Complications and Risks of Laryngeal Mask versus Endotracheal Tube for Patients Undergoing General Anesthesia

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Abstract

Background: Laryngeal mask and endotracheal tube complications and risks for patients undergoing general anesthesia can have significant clinical implications. Assessing these complications is crucial for optimizing patient care. **Aim:** Assess complications and risks of laryngeal mask versus endotracheal tube suction for patients undergoing general anesthesia **Research design:** In this study, a descriptive and correlation research design was used. **Setting**: The study was carried out at Assiut General Hospital's operating room. **Sample:** A Purposive sample composed of 60 patients A total of sixty adult patients according inclusive and exclusive criteria. **Tools, Tool (I)** Patient assessment tool**, Tool (II):** Risk factors assessment tool**, Tool (III):** Patients 'complication assessment tool**. Results:** Out of the studied patients (60) who underwent general anesthesia, twenty- four patients encountered complications during anesthesia for endotracheal tube, nine of them (30%) developed Damage teeth or lips, four patient experienced Endotracheal tube malfunctions. While fourteen patients (46%) experienced aspiration for laryngeal mask. Complications after anesthesia were experienced by 23.0% of the total studied patients. Bruising and soreness (P value, 0.044), damage to the mouth or teeth (P-value, 0.038), identified as significant predictors for endotracheal tube complications. **Conclusion:** The application of Laryngeal mask airway has a decreased frequency of complications than endotracheal tube. Believe that the laryngeal mask may be an alternative airway device to endotracheal tube in minor surgery. While endotracheal tube with major surgery. **Recommendation:** Before surgery, give patients health education and make sure that nurses are well-prepared.

Keywords: Anesthesia, Complications, Endotracheal tube & Laryngeal mask, Risk.

Introduction

Anesthesiology is the field of healthcare involved with providing a state of controlled, temporary loss of sensation or awareness that is induced for medical purpose s such as a surgical intervention. It may include a combination of various components including analgesia, amnesia, unconsciousness, and muscle relaxation**. (Komorowski & Joosten, 2021)**

General anesthesia is defined as a medically produced state of unconsciousness that is accompanied by the loss of defensive reflexes and the relaxation of skeletal muscles. Intravenous sedatives and analgesics are usually used to induce general anesthesia, which is then maintained with volatile anesthetics. **(Jones, et al 2023)**

Among the most significant artificial airway devices used in the administration of general anesthesia are laryngeal mask airway and endotracheal intubation. **(Obsa., et al 2020).** Endotracheal tubes come into direct touch with the interior of the respiratory tract and are intended to maintain the patency of the ventilation for the patients. They function as a device that facilitates respiratory exchange. **(Saad., et al 2022)**

The gold standard intervention for managing airway emergencies is endotracheal intubation. Endotracheal intubation-related complications are both common and numerous. In our study, the following complications were linked to endotracheal intubation: regurgitation and aspiration of stomach contents, endobronchial intubation, incorrect positioning of the endotracheal tube in either the esophagus or hypopharynx, hypoxia, hypotension, dysrhythmia, cardiac arrest, hypertension, tachycardia, bradycardia. **(Taş., et al 2021)**

A growing alternative to the endotracheal tube in head and neck surgery over the past 20 years is the laryngeal mask airway (LMA), which maintains upper airway patency without the need for direct visualization of the vocal cords and may prevent potential trauma during the tracheal intubation process. **(Hung., et al 2022)**

Additionally, LMA insertion may result in unfavorable airway reflexes such coughing, gagging, and obstruction of the airway, which may jeopardize the efficacy and security of anesthesia and operation. It is not contraindicated to use muscle relaxants during LMA insertion because they can help with the procedure and lessen the likelihood of unfavorable

airway reflexes such coughing, choking, and laryngospasm. **(Ye., 2024)**

A surgical patient is a person who requires extensive care and treatment because they are in a vulnerable circumstance. Nurse anesthesia is a purposefully planned, goal-directed reaction to the unique demands of surgical patients. Throughout the anesthesia process, nurses are constantly on hand to quickly assess and adapt to the patient's circumstances. In order to achieve the best possible outcome and avoid unfavorable events, they collaborate with other medical professionals to provide all three phases of perioperative anesthesia care (pre-, intra-, and postoperative). They also facilitate surgery, trauma care, advanced life support, and other emergency cases. **(Lekens., et al2023)**

Significance of the study

Laryngeal mask airway (LMA) or endotracheal tube (ETT) can be used for airway management during general anesthesia. In many surgical populations, the use of LMA as opposed to ETT has been demonstrated to shorten operation and recovery times, enhance hemodynamic stability, and reduce anesthetic requirements. Additionally, it has been demonstrated to lessen postoperative nausea and vomiting and airway problems, both of which have a significant impact on overall patient satisfaction **(Virginia Commonwealth University, 2020)**

As stated in the Assiut General Hospital patient records, it has been found that there were about 956 cases undergoing general anesthesia every Year **(Assiut General Hospital record.,2022).** According to research, LMAs are just as successful as other airway management techniques. Depending on the device and the operator's skill level, blind intubation success rates with an LMA can range from 60% to 99%. When it comes to supraglottic devices, the Fast Rach LMA (ILMA) has the highest rate of blind intubation; nonetheless, flexible fiberoptic guidance is the ideal method when it can be employed.

Aim of the study:

Assess complications and risks of laryngeal mask verses endotracheal tube for patients undergoing general anesthesia

Research questions:

What are complications and risks of laryngeal mask verses endotracheal tube for patients undergoing general anesthesia?

Patients and Method:

Research Design:

In this study, a descriptive research design was used.

Setting :

The study was carried out at Assiut General Hospital's operating room.

Setting description:

The operating room unit at Assiut General Hospital comprises a complete wing with four operation rooms, two room for major operation and two room for minor operation.

Sample:

A Purposive sample composed of 60 patients a total of sixty adult patients according inclusive and exclusive criteria who was admitted to operating room undergoing surgical operation at Assiut General Hospital. Who were 60 adult male and female patients, with ages ranging from 18 to less than or equal to 60 years old, that 30 patients with endotracheal tube and 30 patients with laryngeal mask.

Tools of data collection :

Four tools were utilized to obtain pertinent data for the present study.

Tool one: patients' assessment tool:

It was designed and developed by the researcher based on the relevant national and international literatures, which divided into four parts:

Part 1: patient's demographic data assessment questioner

The purpose of this section was to evaluate the patient's demographic data which consisted of sex items of demographic data (age, gender, patient Code, marital status, level of education, occupation)

Part 2: patients' Hemodynamic data:

The purpose of this section was to evaluate the patient's medical data which consisted five items: (Blood pressure, oxygen saturation, respiratory rate, body temperature and pulse rate) were taken through; preanesthetic, during and post anesthesia and medical measure for Height, weight and BMI.

Tool two: Risk factors assessment tool:

The purpose of this section was to evaluate the patient's Risk factors: which consisted of ten items; long duration of surgery, Type of airway, respiratory disease, cardiovascular disease, anesthesia drug related, hypothermia, habits, Obesity and chronic disease.

Tool three: The agitated behavior scale (ABS)

This tool was designed and adopted by the researcher based on the following literatures, **(Bogner, 2021)** it is a 14-item measure with various behavioral categories on it. Every item is given a score ranging from 1 (Normal) to 4 (sever) 21 points or less is considered normal behavior, 22–28 is considered mild agitation, 29–35 is considered moderate agitation, and 36–56 is considered severe agitation.

Score1: Normal.

Score 2: Mild. doesn't stop the sufferer from acting in other suitable ways.

Score 3: Moderate. Needs to be redirected from agitated to suitable behavior.

Score 4: Sever. Agitation continues in spite of attempts at diversion

Tool four: Complications' assessment tool:
This tool was developed by research to assess complications, it will Include two parts; during anesthesia and after anesthesia.

Part 1: During anesthesia : It includes two parts:
The purpose of this section was to evaluate the patient's complication during anesthesia which consisted of sixteen items as (Hypoxia, Damage teeth or lips, Endotracheal tube malfunction, Gagging, hypotension, Hypothermia, Abnormal heart rate, Difficult recovery (prolonged duration, dysphoria), Arrhythmias (sinus tachycardia, sinus bradycardia, others, hypoventilation, High airway pressures (kinked or obstruction tube, pulmonary compliance), end bronchial intubation, Laryngospasm, Oropharyngeal intubation, Aspiration and Anesthesia awareness)

Part 2: Immediately postoperative: Was used to assess complications after anesthesia: it includes 10 items as (nausea or vomiting, chills and shivering, disorientation and memory loss, bladder issues, lightheadedness, bruises and soreness, sore throat, oral or dental damage, hoarseness, and other symptoms.

Method:
There were three stages to the study's execution.

Preparatory phase : This phase involved developing the data collection tools based on review of the pertinent literature by the researchers and preparing the data collection instruments.

- After explaining the purpose and scope of the study, permission to perform it was granted by the dean of the nursing faculty at Assiut University as well as by the hospital's competent authorities, the head of the anesthesia department and the head of operations.
- Tools for collecting data were developed by researcher based on a survey of relevant books, papers, journals, publications, and references from the past, present, and worldwide in a variety of fields.
- **A Pilot study:** was carried out before data collection on six patients, or 10% of the total patients, in order to assess the applicability and clarity of the tools and gauge the amount of time needed to complete the data collecting forms. The study included the same sample that was chosen for the pilot study since the data from that investigation was examined and no modifications were made to the instruments used.

Content validity of the study tools was be reviewed by a jury of 5 expert in field (3 critical care nursing staff & two of anesthesiologist in faculty of medicine

Assiut to assess the clarity, The tools' viability, applicability, and content validity were assessed, and all required adjustments were made.

Reliability:
The internal consistency of the tool's component parts was assessed using the Cronbach's Alpha test to determine the reliability of the tools, The reliability of patient assessment tool was 0.73 and the reliability of patient complications outcomes tool was 0.79 which was accepted.

Ethical considerations:
The scientific research ethic committee at Assiut University's college of nursing gave this project ethical date 29/1/2023. The participating patients were fully informed about the purpose and methodology of the study before providing their informed consent. The researcher guaranteed the complete anonymity and confidentiality of the participants 'data. Additionally, the patients were assured of their right to withdraw from the study at any phase.

Data collection:
- The seven-month data collection period ran from August 2023 to February 2024.
- The researcher attended the mentioned setting six days per week from 8.30 am to 2pm to collect the data from the patients.
- The researcher greeted the patients, gave a brief explanation of the study's objective before any data was collected, and obtained the patients' verbal consent to participate in the study voluntarily.
- Data was obtained in an operation room unit from each patient underwent general anesthesia study during morning shifts, and patients were monitored until discharge.
- Data collection related to the demographic characteristics of the patients under study was conducted by using Tool I, Part (1).
- Data collection related to Hemodynamic assessment was conducted before, during and after anesthesia by using Tool I, Part (II) .
- Each patient who participated in the study was interviewed individually, the questionnaire was completed by the researcher who questioned the patients and documented their answer. The sheet was filled & completed before anesthesia by using Tool II.
- Data collection related to patient's risk factor was conducted using Tool II.
- Data collection related to patient's behavior was conducted using the agitated behavior scale in tool (III)
- Data collection related to complications of endotracheal tube and laryngeal mask were assessed during and after general anesthesia by using Tool IV, part (I), part (II).

- The researcher monitored the patients during and after anesthesia procedure.
- Comparison was done between two group to assess complication of subglottic and endotracheal tube

At the end of the study determine the rates of complication

Statistical analysis:

The statistical programs for the social sciences (SPSS) version 26.0 program were used to analyses all of the data., and Excel was used to produce the figures. The content of each tool was examined, classified, and the researcher coded it after that. Numbers and percentages were used to characterize categorical variables, whereas the mean and standard deviation (Mean, SD) were used to characterize continuous variables. The chi-square test was employed to compare categorical variables, while the t-test was utilized to evaluate continuous ones. A P-value of less than 0.05 was deemed significant. The analysis of multivariate logistic regression was done to investigate the independent significant predictors of EPS complications. Correlations was performed using Pearson correlation coefficient.

Limitations of the study :shortrange of number patients.

Results:

Table (1): Distribution of personal characteristics among studied group.

personal characteristics	ETT (n=30)		laryngeal mask (n=30)		Total (n=60)		P. value
	No	%	No	%	No	%	
Sex							
Male	11	36.7	16	53.3	27	45.0	0.194
Female	19	63.3	14	46.7	33	55.0	
Age group							
Less than 30 years	7	23.3	13	43.3	20	33.3	
From 30- 40 years	10	33.3	4	13.3	14	23.3	0.112
More than 40 years	13	43.4	13	43.4	26	43.4	
Mean±SD(range)	40.17±17.67(18-76)		37.13±16.17(18-64)		38.65±16.86(18-76)		0.491
Marital status							
Single	7	23.3	9	30.0	16	26.7	
Married	19	63.3	21	70.0	40	66.7	0.114
Widower	4	13.3	0	0.0	4	6.7	
Educational level							
Illiterate	15	50.0	8	26.7	23	38.3	
Diploma	12	40.0	17	56.7	29	48.3	0.174
Bachelor's	3	10.0	5	16.7	8	13.3	

Table (2): Mean ±SD Distribution Hemodynamic between Endotracheal tube and laryngeal mask Related to the patient pre, during and after anesthesia (No=60)

Hemodynamic	ETT			P. value	Laryngeal mask			P. value
	Pre anesthesia	During anesthesia	After anesthesia		Pre anesthesia	During anesthesia	After anesthesia	
	Mean ±SD	Mean±SD	Mean±SD		Mean±SD	Mean±SD	Mean±SD	
Pulse	81.8±4.91	91.67±21.0	81.37±4.21	0.003**	79.9±4.11	81.47±22.88	79.43±4.43	0.834
Temp	37±0	36.92±0.17	36.99±0.05	0.008**	37±0	36.99±0.07	37±0	0.372
SBB	116.67±6.0	88.33±11.7	113.33±6.0	0.000**	118±10.95	96.67±15.83	116.33±8.09	0.000**
DBB	74.67±5.71	53.67±8.5	72±5.51	0.000**	76.67±8.44	61±12.69	75.33±6.29	0.000**
Resp	12.2±0.61	12.1±1.42	12.07±0.37	0.843	12±0	13.37±2.4	12±0	0.000**
Sao2	98.13±0.51	94.33±4.92	98.77±0.43	0.000**	98.27±0.45	91.9±5.12	98.5±0.68	0.000**

Table (3): Percent Distribution of risk Factor Related to Endotracheal tube and laryngeal mask among studied group (N=60)

|	ETT (n=30)		laryngeal mask (n=30)		P. value
	No	%	No	%	
long duration of anesthesia (1.5h-3h)	26	86.7	21	70.0	0.117
Respiratory Disease	14	46.7	10	33.3	0.292
Chest infection	10	33.3	7	23.3	0.556
Chronic obstructive pulmonary disease	5	35.7	2	20.0	0.285
Bronchitis	0	0.0	0	0.0	-
Asthma	2	6.7	1	3.3	0.999
cardiovascular	10	33.3	6	20.0	0.243
hypotension	7	23.3	4	13.3	0.480
hypertension	3	10.0	2	6.7	0.996
Congestive heart failure	0	0.0	0	0.0	0.0
Myocardial infraction	0	0.0	0	0.0	0.0
Type of Inhalation					
Halothane	19	63.3	6	20.0	0.001**
Isoflurane	11	36.7	24	80.0	
hypothermia	0	0.0	0	0.0	0.0
Habits	2	6.7	12	40.0	0.002**
Smoking	2	6.7	9	30.0	0.045*
Drug abuse	0	0.0	3	10.0	0.122
Obesity	5	16.7	10	33.3	0.136
endocrine disease	4	10.0	7	23.3	0.184
Diabetes	3	10.0	7	23.3	0.283
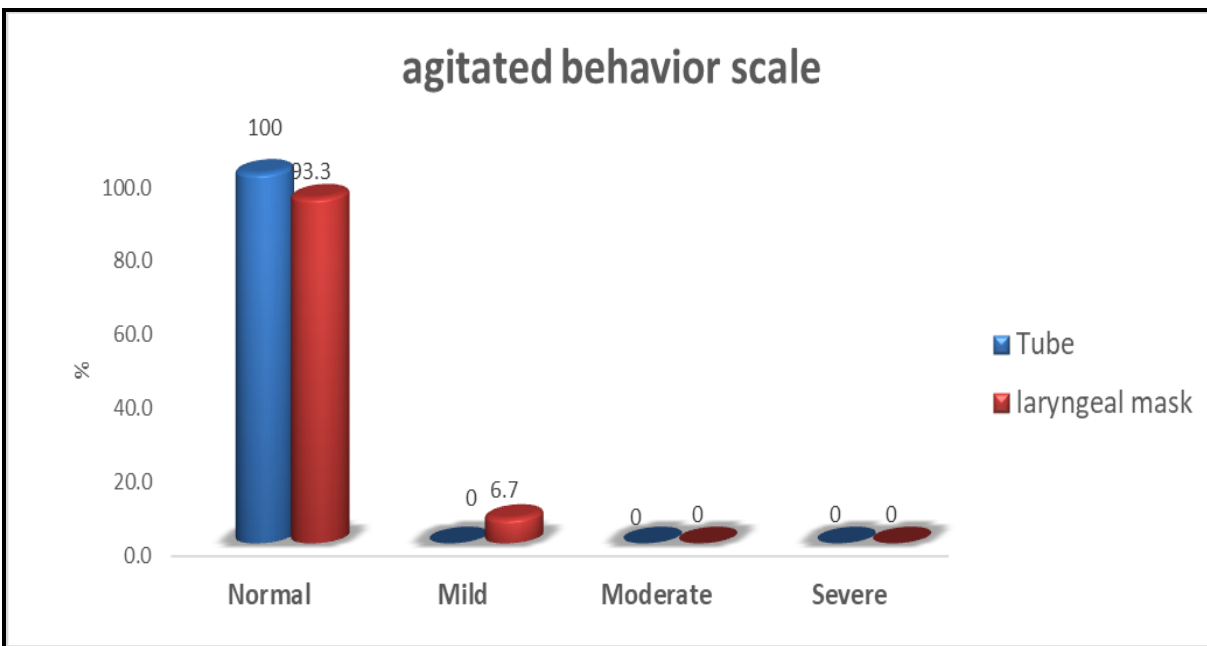
Figure (1): Relation between Endotracheal tube and laryngeal mask Related to the agitated behavior scale Level (n=60)
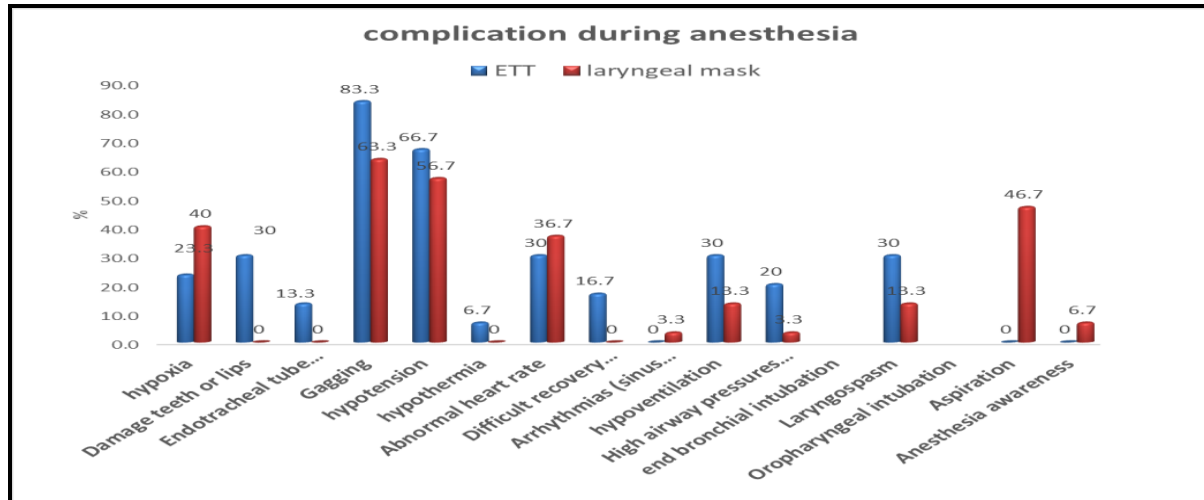
Figure (2): Percent distribution of complication Between Endotracheal tube and laryngeal mask during anesthesia.
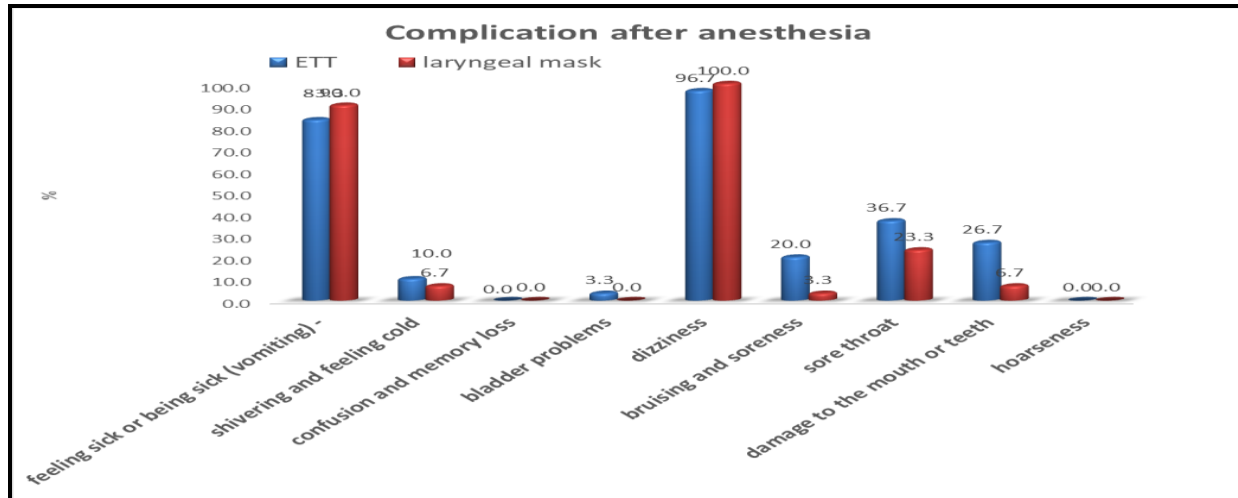

Figure (3): Percent distribution of complication between Endotracheal tube and laryngeal mask Immediately postoperative (n=60)

Table (4.a): Correlation co-efficient between patient`s risk factors and complications.

		long duration of anesthesia	Type of airway	Respiratory	cardiovascular	Type of Inhalation	habits	obesity	endocrine disease
Hypoxia	r	0.184	0.023	-0.044	-0.167	0.212	0.217	-0.145	0.075
	P	0.159	0.859	0.739	0.201	0.104	0.095	0.270	0.570
Damage teeth or lips	r	0.221	0.132	-0.057	-0.253	-0.118	-0.232	0.081	-0.066
	P	0.090	0.313	0.664	0.051	0.368	0.075	0.539	0.619
Endotracheal tube malfunction	r	0.141	-0.029	-0.218	.292	-0.181	-0.147	-0.154	-0.105
	P	0.284	0.825	0.094	0.024*	0.167	0.261	0.239	0.431
Gagging	r	0.140	0.230	0.108	0.108	-.280-	-0.024	0.000	0.072
	P	0.285	0.077	0.413	0.412	0.030*	0.857	1.000	0.586
Hypotension	r	-0.165	0.217	0.084	.320	-0.249	-0.132	-.257-	0.176
	P	0.208	0.096	0.524	0.013*	0.055	0.313	0.047*	0.183
Hypothermia	r	0.098	-0.122	0.227	-0.112	-0.220	-0.102	-0.107	-0.085
	P	0.458	0.355	0.081	0.394	0.092	0.436	0.415	0.524

		long duration of anesthesia	Type of airway	Respiratory	cardiovascular	Type of Inhalation	habits	obesity	endocrine disease
Abnormal heart rate	r	-0.229	-0.077	-0.072	0.213	0.167	-0.139	.408	0.075
	P	0.079	0.558	0.584	0.102	0.201	0.288	0.001*	0.570
Difficult recovery (prolonged duration, dysphoria)	r	0.159	0.066	0.000	-0.182	-.357-	-0.166	0.104	-0.137
	P	0.226	0.617	1.000	0.164	0.005*	0.204	0.427	0.299
Arrhythmias (sinus tachycardia, sinus bradycardia, others)	r	0.068	-0.085	-0.106	-0.079	0.110	0.236	-0.075	-0.059
	P	0.603	0.517	0.419	0.551	0.403	0.069	0.568	0.655
Hypoventilation	r	.277	0.097	0.066	-0.043	-0.048	.284	-.304-*	-0.228
	P	0.032*	0.460	0.616	0.746	0.716	0.028*	0.018	0.082

Table (4.b): Correlation co-efficient between patient`s risk factors and complications.

		long duration of anesthesia	Type of airway	Respiratory	cardiovascular	Type of Inhalation	Habits (smoking)	obesity	endocrine disease
High airway pressures (kinked or obstruction tube, pulmonary compliance)	r	0.191	-0.125	-0.085	-0.219	-0.114	-0.200	-0.090	-0.166
	P	0.143	0.343	0.520	0.093	0.385	0.125	0.494	0.210
Laryngospasm	r	-.313-	0.097	.314	0.049	-0.048	-0.099	-.304-	-0.022
	P	0.015*	0.460	0.015*	0.711	0.716	0.452	0.018*	0.868
Aspiration	r	-0.188	0.069	-0.048	-0.154	.306	.348	0.046	0.173
	P	0.150	0.601	0.714	0.239	0.017*	0.006*	0.730	0.191
Anesthesia awareness	r	0.098	-0.122	-0.152	.308	0.157	-0.102	.322	-0.085
	P	0.458	0.355	0.248	0.017*	0.231	0.436	0.012*	0.524
feeling sick or being sick (vomiting) -	r	0.032	-0.064	0.020	0.237	0.066	0.100	0.226	-0.085
	P	0.810	0.626	0.879	0.069	0.615	0.445	0.082	0.522
Shivering and feeling cold	r	0.159	-0.066	0.246	-0.182	-0.112	0.119	0.104	-0.122
	P	0.226	0.617	0.058	0.164	0.394	0.366	0.427	0.358
Bladder problems	r	0.068	-0.085	-0.106	-0.079	-0.154	-0.072	-0.075	-0.059
	P	0.603	0.517	0.419	0.551	0.240	0.586	0.568	0.655
Dizziness	r	-0.068	0.085	0.106	0.079	0.154	0.072	0.075	0.059
	P	0.603	0.517	0.419	0.551	0.240	0.586	0.568	0.655
Druising and soreness	r	0.191	-0.125	.339	0.016	-0.114	-0.078	0.030	-0.166
	P	0.143	0.343	0.008*	0.906	0.385	0.555	0.820	0.210
Sore throat	r	-0.185	0.127	-0.015	0.099	-.258-	0.069	-0.210	0.112
	P	0.156	0.334	0.910	0.453	0.046*	0.601	0.107	0.400
Damage to the mouth or teeth	r	0.235	0.098	-0.091	-0.067	0.015	-0.247	.258	-0.084
	P	0.070	0.458	0.488	0.609	0.909	0.057	0.046*	0.529

Table (1): Represent the personal characteristics among studied group; this study was conducted on 60 patients with a mean38.65±16.86 years old. Regarding sex, 53.3% of the patients under study were male, while 63.3% were female. The majority of studied patients (66.7%) were married. regarding age and gender, it was found that there was no significant difference between the two groups.

Table (2): Represent Distribution Hemodynamic Between Endotracheal tube and laryngeal mask before, during and after the anesthesia and show that there was a significant difference in respiration between the two groups, systolic blood pressure, diastolic blood pressure during anesthesia with p value (0.01,0.02,0.01), diastolic blood pressure after

anesthesia using p-value 0.03, there was no significant difference to others.

Table (3): Represent the risk factor of studied group Regarding long duration of anesthesia 86.7 nearly half of patients in endotracheal tube. approximately one third of studied patients (33.3%) were diagnosed with Chest infection. Major Type of Inhalation (80%) were isoflurane. Regarding smoking about (30%) of the studied patients were smoking and Regarding Obesity about (33.3%) of the studied patients were obesity. demonstrate that smoking and type of inhalation differed significantly between the two groups (p-value: 0.001, 0.045), but other risk factors did not differ significantly.

Figure (1): This figure Illustrated major of various behavior were normal with mean 16.02±2.89, that the two groups' differences were statistically significant Impulsive, impatient, having a poor pain or frustration threshold, being uncooperative, demanding, or resistant to care, Uncooperative, resistant to care or demanding with p value (,0.036,0.038, 0.038)

Figure (2) This figure Illustrated the incidence of complication occurred with the both methods endotracheal tube and laryngeal mask nearly one third (30%) had Damage teeth or lips, while four patients (13.0%) experienced endotracheal malfunction, and total abnormal heart rate (33.3%), Regarding Aspiration major occurred (46.7%) in laryngeal mask.

Figure (3): This figure illustrated the various complications experienced by studied patient. Feeling sick (vomiting) occurred as total (86.7%), while three of patients had shivering and feeling cold, approximately one third (36.7%) had sore throat.

Table (4.a): Shows there were significant difference between risk factors and complication regarding the presence correlation endotracheal tube malfunction to cardiovascular with p-value 0.024, gagging to type of inhalation with p-value 0.030, hypotension to cardiovascular with p-value 0.013, abnormal heart rate to obesity with p-value 0.001, difficult recovery to type of inhalation with p-value 0.005, hypoventilation to long duration of anaesthesia and obesity with (p-values of 0.032, 0.018).

Table (4.b): Shows there were significant difference between risk factors and complication regarding the presence correlation Laryngospasm to long duration of anaesthesia, respiratory and obesity with p-value (0.015, 0.015, 0.018), aspiration to type of inhalation with p-value 0.017, Anaesthesia awareness to cardiovascular and obesity with p-value (0.017, 0.012), bruising and soreness to respiratory with p-value 0.008, sore throat to type of inhalation with p-value 0.04.

Discussion

The LMA can be beneficial, particularly in patients with severe stenosis where it may be impossible to position the ETT due to extreme airway narrowing. Additionally, mechanical trauma, swelling, bleeding, and subsequent airway occlusion are associated with endotracheal intubation; in contrast, the LMA does not put mechanical stress on the newly sutured airway and does not compromise its blood supply. Additionally, while the patient is coming out of anesthesia, the LMA reduces the chance that they will cough. **Menna., et al (2021)**

The current study was designed to assess complications and risks of subglottic and endotracheal tube for patients undergoing general anesthesia through the following items:

Demographic data:

The current investigation confirmed that the majority of the patients in the investigated age group were married and that the largest percentage of them were over forty years old. These results are in line with research done by **Lakshmi., et al (2023)** who found that Most of the people of the study participants were between the ages of 31 and 50

The results of this study showed that women made up more than half of the sample. This may attribute this type of airway are more suitable for female than male. This observation is supported by the finding in a study carried out by **Liu., et al (2019)** who found that, more than half of the studied patients were females. There was no significant difference in sex, age, weight.

Regarding these risk factors, the current study stated that the majority of patient who had endotracheal tube had long duration of anesthesia. These findings are similar to a study conducted by **(Nowak & Schemitsch,2019)** who found that, an operating time of more than 90 minutes may be an independent predictor of major and minor complications and that an operating time of between 40 and 90 minutes may be ideal.

This finding is similar to a study done by **Menna., et al (2021)** This retrospective investigation showed that the LMA strategy required less time to operate than the ETT approach. Type of inhalation especially is occurrence for the patients underwent laryngeal mask as he noticed about forty percent of these individuals' experiencing complications, and these outcomes were consistent with **Alshami., et al (2023)** who reported that when using isoflurane, the most occurring side effect which is hypotension with the percentage of 42.9%.

Concerning smoking, the current study identified a statistically significant difference between endotracheal tube and laryngeal mask, with a p-value of (0.045). This finding aligns with the results of a

study by **Swerdlow, (2020)** who found an acknowledged workplace risk for those who work in operating rooms is surgical smoke. **Regarding obesity,** the results of the current study indicate that approximated one third of the studied patients were obese had laryngeal mask, this meaning the laryngeal mask more suitable for patients who obesity. This finding is consistent with the study conducted by **Aryafar., et al (2021)** who found that, the average BMI of the patients was 24.4 that the majority of the patients in the study were overweight.

Regarding complications during anesthesia the current study showed that approximately 30% of the people under investigation had oral and dental problems**.** The current study showed that approximately 30% of the people under investigation had oral and dental problems as complications of endotracheal tube during anesthesia, this may attribute during multiple maneuvers of insertion endotracheal to patients, this result agreed with **Neto., et al (2023)** who reported that the tracheal intubation with a laryngoscopy was considered a leading cause of dental injury.

Regarding Difficult recovery the current study identified a statistically significant difference was related to difficult recovery p-value of (0.020) the study conducted by **Al Saeg., et al (2021)** who found that there is a relationship between the length of intubation and its complexity in relation to the proportion of laryngeal injury. In my opinion the length of time and complexity of intubation have an impact on the difficulties of recovery.

Regarding High airway pressures the current study found that High airway pressures (kinked or obstruction tube, pulmonary compliance) related to endotracheal tube during anesthesia was twenty percent this finding in agreement with **Paramaswamy, (2019)** who reported that after the insertion of an endotracheal tube (ETT), insufficient ventilation or oxygenation is obtained. Once alternative explanations such tube kinking, patient biting, or capnography side stream obstruction have been ruled out, this situation presents itself.

Regarding Aspiration the current study revealed that sore throat more common in endotracheal tube than laryngeal mask, the study conducted by **Hung.,et al(2022)** who found that a lower sealing pressure and a higher incidence of stomach insufflation were two of the observed drawbacks of LMA compared to ETT

Regarding complications Immediately postoperative the current study found that complication of studied patients underwent general anesthesia was sore throat following LMA would be less This finding in agreement with **Aryafar., et al (2021)** who reported that We hypothesized that incidence of Following LMA, there would be fewer

sore throats, which would be linked to less postoperative throat pain and happier patients. Age, sex, and BMI did not significantly correlate with the incidence of sore throat following LMA administration (P > 0.05). In our study, patients who had general anesthesia during surgery reported having minor postoperative sore throats after LMA. Following LMA, there would be fewer sore throats, which would be linked to less postoperative throat pain and happier patients. Age, sex, and BMI did not significantly correlate with the incidence of sore throat following LMA administration (P > 0.05). In our study, patients who had general anesthesia during surgery reported having minor postoperative sore throats after LMA.

In addition, the exiting study showed **positive correlation between abnormal heart rate to obesity** this result matched with **Koliaki et al., (2019)** study who found that the cardiovascular system's structural and functional modifications brought on by obesity to accommodate excess body weight mediate direct consequences., obesity induces adverse hemodynamic effects and modifications in cardiovascular.

In opinion, patient who risk factor obesity impact various complication. These finding are comparable to a study carried out by **Seyni-Boureima et al., (2022)** The presence of obesity increases the risk for surgical and postsurgical complications.

The current investigation revealed a significant **positive correlation among type of inhalation, Gagging and aspiration**. This observation is supported by the finding in a study carried out by **Hays, (2020)** During inhalation of volatile anesthetic agents can produce airway irritation and may precipitate coughing, patients are particularly prone to laryngospasm, emesis, and aspiration of gastric contents.

In the study showed **positive correlation between long duration of anesthesia and hypoventilation** these finding are similar to a study conducted by **Tanveer et al., (2024)** who found that, Long-duration procedures are associated with greater complication rates.

Conclusion:

The application of Laryngeal mask airway has a lower incidence of complications, according to the current study the incidence of complication respiratory adverse events (aspiration) Under general anesthesia, Laryngeal mask airway is less than Endotracheal tube. We believe that the Laryngeal mask airway may be an alternative airway device to Endotracheal tube in minor surgery. While endotracheal tube with major surgery.

Recommendations:

Before surgery, give patients health education, and have nurses properly prepare the patients for the procedure, Give Long-term Follow-up to assess the persistence of complications and the overall recovery process.

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