



Turkish Anaesthesiologist's Experiences of Anaesthetic Management of Patients with Obstructive Sleep Apnea (OSA)

Türkiye'de Anestezi Uzmanlarının Obstrüktif Uyku Apneli (OSA) Hastaların Anestezi Yönetimleri Hakkındaki Tecrübeleri

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Objective: Obstructive sleep apnea (OSA) is an important health problem that is increasing with the increase in the incidence of obesity. For patients with OSA, it is reported that preoperative OSA diagnosis is made in only 10%–20% of the patients. Therefore, it gains importance that these patients are diagnosed in the preoperative period. The aim of this study is to analyze with a survey the experiences of anaesthesia experts working in Turkey about the diagnosis of patients with OSA, anaesthetic methods and postoperative care.

Methods: The study was completed with an online survey form distributed via email. Survey participants were sent an email, and those experts who wished to participate clicked on the link, answered the questions and returned the survey via email.

Results: A total of 134 anaesthesia experts participated in this study. While 97% of the participating anaesthetists considered diagnosis of patients with OSA to be important, only 53% trusted themselves to recognize this patient group. Of the total number of participants, 43% did not know the STOP-BANG test used in the preoperative period to diagnose patients with OSA. The percentage who thought that patients with OSA would increase the incidence of difficult intubation was 84%. In the intraoperative period, the percentage who chose inhalation anaesthetics was 35%, whereas the rate of those who chose total intravenous anaesthesia (TIVA) was 48%.

Conclusion: This study indicates that the medical knowledge of Turkish anaesthetists on the topic of OSA requires updating. In addition, we believe a practical guide to standardize the diagnosis and preoperative/perioperative management of patients with OSA should be prepared for Turkish anaesthetists.

Keywords: Obstructive sleep apnea, questionnaire, knowledge, attitudes, anaesthesiologist

Amaç: Obstrüktif uyku apnesi (OSA) obezite sıklığının da artmasıyla birlikte gittikçe büyüyen önemli bir sağlık sorunudur. Ancak, OSA'lı hastaların preoperatif olarak yalnızca %10-20'sine tanı konduğu belirlenmiştir. Bu nedenle bu hastaların preoperatif dönemde tanınması önem kazanmaktadır. Çalışmamızın amacı, Türkiye'de çalışmakta olan anestezi uzmanlarının OSA'lı hastaların tanınması ve anestezi yönetimleri ve postoperatif bakımları ile ilgili tecrübelerinin bir anket ile analiz edilmesidir.

Yöntemler: Araştırma anket formatında olup internet ortamında e-mail yoluyla gerçekleştirildi. Anket katılımcılara e-mail yoluyla gönderildi ve ankete katılmak isteyen uzman hekim kendisine gelen linki tıklayarak soruları cevaplayıp yine e-mail yoluyla gönderdi.

Bulgular: Bu çalışmaya toplam 134 anestezi uzmanı katıldı. Katılımcıların %97'si OSA'lı hastaların tanınmasını önemli olduğunu düşünmekte ancak bunların sadece %53'ü bu hastaları tanımadı kendine güvenmektedir. Katılımcıların %43'ü OSA hastalarının preoperatif dönemde tanımadaki kullanılan STOP-BANG skorunu bilmemekte. OSA'lı hastalarda zor entübasyon olasılığının arttığını düşünenlerin oranı ise %84 olarak bulunmuştur. Bu hasta grubunda intraoperatif dönemde inhalasyon anesteziyi tercih edenlerin oranı %35, TIVA tercih edenlerin oranı ise %48'dir.

Sonuç: Bu çalışma anestezi uzmanlarının OSA konusunda tıbbi bilgilerini güncellemesi gerektiğini göstermiştir. Ayrıca Türkiye'de anestezi uzmanları için OSA'lı hastaların tanınması ve perioperatif/postoperatif yönetiminde standardizasyonu sağlanması için pratik bir kılavuz hazırlanması gerektiğini düşünüyoruz.

Anahtar Kelimeler: Obstrüktif uyku apnesi, anket, bilgi, tutum, anestezi uzmanı

Introduction

Obstructive sleep apnea (OSA) is a sleep disorder characterized by repeated partial or full blockage of the upper respiratory airways during sleep, leading to apnea attacks lasting more than 10 s. Obstructive sleep apnea (OSA) is an important health problem that is increasing as the frequency of obesity increases. In western countries, nearly 28% of adults are estimated to have some problems related to at least mild OSA. Even mild OSA has been determined to be related to an important rate of morbidity and mortality (1, 2). The first priority in all surgical procedures is to optimize for previously existing comorbidities. However, for patients with OSA, it is reported that OSA diagnosis is made preoperatively in only 10%–20% of patients with OSA. Therefore, it gains importance that these patients are diagnosed in the preoperative period (3, 4). In addition, the American Society of Anaesthetists (ASA) has published a guide for perioperative management of patients with OSA. The aim of this guide is to reduce the complication risks that may develop in patients with OSA in the perioperative period (5, 6). Recently, anaesthetists in developed countries have accepted OSA as an important disease and precautions have been taken (7).

The aim of this study is to analyze with a survey the experiences of anaesthesia experts working in Turkey about the diagnosis of patients with OSA, anaesthetic methods and postoperative care.

Methods

Required permissions for the study were obtained from the Clinical Research Ethics Committee of the Çanakkale 18 Mart University Medical Faculty. The research was conducted in the form of a survey distributed over the internet via email. Survey participants were sent an email, and those doctors who wished to participate clicked on the link, answered the questions and returned the survey via email.

Statistical analysis

Data are presented as mean±standard deviation (SD) after performing descriptive statistics and expressed as relative percentages of all the selected choices of questions.

Results

A total of 134 anaesthetists participated in this study. Of the total number of participants, 63 were male and 71 were female. The demographic data from participants are shown in Figures 1, 2 and 3. While 97% of participating anaesthetists considered diagnosis of patients with OSA to be important, only 53% trusted themselves to recognize this patient group. In addition, of the total number of anaesthetists who answered the survey, 61% thought OSA was related to hypertension and 99% thought it was related to obesity. The thoughts of participants on the STOP-BANG score, used to

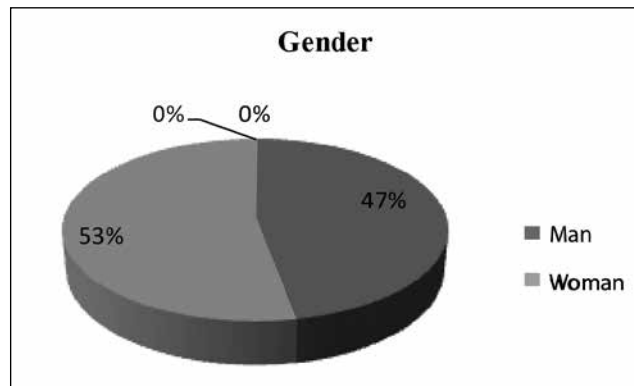


Figure 1. Gender of anaesthetists who participated in the survey

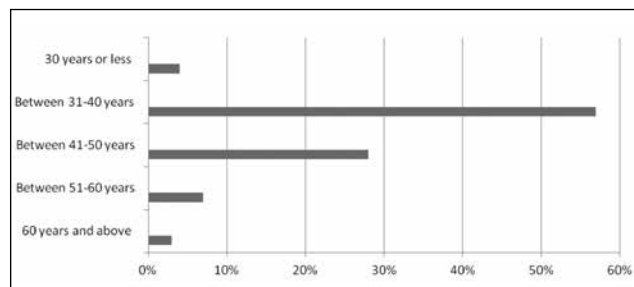


Figure 2. Age range of participants

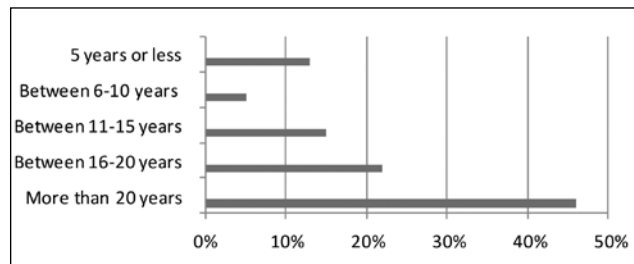


Figure 3. Length of experience as an anaesthetist

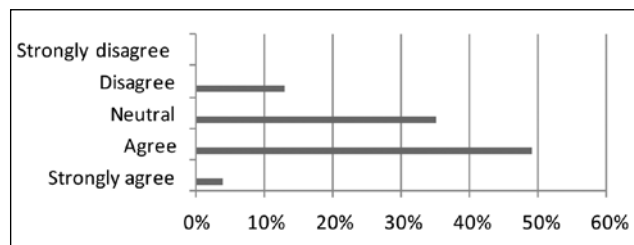


Figure 4. I am very comfortable diagnosing patients at a risk of obstructive sleep apnea

diagnose patients with OSA in the preoperative period, are shown in Figures 4 and 5. The percentage that believed OSA increased the incidence of difficult intubation was 84%. The percentage, which thought the ramp position was appropriate to deal with difficult intubation, was 71%. Of the total number of participants, 96% thought that sedative premedication would lead to airway obstruction in patients with OSA. The anaesthetists who responded to our survey thought that regional anaesthesia was the best choice for appropriate patients

(99%). The percentage that chose inhalation anaesthetics in the intraoperative period was 35%, whereas the percentage who chose total intravenous anesthesia (TIVA) was 48%. In addition, the choice of inhalation anaesthetic is shown in Figure 6. Participants are illustrated Sugammadex should be used for reversal in patients with OSA (Figure 7). The percentage that chose sugammadex for reversal in patients with OSA was observed to be 74%. The postoperative analgesic choices of participants are illustrated in Figures 8 and 9.

Discussion

In this study, we observed that Turkish anaesthesia experts have difficulty diagnosing patients with OSA preoperatively. In addition, we concluded that anaesthesia management in the intraoperative and postoperative periods was not standardized.

It has been determined that the incidence of OSA is higher in any patient group requiring surgery than in the general population (8). It is known that patients with OSA have higher perioperative risks than normal patients. In particular, postoperative respiratory complications, arrhythmia and hypertension are generally reported together with OSA (9-11). OSA may cause some important systemic effects that are important from the point of view of the anaesthesiologists. OSA has been linked to a metabolic syndrome and has been shown to be an independent indicator of increased blood glucose (12, 13). In addition, it has been reported that the incidence of congestive heart failure, coronary artery diseases, cerebrovascular diseases and gastroesophageal reflux is increased in this patient group (14).

The problems encountered during difficult airway management are known to be the chief cause of life-threatening anaesthetic complications (15). In addition, it is thought that patients with difficult airway management, difficult intubation, or lengthened recovery periods may have OSA (16). It has been shown that up to 22% of patients with OSA have difficult intubation, and intubation cannot be completed in 5% of patients with OSA; this is eight and 10 times more than the average, respectively (17). In a study of 15 patients known to have difficult intubation, eight were diagnosed with OSA on polysomnography, whereas only two were diagnosed with OSA in the control group of 15 patients (18). In addition, unsuccessful difficult airway management is held responsible for 35% of deaths linked to anaesthesia, and the frequency of difficult intubation in normal patients undergoing surgery was determined to be 0.04%. However, in patients with OSA, this incidence rises to 21.6% (19). Of the total number of participating anaesthetists in our study, 76% thought that all patients diagnosed with OSA before the operation should be evaluated for difficult intubation. In addition, it was determined that the majority of participants believed that the ramp position made intubation easier in this patient group.

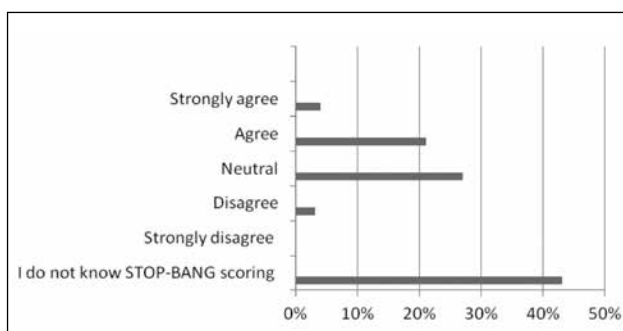


Figure 5. The STOP-BANG score should be routinely used in the preoperative evaluation of patients with OSA
OSA: obstructive sleep apnea

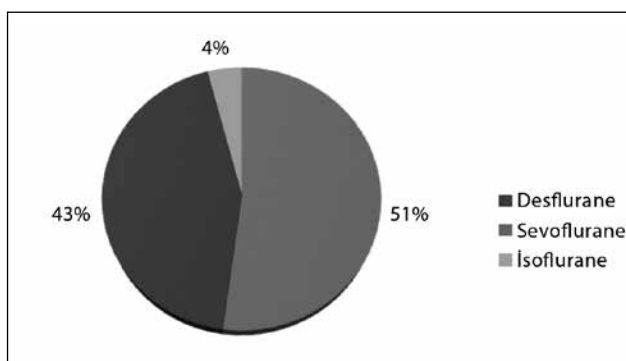


Figure 6. Which volatile agent would you choose for maintenance of anaesthesia in patients with OSA?
OSA: obstructive sleep apnea

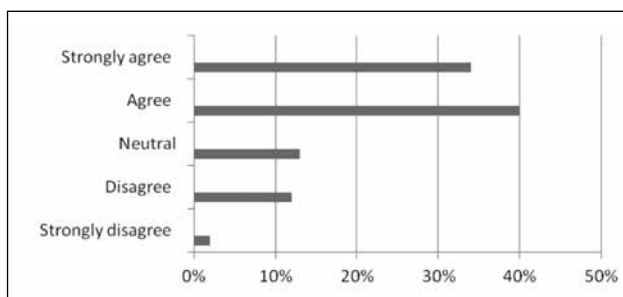


Figure 7. Sugammadex should be used for reversal in patients with OSA
OSA: obstructive sleep apnea

All anaesthetic medications reduce the activity of the pharyngeal dilator muscles. In patients with OSA, administration of these medications increases hypoxemia and reduces the response to hypercapnia; thus, patients with OSA are more obstructed. As a result, careful consideration should be made before administering premedication to this patient group because it has been shown that airway obstruction may develop in the postoperative period. In addition, the sensitivity of patients with OSA to narcotics is higher than in patients without OSA, for example, the necessary medication dose for children with OSA is nearly half of that required for similar patients without OSA (20). Of the total number of anaesthetists participating in our survey, 98% believed that avoiding premedication was a good choice for patients with OSA.

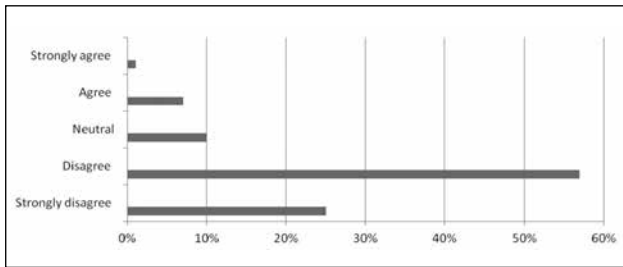


Figure 8. Opioids are the best choice for the postoperative analgesia of patients with OSA
OSA: obstructive sleep apnea

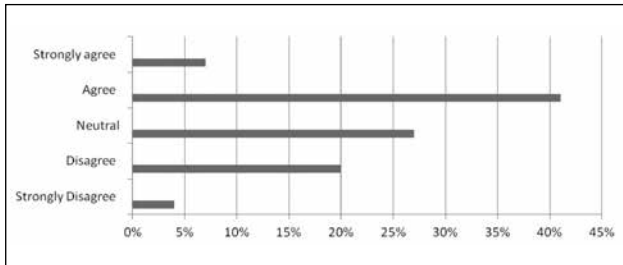


Figure 9. Postoperative PCA methods should be used for patients with OSA
PCA: patient-controlled analgesia; OSA: obstructive sleep apnea

Maintenance of anaesthesia for patients with OSA is a topic of debate. In a study of patients administered desflurane for anaesthetic post-anaesthesia care unit (PACU), extubation time was quicker and the levels of oxygen saturation were higher (21, 22). In our survey, while 51% of anaesthetists chose desflurane for anaesthesia maintenance, 49% chose sevoflurane.

The gold standard of OSA diagnosis, polysomnography, is expensive, uncomfortable and time consuming. As a result, to recognize OSA in the preoperative period, the STOP-BANG score was designed for use by anaesthesiologists (23). In studies, it has been shown to have the highest sensitivity of all current scanning tests, and patients with positive scores have been observed to have eight times the normal rate of difficult intubation. In addition, patients with positive STOP-BANG scores have been determined to have 12–14 times of the normal levels of postoperative desaturation (24). In our study, it was revealed that 46% of anaesthetists did not know the STOP-BANG score. It was observed that only 53% of the anaesthesiologists participating in our survey trusted themselves to recognize patients with OSA in the preoperative period. This leads us to believe that nearly half of the anaesthetists in Turkey do not have sufficient information about OSA.

In postoperative patients with OSA, the aim is to minimize the use of medications with the potential to increase obstruction risk (e.g., opioids and benzodiazepines) and to choose multimodal analgesia as much as possible. Anaesthetic medications suppress the sudden waking caused by hypoxemia and hypercapnia and may cause more severe apnea. Neuraxial opioids may produce the same effect. Continuously released

medications are partially dangerous in this respect, causing longer and more severe apnea. Patient-controlled analgesia (PCA) may be risky; cases of serious respiratory depression within 2–31 h after PCA have been observed (25). The ASA guide determines that oxygen support should only be administered in necessary situations in postoperative management because it may increase the duration of apnea and obstruct its diagnosis. ASA recommends that continuous oxygen monitoring should only be applied to patients in the intensive care unit and in the PACU (5).

Anaesthetic management of patients with OSA is linked to a variety of factors, including the confidence of the anaesthetist, personal knowledge, clinical experience and ability to use airway devices. We believe this survey study, in addition to increasing recognition of patients with OSA in the preoperative period, will increase the development of airway management for this patient group and experience of managing perioperative complications. Thus, we foresee a reduction in mortality and morbidity of patients with OSA linked to anaesthesia and an increase in anaesthetic quality.

Conclusion

Contrary to many other diseases, an important proportion of patients with OSA come to the operating room without diagnosis. This situation increases the responsibility of the anaesthetists to suspicious patients. This study shows that the medical knowledge about OSA of Turkish anaesthetists requires updating. In addition, we believe a practical guide should be prepared to help Turkish anaesthetists recognize patients with OSA and to standardize preoperative/perioperative management.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee Çanakkale Onsekiz Mart University.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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Anaesthetists' Experiences of Anaesthetic Management of Patients with Obstructive Sleep Apnea Syndrome (OSA)

Our esteemed colleagues, this study is intended to determine your experiences of the anaesthetic management of patients with obstructive sleep apnea (OSA) syndrome as working anaesthetic experts. THIS SURVEY IS NOT AN EXAM. IT IS NOT LINKED TO THE MINISTRY OF HEALTH OR ANY OTHER PUBLIC ORGANIZATION. Please be at ease; it should reflect the levels of general application. IDENTIFICATION INFORMATION IS NOT REQUIRED. Anaesthetist participants will be asked a total of 38 questions on the anaesthetic management of patients with OSA. These questions are in four groups (A–D). Group A questions are about personal data, group B questions are about the experience of the preoperative evaluation of patients with OSA, group C questions are about the experience of the intraoperative anaesthesia management of patients with OSA and group D questions are on the experience of the postoperative monitoring of patients with OSA. Please answer all questions. We are deeply grateful for your participation and for your contribution to the development of ANAESTHESIA science in our country.

*Required

A. Personal Information

***A1. Age**

- 30 years or less
- Between 31 and 40 years
- Between 41 and 50 years
- Between 51 and 60 years
- 60 years and above

A2. Gender *

- Female
- Male

A3. Experience as an anaesthetist (years) *

- 5 years or less
- Between 6 and 10 years
- Between 11 and 15 years
- Between 16 and 20 years
- More than 20 years

A4. City *

A5. Organization *

- University hospital
- State hospital
- Private sector

A6. Number of beds in your organization *

B. Preoperative evaluation of patients with obstructive sleep apnea

***B1. Obstructive Sleep Apnea is an important clinical disorder.**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B2. Obstructive sleep apnea is more common in women than in men. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B3. The most frequent causes of obstructive sleep apnea in children are adenoids and large tonsils *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B4. It is important to diagnose patients at risk of obstructive sleep apnea. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B5. I am very comfortable recognizing patients at risk of obstructive sleep apnea *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B6. Patients at risk of obstructive sleep apnea should consult with ENT and pulmonary disease experts in the preoperative period. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B7. Obstructive sleep apnea is related to hypertension *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B8. Obstructive Sleep Apnea is related to obesity *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B9. It is necessary to add symptoms of obstructive sleep apnea, such as snoring, witnessed apnea and excessive daytime somnolence, to the standard preoperative anaesthetic evaluation *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B10. All patients with obstructive sleep apnea due for operation should undergo a respiratory function test *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B11. The STOP-BANG score should be routinely used for preoperative evaluation of patients with obstructive sleep apnea *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- I do not know STOP-BANG scoring

B12. The gold standard for diagnosis of obstructive sleep apnea is polysomnography. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B13. The incidence of difficult intubation is definitely increased in patients with obstructive sleep apnea *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B14. To ease intubation before induction of patients with obstructive sleep apnea, they should be placed in the “ramp” position *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B15. Neck diameter of patients suspected of obstructive sleep apnea should be measured during preoperative evaluation *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B16. All obstructive sleep apnea patients due for operation should be accepted as difficult intubation. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

B17. Sedative premedication of obstructive sleep apnea patients may increase airway obstruction *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

C. Intraoperative anaesthetic management of patients with obstructive sleep apnea

***C1. I trust my ability to manage patients with obstructive sleep apnea peroperatively**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

C2. For all obstructive sleep apnea patients, intubation with fiber optic bronchoscope is the best choice of surgery *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

C3. If the surgical method allows and patients fulfill appropriate criteria, regional anaesthesia should be considered *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

C4. TIVA should be chosen for anaesthetic maintenance of patients with obstructive sleep apnea *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

C5. Inhalation anaesthesia should be chosen for anaesthetic management of patients with obstructive sleep apnea *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

C6. Which volatile agent would you choose for anaesthetic maintenance of patients with obstructive sleep apnea? *

- Desflurane
- Sevoflurane
- Isoflurane

C7. Neuromuscular monitoring should be considered for patients with obstructive sleep apnea. *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

C8. Sugammadex should be used for reversal in patients with obstructive sleep apnea *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

D. Postoperative monitoring of patients with obstructive sleep apnea ***D1. In the recovery room when patients are turned onto their backs, they should be held in a lateral position if they have risk of upper airway obstruction**

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

D2. All patients should be given routine oxygen support in the recovery room *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

D3. Patients with obstructive sleep apnea diagnosis should be warned to bring their CPAP devices to the operating room *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

D4. The recovery room should have a nasopharyngeal airway kit for emergencies *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

D5. Opioids are the best choice for postoperative analgesia in patients with obstructive sleep apnea *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

D6. Patients with obstructive sleep apnea should use postoperative IV PCA methods *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

D7. Patients with obstructive sleep apnea should be monitored for at least 3 h in the postoperative period *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree