CPAP or BiPAP, or positive airway pressure techniques, would be beneficial for that patient.

Now, after ambulatory surgery, once the patients are discharged home, obviously we need to continue non-opioid analgesic techniques. In addition, we need to be cognizant of the fact that patients who have sleep apnea have modified sleep architecture. In other words, these patients, because of surgical stress response, have decreased in their REM sleep in the immediate postoperative period. After the surgical stress response is worn off—typically for ambulatory type of surgical procedures—there's a rebound increase in REM sleep, and during this period the patients are at high risk of apneic episodes.

Therefore, we have to advise the patients and the family that they are at risk for a longer period of time, not just in the immediate postop period, and therefore they have to take care and not overdose themselves with opioids; and if – those patients who are on CPAP should be using the CPAP at least for the next three to four days, depending upon the type of surgical procedure. So, this, in short, are the key points of this *Refresher Course*.

Dr. Amanda Burden: Dr. Joshi, thank you so much for providing us with that important information. As you said, patients who have obstructive sleep apnea present unique management challenges for us as anesthesiologists. Your work really helps us understand how to approach the pathophysiology of obstructive sleep apnea, and the discussion of perioperative risk-reduction strategies, including the role of regional anesthesia, was particularly helpful. Thank you again for your time. And now back to you, Dr. Schwartz.

Dr. Alan Jay Schwartz: Thank you for joining us today, and participating in this insightful conversation with this month's featured author. Be sure to join us for next month's one-on-one author interview, presented in this new, exciting format.

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