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10-2019

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Stanlies D'Souza

Baystate Health, dsouzastan@yahoo.com

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#### Recommended Citation

D'Souza S. Dexmedetomidine Based Awake-asleep-awake Technique in Prone Position for a Morbidly Obese Patient with Obstructive Sleep Apnea for Spinal Cord Stimulator Implantation. American Society of Anesthesiologists (ASA) Conference, Oct 19-23, 2019, Orlando, Florida.

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# Dexmedetomidine-based Awake-Asleep-Awake Technique in Prone Position for a Morbidly Obese Patient with Obstructive Sleep Apnea for Spinal Cord Stimulator Implantation



Stanlies D'Souza, MD

Department of Anesthesiology at Baystate Medical Center / University of Massachusetts Medical School



## Introduction

Morbidly obese patients in a prone position are at high risk for airway obstruction and hypoxic episodes. Dexmedetomidine reduces the amount of propofol needed and the incidence of such hypoxic episodes. Recent evidence shows that dexmedetomidine-based total intravenous anesthesia (TIVA) results in less apnea and desaturation compared to propofol-based TIVA techniques and is better tolerated in morbidly obese patients.

## Case Description

A 42-year-old male with a BMI of 51 and a history of obstructive sleep apnea (OSA) presented for spinal cord implantation for chronic back pain. Dexmedetomidine 1 mcg/kg bolus followed by 0.5-0.7 mcg/kg/hour infusion was combined with low dose of propofol and remifentanil infusion. The lean body weight was used for anesthetic drug administration. Patient saturated at 100% throughout the procedure with supplemental oxygen and no apnea episodes..

## Case Discussion

Patients with sleep apnea are at high risk for respiratory depression caused by sedatives, opiates and hypnotic agents. OSA is usually confirmed with polysomnography. Identifying OSA suspects using STOP BANG criteria during preoperative evaluation is essential in planning the Monitored Anesthesia care technique for an obese patient.

### STOP BANG criteria for identifying Obstructive Sleep Apnea (OSA)<sup>1</sup>

*The presence of three or more factors increases the risk of OSA.*

1. Male
2. Age over 50
3. Hypertension
4. Neck circumference more than 40 cm
5. History of snoring
6. Daytime sleepiness

### Properties of Dexmedetomidine:

1. Dexmedetomidine is an alpha 2 agonist and acts at presynaptic level
2. It reduces the release of norepinephrine
3. Alpha 2 receptors are centrally located locus coeruleus
4. It causes minimal respiratory depression
5. It causes more bradycardia and less hypotension than clonidine
6. It produces alpha waves on EEG; does not produce delta waves or burst suppression; EEG resembles normal stage 2 sleep
7. It reduces emergence agitation
8. It has analgesic properties

## References

1. Chung F, Abdullah HR, Liao P: STOP-Bang Questionnaire: A Practical Approach to Screen for Obstructive Sleep Apnea. Chest 2016; 149:631-38
2. Hofer RE, Sprung J, Sarr MG, Wedel DJ; Anesthesia for a patient with morbid obesity using dexmedetomidine without narcotics. Can J Anaesth 2005; 52:176-80

## Our Novel Anesthesia technique for Awake-Asleep- Awake technique for this morbidly obese patient with Obstructive Sleep Apnea for Spinal Cord Stimulator Implantation

1. Administer preoperative acetaminophen
2. Position patient awake in comfortable prone position
3. Dexmedetomidine 1mcg/kg bolus over 10 min followed by 0.2-0.7 mcg/kg/hr of infusion
4. Add propofol at 100 mcg/kg/min and reduce the infusion rate as the patient falls asleep
5. Remifentanil at 0.01-0.05 mcg/kg/min
6. Use lean body weight for dosing propofol/dexmedetomidine/opiates
7. Avoid using midazolam
8. Stop infusions at least 10-15 min prior to proposed wake up
9. Continue oxygen via face mask or nasal cannula
10. Use high flow oxygen when the patient is asleep, which improves oxygenation during apneic episodes.

## CONCLUSION

*Our dexmedetomidine-propofol combined technique did not produce any hypoxic events during the above procedure. Patient effectively participated in the trial with a high level of cooperation. We recommend this technique for morbidly obese patients in prone position for spinal cord stimulation trial. Its opiate-sparing effects and lack of respiratory depression make it an ideal method for sedation of morbidly obese patients.<sup>2</sup>*