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A prospective comparison study comparing the supraglottic airway devices i-gel and ilma for blind endotracheal intubation

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Abstract
Objectives and Background: This study compares the insertion times of the I-GEL and ILMA supraglottic airway devices and assesses their efficacy as conduits for blind endotracheal intubation and emergency ventilatory devices in difficult intubating situations.
Material and Methods: This study was a prospective comparative one. The Prathima Institute of Medical Sciences, Karimnagar, Telangana, India, hosted the study from January 2015 to August 2015. 40 patients were employed in this investigation. 40 patients who were having elective surgery under general anaesthesia participated in this study, which was carried out with institutional ethical committee approval. All patients provided their written, voluntarily informed consent.
Results: Chi-square and fisher's exact tests were used to compare demographics, ease of insertion, number of attempts and duration for SAD insertion, number of attempts and duration for ETT insertion, failure, and postoperative sore throat and dysphasia.
Conclusion: Some have argued that ILMA is preferable to I-GEL as a conduit for blind endotracheal intubation and as a device for emergency rescue ventilation.

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

Introduction
Any anesthesiologist's primary duty and goal is to keep the airway open. Since the advent of endotracheal intubation, tracheal intubation and inadequate breathing have caused concerns that aren't essential. Airway mismanagement is common because most people do not have the necessary training or equipment to deal with emergency situations [1]. The use of a supraglottic airway device can aid in oxygenation and ventilation without resorting to endotracheal intubation. Something supraglottic covers the larynx and sits above the glottis.
These items are also known as extraglottic devices in some literature [2, 3].
The device was made to reduce the need for ETT insertion and, by extension, the risk of airway morbidity associated with tracheal intubation. Some time later, the brain experimented with several mask airway designs for the larynx. He did his own study and testing of the device independently while under local anesthesia, and he published his findings in a number of academic journals. Dr. Chandy Verghese, another researcher with an interest in these devices, came up with a number of hypotheses and technological procedures, like the Chandy's manoeuvre [4, 5], for introducing them into patients' airways.
Supraglottic airway devices lie between a face mask and an endotracheal tube in terms of anatomical position, size, invasiveness, method, and insertion capability. These devices are helpful for those who are having difficulty breathing, in cases of emergency, and during cardiac resuscitations [6, 7]. They function outside the trachea but help create an airtight airway.
Presently, the administration of the great majority of general anesthetics involves the use of supraglottic airway devices, which are integral components of modern, complicated airway algorithms. Some supraglottic airway devices are used for intubation that is either blind or guided by fiberoptic bronchoscopy. An increasing number of anesthesiologists and emergency medical personnel are turning to these devices for use in resuscitating patients with compromised airways [8, 9].

Materials and Methodology
This study was a prospective comparative one. The Prathima Institute of Medical Sciences, Karimnagar, Telangana, India, hosted the study from January 2015 to August 2015. This study, which was conducted with the agreement of the institutional ethics committee, involved

40 patients undergoing elective surgery under general anesthesia. All participants willingly gave their written informed consent.

The patient was given intravenous doses of Ranitidine (50 mg) and Metoclopramide (10 mg) 30 minutes before induction, and then taken to the operating room. After an IV was placed, ringer lactate solution was started. Common displays were interconnected.

Results

The effectiveness of the supraglottic airway devices I-GEL and ILMA as emergency ventilatory devices and their capacity as conduit for blind intubation was compared in a prospective non-randomized, double-arm, single-blinded, comparative experiment. Everything was gathered and calculated.

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

Descriptive statistics were used to summarize all data, and the results were displayed as means and percentages. Valid statistical tests for comparison were performed. The continuous variables were analyzed with the use of the unpaired t test. Analyses of categorical variables were performed using the Chi-Square Test and the Fisher Exact Test.

Table 2: Age wise group distribution

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

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 3: Gender wise group distribution

Sr. No.	Gender	ILMA Group	I-GEL Group
1.	Male	16	15
2.	Female	04	05
	Total	20	20

The ILMA group consisted of primarily female patients, as expected given its name. The I-GEL group consisted primarily of female patients, as expected given its name. the connection between the different 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

The majority of the patients in the I-LMA group were classified as ASA 1 patients. The majority of patients who were assigned to the i-Gel group were also classified as ASA 1 patients. It is generally agreed upon that there is no statistically significant link between the intervention groups and the presence or absence of ASA.

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

The majority of the patients in the ILMA group, which had a mean weight of 57.10 kg and ranged in age from 51 to 60 kg, were between those two weights ranges. Intergroup connections in the intervention groups the majority of the patients in the I-GEL group had a weight ranging from 51 to 60 kg, with a mean weight of 54.13 kg.

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

Patients in the ILMA group had a mean height of 156.73 centimeters, and the majority of those patients were between 151 and 160 centimeters tall. The majority of the patients in the I-GEL group, with a mean height of 156.73 cm, fell within the range of 151-160 cm when it came to their height. It is taken into consideration that there is a correlation between the height distributions of the different intervention groups.

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

Table 9: Ease of insertion score

Sr. No.	Ease of Insertion Score - Groups	ILMA Group	I-GEL Group
1.	Score 1	1	21
2.	Score 2	16	9
3.	Score 3	13	0
	Total	20	20

A vast majority of people in the ILMA group rated the ease of insertion as 2. The insertion ease was rated as 1 by the vast majority of i-Gel patients. The fact that the Easy of Insertion Score 1 is observed to be less frequent in the ILMA group compared to the I-GEL group is taken into account. When comparing the ILMA and I-GEL groups, the ILMA group had a significantly lower occurrence of ease of insertion score 1. This discrepancy is real, noteworthy, and not coincidental. In this study, the I-GEL group scored considerably and consistently worse than the ILMA group when evaluating the ease of insertion and as a conduit for blind end tracheal intubation.

Discussion

Professional anesthesia care requires a wide range of skills, but one of the most important is expertise in airway management. Managing a challenging airway calls for a number of factors to come together, including correct airway evaluation, careful patient selection, preoperative optimization, the use of personnel with appropriate training and expertise, and the utilization of safe airway management tools and technology [10, 11]. Intubation and mask ventilation complications predominate as the leading causes of morbidity following anesthesia. Tracheal intubation is complicated for 1-4% of people. There has been a lot of research and development in recent years into devices that can aid with breathing and airway opening for those who have difficulty doing so. Primary issues stem from inadequate oxygenation, ventilation, or both. For the past two decades, scientists and clinicians have sought out tools and methods to alleviate the issue of challenging breathing and oxygenation [12].

Products like supraglottic airway devices can save lives in critical situations and with difficult airways. There has been a rise in the usage of supraglottic airway devices in the fields of anesthesiology and emergency medicine as a last resort for patients who are difficult to intubate or ventilate. The effectiveness of supraglottic airway devices as emergency rescue airways and as a pathway for blind or fiberoptic guided endotracheal intubation has been the subject of a great deal of research. This study compared the I-GEL and ILMA supraglottic airway devices for their ease of insertion and evaluated their performance as conduit devices for tracheal intubation under challenging intubation conditions and as emergency rescue airway devices [13, 14].

The study by Bhandari *et al*. indicated that the first-attempt success rate for blind tracheal intubation was comparable in both groups, contradicting the findings of Halwagi *et al*. and Sastre *et al*. Among both groups, the i-gel group had a higher rate of success on the second attempt than the ILMA group did. It took the ILMA group 30.68 seconds and the I-GEL group 20.41 seconds to successfully intubate a patient, according to research by Bhandari *et al*. [15, 16].

In my study, just one patient who used I-GEL was successfully intubated on the first try, while 22 patients who used ILMA were successful on the first try. Five patients in the ILMA group required a second attempt, while 18 patients in the I-GEL group did. Eight patients in the I-GEL group required a third attempt, but none in the ILMA group did. Due to the necessity for more than three attempts to insert the SAD, three patients in the ILMA group were not intubated. Three patients in the I-GEL group had failed intubations. Fisher's exact test for significance showed a p value of 0.0001. Only two patients in the ILMA group required more than ten seconds to complete the intubation process, out of a total of twenty-eight. Only four of the twenty-three patients in the I-GEL group had their intubations completed in less than ten seconds. Three patients in the I- GEL group had failed intubations. Due to the fact that the p value from an unpaired t test was similarly significant (0.0001) [17, 18], it may be concluded that blind intubation with ILMA was superior to I-GEL.

Bhandari *et al*. showed that both the I-GEL and ILMA groups were successful one hundred percent of the time. In my study, only three patients in the ILMA group required more than three attempts to insert a SAD; these people were not attempted and were considered failures. All 30 patients assigned to the I-GEL group had successful implant placement on the first or second attempt. Since the vast majority of people in each intervention group had a successful SAD implantation, we may conclude that there is no statistically significant association between the groups and SAD success/failure. As a matter of fact, this was accomplished on the first or second try by applying cricoid pressure for I-GEL and inverting the tubes for ILMA [19, 20].

The majority of patients in both groups (ILMA and I-GEL) were successfully intubated, with the exception of three patients in the I-GEL group who required more than three attempts and whose duration exceeded 20 seconds. Although the majority of patients in both the I-GEL and ILMA groups underwent SAD-guided blind endotracheal intubation, the p value for the association between the intervention groups and failure of blind endotracheal intubation status was not significantly different from 0.05 (Fisher's exact test) [21].

No participants in the Bhandari *et al*. study experienced any difficulty swallowing or sore throats. In the study conducted by Keijer *et al*., those who were given ILMA had a significantly higher rate of developing a sore throat. Sameer *et al*. found that the prevalence of dysphonia was greater in the ILMA group. In my research, only 5 of the 14 patients in the I-GEL group reported experiencing any sort of throat discomfort or difficulty swallowing due to the treatment. Obtaining a p value of 0.0125, the finding was statistically significant. Statistical significance (p 0.05) requires a link between the intervention groups and the postoperative dysphagia/sore throat status. Fisher's exact test indicates that ILMA has a higher risk of postoperative sore throat and dysphagia [21-23].

Conclusion

It was determined that ILMA is a superior conduit for blind endotracheal intubation and I-GEL is superior as an emergency ventilator due to the results of the study. These two claims are supported by the evidence. Conclusions that ILMA is a better airway device than I-GEL for emergency rescue ventilation and a better conduit for blind endotracheal intubation can be drawn from this. These two claims both hold water.

Conflict of Interest

None

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