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Comparison of Airway Placement Conditions and Postoperative Outcomes of Sniffing Position and Laryngoscope-Guided Laryngeal Mask İnsertion Methods in Geriatric Edentulous Patients

Geriatrik dişsiz hastalarda: (Sniffing) Koklama Pozisyonunda ve Laringoskop Kılavuzlu Laringeal Maske Yerleştirme Yöntemlerinin Hava Yolu Yerleşim Koşullarının ve Postoperatif Etkilerinin Karşılaştırılması

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ABSTRACT

AIM: Laryngeal mask airway (LMA) is a supraglottic airway device that can successfully secure the airway. In an aging population, elderly patients undergo complex surgical interventions. The aim of this study was to compare the success of LMA ProsealTM placement in edentulous geriatric patients with blind technique or laryngoscope assistance in terms of fiberoptic bronchoscope scores (Brimacombe scoring and Campbell categories) and clinical outcomes.

MATERIAL AND METHODS: We obtained written informed consent from participants. The study included 50 American Society of Anesthesiologists (ASA) physical status I-III edentulous patients between 60 and 85 years of age who were undergoing elective urological surgery with an indication of PLMA placement. Patients were randomly divided into two groups. The PLMA was inserted with the blind technique or with the assistance of a laryngoscope. Brimacombe scoring and Campbell categories were used to evaluate ProsealTM laryngeal mask airway placement. Fiberoptic evaluations, placement times, ease of placement, thyromental distance, neck thickness, interincisal distance and number of missing teeth were compared. Young criteria, tidal volumes, peak pressure, postoperative airway morbidity, complications and hemodynamic variables were also analyzed.

RESULTS: The PLMA placement time was shorter in the blind technique group than in the laryngoscope-assisted group (P<0.005). No significant difference was observed between the groups in terms of fiberoptic evaluation-based Brimacombe scoring and Campbell categories. Furthermore, no difference was found between the two groups in terms of postoperative airway morbidity, complication rates and hemodynamic parameters.

CONCLUSION: In edentulous geriatric patients, a faster, easier, and less invasive approach should be preferred for PLMA placement. Based on findings confirmed by fiberoptic evaluations, the blind insertion technique can be considered a suitable and effective option for PLMA placement in this patient group.

Keywords: laryngeal mask airway, blind technique, laryngoscope, fiberoptic assessment, geriatric

ÖZET:

GİRİŞ: Laringeal maske (LMA) hava yolunu başarılı bir şekilde güvence altına alabilen bir supraglottik hava yolu cihazıdır. Yaşlanan bir popülasyon da yaşlı hastalarda karmaşık cerrahi müdahaleler gerçekleştirilir. Bu çalışmanın amacı, dişsiz geriatrik hastalarda kör teknikle veya laringoskop yardımıyla LMA ProsealTM yerleştirme başarısını fiberoptik bronkoskop skorlamaları (Brimacombe skorlaması ve Campbell kategorileri sonucunu) ve klinik sonuçları açısından karşılaştırmaktı.

GEREÇ VE YÖNTEM: Elektif ürolojik cerrahi geçirecek, LMA ProsealTM yerleştirme endikasyonu olan, 60-85 yaş arasında 50 Amerikan Anestezistler Derneği (ASA) I-III dişsiz hasta, yazılı bilgilendirilmiş onam alındıktan sonra çalımaya dahil edildi. Hastalar rastgele iki gruba ayrıldı. LMA ProsealTM, kör teknik kullanılarak veya laringoskop kullanılarak yerleştirildi. ProsealTM laringeal maske hava yolu yerleştirme değerlendirmesinde Brimacombe skorlaması ve Campbell kategorileri kullanıldı. Fiberoptik değerlendirmeleri, yerleştirme süreleri, yerleştirme kolaylığı, tiromental mesafe, boyun kalınlığı, kesici dişler arası mesafe ve eksik diş sayısı karşılaştırıldı. Ayrıca Young kriterleri, tidal hacimler, tepe basıncı, postoperatif hava yolu morbiditesi, komplikasyonlar ve hemodinamik değişkenler analiz edildi.

BULGULAR: PLMA yerleştirme süresi, kör teknik grubunda laringoskop destekli gruba göre daha kısa bulundu (P<0,005). Fiberoptik değerlendirmeye dayalı Brimacombe skorlaması ve Campbell kategorileri açısından gruplar arasında anlamlı bir fark gözlenmedi. Ayrıca, postoperatif hava yolu morbiditesi, komplikasyon oranları ve hemodinamik parametreler bakımından da iki grup arasında fark saptanmadı.

SONUÇ: Geriatrik dişsiz hastalarda PLMA yerleşimi için daha hızlı, daha kolay ve daha az invaziv bir yaklaşım tercih edilmelidir. Fiberoptik değerlendirmelerle doğrulanan bulgular doğrultusunda, kör teknik yöntemi, bu hasta grubunda PLMA yerleştirilmesi için uygun ve etkili bir seçenek olarak değerlendirilebilir.

Anahtar kelimeler: Laringeal maske, kör teknik, laringoskop, fiberoptik değerlendirme, geriatrik

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INTRODUCTION

Management of the airway is crucial in the practice of anesthesiology, as problems with securing the airway can threaten the safety and life of a patient (1). A laryngeal mask airway (LMA) is a supraglottic airway device that can successfully secure the airway. It is an alternative to bag-and-mask ventilation that frees the hands of the anesthesiologist and offers other advantages, such as causing less gastric distention and inflicting less airway trauma compared to an endotracheal tube in elective surgeries (2,3). It also has a more effective seal than a face mask and is less invasive than endotracheal intubation (4). The LMA ProSeal™ (PLMA) is a second-generation supraglottic device that incorporates separate ventilation and gastric channels, a bite block, and a reinforced tip. It creates a safer airway by reducing the risk of aspiration and is more efficacious in terms of positioning. It also provides a more advanced airway compared to first-generation supraglottic airway devices (SADs) without a gastric access channel (4). Developments in anesthesia and modern surgical techniques and medication have allowed multiple complicated interventions to be performed in elderly patients within an aging population (5). The reduced tone of the upper airway under general anesthesia reduces the air space in the oropharynx and, with the posterior displacement of the tongue, soft palate, and epiglottis, can cause an increase in the frequency of airway obstruction in these patients (6). Sixty percent of patients above 65 years of age are edentulous. Since they do not have teeth, their sunken cheeks can render ventilation with a mask more difficult or impossible (7,8). The blind insertion technique described by Brain is commonly used (9). However, the insertion of the PLMA is often not smooth and can cause gastric insufflation and anesthetic gas leakage. Because of the anatomic difficulties of geriatric edentulous patients, LMA insertion in this population can be catastrophic. The primary objective of this study was to compare the success rates of blind PLMA placement with laryngoscope-assisted placement. To perform this assessment, we used fiberoptic assessments of the Brimacombe score and Campbell categories. Our secondary objective was to compare airway morbidities, complications, and hemodynamic variables between the groups.

MATERIAL AND METHOD

This prospective double blinded randomised controlled study took place at Dışkapı Yıldırım Beyazıt Training and Research Hospital and was approved by Institutional Ethics Commitee and ClinicalTrial.gov 04509960. After obtaining written informed consent, we enrolled 50 ASA I-III edentulous patients aged between 60-85 undergoing elective urological surgery with indication of LMA ProsealTM placement. All the procedures were conducted by two researchers with more than five years of experience in laryngeal mask airway insertion. Patients with recent history of upper respiratory tract infection, BMI> 35, symptomatic hiatus hernia, severe gastroesophageal reflux and dementia was excluded from the study. Also patients who failed LMA insertion for the first attemp were excluded form the study. Before induction of anesthesia, routine pre-anesthetic assessment was performed for all patients. Demographic parameters, neck circumference, thyromental distance and interincisor distance is measured and recorded. Smoking habits, height, weight, ASA, Mallampati classification and number of missing tooth were also recorded.

Patients were randomly divided into two groups: Blind insertion Group (B) and Laryngoscope assisted Group (L), with 25 patients in each group, using the sealed envelope technique. Without premedication, patients arrived in the operating room, routine monitoring was applied, including electrocardiography, pulse oximetry and noninvasive blood pressure measurement. All patients received pre-oxygenation for 3 minutes, The intravenous route was used for anesthetic induction with the simultaneous infusion of propofol with an initial target controlled infusion (TCI) of (Cp) 6 µg.ml-1, and remifentanil with an initial TCI of effect-site concentration (Ce) 2 ng.ml-1. After the patient showed loss of verbal contact, a single intravenous bolus dose of rocuronium 0.2 mg.kg-1 was administered. A effect-site target controlled infusion (TCI) of remifentanil, a commercail TCI pump (Orchestra Base Primea, Fresinus Vial; France) was used.

The size of the LMA ProsealTM was chosen based on the patients body weight: 30-50 kg, no3; 50-70 kg, no 4; and 70-100 kg no 5. The supraglottic airway devices are completely deflated before insertion. Young criteria was used for assessment of jaw relaxation (10). Grade 1- absolutely relaxed with no muscle tone, Grade II- moderately relaxed with some muscle tone, and Grade III- poorly relaxed with full muscle tone. Depth of anesthesia was evaluated with a bispectral index (BIS) monitor (BIS Vista™ [Aspect Medical Systems, Newton, MA, USA]). When BIS value reached 40-60, the predetermined supraglottic airway device was inserted. The LMA ProsealTM was lubricated and in Group B, patients head was placed in the sniffing position and LMA was inserted using the blind technique. In Group L, laryngoscope was used while inserting. A Macintosh laryngoscope blade is placed in vallecula and the epiglottis is identified, then the tongue and epiglottis are lifted anterior and superiorly (11). The LMA ProsealTM is inserted until it is seated in hypopharynx and/or the proximal rim of the LMA ProsealTM is all that can be seen. After insertion, each device was inflated with a hand-held airway manometer to a cuff pressure of 40-60 cmH2O(Rüsch, Germany). An effective airway was defined as as square wave end-tidal carbon dioxide trace and a presence of normal thoracoabdominal movement. All patients were ventilated with a tidal volume of 7-8 ml/kg, inspirium expirium inspiratory-expiratory ratio 1:2 and end-tidal CO2(ETCO2) is held between 30 and 35 mmHg. To assess the accuracy of the LMA ProsealTM, the oropharyngeal leak pressure(OLP) is measured by a second anesthesiologist after the first anesthesiologist inserts the LMA ProsealTM and leaves the operating room. High OLP is desired to indicate the applicability of the successful supraglottic airway management. Oropharyngeal leak pressure (OLP) was determined by transiently discontinuing ventilation and closing the adjustable pressure-limiting valve with a fresh gas flow of 3 L/min until the airway pressure reached a steady state and the leakage sound was heard. The airway pressure was not allowed to exceed 40 cm H2O. We recorded the insertion time which is the time between the laryngeal mask passing between the incisors and the first end tidal CO2 value was taken as the time of wearing the laryngeal mask. Ease of insertion was graded by the anesthesiologist as easy, fair and difficult (12,13). If insertion after one attemp fails, the patient is excluded from the study. The second anesthesiologist blinded to the groups assessed the anatomical position of LMA Proseal by introducing a flexible fiberoptic into the airway tube and graded fiberoptic categories of Campbell and Brimacombe scoring. The fiberoptic view of the distal end of LMA ProsealTM and proximal airway was rated using a standartized data collection tool and grouped under Campbell categories, A,B,C,D,E based on the amount of epiglottis covering the glottic opening (11). Also Brimacombe scoring system was assessed as follows: 4, only vocal cords visible; 3, vocal cords plus posterior epiglottis visible; 2, vocal cords plus anterior epiglottis visible; 1, vocal cords not seen (14). After removal of LMA ProsealTM, it was examined for the presence of visible blood. After taking to the recovery unit, sore throat, hoarseness, earpain, nausea and vomiting were asked and recorded. In the study protocol, the ease of LMA placement, insertion time, Brimacombe scoring, Campbell categories, tidal volumes and peak pressure is recorded. Hemodynamic parameters including systolic and diastolic blood pressure, mean arteriel pressure, oxygen saturation and pulse were recoreded at baseline, first minute after induction, first minute after LMA ProsealTM insertion, 3th, 5th, and every 5th min postinsertion. Airway morbidity incidence such as coughing, laryngospasm, and gagging were recorded.

Statistical Analysis

Statistical analysis was performed using SPSS for Windows version 20.0. Descriptive statistics were presented as numbers and percentages for categorical variables and as means with standard deviation for quantitative variables. The assumption of normal distribution was examined with the Kolmogorov–Smirnov and Shapiro–Wilk tests for the analysis of numerical data. For the data showing normal distribution, the mean difference between groups was analyzed by an independent samples t-test, and the median difference between groups was analyzed by the Mann–Whitney U test for data that did not show normal distribution. The analysis of the categorical variables was performed using a chi-squared test or Fisher's exact test as appropriate. Data were analyzed at the 95% confidence interval, and the tests were considered significant when the p-value was less than 0.05.

RESULTS

Fifty-four patients were recruited for the study, but two patients from each group were excluded due to failed PLMA insertion. Thus, a total of 50 patients were included in the statistical analysis. The demographic data, smoking habits, ASA status, and

Mallampati scores were similar between the groups

Table 1: Demographic data, ASA status, Mallampati scores, smoking habits and PLMA insertion time

	Blind Group (n=25)	Laryngoscope Group (n=25)	p
Age (year)	70,36±7,2	67,08±6,0	0,096
Gender(man/woman)	20(80%) /5(20%)	21(84%) /4(16%)	0,713
Weight(kg)	78,8±11,0	83,9±13,2	0,146
Height(cm)	167,6±8,1	169,4±7,5	0,409
ASA (I/II/III)	19(76%) /6(24%)	20(80%) /5(20%)	0,733
Mallampati(1/2/3)	0(0%) /22(88%) /3(12%)	3(12%) /16(64%) /6(24%)	0,084
Smoking habits	11(44%)	16(64%)	0,156
PLMA insertion time	24,4±5,3	28,5±3,9	**0,005**
Data are mean ± standard deviation or number of patients (%)			

The duration of anesthesia and propofol consumption were also similar between the groups ($p > 0.05$). The PLMA insertion time was 24.4 ± 5.3 seconds in the blind insertion group and 28.5 ± 3.9 seconds in the laryngoscope-assisted group. There was a statistically significant difference between the groups ($p < 0.005$; Table 1). The Brimacombe scoring and Campbell categories did not differ between the groups ($p > 0.05$; Tables 2,3)

Table 2: Campbell categories

	Blind Group (n=25)	Laryngoscope Group (n=25)	Total (n=50)	p
A (%0)	3 (12%)	4 (16%)	7 (14%)	0,645
B (%1-25)	8 (32%)	7 (28%)	15 (30%)	
C (%26-50)	6 (24%)	6 (24%)	12 (24%)	
D (%51-75)	3 (12%)	6 (24%)	9 (18%)	
E (%76-100)	5 (20%)	2 (8%)	7 (14%)	

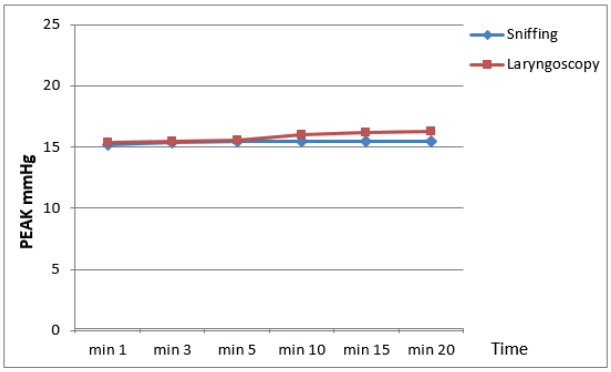
Table 3: Brimacombe scoring

	Blind Group (n=25)	Laryngoscope Group (n=25)	Total (n=50)	p
4	3 (12%)	2 (8%)	5(10%)	0.699
3	8 (32%)	5 (20%)	13(26%)	
2	11 (44%)	13(52%)	24(48%)	
1	3 (12%)	4 (16%)	7(14%)	
0	0 (0%)	1 (4%)	1(2%)	
Data analyzed chi-square test				

The thyromental distance, neck thickness, interincisor distance, and number of missing teeth were similar between the groups ($p > 0.05$). The ease of insertion was also similar between the groups ($p > 0.05$). There were no differences in Young's criteria, tidal volumes, or peak pressure between the groups ($p > 0.05$)

Table 4: Airway-related Characteristics

	Blind Group (n=25)	Laryngoscope Group (n= 25)	p
Thyromental distance 6,5cm>	7,9±1,1	7,7±0,9	0,431
Neck thickness <40cm	41,3±3,0	41,8±3,0	0,573
İnterincisor distance <3cm	5,0±0,7	5,4±0,7	0,080
Young criteria			
Absolutely relaxed	21(84%)	23(92%)	0,384
Moderately relaxed	4(16%)	2(8%)	
Poorly relaxed	0(0%)	0(0%)	
Data are mean ± standard deviation or number of patients (%)			



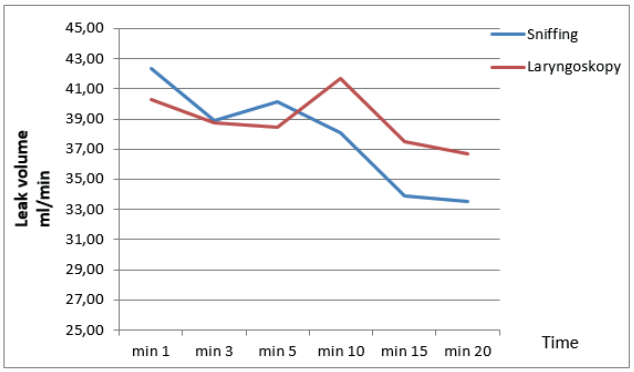


Figure 1

Comparison of PEAK pressure, leak volume $P < 0.05$ for independent sample t-test comparing variales between two groups

Postoperative airway morbidity was similar between the groups in regard to laryngospasm, coughing, and gagging ($p > 0.05$). Postoperative complications, such as sore throat, blood stains on the LMA, hoarseness, ear pain, nausea, and vomiting, were also similar between the groups ($p > 0.05$). Blood was observed on the LMA in 3 patients who underwent blind insertion and 8 patients who underwent laryngoscope-guided LMA insertion; this was not statistically significant. Sore throat was observed in 2 patients in both groups, and nausea and vomiting were observed in 1 patient in both groups. There was no difference in the hemodynamic parameters between the groups ($p > 0.05$)

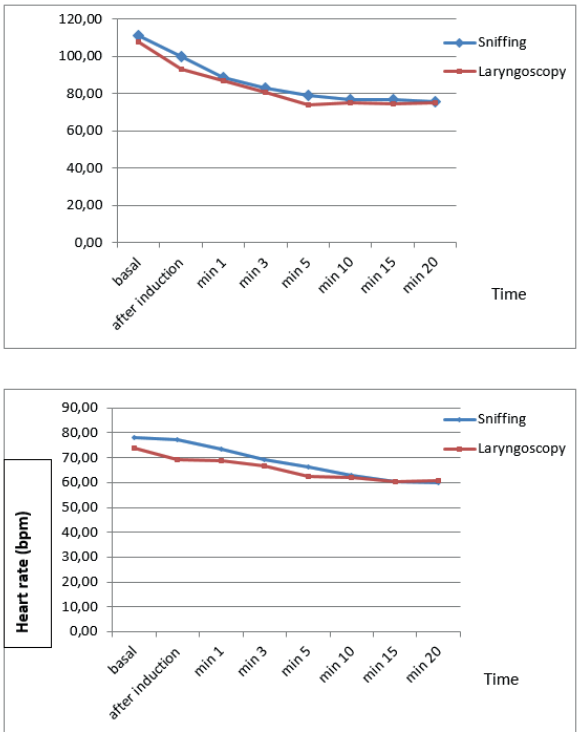
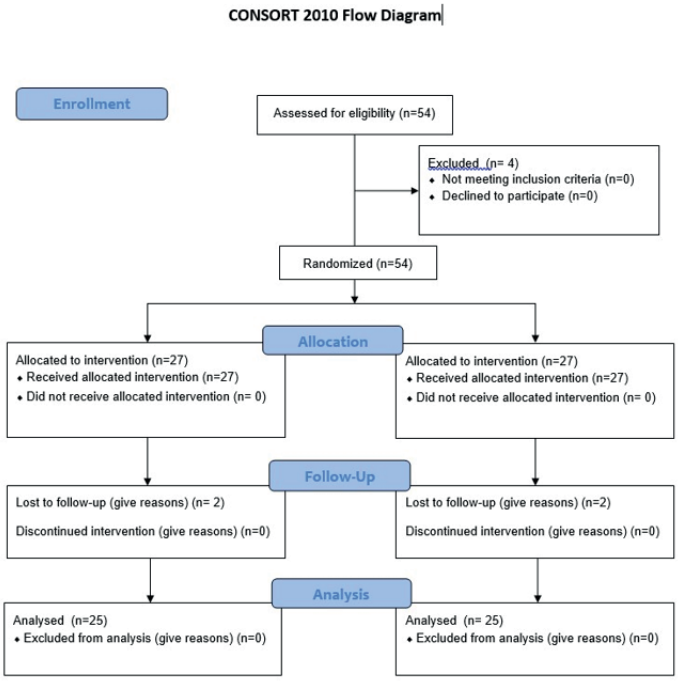


Figure 2

Comparison of MAP, HR in both groups mean arterial pressure (A), the heart rate(B) $p<0.05$ for independent sample t-test comparing variales between two groups

Using the mean differences in the percentage of epiglottis covering the glottic opening between the two groups, the effect level for Cohen's d was calculated as 0.82 (high). Accordingly, it was accepted as $\alpha = 0.05$ in the power analysis, and the sample size was calculated as 50 in the analysis at the 80% power level. Twenty-five observations for each group were deemed sufficient for this study.



DISCUSSION

In elderly patients, the absence of teeth makes mask ventilation difficult. Upper airway tone is decreased, which may lead to airway obstruction. Few studies have investigated the insertion of laryngeal masks and the possible problems related to this process in the geriatric age group (5,15). To our knowledge, this study is the first to compare blind and laryngoscopic PLMA insertion techniques using the fiberoptic assessments of Brimacombe scoring and Campbell categories in edentulous geriatric patients. We found that the PLMA insertion time was significantly shorter in the blind insertion group than in the laryngoscope-assisted group, but there no statistically significant differences were found were fiberoptic assessment scores, hemodynamic variables, postoperative airway morbidities, or complications between the groups. As the population ages, edentulous individuals make up a significant proportion of those over 65. The presence of teeth helps to shape the facial soft tissue to allow the mask to sit comfortably around the mouth (16). Ventilation with a mask may be difficult to perform on edentulous patients since a standard mask does not easily fit onto their cheeks (17). As the space for air decreases in the oropharynx due to the low muscle tone caused by general anesthesia, the airway may be obstructed by the movement of the tongue, the soft palate, and the epiglottis (18). Moreover, since sunken cheeks may make ventilation with a mask ineffective or even impossible it takes more time to insert and properly position an LMA on elderly patients compared to young patients (19). Episodes of inadequate ventilation that require adjustment of the LMA position during surgery also occur more frequently in elderly patients than young patients. For these reasons, adequate ventilation must be provided rapidly in elderly and edentulous patients. Control of LMA placement with fiberoptic assessments such as Brimacombe scoring and Campbell categories is important. Kim et al. compared the clinical efficacy of the classic laryngeal mask airway (cLMA) in elderly versus adult patients and found that poor dentition in the elderly may require increased attention to maintaining the proper positioning of the device. The occurrence of inadequate ventilation events associated with the use of cLMA led the authors to conclude that the device is less effective in elderly patients compared to younger adults (20). In our study, the PLMA, a second-generation supraglottic airway device, was inserted using the blind technique in one group and with the assistance of a laryngoscope in the other. In both groups, insertion was easy to perform, although two patients from each group were excluded following unsuccessful first attempts. While we did not compare two different types of laryngeal masks, our findings suggest that the PLMA may may be more advantageous than the cLMA for edentulous geriatric patients. We believe that the PLMA, as a second-generation device, provides more favorable outcomes in this patient population due to its improved sealing and stability characteristics. Genez et al, have compared the use of the Unique™ laryngeal mask in denticulate and edentulate geriatric patients (5). They reported a successful insertion rate of 78.7% for denticulate patients and 60.6% for edentulous patients. In our study, we found that the ease of inserting the ProSeal Laryngeal Mask Airway (PLMA) was higher compared to previous reports. This improvement may be attributed to the use of muscle relaxants during PLMA placement. In contrast, studies that did not administer muscle relaxants found the insertion process to be more challenging. Our protocol involved administering muscle relaxants before inserting the PLMA, and we assessed the position of the device using fiberoptic evaluations based on Brimacombe scoring and Campbell categories. Moreover, Brimacombe et al. reported a 98% success rate for ease of insertion when muscle relaxants were used, which emphasizes the importance of neuromuscular blockade and adequate anesthetic depth in facilitating successful placement. In our study, PLMA insertion was conducted once the Bispectral Index (BIS) value reached between 40 and 60, ensuring sufficient anesthetic depth for both groups. None of the patients showed clinical signs of poor anatomic placement at any point in the study, and there was no evidence of obstruction of anesthetic gas flow or leakage in either group. The fiberoptic assessments of the LMA placement, the Campbell categories and Brimacombe scoring, were similar between the groups. In a previous study, Chandan et al. prospectively compared the blind technique with the laryngoscope-assisted technique and found no statistically significant difference between the groups, which is consistent with our findings (4,22). Campbell and Biddle have also compared these two techniques of LMA insertion and achieved ideal positioning with a direct view of epiglottis and not with the

blind technique (11). However, both of these studies focused on the use of the cLMA in adults, whereas we used the PLMA to compare the two insertion techniques with geriatric edentulous patients. The laryngoscope is a widely used and readily available tool in anesthesia practice. We hypothesized that utilizing it to guide PLMA placement could facilitate and optimize insertion in geriatric edentulous patients. However, in our study, the time required for PLMA insertion was significantly shorter in the group using the blind technique compared to the laryngoscope-guided method. Despite this difference in insertion time, there was no significant difference between the groups in the fiberoptic assessment of PLMA placement, indicating comparable positioning outcomes regardless of the technique used. It could be stated that the reason for using the blind technique is to avoid sympathetic stimulation and pharyngolaryngeal adverse events from the instrumentation of the oropharyngeal soft tissues during laryngoscopy. Although these hemodynamic changes are short lived, they are especially undesirable in geriatric populations with altered cardiac reserves and pre-existing myocardial or cerebral diseases (23). The blind technique for LMA placement may avoid airway trauma with little hemodynamic change. Additionally, our geriatric population is prone to irritation due to their reduced muscle tone. In our study, there was no difference in hemodynamic parameters between the two groups. The incidence of airway morbidity and complications was also similar between the groups. As our population is highly sensitive, we gently lifted the epiglottis and did not try to visualize the tracheal opening or vocal cords. The depth of anesthesia was controlled by administering by propofol and remifentanil with an initial Target controlled infusion (TCI) of effect-site concentration, and we tried to keep the BIS values at 40–60. Kim et al. observed similar hemodynamic parameters, pharyngolaryngeal adverse events, and fiberoptic position scores between blind insertion and laryngoscope-guided insertion in adult patients (24). No hemodynamic changes were observed between blind insertion and laryngoscope-guided insertion in Choo et al.'s study either (25). Compared to our study, Özgül et al. reported similar hemodynamic parameters and incidence of postoperative airway morbidity with the PLMA when comparing the blind technique to videolaryngoscopy.26 Some other studies using laryngoscope-guided insertion of an LMA identified no significant difference in hemodynamic parameters compared to the standard blind technique (23,24). Genez et al. compared the use of the Unique™ LMA in denticulate and edentulate geriatric patients and reported no throat pain in patients (5). Smilarly Burgard et al. investigated the effect of cuff pressure reduction on postoperative sore throat in LMA anesthesia and found that postoperative sore throat could be reduced by keeping the cuff pressure at a low pressure value (27). Adequate depth of anesthesia is also required to prevent adverse events, such as coughing and laryngospasm. In our study no patients reported postoperative throat pain, which may be attributed to maintaining the LMA cuff pressure between 40–60 cmH_2O and ensuring adequate anesthetic depth using BIS monitoring. In addition, we did not use nitrous oxide, as it can diffuse into the LMA cuff and increase the inner pressure of the cuff. Compared to our findings, Patil et al. reported similar incidences of overall and individual complications when using the blind and laryngoscopic techniques (28). We monitored the ventilation parameters to obtain more information about airway pressures in elderly patients and found similarity between the groups. A limitation of Genez et al.'s study is that they did not record the airway pressure or tidal volume. Although Yurtlu et al. demonstrated that the experience of anesthesia practitioners does not affect the accurate determination of LMA cuff pressure or the incidence of related pharyngolaryngeal adverse events, we believe that our lack of postoperative airway morbidity and complications was due to our five years of experience with LMA insertion (29). Our study had some limitations. Specifically, the assessment of the ease of insertion was not blinded, and the study was performed by experienced anesthesiologists. Thus, the results may not be applicable to less experienced practitioners. We believe that fiberoptic examination is the most convenient method for assessing the accuracy of the anatomic placement of an LMA in clinical studies. An important advantage of our study was the use of two different fiber-optic assessments of LMA placement. Our findings demonstrated no statistically significant difference in fiberoptic assesments of PLMA insertion between the laryngoscope-guided and blind (sniffing position) techniques in edentulous geriatric patients. Moreover, the blind technique was associated with a shorter insertion time, without an increase in hemodynamic disturbances or postoperative complications.

CONCLUSION

Geriatric edentulous patients with reduced tissue elasticity, weakened upper airway musculature, and multiple comorbidities require a quicker, simpler, and less complex option for PLMA insertion. Our findings indicate that the blind technique is the most appropriate choice for PLMA insertion, as verified by Brimacombe scoring and Campbell categories.

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Author Contributions

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TASARIM VE DİZAYN | Sonuçlara ulaşmak için yöntemlerin planlanması G BUMİN AYDIN

DENETLEME/DANIŞMANLIK Proje ve makalenin organizasyonu ve seyrinin gözetimi ve sorumluluğu J ERGİL

LA Proje için hayati önem taşıyan personel, mekân, finansal kaynak, araç ve gereç sağlanması G BUMİN AYDIN

MALZEMELER Biyolojik malzemeler, reaktifler ve sevk edilen hastalar F AKASLAN

VERİ TOPLAMA VE/VEYA | Deneylerin yapılması, hastaların takibi, verilerin İŞLEME düzenlenmesi ve bildirilmesi için sorumluluk almak F AKASLAN

ANALİZ VE/VEYA YORUM Bulguların mantıklı açıklaması ve sunumu için sorumluluk almak F AKASLAN

LİTERATÜR TARAMASI | Gerekli olan bu fonksiyon için sorumluluk almak J ERGİL

Yazım YAZAN Makalenin tümü veya asıl bölümün oluşturulmas için sorumluluk almak J ERGİL
|
ELEŞTİREL İNCELEME | Makaleyi teslim etmeden önce sadece imla ve dil bilgisi açısından değil, aynı zamanda entelektüel içerik açısından yeniden çalışma yapmak. F AKASLAN, G BUMİN AYDIN, J ERGİL

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