ORIGINAL ARTICLE

The use of STOP-BANG questionnaire and other difficult airway determinants in difficult airway prediction and correlation

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ABSTRACT

BACKGROUND: The primary objective of this study was to evaluate the use of STOP-BANG questionnaire in prediction of difficult airway. The secondary aim of this study is to evaluate the correlation of the questionnaire and other difficult airway determinant tests in predicting difficult airway.

METHODS: Two hundred American Society of Anesthesiologists' Status I, II, and III patients under general anesthesia were enrolled in this prospective randomized study. Patients' age, height, body weight, body mass index, neck circumference, inter-incisor distance when the mouth is fully open, sternomental and thyromental distance, mandibular length, neck length, biting the upper lip, STOP-BANG score, and Mallampati and Cormack–Lehane (C–L) grades were recorded. The first thing we want to find is to determine the usability of the STOP-BANG questionnaire as an indicator of the difficult airway. Comparing difficult airway with the other parameters was secondary objectives. The patients were divided into two groups as difficult and easy intubation with difficult and easy facial mask ventilation. The data were analyzed using an SPSS statistics 16.0 program. Statistical analysis was performed using, Chi-square and Spearman correlation analysis test.

RESULTS: Forty-five out of 200 patients had difficulty in intubation and 73 out of them had difficulty in mask ventilation. Between difficult airway and high STOP-BANG score was a moderate positive correlation ($p<0.05$). Furthermore, unnatural dental status, greater head circumference, greater neck circumference, Mallampati, and C–L classification were significantly positive correlated with a difficult airway ($p<0.05$).

CONCLUSION: In our study, the STOP-BANG questionnaire was found to be important in predicting the difficult airway and this test was found to be usable like other difficult airway parameters.

Keywords: Face mask ventilation; intubation; STOP-BANG score.

INTRODUCTION

Difficult airway management remains the most common cause of anesthesia-related morbidity and mortality. Although rare, patients in a "cannot-intubate/cannot-ventilate" scenario account for 25% of all anesthesia-related deaths.[1] A meta-analysis involving 844,206 participants found that the median frequency of difficult intubation is 5–16% and that difficult face mask ventilation is 5–25%.[2] Nearly one-third of difficult facemask ventilation is actually accompanied by difficult tracheal intubation. Therefore, in patients under anesthesia, difficult facemask ventilation is also a critical situation to be resolved as with failed intubation.

Obstructive sleep apnea syndrome (OSAS) is a cautionary predictor of difficult airway. OSAS is a disorder characterized by obstructive apnea and hypopnea episodes during sleep and excessive daytime sleepiness. Polysomnography is the gold standard in the diagnosis of this disorder.[3] However, the STOP-BANG questionnaire is the preferred screening

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tool because of the application difficulties of polysomnography.[3] The STOP-BANG questionnaire was first developed in 2008. It is a simple, easy to remember, and reportable screening tool that includes four subjective (STOP: Snoring, tiredness, observed apnea, and high blood pressure) and four demographic items (BANG: Body mass index [BMI], age, neck circumference, and gender). Patients who score ≥5 on the STOP-BANG questionnaire are likely to have severe OSAS.[4]

No parameters used for predicting difficult intubation today are 100% sensitive and specific. Objective tests must be determined to estimate difficulty of intubation because serious life-threatening complications can occur if intubation is not performed. This study aimed to evaluate the effectiveness of the STOP-BANG questionnaire as a screening tool for OSAS in predicting difficult airway. It also aimed to estimate the diagnostic accuracy of commonly used airway examination tests for assessing difficult airway in adult patients.

MATERIALS AND METHODS

Approval of the local ethics committee was obtained with the decision number 2018/1232, and the study was conducted in accordance with the principles of Declaration of Helsinki. It was performed in the outpatient clinic and operating room of a university hospital. The study included 200 patients aged above 18 years with an American Society of Anesthesiologists (ASA) risk score of I–III and scheduled for an elective operation between February 2018 and June 2018. The study was conducted after obtaining written informed consent from the participants. This study excluded those patients who were unconscious, unoriented, and uncooperative; who may require rapid sequence or awake endotracheal intubation; had a history of upper respiratory tract surgery, burn, trauma, and anomalies in the head-and-neck region; and patients with obstetrics. In the pre-operative evaluations of all patients, age, gender, height, body weight, BMI, dental status (whether or not they have natural teeth), and Mallampati score were recorded. Mallampati score was recorded by seeing mouth opening.[5] For anthropometric measurements, thyromental distance, sternomental distance, neck circumference, mandibular length, head circumference, neck length, and inter-incisor distance (IID) were measured, and the upper lip bite test was carried out. All measurements were performed by the same anesthesiologist assistant (with 3 years of experience). For thyromental distance, the distance between the thyroid cartilage and the tip of the jaw was measured with the head in full extension. For sternomental distance, the distance from the sternal notch to the tip of the jaw was measured with the head in full extension. Neck circumference was measured at the level of the thyroid cartilage with the head in the neutral position. For mandibular length, the distance between the tip of the jaw and the gonion was measured. For head circumference, the distance between the forehead and protuberance occipitalis was measured. For neck length, the distance between the processus mastoideus and the upper end of the sternum was measured. The IID was obtained by measuring the distance between the upper and lower incisors with the mouth fully opened. In an upper lip bite test, the patients were asked to bite the upper lip with their lower incisors.[5] In addition, all patients were asked to answer the STOP-BANG questionnaire.[4] The STOP-BANG is an 8-item questionnaire consisting of closed-ended questions with a score for each positive answer used as an OSAS screening tool; those patients who scored ≥5 points from this questionnaire were considered to have severe OSAS, whereas those who scored <5 points were considered to have mild-moderate OSAS. In classical laryngoscopy, the glottic view is evaluated using the Cormack–Lehane (C–L) test.[5] Difficult intubation predictors include a Mallampati score of III or IV, Class III upper lip bite test, an IID of <3 cm, a thyromental distance of <6 cm, a sternomental distance of <12.5 cm, a neck circumference of >40 cm, a head circumference of >57 cm, a mandibular length of <9 cm, a neck length of <16.5 cm, a STOP-BANG questionnaire score of ≥5, and a C–L grade of III or IV.[2,3,5–10]

After routine monitoring (electrocardiogram, non-invasive blood pressure, and peripheral oxygen saturation), 2 mg/kg propofol, 1 mg/kg lidocaine, and 1 µg/kg fentanyl were used to induce anesthesia. Rocuronium at 0.6 mg/kg was administered intravenously to facilitate endotracheal intubation. Intubation and mask ventilation were performed by the same anesthesiologist assistant with 3 years of experience. At 180 s after the administration of rocuronium, laryngoscopy and intubation were performed in a standard sniffing position. After general anesthesia induction, whether or not mask ventilation and intubation were difficult which were recorded. Difficult mask ventilation was defined as the inability of an anesthesiologist to provide sufficient oxygen saturation with 100% oxygen during mask ventilation (SpO_2 <90%) and the use of other devices, such as laryngeal mask airway or necessity to attempt intubation.[11] Difficult intubation was defined as three or more unsuccessful attempts with classical laryngoscopy and the procedure lasting longer than 10 min.[12] When difficult intubation was encountered, the algorithm recommended by ASA was used.[13]

The sample size was calculated as 200 patients with an α level of 0.05 and power of 0.80 to determine the 20% difference of difficult intubation between high-risk and patients with low-risk OSAS. Continuous variables were expressed as mean±standard deviation, and nominal data were expressed as number and percentage. The Chi-square test was to measure the relationship of difficult intubation and difficult mask ventilation with other variables, and the Spearman correlation analysis test was used for correlation. Regression analysis could not be performed because sampling was not suitable because the R2 value was close to zero. Data were analyzed using SPSS 16.0. Statistical significance was considered at p<0.05.

RESULTS

Our study included 200 patients. Of these patients, 99 were male and 101 were female. The mean age of the patients was 52.8±15.01 years, the mean body weight was 82.28±17.37 kg, the mean height was 164.94±9.03 cm, and the mean BMI was 30.3±6.44. Other demographic data are given in Table 1. When the patients were divided into two subgroups according to intubation difficulty, 45 (22.5%) were difficult to intubate and 155 (77.5%) were easy to intubate. Difficult intubation was more frequent in the patients with a STOP-BANG score of ≥5 (p=0.002). Neck circumference and Mallampati score were significantly higher in the patients with difficult intubation than in those without difficult intubation (p<0.001). Difficult intubation was more common in those with natural teeth and in male patients. Table 2 shows the statistically significant demographic and clinical data of the patients with and without difficult intubation.

Table 1. STOP-BANG score and airway measurements

	n	Minimum-Maximum	Mean±SD
STOP-BANG Score	200	0–8	3.26±1.97
IID (cm)	200	2–6	4.2±0.82
TMD (cm)	200	4–10	6.65±1.15
SMD (cm)	200	9–20	14.27±2.04
ML (cm)	200	7–13	9.85±1.05
HC (cm)	200	51–62	56.35±2.56
NL (cm)	200	11–22.5	16.52±2.17
NC (cm)	200	28–51	38.7±4.58

IID: Interincisor distance; TMD: Thyromental distance; SMD: Sternomental distance; ML: Mandibular length; NL: Neck length; NC: Neck circumference; SD: Standard deviation; HC: Head circumference.

Table 2. Demographic and clinical data of patients with and without difficult intubation

	Easy intubation (n=155)	Difficult intubation (n=45)	p
	n (%)	n (%)	
Male (Gender)	68 (43.9)	31 (68.9)	0.003
Unnatural tooth	61 (39.4)	7 (15.6)	0.003
Mallampati 3–4	44 (28.4)	29 (64.4)	<0.001
IID <3 cm	13 (8.4)	10 (22.2)	0.01
HC >57 cm	62 (40)	28 (62.2)	0.008
NC >40 cm	47 (30.3)	28 (62.2)	<0.001
Difficult face mask ventilation	47 (30.3)	26 (57.8)	0.001
STOP-BANG Score ≥5	42 (27.1)	23 (51.1)	0.002

IID: Interincisor distance; HC: Head circumference; NC: Neck circumference.

When the patients were divided into two subgroups according to their STOP-BANG score, 135 (67.5%) had a STOP-BANG score of <5, whereas 65 (32.5%) had a STOP-BANG score of ≥5. The mean weight, BMI, age, mean sternomental distance, head circumference, mandibular length, and neck circumference were significantly higher in the patients with a high STOP-BANG score than in those with a low STOP-BANG score (p<0.001). The incidence of unnatural teeth, long mandible, greater head circumference, high ASA, and Mallampati degrees, which were not present in the questionnaire, were higher in the patients with a STOP-BANG score of ≥5. Difficult intubation was more frequent in the patients with a STOP-BANG score of ≥5 (p=0.002). The statistically significant demographic and clinical data of the patients with and without a STOP-BANG of ≥5 are given in Table 3.

When the patients were divided into two subgroups according to ventilation difficulty with mask, 127 (63.5%) had easy, whereas 73 (36.5%) had difficult mask ventilation. The mean height, weight, age, mean STOP-BANG score, mean mandibular length, head circumference, and neck circumference were statistically significantly different between the easy and difficult mask ventilation subgroups (p<0.05). Table 4 shows the statistically significant demographic and clinical data of the patients with and without difficult mask ventilation. Difficult intubation was weakly correlated with dental status, gender, IID, and head circumference; moderately correlated with neck circumference, STOP-BANG score, and Mallampati score; and strongly correlated with neck circumference (Table 5). Neck circumference and Mallampati degrees showed higher correlation with difficult intubation than STOP-BANG (Table 5).

Table 3. Demographic and clinical data of patients with and without a STOP-BANG score of ≥5

	STOP-BANG Score <5 (n=135)	STOP-BANG Score ≥5 (n=65)	p
	n (%)	n (%)	
Male (Gender)	50 (37)	49 (75.4)	<0.001
Unnatural tooth	39 (28.9)	29 (44.6)	0.028
BMI >35	25 (18.5)	28 (43.1)	<0.001
Age >50	61 (45.2)	59 (90.8)	<0.001
Mallampati 3–4	39 (28.9)	34 (52.3)	0.014
ML <9 cm	28 (20.7)	2 (3.1)	0.001
HC >57 cm	48 (35.6)	42 (64.6)	<0.001
NC >40 cm	27 (20)	48 (73.8)	<0.001
Difficult face mask ventilation	32 (23.7)	41 (63.1)	<0.001
Difficult Intubation	22 (16.3)	23 (35.4)	0.002

HC: Head circumference; NC: Neck circumference; ML: Mandibular length; BMI: Body Mass Index.

Table 4. Demographic and clinical data of patients with and without difficult mask ventilation

	Easy face mask ventilation (n=127)	Difficult face mask ventilation (n=73)	p
	n (%)	n (%)	
Male (Gender)	44 (22)	55 (27.5)	<0.001
Unnatural tooth	36 (28.3)	32 (43.8)	0.026
Age >50	67 (52.8)	53 (72.6)	0.006
Mallampati 3–4	37 (29.2)	36 (49.3)	0.033
ML >9 cm	99 (78)	71 (97.3)	<0.001
HC >57 cm	39 (30.7)	51 (69.9)	<0.001
NC >40 cm	27 (21.3)	48 (65.8)	<0.001
Difficult intubation	19 (15)	26 (35.6)	0.001
STOP-BANG Score ≥5	24 (18.9)	41 (56.2)	<0.001

HC: Head circumference; NC: Neck circumference; ML: Mandibular length.

Table 5. Correlations between parameters predicting difficult airway and difficult intubation

	Spearman Correlation	p
Difficult face mask ventilation	0.238	0.001
STOP-BANG Score ≥5	0.214	0.002
Unnatural Tooth	-0.210	0.003
Male Gender	-0.209	0.003
IID <3 cm	-0.181	0.01
Mallampati Score	0.315	<0.01
HC >57 cm	0.187	0.008
NC >40 cm	0.275	<0.01

HC: Head circumference; NC: Neck circumference; IID: Interincisor distance.

Difficult mask ventilation was weakly correlated with dental status, Mallampati score, ASA risk score and age and moderately correlated with gender, STOP-BANG score, neck circumference, head circumference, and mandibular length grade (Table 6).

Difficult airway and STOP-BANG score of ≥5 were strong correlated with C–L Grades 3 and 4 (p<0.001).

DISCUSSION

Difficult airway is a situation in which a trained anesthesiologist faces difficulty with face mask ventilation, intubation, or both. In the present study, the frequency of difficult airway was higher in the patients with STOP-BANG score ≥5 than in the patients with a low score, and a STOP-BANG score of ≥5

Table 6. Correlations between parameters predicting difficult airway and difficult mask ventilation

	Spearman Correlation	p
STOP-BANG Score ≥5	0.383	<0.01
Unnatural tooth	0.157	0.026
Male (Gender)	-0.392	<0.01
Mallampati Score	0.201	0.004
HC >57 cm	0.379	<0.01
NC >40 cm	0.442	<0.01
ML <9 cm	0.260	<0.01
Age >50 years	-0.195	0.006

HC: Head circumference; NC: Neck circumference; ML: Mandibular length.

was more frequent in the patients with difficult airway compared with their counterparts. In addition, the following results were also observed: (1) Five criteria (male gender, Mallampati 3–4, head circumference >57 cm, neck circumference >40 cm, and IID) were independent risk factors for difficult intubation; (2) difficult mask ventilation was more frequent when intubation was difficult; and (3) seven criteria (age older than 50 years, unnatural teeth, male gender, Mallampati 3–4, mandibular length >9 cm, head circumference >57 cm, and neck circumference >40 cm) were independent risk factors for difficult mask ventilation.

Securing the airway is important in clinical anesthesia, and failure to achieve it has serious consequences within a few minutes. Therefore, difficult airway should be predicted before the intervention by evaluating patients with various anatomical features, appropriate tests, and criteria. Difficulty in intubation occurs at a rate of 1–18%, and failed intubation occurs in 0.05–0.35% of these cases.[14] In the present study, the rate of difficult intubation was 22.5%, and the rate of difficult mask ventilation was 36.5%. In one study, the incidence of difficult intubation in patients with OSAS is 21.9%.[15] The high difficult intubation rate in our study may be due to the high number of patients with STOP-BANG >5.

OSAS is associated with narrowing of the upper airway because of the fat on the pharyngeal wall and loss of pharyngeal dilator activity during sleep.[16] Difficult intubation and difficult face mask ventilation are significantly increased probably because of the collapse of the upper respiratory tract and may, therefore, be an independent risk factor.[15,17] However, Neligan et al.[18] found no correlation between OSAS and difficult intubation. Neligan et al. conducted a prospective study of patients undergoing bariatric surgery. Another difference from our study is that it was placed in the "ramped" position for tracheal intubation. In the obese patient population, we believe that the ramped position, where the head, shoulders, and upper part of the trunk are raised above the chest, significantly improves laryngoscopic vision. These results suggest that no significant relationship exists between OSAS and difficult airway. Some studies found that snoring may predict difficult face mask ventilation, but OSAS is not associated with difficult face mask ventilation.[17] Despite this result, they expected to find a more specific improved positive predictive value because of the high prevalence of snoring in the study.

In the present study, the frequency of difficult airway was higher and statistically significant in the patients with a STOP-BANG score of ≥5, which are likely to be at risk of severe OSAS, compared with the patients with a low score ($p=0.02$). We found a moderate positive correlation between difficult airways with STOP-BANG ($p<0.05$). For anesthesiologists, a valid and reliable screening test is important to detect patients with OSAS because severe perioperative complications may develop in patients with severe OSAS.[16] Therefore, the STOP-BANG questionnaire can provide an idea in recognizing patients with undiagnosed OSAS and whether or not these patients will have airway difficulties.

Our investigation demonstrated that a high Mallampati score, STOP-BANG >5, male gender, head circumference, and neck circumference are significant independent variables for difficult airway. In addition, while IID was significant in showing difficult intubation, abnormal teeth, age >50, and mandible length >9 cm were statistically significant predictors of difficult mask ventilation.

Neck circumference, C–L, and Mallampati degrees showed higher positive correlation than STOP-BANG. Although the neck circumference criterion was included in the STOP-BANG questionnaire, it was more correlated with in demonstrating difficult intubation when used alone. Wide and short neck is a risk factor for difficult airway.[17] A previous study found a statistically significant correlation between difficult intubation and head circumference.[9] A large head circumference may cause difficulties because of the limited extension required for intubation. In the present study, neck and head circumference were correlated with difficult airway ($p<0.001$). We found no statistically significant correlation between neck length and difficult airway ($p>0.05$).

Some studies have shown that obesity is a risk for difficult airway.[17,19] In addition, a study reported that the incidence of difficult airway in morbidly obese individuals is not different from those with a normal BMI.[20] In the present study, we found no significant correlation between a BMI of >35 and difficult airway ($p>0.05$). For patients with BMI >35, the possibility of encountering a difficult airway increases as the neck circumference increases.[21] Hence, we believe that obesity alone is not a sufficient predictor of difficult airway. In the literature, no correlation has been established between height and difficult airway.[22] By contrast, the present study found a statistically significant correlation between mean height and difficult airway ($p<0.05$). However, additional studies are needed to conclude that height is important for a difficult airway because evaluating height along with other factors such as the ratio of thyromental distance increases accuracy.

Some studies have shown an increased incidence of difficult intubation and difficult face mask ventilation in advanced age; however, Kandemir et al.[9] did not find a correlation between age and difficult intubation.[17] In our study, we found no correlation between age and difficult intubation ($p=0.291$). Considering the correlation between mask ventilation and age, we found that the incidence of difficult airway increased as the patients' ages increased ($p<0.001$). This phenomenon may be attributed to anatomical factors, such as the absence of teeth, limitation of neck movements, and changes in mouth and jaw structure with age.

Dental problems, such as tooth deficiency in the elderly and loss of maxillary incisors, protruding canines in young people may be the cause of difficult airway. A previous study indicated that lack of teeth is a factor in encountering difficult airway.[18]

Similar to the study by Bryan et al.,[23] we found that intubation is easier in those with unnatural teeth while difficult mask ventilation was more frequent ($p<0.05$). Although our study showed that abnormal teeth will not be a problem for difficult intubation, we cannot accept this finding alone without evaluating factors, such as underlying dental problem(s), presence of chin protrusion, and temporomandibular joint disk displacement.

Studies on the correlation between gender and difficult airway found that difficult airway is encountered more commonly in males than females.[24] In our study, we found a slight increase in difficult airway among male patients, which agrees with the literature ($p<0.05$). The cervical vertebra, muscle, and soft-tissue volume are larger in men than women, even after adjusting for various body sizes, including total body weight. Therefore, intubation is more likely to be difficult in male patients than female patients because more force is required to create movement in these structures during intubation.

The size of the tongue according to the oral cavity can be estimated using the Mallampati test and provides an idea about head-and-neck movements and oropharyngeal structures.[6] Many studies found that a high Mallampati score is associated with difficult intubation and difficult mask ventilation.[2,25] However, Nørskov et al.[26] concluded that Mallampati scoring alone is not a definitive test. For the Mallampati classification to be reliable, the patient must open his or her mouth and extend his or her tongue at the maximum level ($p<0.001$).

A meta-analysis in 2019 reported that the upper lip bite test is the most sensitive test for detecting difficult laryngoscopy when compared with other tests.[2] In the present study, no statistically significant correlation was found between the upper lip bite test and difficult airway (p>0.05). The accuracy and reliability of this test may vary depending on the gender and ethnic group of the patients. This result may be ascribed to the craniofacial diversity between individuals, their failure to understand the description of the test, and their different lip and tooth structures. In fact, a previous study showed that the upper lip bite test alone is not a reliable test because of such reasons.[14]

A previous study showed that the incidence of difficult intubation is higher in those with a C–L grade of 3 and 4.[27] In our study, a strong correlation was found between high C–L grades and difficult airway (p<0.001). However, despite the strong correlation between difficult intubation and C–L grade, the fact that this can be carried out after the administration of general anesthesia to the patient is the major disadvantage of it. Hence, we should use other tests that can indicate difficult airway.

The IID indicates the movement of the temporomandibular joint, and a small IID may complicate visualization of the larynx. A meta-analysis reported that the IID is not significant in indicating difficult airway.[2] In our study, IID of <3 cm was correlated with difficult intubation (p=0.01), but it showed no statistically significant correlation with difficult mask ventilation (p=0.460). Thyromental distance is an indicator of the mandibular cavity; it also reflects whether or not displacement of the tongue by the laryngoscope blade would be easy or difficult. The small distance indicates that the larynx may be anteriorly located. Some studies found that the probability of difficult face mask ventilation increases if it is <6 cm.[17,28] Some studies reported that thyromental distance measurement is not highly valuable in determining difficult airway.[2] In the present study, no significant correlation was found between thyromental distance measurement and difficult airway (p>0.05).

Neurological problems related to neck movement, the degree of cervical spine flexion, and extension should be evaluated before intubation. A previous study showed that sternomental distance, an indicator of head-and-neck mobility, is useful in predicting difficult intubation.[29] Other studies showed that sternomental and thyromental distances have a limited value in predicting difficult intubation.[5,29] These different results may be due to the fact that measurements are affected by the extension of the head and the position of the larynx. In our study, we found no significant correlation between sternomental distance and difficult airway (p>0.05).

Comparison results showed no significant correlation between the mandibular length and difficult intubation (p=0.192). However, the mandibular length showed a significant correlation with difficult mask ventilation (p<0.001). Therefore, mask ventilation may be difficult with increasing mandibular length possibly because of the difficulty in gripping the jaw and inability to pull the lower jaw toward the mask.

The previous studies obtained different results on the correlation between difficult mask ventilation and difficult intubation. A meta-analysis reported that the frequency of difficult mask ventilation is 5–25%.[2] Another study on 188,064 patients reported that 20% of patients with difficult mask ventilation may have difficult intubation.[30] In our study, we found a statistically significant correlation between difficult mask ventilation and difficult intubation (p=0.001).

Conclusion

Difficult intubation and difficult mask ventilation correlate with different tests, scoring systems, and anthropometric measurements. Although a moderate correlation exists between STOP-BANG score and difficult airway, we believe that this questionnaire can be used in preoperative anesthesia assessment as an adjuvant to other tests in predicting difficult airway and detecting patients with undiagnosed OSAS. However, further studies with larger sample size and on different populations are warranted to use the questionnaire as a general screening test for predicting difficult airway.

Ethics Committee Approval: This study was approved by the Necmettin Erbakan University Meram Faculty of Medicine Clinical Research Ethics Committee (Date: 02.03.2018, Decision No: 2018/1232).

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ORİJİNAL ÇALIŞMA - *ÖZ*

Zor havayolu tahmini ve korelasyonunda STOPBANG anketinin ve diğer zor havayolu belirleyicilerinin kullanılması

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AMAÇ: Bu çalışmadaki ilk amaç, zor hava yolunu tahmin etmede STOP-BANG anketinin kullanımını değerlendirmektir. Çalışmada ikincil olarak değerlendirmek istenen zor hava yolunu tahmin etmede anketin ve diğer zor hava yolu belirleyici testlerin korelasyonunu değerlendirmektir.

GEREÇ VE YÖNTEM: Bu ileriye yönelik randomize çalışmaya genel anestezi altında opere olacak iki yüz Amerikan Anesteziyologlar Derneği (ASA) skoru I, II ve III olan hastalar alındı. Hastaların yaşı, boyu, vücut ağırlığı, vücut kitle indeksi, boyun çevresi, ağız tam açıkken interinsizör mesafesi, sternomental ve tiromental mesafe, mandibular uzunluk, boyun uzunluğu, üst dudak ısırma testi, STOP-BANG skoru, mallampati ve Cormack Lehane derecesi notları kaydedildi. İlk olarak bulmak istediğimiz zor hava yolunun bir göstergesi olarak STOP BANG anketinin kullanılabilirliğini tespit etmektir. Zor hava yolunu diğer parametrelerle karşılaştırmak ikincil hedefimizdi. Hastalar zor ve kolay yüz maskesi ventilasyonu ile zor ve kolay entübasyon olarak iki gruba ayrıldı. Veriler bir SPSS istatistik 16.0 programı kullanılarak analiz edildi. İstatistiksel analiz Ki-kare ve Spearman korelasyon analizi testi kullanılarak yapıldı.

BULGULAR: İki yüz hastadan 45'inin entübasyonda, yetmiş üçünün ise maske ventilasyonunda zorluk görüldü. Zor hava yolu ile yüksek STOP-BANG skoru arasında orta derecede pozitif korelasyon vardı ($p<0.05$). Ayrıca anormal diş yapısı, büyük kafa çevresi, büyük boyun çevresi, mallampati, Cormack Lehane sınıflandırması zor hava yolu ile anlamlı pozitif korelasyon gösterdi ($p<0.05$).

TARTIŞMA: Çalışmamızda, STOP-BANG anketinin zor hava yolunu tahmin etmede önemli olduğu görülmüştür ve bu test diğer zor hava yolu parametreleri gibi kullanılabilir olduğu tespit edilmiştir.

Anahtar sözcükler: Entübasyon; STOP-BANG skoru; yüz maskesi ventilasyonu.

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