

Perioperative Management of Obstructive Sleep Apnea Patients



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Objectives

- ▶ Describe the preoperative evaluation, intraoperative monitoring, & postoperative management for patients with suspected OSA
- ▶ Identify the effects of anesthetic medication in OSA patients
- ▶ Discuss the perioperative guidelines for OSA patients



What is OSA?!

Obstructive sleep apnea, a highly prevalent disorder characterized by *recurrent episodes of partial or complete upper airway obstruction during sleep associated with reduction in ventilation resulting in recurrent arousals & episodic oxyhemoglobin desaturations.*



Frequency of OSA



Sleep-related disorders occur in approximately 20% of adults



7% has moderate to severe OSA



80% of OSA patients are undiagnosed & untreated



70% of obese patients undergoing bariatric surgery have reported OSA



70% of these patients were undiagnosed before perioperative evaluation



Prevalence of OSA in adult non-upper airway surgical patients is 22%



Take Home Message (1)

OSA is very common & is often undiagnosed





AMERICAN SOCIETY
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■ SPECIAL ARTICLES

Anesthesiology 2006; 104:1081-93

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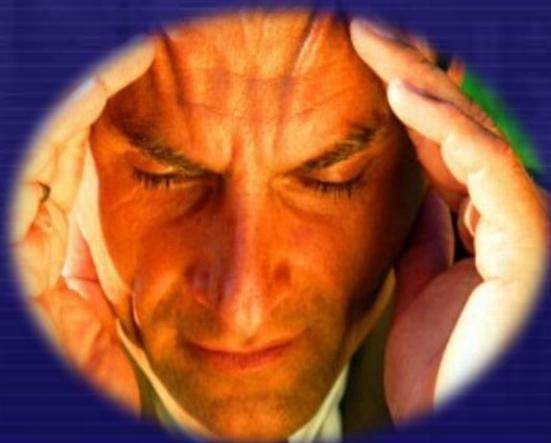
*Practice Guidelines for the Perioperative Management of
Patients with Obstructive Sleep Apnea*

*A Report by the American Society of Anesthesiologists Task Force on
Perioperative Management of Patients with Obstructive Sleep Apnea*



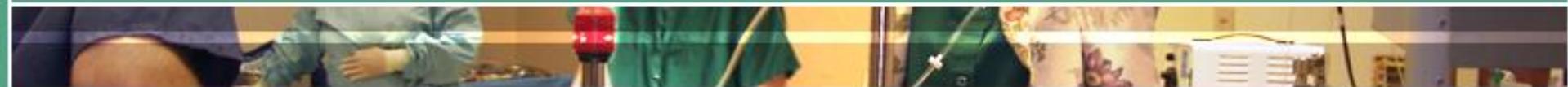
Identification & Assessment of OSA

A. Predisposing clinical symptoms suggesting of OSA:



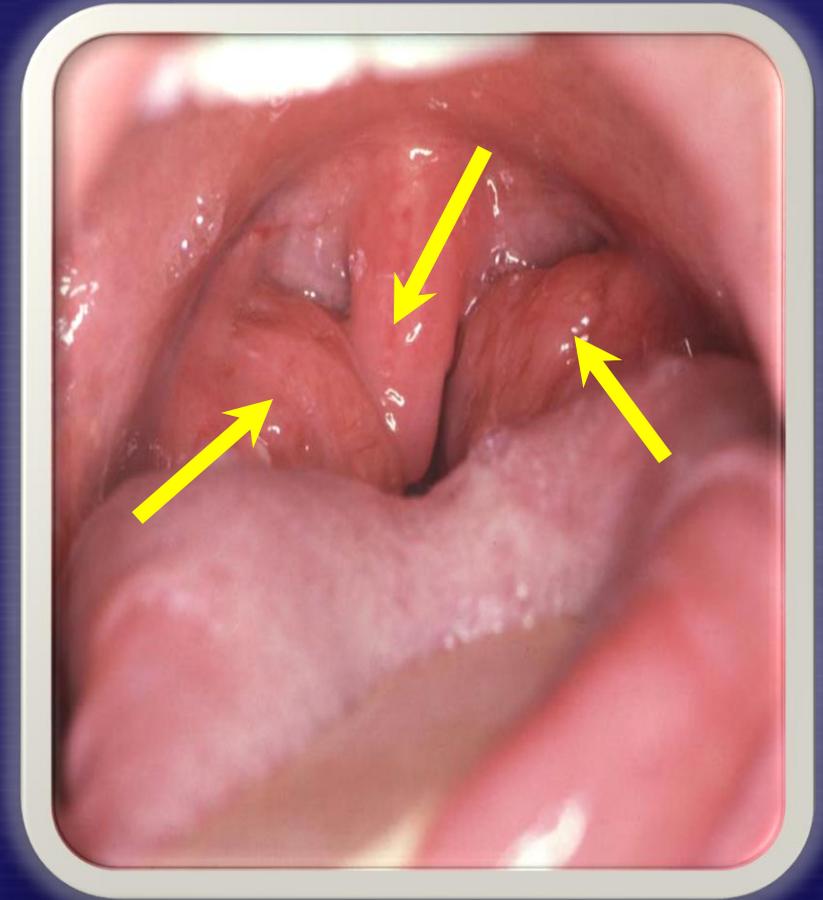
Identification & Assessment of OSA

B. Predisposing physical clinical signs suggesting of OSA:



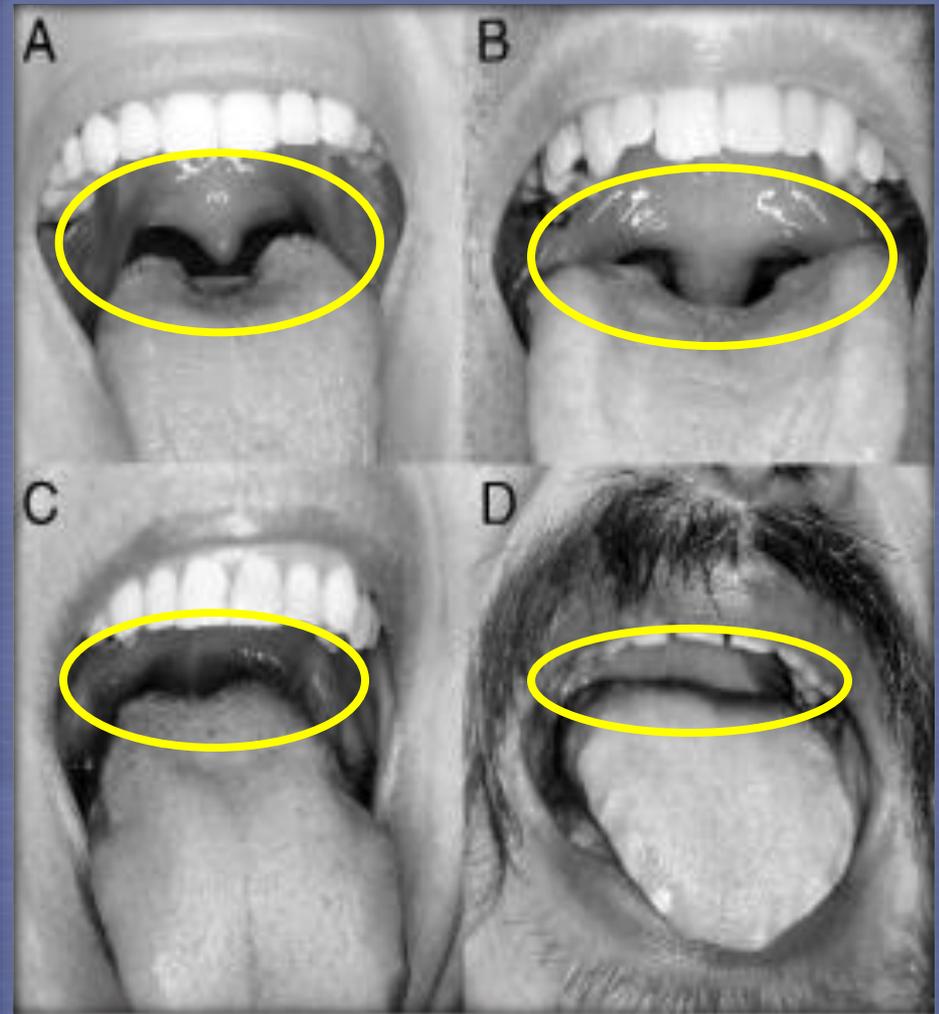
Identification & Assessment of OSA

B. Predisposing physical clinical signs suggesting of OSA:



The Mallampati (MP) Score

- ▶ **MP Class I** → the entire uvula, faucial pillars & soft palate can be seen.
- ▶ **MP Class II** → the upper part of the uvula, the faucial pillars & the soft palate can be seen.
- ▶ **MP Class III** → only the soft palate can be seen.
- ▶ **MP Class IV** → only hard palate can be seen.



Sleep Study



Screening Questionnaires

- ▶ Easy to understand
- ▶ Berlin Questionnaire
- ▶ Ease of administration/scoring
- ▶ ASA Checklist
- ▶ Limited time requirements
- ▶ Sensitivity/Specificity
- ▶ STOP and STOP-BANG questionnaire
- ▶ Validated (PSG)
- ▶ Generalized to various patient populations



OSA & the Surgical Patient

- ▶ Classified as high risk of OSA:
 - ✓ Berlin Questionnaire 33%
 - ✓ ASA Checklist 27%
 - ✓ STOP Questionnaire 28%
- ▶ Approximately 30% of general surgical patients will screen positive for OSA.
- ▶ No significant difference in the questionnaires in the ability to identify patients with OSA.

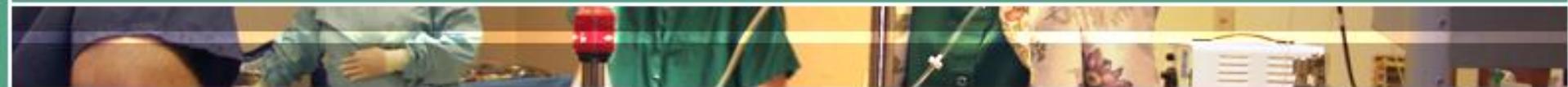


STOP-BANG Questionnaire

- Sensitivity (STOP-BANG Questionnaire)**
- | | | |
|---|-----|----|
| 1. Snoring: Do you snore loudly (loud enough to be heard through closed doors)? | Yes | No |
| 2. Tired: Do you often feel tired, fatigued, or sleepy during daytime? | Yes | No |
| 3. Observed: Has anyone observed you stop breathing during your sleep? | Yes | No |
| ▶ AHI > 5 STOP 65.6% STOP-BANG 83.6% | Yes | No |
| ▶ AHI > 15 STOP 74.3% STOP-BANG 92.9% | Yes | No |
| 6. Age: Age over 50 years old? | Yes | No |
| ▶ AHI > 30 STOP 79.5% STOP-BANG 100% | Yes | No |
| 7. Neck circumference: Neck circumference greater than 40 cm? | Yes | No |
| 8. Gender: Male? | Yes | No |

High risk of OSA: answering yes to 3 or more items

Low risk of OSA: answering yes to less than 3 items



Take Home Message (2)

Patients with suspected OSA should not undergo elective procedures until performing thorough preoperative evaluation.



Take Home Message (3)

The elective surgery in patients having OSA should be postponed until the patient is treated with PAP therapy for at least 4-6 weeks before surgery.



Intraoperative Management

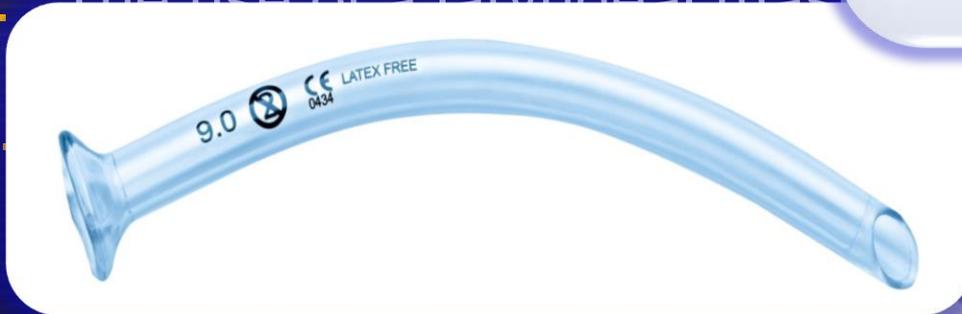
a) Intubation:

- i. Pre-intubation 3-5 minutes
- ii. Airway control at the time of intubation vs. nasopharyngeal

iii. The use of a laryngeal mask

- iv.
- v.

vi. Available alternative methods



Intraoperative Management

b) Anesthetic technique:

- i. Local or regional anesthesia versus general anesthesia.
- ii. Combined regional and general anesthesia versus general anesthesia.
- iii. Sedation versus general anesthesia.



Effect of Analgesics & Sedatives

Effect	Influence
CNS depression	<ul style="list-style-type: none">▪ Depressed consciousness▪ Decrease in skeletal muscle tone▪ Reduced upper airway tone▪ Reduced neural input to upper airway muscles▪ Diminished arousal responses
Respiratory depression	Decrease in FRC, atelectasis
Ventilatory responses	Reduced ventilatory response to hypoxemia & hypercapnia
Response to respiratory workloads	Reduced response to elastic and resistive workload



Intraoperative Management:

c) Monitoring:

- i. Continuously monitor the respiratory depressant effects of sedatives and/or opioids (e.g., level of consciousness, pulmonary ventilation, oxygenation, automated apnea monitoring)
- ii. Special intraoperative monitoring techniques



Intraoperative Management

d) Extubation:

- i. Verify the full reversal of neuromuscular block before extubation.
- ii. Extubate patients after they are fully awake (vs. asleep or partially awake).
- iii. Extubate patients in the semiupright, lateral, or prone positions (vs. supine).



Postoperative Management

a) Analgesic use:

- i. Regional analgesic techniques without opioids versus systemic opioids
- ii. Neuraxial opioids versus systemic opioids
- iii. Titration or lower dosage levels of systemic opioids
- iv. Oral analgesics versus parenteral opioids



Postoperative Management

b) Oxygenation:

- i. CPAP versus no CPAP
- ii. CPAP for patients who had previously been on CPAP versus CPAP for patients not previously on CPAP
- iii. Supplemental oxygen versus no supplemental oxygen
- iv. NIPPV versus no NIPPV (CPAP, oxygen, or room air)



Postoperative Management

c) *Positioning patients* in the lateral, prone, or sitting position versus the supine position

d) *Monitoring*

Telemetry monitoring systems versus no telemetry monitoring systems

e) *Duration of stay*

- i. Extended stay in PACU versus no extended stay in PACU
- ii. Hospital admission versus discharge home



Take Home Message (4)

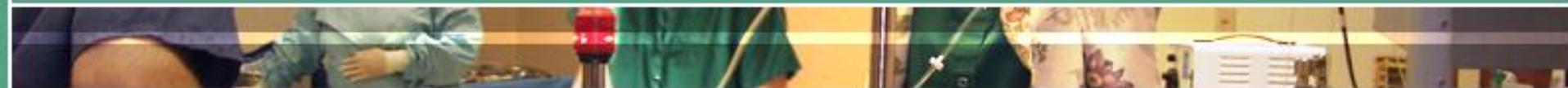
It is imperative to use PAP therapy & to minimize opioids, general anesthesia, and supine position in diagnosed or suspected OSA patients.

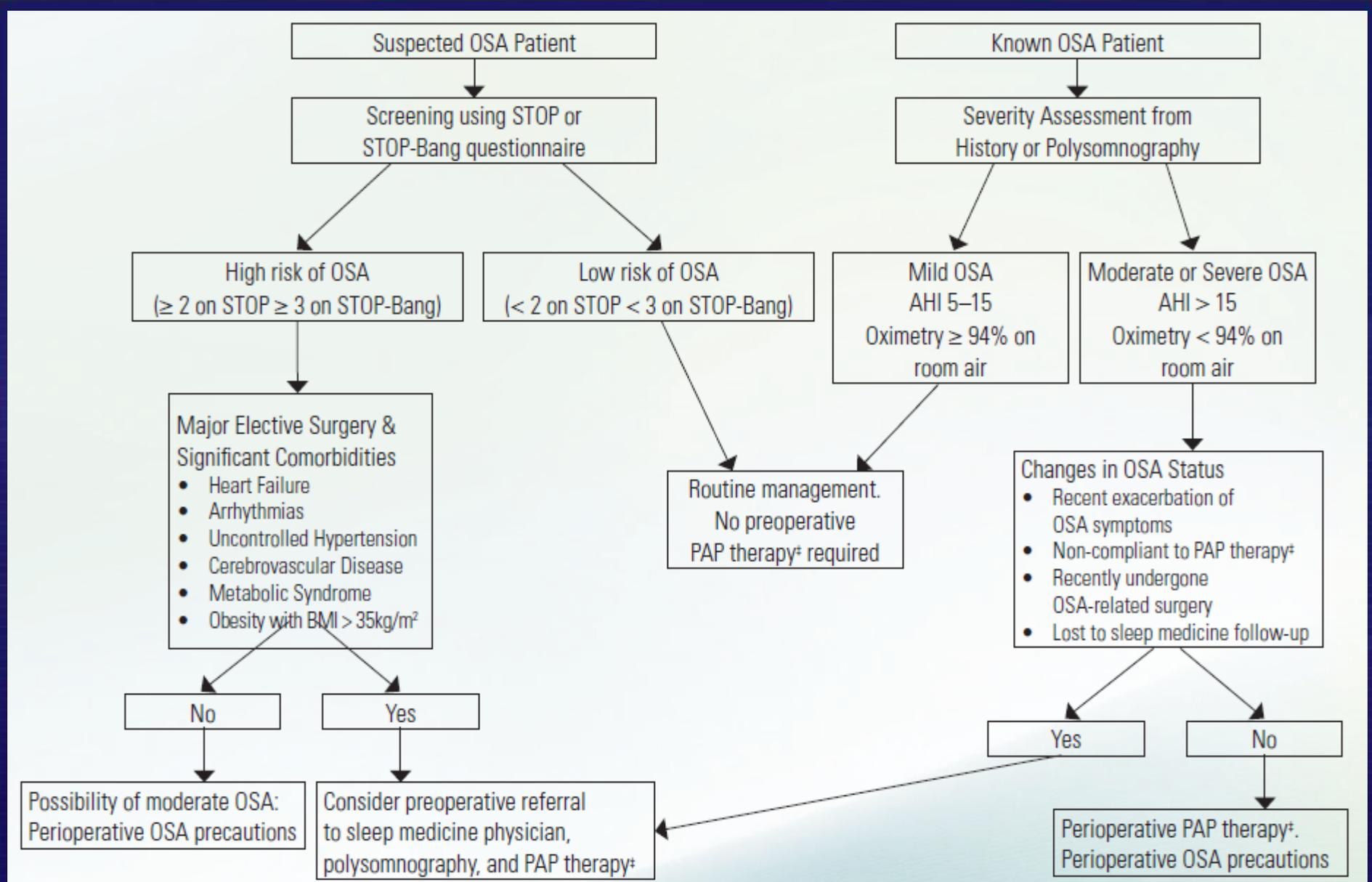




Table 4—American Society of Anesthesiologists Scoring System to Estimate Perioperative Complications

- A: Severity of sleep apnea based on sleep study (ie, AHI) or clinical indicators if sleep study not available:** None = 0; Mild OSA = 1; Moderate OSA = 2; Severe OSA = 3. Subtract 1 point in patients using CPAP or bilevel pressure ventilation preoperatively and postoperatively, and add 1 point in a patient with $\text{Paco}_2 > 50$ mm Hg.
- B: Invasiveness of surgery and anesthesia:** Superficial surgery under local or peripheral nerve block anesthesia without sedation = 0; Superficial surgery with moderate sedation or general anesthesia or peripheral surgery under spinal or epidural anesthesia (with no more than moderate sedation) = 1; Peripheral surgery with general anesthesia or airway surgery with moderate sedation = 2; Major surgery or airway surgery under general anesthesia = 3.
- C: Requirement for postoperative opioid:** None = 0; Low-dose oral opioids = 1; High-dose oral opioids or parenteral or neuraxial opioids = 3.
- D: Estimation of perioperative risk:** Overall score = score of A + greater score of either B or C. Patients with overall score ≥ 4 may be at increased perioperative risk from OSA. Patients with a score ≥ 5 may be at significantly increased perioperative risk from OSA.





Adapted from Seet E, & Chung F. J Anesth 2010;57:849-65



**Perioperative Care of OSA is a
Challenge**



THANK YOU

