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A prospective comparative analysis comparing the I-GEL and ILMA supraglottic bronchioles for blind endotracheal intubation

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Objectives and Background: This study evaluates the effectiveness of the I-GEL and ILMA supraglottic airway devices as conduits for emergency ventilatory devices and blind endotracheal intubation in challenging intubation scenarios, while also comparing the insertion timings of each device.
Material and Methods: This study used a comparative prospective research design. The study was conducted from January 2012 to December 2012 at the Department of Orthopedics, ANNAII Medical College and Hospital, Chennai, Tamil Nadu, India. Forty patients were involved in this study. This study, which was approved by the institutional ethical committee, had 40 patients undergoing elective surgery while under general anesthesia. Written, freely given consent was given by each subject.
Results: Demographics, ease of insertion, number of attempts and duration for SAD insertion, number of attempts and length for ETT insertion, failure, and postoperative sore throat and dysphasia were compared using chi-square and Fisher's exact tests.
Conclusion: There are others who contend that when it comes to emergency rescue ventilation and blind endotracheal intubation, ILMA is a better option than I-GEL.

Keyword: Easy insertion, supraglottic airways, blind endotracheal, intubation

1. Introduction

Maintaining an open airway is the main responsibility and aim of every anesthesiologist. The issues about tracheal intubation and poor breathing that have arisen since the introduction of endotracheal intubation are not necessary. Since most people lack the skills or tools needed to handle emergency circumstances, airway mismanagement is a regular occurrence [1]. An alternative to endotracheal intubation for oxygenation and ventilation is the use of a supraglottic airway device. Above the glottis and covering the larynx is something supraglottic. In certain literary works, these objects are also referred to as extraglottic devices [2].

The purpose of the device was to lessen the requirement for ETT insertion and, consequently, the danger of airway morbidity brought on by tracheal intubation. Later on, the brain tried a number of mask airway configurations for the larynx. Under local anesthesia, he conducted his own independent research and testing of the

gadget, and he published his findings in several scholarly journals. Another researcher interested in these devices, Dr. Chandy Verghese, developed several theories and technical methods, such as the Chandy's manoeuvre [3-5], for inserting them into patients' airways.

Supraglottic airway devices are situated in between an endotracheal tube and a face mask in terms of size, invasiveness, technique, and ease of insertion. These devices are in handy during cardiac resuscitations, for emergency situations, and for people who are experiencing trouble breathing [6, 7]. Although they don't operate inside the trachea, they do aid in sealing the airway.

These days, supraglottic airway devices—which are essential parts of intricate, contemporary airway algorithms—are used to provide the vast majority of general anesthetics. Certain supraglottic airway devices are utilized for blind or fiberoptic bronchoscopy-guided intubations. These devices are being used by more and more emergency medical technicians and anesthesiologists to revive patients who have impaired airways [8, 9].

Methodology: This study used a comparative prospective research design. The study was conducted from January 2012 to December 2012 at the Department of Orthopedics, ANNAII Medical College and Hospital, Chennai, Tamil Nadu, India. In this investigation, which was carried out with the institutional ethical committee's approval, general anesthesia was used for 40 patients having elective surgery. Each and every participant voluntarily provided written, informed consent.

Thirty minutes prior to induction, the patient received intravenous dosages of metoclopramide (10 mg) and ranitidine (50 mg), after which they were brought to the operating room. Ringer lactate solution was started once an IV was inserted. The common displays were networked.

Results

In a prospective non-randomized, double-arm, single-blinded investigation, the efficacy of the supraglottic airway devices I-GEL and ILMA as emergency ventilatory devices and their ability to serve as a conduit for blind intubation were compared. Every detail was compiled and computed.

Table 1: Groups used for the study

Groups	Intervention	Number
ILMA Group	After three minutes of ventilation, ILMA (20) is placed, then blind ETT intubation follows.	20
I-GEL Group	I GEL (20) was inserted after three minutes of breathing was completed, and blind ETT intubation came next.	20

All of the data were summarized using descriptive statistics, and the outcomes were shown as means and percentages. There were valid statistical tests conducted for comparison. The unpaired t test was used to evaluate the continuous variables. The Fisher Exact Test and the Chi-Square Test were used to analyze categorical data.

Patients in the ILMA group had a mean age of 30.50, with the vast majority falling into the 21-30 year old range. Patients in the I-GEL group were mostly between the ages of 21 and 30 (the class median), with a mean age of 30.60 years. Relationships between different groups in the intervention groups.

Table 2: Age wise group distribution

Sr. No.	Age Groups	ILMA Group	I-GEL Group
1.	≤ 20	02	02
2.	21 to 30	08	09
3.	31 to 40	03	03
4.	41 to 50	02	05
5.	51 to 60	05	01
	Total	20	20

Table 3: Gender wise group distribution

Sr. No.	Gender	ILMA Group	I-GEL Group
1.	Male	15	14
2.	Female	05	06
	Total	20	20

As one might guess from its name, the majority of the patients in the ILMA group were female. As one might guess from its name, the majority of patients in the I-GEL group were female. The relationship among the various intervention groups.

Table 4: ASA wise group distribution

Sr. No.	ASA	ILMA Group	I-GEL Group
1.	ASA 1	16	18
2.	ASA 2	04	02
	Total	20	20

In the I-LMA group, most of the patients were categorized as ASA 1 patients. Most of the individuals included in the i-Gel group were also considered to be ASA 1 patients. Most people would agree that there isn't a statistically significant correlation between the intervention groups and whether ASA is present or not.

Table 5: Weight wise group distribution

Sr. No.	Weight (Kg)	ILMA Group	I-GEL Group
1.	≤ 40	01	02
2.	41 to 50	02	03
3.	51 to 60	12	13
4.	61 to 70	05	02
	Total	20	20

With a mean weight of 57.10 kg and an age range of 51 to 60 kg, most of the patients in the ILMA group fell in between those two weight ranges. Intergroup links in the intervention groups: The I-GEL group's patients, with a mean weight of 54.13 kg, were mostly between the 51 and 60 kg weight range.

Table 6: Height wise group distribution

Sr. No.	Height (cms)	ILMA	I-GEL
1.	≤ 150	2	1
2.	151 to 160	16	18
3.	161 to 170	2	1
	Total	20	20

The bulk of the patients in the ILMA group were between 151 and 160 cm tall, with a mean height of 156.73 centimeters. With a mean height of 156.73 cm, the majority of patients in the I-GEL group were in the range of 151-160 cm in terms of height. It is acknowledged that there is a relationship between the various intervention groups' height distributions.

Table 7: Diagnosis wise group distribution

Sr. No.	Diagnosis	ILMA	I-GEL
1.	1 Infertility	2	2
2.	2 Infertility	1	0
3.	Dermoid Cyst Scapula	1	2
4.	DUB	2	0
5.	Fibroadenoma	4	4
6.	Lipoma	2	0
7.	P2L2	2	1
8.	Subacute Appendicitis	3	2
9.	Tuberculosis Abscess	1	4
10.	Others	2	5
	Total	20	20

Table 8: Procedure wise distribution

Sr. No.	Procedure	ILMA	I-GEL
1.	DHL	2	2
2.	Excision	0	1
3.	Fractional Curettage	2	1
4.	Lap Appendicectomy	0	2
5.	Lap Cholecystectomy	4	4
6.	Lap Hernia Repair	0	2
7.	Lap Sterilization	1	2
8.	Diagnostic Lap	2	3
9.	ORIF	4	1
10.	Others	5	2
	Total	20	20

Table 9: Ease of insertion score

Sr. No.	Ease of Insertion Score - Groups	ILMA Group	I-GEL Group
1.	Score 1	2	21
2.	Score 2	15	9
3.	Score 3	13	0
	Total	20	20

In the ILMA group, the majority of participants assessed the ease of insertion as 2. The majority of I-Gel patients ranked the ease of insertion as 1. It is considered that the ILMA group exhibits a lower frequency of the Easy of Insertion Score 2 when compared to the I-GEL group. The ILMA group exhibited a considerably lower occurrence of ease of insertion score 1 in comparison to the I-GEL group. This disparity is significant, real, and not accidental. When it came to ease of insertion and performance as a conduit for blind

end tracheal intubation, the I-GEL group in this trial consistently and significantly performed lower than the ILMA group.

Discussions

Proficiency in airway control is crucial, but a broad variety of abilities is needed to provide professional anesthetic care. Correct airway evaluation, cautious patient selection, preoperative optimization, the use of personnel with the necessary training and expertise, and the application of safe airway management tools and technology are just a few of the components that must come together in order to manage a challenging airway [10, 11]. Following anesthesia, the most common causes of morbidity are issues related to mask breathing and intubation. In 1-4% of cases, tracheal intubation is problematic. In the past few years, a lot of research and development has gone into creating tools that help people who have trouble breathing and opening their airways. The main problems are caused by either insufficient ventilation, oxygenation, or both. Scientists and medical professionals have been looking for instruments and strategies to address the problem of difficult breathing and oxygenation for the last 20 years [12].

In situations where breathing is in danger, devices with difficult airways, including supraglottic airway devices, can save lives. Supraglottic airway devices are being utilized more often as a last resort in the emergency medicine and anesthesiology fields for patients who are difficult to ventilate or intubate. The effectiveness of supraglottic airway devices as blind or fiberoptic guided endotracheal intubation routes and emergency rescue airways has been the subject of numerous research. This study evaluated the I-GEL and ILMA supraglottic airway devices' ease of insertion and evaluated their efficacy as conduit devices for tracheal intubation in challenging intubation scenarios, as well as emergency rescue airway devices [13, 14].Contrary to the conclusions of Halwagi *et al.* and Sastre *et al*., the study by Bhandari *et al.* showed that the first-attempt success rate for blind tracheal intubation was comparable in both groups. Of the two groups, the i-gel group performed better on the second try than the ILMA group did. According to studies by Bhandari *et al*. [15, 16], it took the ILMA group 30.68 seconds and the I-GEL group 20.41 seconds to successfully intubate a patient.

In my study, 22 patients who used ILMA were successfully intubated on their first attempt, compared to just one patient who used I-GEL. A repeat attempt was necessary for five individuals in the ILMA group and for eighteen patients in the I-GEL group. A third attempt was necessary for eight patients in the I-GEL group but not for any patients in the ILMA group. Three patients in the ILMA group were not intubated because it took more than three attempts to insert the SAD. In the I-GEL group, three patients experienced unsuccessful intubations. P value for Fisher's exact test of significance was 0.0001. Out of the twenty-eight patients in the ILMA group, just two took more than ten seconds to finish the intubation procedure. In less than ten seconds, the intubations of only four out of the twenty-three patients in the I-GEL group were finished. In the I-GEL group, three patients experienced unsuccessful intubations. An unpaired t test's p value was similarly significant (0.0001), which leads one to believe that blind intubation with ILMA was preferable to I-GEL [17, 18].

It was demonstrated by Bhandari *et al*. that 100% of the time, both the ILMA and I-GEL groups were successful. Only three patients in the ILMA group in my study needed more than three tries to insert a SAD; the other patients were not tried and were deemed failures. On their first or second try, all 30 patients included in the I-GEL group had their implants placed successfully. We may conclude that there is no statistically significant correlation between the groups and SAD success or failure because the great majority of individuals in each intervention group had a successful SAD implantation. In reality, by using cricoid pressure for I-GEL and inverting the tubes for ILMA, this was achieved on the first or second attempt [19, 20].

With the exception of three patients in the I-GEL group who required more than three attempts and whose duration exceeded 20 seconds, the majority of patients in both groups (ILMA and I-

GEL) were effectively intubated. Fisher's exact test revealed that the p value for the association between the intervention groups and failure of blind endotracheal intubation status was not significantly different from 0.05, despite the fact that the majority of patients in both the I-GEL and ILMA groups underwent SAD-guided blind endotracheal intubation [21].

In the Bhandari *et al*. trial, no one had any sore throats or trouble swallowing. In the Keijer *et al*. trial, the incidence of sore throat was considerably higher in the ILMA-treated group. Sameer *et al*. discovered that the ILMA group had a higher prevalence of dysphonia. Merely five out of the fourteen patients in the I-GEL group that I studied said that the treatment caused any kind of sore throat or trouble swallowing. With a p-value of 0.0125, the result demonstrated statistical significance. A relationship between the intervention groups and the postoperative dysphagia/sore throat status is necessary for statistical significance (p 0.05). According to Fisher's exact test, postoperative painful throat and dysphagia are more common in ILMA patients.

Conclusion

According to the study's findings, I-GEL is a better emergency ventilator and ILMA is a better conduit for blind endotracheal intubation. The evidence backs up these two assertions. This leads one to conclude that ILMA is a superior airway device to I-GEL for emergency rescue ventilation and a superior conduit for blind endotracheal intubation. Both of these assertions are valid.

Conflict of Interest

None

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