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THE INCIDENCE OF DIFFICULT AIRWAY MANAGEMENT IN THE OPERATING ROOM OF UDAYANA UNIVERSITY HOSPITAL FROM JUNE UNTIL SEPTEMBER 2023

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ABSTRACT

Difficult airway management poses significant challenges and potential complications, ranging from soft tissue injury to life-threatening outcomes. The purpose of this research is to determine the incidence of difficult airway management at Udayana University Hospital. This research is a prospective, descriptive observational study with a cross-sectional approach. Sampling was carried out by total sampling in accordance to the inclusion criteria which provided primary data collected through observation forms, calculated using Microsoft Excel from 22 June to 30 September 2023. The incidence of airway management was predicted to be difficult (LEMON score ≥1) in 43.24% (16 of 37 patients) and not difficult (LEMON score 0) in 56.75% (21 of 37 patients). Following anaesthesia and airway management, the actual incidence of difficult airway management in the form of difficult intubation was 8.81% (3 of 37 patients) and non-difficult 91.89% (34 of 37 patients), with the specific incidence of difficult intubation in the adult age group being 6.89% (2 of 29 patients). There were no incidents of difficult airway management in the form of difficult SAD ventilation and CICO. From this research it can be concluded that the incidence of difficult airway management at Udayana University Hospital Operating Room from June to September 2023 was relatively low.

Keywords: difficult airway management incidence, difficult airway incidence rate, airway

ABSTRAK

Manajemen jalan napas sulit merupakan kejadian yang menantang dan berpotensi menimbulkan komplikasi pada pasien, mulai dari cedera jaringan lunak hingga mortalitas. Penelitian ini dilakukan untuk mengetahui jumlah insiden manajemen jalan napas sulit di Rumah Sakit Universitas Udayana melalui studi prospektif berbentuk deskriptif observasional dengan pendekatan potong lintang. Pengambilan sampel dilakukan dengan *total sampling* menurut kriteria inklusi yang menghasilkan data primer berupa hasil formulir observasi berdasarkan pemeriksaan langsung oleh peneliti maupun wawancara dengan dokter anestesi di Rumah Sakit Universitas Udayana dan dikalkulasi menggunakan *Microsoft Excel* terhitung dari 22 Juni hingga 30 September 2023. Pada penelitian ini didapatkan insiden manajemen jalan napas diprediksi sulit (skor LEMON ≥1) pada 43,24% (16 dari 37 pasien) dan tidak sulit (skor LEMON 0) pada 56,75% (21 dari 37 pasien). Setelah dilakukan pengelolaan jalan napas, insiden manajemen jalan napas sulit berupa kesulitan intubasi adalah 8,81% (3 dari 37 pasien) dan tidak sulit 91,89% (34 dari 37 pasien), dengan insiden spesifik kesulitan intubasi kelompok usia dewasa adalah 6,89% (2 dari 29 pasien). Tidak ada insiden manajemen jalan napas sulit berupa kesulitan ventilasi SAD dan CICO. Melalui hasil tersebut dapat disimpulkan insiden manajemen jalan napas sulit di Kamar Operasi Rumah Sakit Universitas Udayana pada Juni – September 2023 tergolong rendah.

Kata kunci: insiden manajemen jalan napas sulit, angka kejadian jalan napas sulit, jalan napas

INTRODUCTION

Airway management is a priority in patient care because inadequate delivery of oxygenated blood to the brain and other vital organs can cause rapid death.[1] Due to its sensitivity, the death of brain cells due to lack of oxygen can occur from five minutes after the oxygen supply is cut off.[2] One aspect of airway management that requires special attention is difficult airway management.[3]

Difficult airway management includes clinical situations where anticipated or unanticipated difficulty or failure is experienced by an anesthesiologist during airway management, including facemask ventilation, tracheal intubation, or both.[4] Difficult airway management is currently one of the biggest challenges for anesthesiologists because it has dramatic consequences for patients if they fail to intubate or ventilate.[5]

Oftentimes, airway management for general anesthesia patients in the form of laryngoscopy and tracheal intubation can be carried out smoothly. However, if difficult or failed tracheal intubation occurs after induction of anesthesia, complications that may happen include soft tissue injury, tooth avulsion, surgical airway with the risk of bleeding/infection/perforation of the esophagus or posterior wall of the trachea, inability to maintain tissue oxygenation, brain injury, cardiorespiratory arrest, and even death.[6]

Failure of airway management can also result in increased gastric insufflation, trauma to the posterior pharynx, increased blood/secretions in the airway, and edema of the subglottic structures which can make subsequent attempts at treatment more difficult and lead up to complete airway obstruction.[7] During difficult airway management, every anesthesiologist should also monitor the patient and evaluate for further complications such as aspiration, pneumothorax, edema, or possible bleeding.[5]

In elective surgery patients, the incidence of difficult direct laryngoscopy and tracheal intubation varies widely, ranging from 1.5% to 13%.[6] Other studies confirm that the incidence of difficult airway management is still poorly recorded and varies greatly by location.[8] The variation in study data may be justified due to some of the studies supporting these data being retrospective, some referring to different definitions of difficult intubation, and variation between the study populations.[6] Currently, at Udayana University Hospital (Unud Hospital), Badung, there is no research that can be used as an illustration regarding difficult airway incidents.

Given that the inability to maintain airway patency following the induction of general anesthesia is a crucial factor contributing to morbidity and mortality in the scope of anesthesia,[6] incident data needs to be studied to describe the condition of difficult airway management at Unud Hospital.

Airway management involves a complex interaction between patient factors, clinical settings, and practitioner skills.[9] By knowing the incidence of difficult airway management, practitioners can be better prepared to deal with similar cases in terms of skill and level of alertness to reduce patient complications and mortality rates. Furthermore, this data serves as a catalyst for additional research into the development of airway care equipment that can help better treat difficult airway cases.

MATERIALS AND METHODS

This study employs a prospective, descriptive observational design with a cross-sectional approach. Primary data was collected through an observation form based on direct examinations by the researcher and interviews with the anesthesiologists in charge of each patient. The research took place in the operating room of Unud Hospital, Jimbaran, Badung, from June to September 2023.

The target population of this study is all patients undergoing elective surgery and the accessible population is patients undergoing elective surgery and anesthesia with airway management in the operating room at Unud Hospital. The inclusion criteria were Unud Hospital patients who underwent elective surgery with inhalational anesthetic between June and September 2023, had complete data, and agreed to be research subjects. The exclusion criteria were elective surgery patients at Unud Hospital with intravenous general anesthesia and regional anesthesia techniques. Sampling was conducted through total sampling. The variables examined include airway management, patient age, LEMON assessment results, and the incidence of difficult airway management, categorized into three groups: difficult intubation, difficult SAD ventilation, and cannot intubate, cannot ventilate (CICO).

The acquired data was processed using Microsoft Excel and presented in a descriptive proportion table. This study has received ethical clearance from the Ethics Commission of the Faculty of Medicine, Udayana University, with the reference number 961/UN14.2.2.VII.14/LT/2023, and research permission from Udayana University Hospital with the reference number B/965/UN14.6/PT 01.04/2023.

RESULTS

This study included a total of 37 subjects meeting the inclusion criteria. The findings revealed an 8.81% incidence of difficult airway management through difficult intubation in 3 out of 37 patients, while 91.89% (34 out of 37 patients) experienced non-difficult airway management. Specifically, in the adult age group, the incidence of difficult intubation was 6.89% (2 out of 29 patients) (refer to Table 4 and Table 5).

The results of this research is as follows:

Table 1. Characteristics of research subjects based on age

Age Group (years)	F	Percentage (%)
Neonates and Infants (<1)	0	0
Children (1-12)	2	5.4
Teenagers (13-17)	1	2.7
Adults (18-64)	29	78.37
Elderly (≥65)	5	13.51
Total	37	100

Table 2. Characteristics of all research subjects based on initial assessment (LEMON assessment)

Component	F	Percentage (%)	F	Percentage (%)	Total (n)	Total (%)
Look Externally						
Facial Trauma	Absent		Present			
	32	86.48	5	13.51	37	100
Large Incisors	Absent		Present			
	36	97.29	1	2.7	37	100
Beard/Moustache	Absent		Present			
	37	100	0	0	37	100
Large Tongue	Absent		Present			
	35	94.59	2	5.4	37	100
Evaluate 3-3-2						
Inter-incisor distance	≥3 finger breadths		≤2 finger breadths			
	35	94.59	2	5.4	37	100
Hyomental distance	≥3 finger breadths		≤2 finger breadths			
	36	97.29	1	2.7	37	100
Thyromental distance	≥2 finger breadths		≤1 finger breadths			
	36	97.29	1	2.7	37	100
Mallampati	Class I-II		Class III-IV			
	22	59.45	15	40.54	37	100
Obstruction	Absent		Present			
	36	97.29	1	2.7	37	100
Neck Mobility	Free		Limited			
	37	100	0	0	37	100

Table 3. Comparison between predicted and actual incidents of difficult airway management based on the LEMON assessment

Prediction	F	Percentage (%)	Management Results	F	Percentage (%)
Non-Difficult	21	56.75	Non-Difficult, Predictable	21	56.75
			Non-Difficult, Unpredictable	13	35.13
Difficult	16	43.24	Difficult, Predictable	3	8.1
			Difficult, Unpredictable	0	0
Total	37	100	Total	37	100

Table 4. Incidence of difficult airway management by difficulty category

Category	F	Percentage (%)
Non-Difficult	34	91.89
Difficult Intubation	3	8.1
Difficult SAD Ventilation	0	0
CICO	0	0
Total	37	100

Table 5. Comparison of predicted difficult airway management and the incidence of difficult airway management per age category

Age Group (years)	Total Number of Patients	Predicted Number of Patients with Difficult Airway Management	Number of Patients with Difficult Airway Management	Specific Incidence per Age Category (%)
Neonates and Infants (<1)	0	0	0	0
Children (1-12)	2	1	0	0
Teenagers (13-17)	1	0	0	0
Adults (18-64)	29	12	2	6,89
Elderly (≥65)	5	3	1	20
Total	37	16	3	

Based on Table 5, it can be seen that this study tends to describe the incidence of difficult airway management in the adult age group (18-64 years) with 12 patients having a LEMON score of ≥1 and 2 cases of difficult intubation (6.89%) in the adult age group.

Table 6. Variations in LEMON assessment scores

LEMON Assessment Score	F	Percentage (%)
0	21	56,75
1	7	18,91
2	6	16,21
3	3	8,1
>3	0	0
Total	37	100

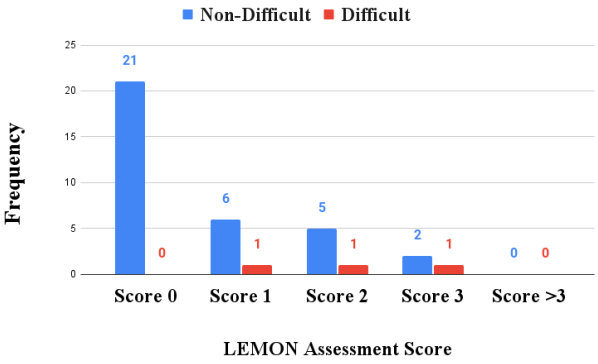

Figure 1. Bar diagram of variations in LEMON assessment scores

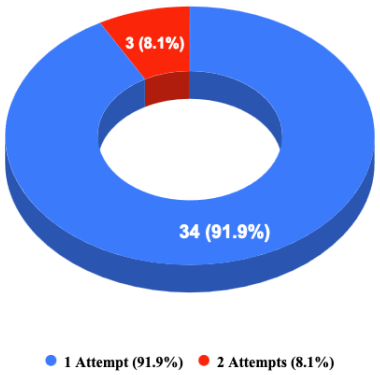

Figure 2. Number of airway management attempts

DISCUSSIONS

Demographic Characteristics

In this study, it was found that most of the study subjects were in the adult age group (18-64 years), comprising 29 individuals (78.37%), followed by five individuals in the elderly age group (≥65 years) (13.51%). These findings align with research conducted by Workeneh et al. in Ethiopia, which used a similar inclusion criterion. Their study included 153 patients (72.2%) aged 17-50 years and 17 patients (8%) aged ≥51 years old who underwent general anesthesia with endotracheal intubation.[10] Similarly, Andrade et al.'s study revealed a consistent age distribution trend among surgical patients, with the majority being aged

<65 years (77.4%) and the remaining 22.6% aged ≥65 years.[6]

The average age of the patients in this study was 40.81±19.13 years. This is in line with other studies, such as the study conducted by Khan et al., in Pakistan, which reported an average age of 53.59±13.32 years, and the study conducted by Oria et al., in Afghanistan, with the average age of 36.98 ±15.5, while Prakash et al.'s study in India reported an average age of 37.8 ± 13.5.[11–13]

The age demographic of surgical patients generally includes adults and the elderly, primarily due to elective procedures and surgeries that are often associated with diseases of old age.[14] Although advancing age increases the likelihood of needing surgery, there are also many potential risks when surgical procedures are performed on the elderly which discourage the them from undergoing surgery. Some common physiological problems that are associated with aging and increase the likelihood of complications during or after surgery include increased blood pressure, blocked arteries, and heart and lung diseases.[15] Other considerations that influence the decision making process for elderlies in undergoing surgery according to a research by Malani et al., include the possibility of pain/discomfort, difficulty of recovery due to the body's physiological decline, the financial costs, the time required to stop working, the absence of a caregiver post-surgery, and transportation issues.[16]

The population undergoing surgery is increasing in age faster than the general population, so there will be a significant increase in the number of operations in the coming years. To meet these needs while providing safe and high-quality services, a comprehensive adaptation of policies is imperative.[14] An analysis by Oria et al., identified that individuals aged over 40 years exhibited an association with the incidence of difficult intubation.[12] In line with this, Prakash et al., reported that increasing age is associated with difficulty in intubation due to factors such as reduced muscle tone in the upper airway, increased body weight, and greater changes in sleep cycles. These factors then contribute to the development of obstructive sleep apnea, which further poses a risk for difficult intubation.[13] Therefore, understanding patient characteristics is a crucial aspect that must be attended to in airway management.

Characteristics Based on LEMON Assessment

The LEMON assessment can be used to reduce the probability of unpredicted difficult airway management and its complications.[17] Discussion of patient characteristics, assessed through the LEMON assessment, is as follows:

Look Externally

In this study, the external appearance component in the form of facial trauma was the second most common characteristic found, accounting for 13.51% of the cases (5 of 37 patients). Additionally, large incisors were identified in 2.7% (1 of 37 patients), large tongues in 5.4% (2 of 37 patients), and none of the patients had a beard or a moustache. In contrast, Savatmongkorngul et al.'s study reported a lower incidence of facial trauma at 2.76% (17 of 617 patients). However, the prevalence of patients with large incisors, large tongues, and beards/moustaches was slightly higher with rates of 8.75% (54 of 617 patients), 8.75% (54 of 617 patients), and 4.54% (28 of 617 patients) respectively.[18]

Evaluate 3-3-2

In this study, an inter-incisor distance of ≤2 fingers was observed in 5.4% (2 out of 37 patients). Additionally, a hyomental distance of ≤2 fingers and a thyromental distance of ≤1 finger were found in 2.7% (1 out of 37 patients). Contrasting results were reported by Tripathi et al., where the inter-incisor distance was ≤2 fingers in 16.41% (11 out of 67 patients), the hyomental distance was ≤2 fingers in 14.92% (10 out of 67 patients), and the thyromental distance was ≤1 finger in 13.43% (9 out of 67 patients).[17] Similarly, Savatmongkorngul et al. documented higher percentages, including an inter-incisor distance of ≤2 fingers in 11.35% (70 out of 617 patients), a ≤2 finger hyomental distance in 11.83% (73 out of 617 patients), and a ≤1 finger thyromental distance in 11.02% (68 out of 617 patients).[18]

Mallampati Class III-IV

Mallampati Class III-IV was the most common characteristic found in this study, accounting for 40.54% (15 of 37 patients). This finding differs significantly from other literature where Mallampati class III-IV was found in only 19.6% (26 of 133 patients)).[6] Generally, Mallampati class IV is identified in older patients (average age of 53 ± 9 years), often accompanied by a larger neck circumference and tongue size. This aligns with the demographic characteristics of this study, where the majority of patients fall within the adult age range.[6]

Obstruction

In this study, obstruction was found in 2.7% (1 of 37 patients). The data obtained is not much different from the study by Tripathi et al., which reported obstruction happening in 1.49% (1 out of 67 emergency patients),[17] but is notably lower compared to the study by Savatmongkorngul et al., where obstruction was found in 14.26% (88 of 617 emergency patients).[18]

Neck Mobility

In this study, no characteristics of limited neck mobility were found. The results differ significantly from the studies conducted by Tripathi et al., Savatmongkorngul et al., and Andrade et al., which reported higher rates of limited neck mobility at 14.92% (10 out of 67 patients), 6.65% (41 out of 617 patients), and 6.01% (8 out of 133 patients), respectively.[6,17,18]

It is concluded that the characteristics found between studies showed a significant variation in numbers. This is due to differences in the demographic characteristics of patients visiting each hospital, inclusion and exclusion criteria between studies, as well as the location of each study. In this study, the characteristic most commonly found was Mallampati Class III-IV, accounting for 40.54% (15 of 37 patients), followed by the externally visible component in the form of facial trauma at 13.51% (5 of 37 patients). These results are supported by literature which states

that one of the most dominant risks for intubation difficulty is Mallampati Class III-IV.[6] Other assessment components, including large incisors, beard/moustache, large tongue, inter-incisor distance ≤2 fingers, hyomental distance ≤2 fingers, thyromental distance ≤1 finger, the presence of obstruction, and limited neck mobility show relatively low numbers in this study, especially when compared to other studies.

Difficult Airway Management Incidence

In Table 3, it is predicted that 43.24% (16 of 37 patients) may encounter difficult airway management. Among the 16 patients, after anaesthesia induction and airway management, the incidence of difficult airway management, specifically difficult intubation, was 8.1% (3 of 37 patients). In a meta-analysis by Rai et al., involving 35 studies on difficult airway management from 1980 to 2004, variations in the incidence of difficult intubation were found. The lowest recorded incidence was 1.5% and the highest reached 20.2%, with an average of 7.5%.[19] The research result of 8.1% aligns closely with the meta-analysis average and falls within its range. An important aspect to note from these studies is that there is a fairly wide interval between the lowest and highest incidence rates. This wide interval can be influenced by various factors, with the primary factor being differences in the standard definition of difficult intubation incidence.

In this study, difficult airway management was defined using the LEMON assessment approach in combination with the number of repeat management attempts. In contrast, many other studies typically define difficult intubation as Cormack-Lehane class 3 or higher, while some use different classification systems such as the Intubation Difficulty Scale (IDS) Score or the LEMON assessment). The definition may also involve considering the number of repeat attempts.[19] If only Cormack-Lehane (class 3- 4) is used as the criterion for defining the incidence of difficult endotracheal intubation, the incidence falls within the range of 4-10%. However, if the definition includes both the number of intubation attempts and Cormack-Lehane grading (class 3-4), the incidence narrows to 1.5-2.5% within a population of adult surgical patients.[20,21] It appears that by combining multiple definitions or indicators, the incidence of difficult intubation becomes more specific, resulting in lower rates. In addition to the varying definitions of difficult intubation, variations in research results are also influenced by patient characteristics, differences between retrospective and prospective study types, and instances of unreported cases.[10]

Workeneh et al.'s study reported an incidence of difficult airway management of 9% (19 of 212) among patients undergoing both elective and emergency surgery, while Khan et al.'s study reported an incidence of 3% (9 of 294 patients) in elective surgery patients.[10,11] The variance in incidence rates between the two studies can be attributed to the extensive exclusion criteria used by Khan et al. Excluded factors in Khan et al's study included patients with a history of head and neck surgery, those undergoing tracheotomy, those requiring rapid sequence inuction, and those planning to use a supraglottic airway device, fiberoptic intubation, or video laryngoscope.

The incidence of difficult intubation observed in our study aligns more closely with the findings of Workeneh et al. due to the influence of similar factors between the two studies, such as both studies being conducted in teaching hospitals and utilizing similar subject criteria, which includes all general anaesthesia operations with endotracheal intubation.[10] Additionally, there are anthropometric variables, including variations in thyromental and sternomental distances, along with the degree of mouth opening, which is believed to be the reason for differences in population groups and contribute to differences in the incidence of difficult airway management across various studies.

In this study, there were no recorded incidents of difficulty in SAD ventilation, CICO, or emergency front neck access (surgical airway/cricothyroidotomy). According to the 2015 Difficult Airway Society algorithm for difficult intubation, SAD insertion is considered as an attempt to maintain oxygenation, and emergency front neck access is carried out only if intubation fails.[22] However, in this study, all difficult intubations were successfully managed on the second attempt, as depicted in Figure 2. Thus, all research subjects in this study did not require management in the form of SAD ventilation, CICO did not occur, and surgical airway management was not necessary.

In Jayaraj et al.'s study involving 111 patients with difficult intubation, CICO occurred in 14 patients (13%) and three patients (0.03%) required a surgical airway management because of ventilation challenges.[21] The incidence of CICO in that study was influenced by poor glottic visualization (93%) and airway bleeding (36%). Among all patients with difficult intubation, desaturation was reported in 8%, airway bleeding in 7%, and airway edema in 6%.[21] Factors that differentiate this study from Jayaraj et al.'s study include variations in patient conditions and characteristics, a longer study duration (seven years), and a larger number of total surgical cases involving 42,805 patients as research subjects. We conclude that these differences contribute to the absence of recorded incidents of difficult SAD ventilation, CICO, and surgical airway management in this study, which spanned approximately three months with 37 research subjects.

Prediction Results of Difficult Airway Management Incidence

Based on Table 3, the LEMON assessment was successful in predicting all incidents of difficult airway management and no unpredictable difficult airway management occurred. These results are supported by the study of Sharma et al., which showed that the LEMON assessment effectively stratifies patients based on the risk of difficult airway management.[23] However, to date, the management of unpredictable difficult airway remains one of the major challenges anaesthesiologists face in clinical practice. In general, current available airway assessment tools have low sensitivity and high variability, leading to varying reliability in predicting difficult airway management.[24,25] With its low sensitivity and high specificity, the LEMON assessment tends to yield a higher false negative rate and a lower false positive rate. The high specificity of the LEMON assessment (96.15%) according to the research of Tripathi et al., was proven in this study through a relatively low number of false positives. Specifically, there were six patients with a score of 1, five patients with a score of 2, two patients with a score of 3, and the total number false positives were 13 patients (34.21%).[17]

While currently used screening tests for difficult airway may lack specificity and sensitivity, preoperative examination and a combination of tests are still strongly recommended to reduce the risk of unpredictable difficult airway management or failure.[12] A review of airway predictor devices aimed at anticipating difficult airway management, as mentioned in Andrade et al.'s literature, emphasizes that the bedside difficult airway screening tool is not clinically proven to predict all instances of difficult airway management, as more than 60% of cases were not successfully predicted.[6] This contrasts with the results obtained in this study where all incidents of difficult airway management were anticipated through the LEMON assessment. Jayaraj et al.'s study also showed different figures where intubation difficulties were not successfully anticipated through initial assessment in 24.3% (27 of 111 patients).[21] An aspect that also influences the relationship of a test to a real incident is the experience of the personnel managing the situation. According to Cattano et al., anesthesiologists with more than two years of clinical practice experience in anesthesiology can be categorized as experienced in intubations.[26] With variations in experience and competence in management, the management results obtained will also vary.

Additionally, it was found that the number of patients decreased along with each increase in the LEMON score. In this study, patients with a LEMON score of 0, 1, 2, and 3 constituted 21 patients (56.75%), 7 patients (18.91%), 6 patients (16.21%), and 3 patients 3 (8.1%), respectively. No patients received a LEMON score of more than 3. When comparing higher LEMON scores with the increasing difficulty of intubation, our data aligns with the findings of Tripathi et al., which reported data on one, two, and three intubation attempts at rates of 67.16% (45 out of 67 patients), 22.39% (15 out of 67 patients), and 10.45% (7 out of 67 patients), respectively.[17] Other literature obtained data on one-time, two-time, and three-time intubation trials at rates of 62.7% (133 of 212 patients), 24.1% (51 of 212 patients), and 13.2% (28 of 212 patients).[10] The consistency found is that more difficult cases tend to have a lower incidence rate. However, the vigilance of doctors carrying out management must be maintained due to the fatal consequences that can occur to patients due to failure to anticipate difficult airway management.

All three incidents of difficult intubation in this study, distributed evenly across LEMON scores of 1, 2, and 3, were successfully managed within two intubation attempts. These findings suggest that a lower LEMON score does not necessarily correlate with fewer attempts and easier airway management, while a higher LEMON score does not necessarily result in more attempts and more challenging airway management. Multiple attempts can occur at any LEMON score, therefore the anaesthesiologist must always be alert. Repeated attempts at direct laryngoscopy or intubation have been noted to be associated with potential trauma to the airway structures, leading to bleeding and oedema that can obstruct the visualization of the vocal cords (*plica vocalis*). In addition, prolonged apnoea, dysrhythmias (especially bradycardia), and the need for additional anaesthetic drugs due to prolonged and repeated attempts at laryngoscopy were also observed.[10] Thus, an initial assessment of airway management is crucial to enhance the anaesthesiologist's awareness and minimize repeated attempts, which carry significant consequences for patients.

Confirmed by other literature, unpredicted difficult airway management carries a higher risk of complications in the form of morbidity and mortality. These complications include soft tissue injury, airway trauma and oedema, unnecessary airway surgeries, the inability to maintain tissue oxygenation, cerebral hypoxia, cardiac and respiratory events, up to the unfortunate outcome of death.[6,11] Emphasis is needed on the process of assessment, preparation, positioning, pre-oxygenation, oxygen maintenance and reduction of trauma resulting from airway interventions.[12] The inability to predict the occurrence of difficult airway management may further delay patient management and preparation of alternative airway equipment, as well as causing repeated intubation attempts. These non-ideal conditions once again result in an increased risk of complications such as heart attacks, arrhythmias, regurgitation, and airway trauma.[18] On the other hand, if incidents of difficult airway management can be accurately predicted, anaesthesiologists can proactively equip

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themselves for unexpected situations using alternative airway management techniques like the laryngeal mask airway, fibreoptic tools, and video laryngoscope.[11] Moreover, a predictable incidence of difficult airway management provides an opportunity to better prepare highly skilled anaesthesiologists to manage the patients. Acknowledging that not all instances of difficult airway management can be anticipated, every anaesthesiologist is expected to maintain a high index of suspicion and undergo adequate preparation, following a previously trained management plan or algorithm.[6]

CONCLUSION

In conclusion, the findings from this study reveal that the incidence of airway management was predicted to be difficult (LEMON score ≥1) in 43.24% (16 of 37 patients) and not difficult (LEMON score 0) in 56.75% (21 of 37 patients). Following anesthesia and airway management, the actual incidence of difficult airway management in the form of difficult intubation was 8.81% (3 of 37 patients), while the majority, 91.89% (34 of 37 patients) experienced no difficulty. The specific incidence of difficult intubation within the adult age group was 6.89% (2 of 29 patients). There were no incidents of difficult airway management in the form of SAD ventilation and CICO difficulties.

SUGGESTIONS

This study exclusively addresses the incidence of difficult airway management among elective surgery patients using inhalational anaesthetic. Further analytical research is needed to explore the correlation between various predictors of difficult airway incidents (such as the LEMON assessment, Cormack-Lehane grading, Intubation Difficulty Scale (IDS), MOANS score, etc.) and the actual occurrence of difficult airway management. Furthermore, it is recommended that future research can consider expanding the sample size and extending the study duration to increase the representativeness of the data obtained. This would contribute to a more comprehensive understanding of the factors influencing difficult airway incidents and improve the generalizability of the study's findings.

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