

New Guidelines in the perioperative management of Obstructive Sleep Apnea in Adult

Abstract:

Background: Obstructive sleep apnoea (OSA) is a common disorder characterized by repetitive episodes of nocturnal breathing cessation due to upper airway collapse. OSA causes severe symptoms, such as excessive daytime somnolence, and is associated with a significant cardiovascular morbidity and mortality. Different treatment options are now available for an effective management of this disease. After more than three decades from its first use, continuous positive airway pressure (CPAP) is still recognized as the gold standard treatment. Nasal CPAP (nCPAP) is highly effective in controlling symptoms, improving quality of life and reducing the clinical sequelae of sleep apnoea. Other positive airway pressure modalities are available for patients intolerant to CPAP or requiring high levels of positive pressure. Mandibular advancement devices, particularly if custom made, are effective in mild to moderate OSA and provide a viable alternative for patients intolerant to CPAP therapy. The role of surgery remains controversial. Uvulopalatopharyngoplasty is a well established procedure and can be considered when treatment with CPAP has failed, whereas maxillar-mandibular surgery can be suggested to patients with a craniofacial malformation. A number of minimally invasive procedures to treat snoring are currently under evaluation. Weight loss improves symptoms and morbidity in all patients with obesity and bariatric surgery is an option in severe obesity. A multidisciplinary approach is necessary for an accurate management of the disease.

Aim: To provide the anesthesia care provider with an understanding of the basics ,clinical aspects and recent advances in the anesthetic management of OSA patients to improve the perioperative care and reduce the risk of adverse outcomes in those patients who receive sedation, analgesia, or anesthesia for diagnostic or therapeutic procedures under the care of an anesthesiologist.

Keywords: OSA; CPAPA; Preoperative.

INTRODUCTION:

Obstructive sleep apnea (OSA) is a common disorder characterized by repetitive episodes of nocturnal breathing cessation due to upper airway collapse. OSA causes severe symptoms, such as excessive daytime somnolence, and is associated with a significant cardiovascular morbidity and mortality. ⁽⁹⁾

Obstructive sleep apnoea (OSA) is a common chronic disorder affecting about 2–4% of the adult population, with the highest prevalence reported among middle-aged men. ⁽⁹⁾

Age and sex are important influences. Twenty-seven percent of women and 43% of men ages 50 to 70 years old are estimated to have OSA versus 9% of women and 26% of men in the 30- to 49-years category. ⁽⁷⁾ Up to 90% of individuals with moderate-to-severe OSA may remain undiagnosed. ⁽³⁾

Recently, The prevalence ranged from 9% to 38% and was higher in men. It increased with increasing age and in some elderly groups, was as high as 90% in men and 78% in women. At ≥ 15 events/h apnea hypopnea index (AHI), the prevalence in the general adult population ranged from 6% to 17%, being as high as 49% in the advanced ages. OSA prevalence was also greater in obese men and women. This systematic review of the overall body of evidence confirms that advancing age, male sex, and higher body-mass index increase OSA prevalence. ⁽²⁾

With an aging population and increasing rates of obesity, the prevalence of OSA is likely to increase. ⁽⁸⁾ Coupled with an overall growth in the number of surgical procedures being performed, this suggests that the number of patients presenting for surgery with OSA will grow substantially. Whether their OSA is diagnosed or undiagnosed, and whether or not those who are diagnosed are on effective treatment (commonly continuous positive airway pressure [CPAP] therapy). ⁽¹²⁾

Numerous factors including alcohol consumption, smoking, obesity, increased neck circumference, male sex, advanced age, tonsillar and adenoidal hypertrophy, macroglossia, nasal obstruction, and craniofacial abnormalities increase the risk of OSA. ⁽¹⁰⁾

Adverse health outcomes could result from OSA include cerebrovascular disease, cardiovascular disorders (hypertension, ischemic heart disease, arrhythmias, pulmonary hypertension, and congestive heart failure), metabolic syndrome, depression. ⁵

The consequences of untreated OSA are wide ranging and are postulated to result from the fragmented sleep, intermittent hypoxia and hypercapnea, intrathoracic pressure swings, and increased sympathetic nervous activity that accompanies disordered breathing during sleep. Individuals with OSA often feel unrested, fatigued, and sleepy during the daytime. They may suffer from impairments in vigilance, concentration, cognitive function, social

interactions and quality of life (QOL). These declines in daytime function can translate into higher rates of job-related and motor vehicle accidents. ¹¹

The treatment of OSA has been considered an important intervention for reducing the morbidity and mortality associated with stroke and CVD. ¹

During inspiration, the negative pressures produced by the diaphragm and intercostal muscles promote a collapse of the oropharynx. However, the time co-ordinated contraction of the oropharyngeal dilator and abductor muscles maintains the patency of the upper airway. A change in balance towards narrowing of the airway, increased inspiratory pressures, and decreased tone of the oropharyngeal muscles will contribute to obstruction of the upper airway. Complete collapse results in a period of apnoea, whereas partial collapse results in snoring and hypopnoea. Breathing resumes when there is arousal from sleep, because of increased oxygen and carbon dioxide chemo-receptor activity and an increased oropharyngeal muscle tone in response to an increased inspiratory effort. ⁶

Recently, It was found that OSA patients have more profound increases in apnea hypopnea index (AHI) after surgery, with a peak on night 3 and returned to preoperative level only on night 7. ⁴

Conclusion: The aetiology of OSA is multifactorial, consisting of a complex interplay between anatomic and neuromuscular factors, causing upper airway collapsibility. More recently it has been pointed out that there are other physiological factors (i.e. the respiratory arousal threshold, the loop gain, the effect of aging on airway collapsibility) ultimately determining the occurrence of the disease. Therefore new subgroups of patients with different phenotypes are now defined based on several pathophysiologic traits and this may be an important step in order to choose a precise management approach.

Different treatment options are now available for effective management of OSA . CPAP is highly effective in controlling symptoms, improving quality of life and reducing the clinical consequences of sleep apnoea and we must consider it as a first-line option. Bilevel PAP and Auto-CPAP can be used in those patients intolerant to CPAP or when high treatment pressures are necessary. Mandibular advancement devices can be offered as a viable alternative to patients with mild to moderate OSA, intolerant to PAP. The role of surgery remains controversial. Tonsillectomy and adenoidectomy are useful in children and in adults with enlarged tonsils. Uvulopalatopharyngoplasty is a well established procedure to be considered as a second-line option when PAP has failed. Maxillar mandibular surgery is extremely effective

and can be suggested to patients with craniofacial malformations. All patients with obesity should be encouraged to lose weight and bariatric surgery can be considered in patients with BMI over 40. A multidisciplinary approach and the implementation of educational programs will significantly improve the management of the disease.

Routine preoperative screening for OSA in patients presenting for surgery may identify the majority of OSA patients and may provide opportunities for heightened awareness and potential risk reduction by implementing appropriate preoperative, intraoperative, and postoperative interventions.

Ideally, identification of patients with OSA, whether adherent or non-adherent to therapy, and those with suspected OSA should take place well in advance of elective surgery to allow time for potential evaluation and management of OSA preoperatively. The patient and the health care team should be aware that untreated OSA may be associated with increased postoperative morbidity. Consideration should be given to obtaining the results of the sleep study and the recommended PAP setting before surgery. Facilities should have PAP equipment for perioperative use or have the patient bring their own PAP equipment with them to the surgical facility.

Conflict of interest

The authors declare that they have no conflict of interest.

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