Section: Anaesthesiology

Original Research Article

COMPARISON OF SUCCESS RATE OF BLOCKBUSTER® VERSUS I-GEL® LMA AS CONDUIT FOR BLIND ENDOTRACHEAL INTUBATION

Fauzia R. Khan[1], Ritika Jindal[2], Preeti Sharma[3], J.C Dureja[1], Ajaypal Singh Thind[4]

[1]Professor, Kalpana Chawla Government Medical College, Karnal, Haryana, India
[2]Associate Professor, Kalpana Chawla Government Medical College, Karnal, Haryana, India.
[3]Assistant Professor, Kalpana Chawla Government Medical College, Karnal, Haryana, India.
[4]Junior Resident, DNB Anaesthesia, Kalpana Chawla Government Medical College, Karnal, Haryana, India

Received : 15/04/2023
Received in revised form : 09/05/2023
Accepted : 22/05/2023

Keywords:
Blockbuster®, I-gel®, supraglottic airway device, tracheal intubation

Corresponding Author:
Dr. Ritika Jindal,
Email: ritikajindal86@gmail.com

DOI: 10.47009/jamp.2023.5.3.241

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (3); 1177-1183

Abstract

Background: Supraglottic airway devices are increasingly being considered as a conduit for endotracheal intubation. The present study was designed to compare two different supraglottic airway devices, Blockbuster® LMA and I-gel® LMA as a conduit for endotracheal intubation. **Materials and Methods:** This was a prospective observational comparative study. A total of 110 patients were observed for a period of 2 years, with 55 patients each in Group B (Blockbuster®LMA) and Group I (I-gel® LMA).After induction of anaesthesia, LMAs were inserted and on achieving adequate ventilation, fibreoptic bronchoscopy was done to determine postion of LMA as well as to assess the glottis visualisation score. After that blind intubation was attempted through the LMA. The primary aim was comparison of the two LMAs with regard to first attempt success rate of tracheal intubation. Secondary outcomes assessed were ease and time of insertion of each of the LMAs, time for intubation, hemodynamic changes associated with insertion of devices as well as to compare the post operative complications if any in the first 24 hours. **Result:** The first attempt success rate of tracheal intubation was 92.7% in Group B and 81.8% in Group I (P = 0.118), while the overall success rate of intubation was 96.3% in Group B and 83.6% in Group I (P = 0.788). The time for LMA insertion was similar in both the groups. The time for intubation was lesser in Group B (21.90 ± 5.59 s) compared to (24.45 ± 4.59 s) Group I(P = 0.010). **Conclusion:** Time required for insertion as well as ease of insertion was comparable for both LMAs. However Blockbuster® LMA requires lesser time for intubation and has better haemodynamic profile as compared to I-gel® LMA. Also time required for removal of LMA after intubation was lower in Blockbuster® LMA. Post operative complications were comparable in both LMAs.

INTRODUCTION

Endotracheal intubation is a skill used by anaesthetists to secure a patient's airway while providing oxygen and ventilation. Managing a difficult airway when inducing anaesthesia is one of the most challenging task for anaesthesia professionals. Supraglottic airway devices (SADs) have been an integral part for the management of difficult airway situations as ventilating devices.[1] The newer generation SADs are being not only used as ventilating devices but also as a conduit for blind as well as planned fiberoptic guided endotracheal intubation. Nowadays, there is a greater interest in newer generation SADs to be used as conduit for blind endotracheal intubation as it may help to tackle the "cannot ventilate cannot intubate " situation and can be life saving in difficult airway situations. These SADs therefore may help bridge the gap between ventilation and intubation. SADs with intubation conduit are also recommended by All India Difficult Airway Association guidelines 2016 for difficult airway situations.[1]

The I-gel® (Intersurgical, Wokingham, UK) designed by UK anaesthetist, Muhammed Nasir is made from thermo plastic elastomer which allows to conform to the anatomy of the hypopharynx without the need of inflating any cuff. It also has additional features like an integral bite block, a buccal cavity

ISSN (O): 2687-5365; ISSN (P): 2753-6556

stabiliser which prevent its rotation, a gastric channel, an epiglottic rest which prevents airway obstruction. Also, because of its shorter and broader airway channel compared to other SADs, it allows the adult size endotracheal tube to easily pass through it.[2,3] We also have published literature in both mannequin as well as humans where I-gel® has been used as a conduit for endotracheal intubation.[4,5]

Blockbuster®Laryngeal Mask Airway is a newer SAD which was invented in 2012 by Professor Ming Tian, produced by Tuoren Medical (Tuoren Medical Instrument co, Ltd, Changyuan city, China). It has a short airway tube with angulation of more than 95 degree, which matches the the oropharyngeal curve, making insertion easier and less traumatic. The guidance device provided with it allows the endotracheal tube to be directed towards the laryngeal opening at a 30 degree angle which enhances the success rate of blind intubation. The inverted tip of Blockbuster®endotracheal tube called parker flex helps to overcome any obstruction of the tube by anterior wall as it comes out of the LMA.[6]

Studies have been done internationally to determine the success rate of blind intubation via the Blockbuster®as well as I-gel® LMA.[7,8] However, very few Indian authors have individually studied I gel LMA and Blockbuster®LMA as a conduit for endotracheal intubation.

Hence, the present research was designed to compare efficacy of two different supraglottic airway devices, Blockbuster®LMA and the I-gel® LMA as a conduit of endotracheal intubation.

The primary aim of this study was to compare Blockbuster®LMA and the I-gel® LMA with regard to first attempt success rate of blind tracheal intubation.

Secondary outcomes assessed were ease and time required for insertion of each of the LMAs, time required for intubation, hemodynamic changes associated with insertion of devices as well as to compare the post operative complications if any in the first 24 hours.

MATERIALS AND METHODS

This was a prospective observational comparative study carried out in the patients posted for surgical procedures under general anaesthesia in Kalpana Chawla Government Medical College, Karnal, Haryana. After obtaining institutional ethical committee approval, written informed consent was taken from 110 patients of American Society of Anesthesiologists (ASA) physical status I-II, of either sex, aged 18 to 60 years of weight 50-70 kg, with modified mallampati classification of I-III .Patients with anticipated difficult airway, risk of aspiration, pregnant patients and those who refused to participate in the study were excluded from the study. A total of 110 patients were observed for a period of 2 years, with 55 patients in Group B (Blockbuster®LMA) and rest 55 in Group I (I-gel® LMA).

An anesthesiologist with experience of 25 successful insertions and intubations with both the devices performed insertion of LMA as well as subsequent blind intubation using either of the LMA's. The same anesthesiologist performed all the intubations so as to limit intra observer bias. However, observation and data collection was done by an independent observer. Patients were kept nil by mouth (NBM) for 6 hours prior to surgery. Tablet alprazolam 0.5 mg was given to all patients orally one day before surgery. After arrival in the operating room, intravenous line was established and standard anaesthesia monitors were attached. Pre-medication with intravenous glycopyrrolate 0.2 mg, ondansetron 4mg, midazolam 0.02 mg/kg, fentanyl 2 µg/kg was given. All patients were pre-oxygenated with 100% oxygen for 3 minutes and anaesthesia induced with intravenous propofol 2 mg/kg in slow incremental doses. After confirming adequate mask ventilation, vecuronium 0.1 mg/kg was administered. After 3 minutes of vecuronium adminstration, each of the device was inserted using a midline insertion technique in neutral neck position for both the groups. Soon after insertion, cuff was inflated with air in Blockbuster®LMA and connected to the breathing circuit. The appropriate size of LMA was selected according to body weight (Blockbuster®size 4 for 50-70 kg, and for I-gel® size 3 for 50-70 kg). Adequate ventilation was confirmed by chest movements, bilateral air entry on auscultation and presence of ETCO2 waveforms. The lungs were ventilated with a mixture of oxygen and air (1:1) and sevoflurane for an end-tidal concentration of 2%. The ease of LMA placement was assessed using a subjective scale of 1-4.

1-no resistance, 2-mild resistance, 3-moderate resistance, 4-inability to place the device.[9] The position of both the LMAs was determined by fiberoptic bronchoscope. We used fiberoptic bronchscopy to assess the glottis visualization score (Brimacombe score).[10]

There were Four Grades:

1) only cords seen, 2) cords with posterior epiglottis seen, 3) cords plus anterior epiglottis seen, 4) no cords seen, but function adequate. The number of attempts for LMA insertion and insertion time of LMA was noted. Time required for insertion of LMA was defined from removal of facemask to the time where adequate ventilation was established. Intubation was performed blindly through the LMAs, using Blockbuster®endotracheal tube number 7 in group B and Polyvinyl chloride endotracheal tube number 7 in group I. The number of intubation attempts and time required for intubation was noted. The time for successful tracheal intubation started when the endotracheal tube was inserted into LMA until the confirmation through auscultation and capnographic waveform. Time for the first intubation attempt was measured,

ISSN (O): 2687-5365; ISSN (P): 2753-6556

whereas time taken for the second attempt was not assessed. To avoid airway trauma, force was not be used to advance the endotracheal tube. The numbers of intubation attempts was limited to three. Following successful intubation, the device was removed based on the manufacturers' recommendations using a removable stylet as a stabilising rod in both the devices. Time for removal of the device was when it was disconnected from breathing circuit till ETCO2 waveform was observed. The intubation was stated as failed when even after three attempts intubation was not successful and if the tube was dislodged during the removal of LMA. In case of failed intubation, endotracheal intubation was done using direct laryngoscopy. At the end of the procedure, extubation was done as per standard extubation criteria. Complications such as sore throat, blood staining on the device, vomiting, bronchospasm/laryngospasm, post extubation stridor were noted.

For calculation of sample size, N master 2.0 version software was used. Sample size was estimated based on study by Endigeri A et al,[11] who reported first attempt tracheal intubation success rate of 90 % with Blockbuster®LMA and 66.6% with Fast trach LMA. Based on this study we chose intubation success rate as the primary criteria for calculating our sample size. Using the method of two proportions, 95% confidence interval, 5% marginal error and 85 % power, minimum sample size required for the study was 99. For the present study, considering 10 % loss to follow up 110 patients were taken with 55 patients in each group.

The data of continuous variables were presented as mean ± SD/Median (Inter Quartile Range (IQR)), and categorical variables were presented as absolute numbers and percentage under different categories in both the groups separately. Data was checked for normality by non parametric one sample Komograff Smirov Sample test. Independent t test was used for those variables that were not normally distributed. Categorical variables was analysed using either the chi square test or Fisher's exact test. $P<0.05$ was considered statistically significant. Statistical analysis was performed by the SPSS program for Windows, version 21.0(SPSS, IBM Corp., Armonk, NY).

RESULTS

All patients completed the study. There were no stastically significant difference in two groups with regards to demographic profile. [Table 1]

Table 1: Demographic characteristics of the patients

Demographic data	GROUP B(n=55)	GROUP I(n=55)	P value
Age, years (mean±SD)	43.04 ± 15.72	42.35 ± 14.65	0.238(NS)
Gender (Male: female)	11:44	11:44	0.594(NS)
Weight (kgs)	58±4.1	59.6±5.1	0.194(NS)
ASA grade(I:II)	31:24	28:27	0.351(NS)
Mouth opening (cm)	4.61 ± 0.61	4.46 ± 0.51	0.802 (NS)
MMP grading(I:II:III)	21:26:8	17:32:6	0.515(NS)

*NS= Not significant

Block buster LMA was inserted with no resistance in 74.5% of the patients, while in 25.5% of the patients it was inserted with mild resistance. I-gel® was inserted with no resistance in 69.1% of the patients, while in 30.9% of the patients it was inserted with mild resistance. Ease of insertion distribution was comparable in between the groups. [Table 2]

Table 2: Comparison of ease of insertion distribution in the study groups

Ease of insertion	Group B (n= 55)	Group I (n=55)	p Value
	n (%)	n (%)	
I (no resistance)	41 (74.5%)	38 (69.1%)	0.336(NS)
II (mild resistance)	14 (25.5%)	17 (30.9%)	
III (moderate resistance)	0	0	
Inability to place the device	0	0	

*NS= Not significant

Brimacombe score was comparable in between the groups. [Table 3]

Table 3: Comparison of Brimacombe score in the study groups

Brimacombe score	Group B (n= 55)	Group I (n=55)	p Value
	n (%)	n (%)	
Only cords seen	5(9.1%)	5(9.1%)	0.947(NS)
Cords with posterior epiglottis seen	16(29.1%)	14(25.5%)	
Cords plus anterior epiglottis seen	22(40%)	25(45.5%)	
No cords seen, but function adequate	12(21.8%)	11(20%)	

*NS= Not significant

ISSN (O): 2687-5365; ISSN (P): 2753-6556

With the first attempt, blind tracheal intubation was successful in 92.7% of the patients in Group B and 81.8% of the patients in Group I. In second attempt, success rate of intubation was 3.6 % in group B and 1.8% in Group I. Overall success rate of intubation in both the groups was comparable, p=0.788. In group B, 2 patients while in group I, 6 patients required laryngoscopic intubation. [Table 4]

Table 4: Comparison of first pass successful intubation in the two study groups

Pass successful intubation	Group B (n= 55) n (%)	Group I (n=55) n (%)	p Value
FIRST ATTEMPT	51 (92.7%)	45 (81.8%)	0.118(NS)
SECOND ATTEMPT	2 (3.6%)	1 (1.8%)	0.500(NS)
OVERALL, SUCCESS	53 (96.3%)	48 (83.6%)	0.788(NS)

*NS= Not significant

The overall time for LMA insertion in our study was similar in both the groups. The time for intubation was lesser in Group B (21.90 ± 5.59 s) compared to (24.45 ± 4.59 s) in Group I,(P= 0.010).Following successful intubation the time required for removal of LMA was more in GROUP I (37.14 ± 5.03 s) as compared to Group B (34.67 ± 7.63 s), P= 0.047. [Table 5]

Table 5: Comparison of Time: insertion, intubation and removal (sec) the two study groups

	Group B (n= 55)	Group I (n=55)	p Value
Time of LMA Insertion (secs)	13.54 ± 2.74	13.58 ± 1.98	0.937(NS)
Time for intubation (secs)	21.90 ± 5.59	24.45 ± 4.59	0.010 (SS)
Time for removal of LMA (secs)	34.67 ± 7.63	37.14 ± 5.03	0.047 (SS)

*NS= Not significant ┼SS= stastically significant

Thus, I-gel® LMA took longer time for intubation through it as compared to Blockbuster®LMA. Also time required for removal of LMA after intubation was more with I-gel® as compared to Blockbuster®LMA.

Heart rate (beats/minute) was comparable in both the groups before induction , 1 minute and 3 minute after induction .However increased in heart rate was noted 5 minute and 10 minute after induction in group I as compared to group B, which is statistically significant (P value=0.001*) [Figure 1].

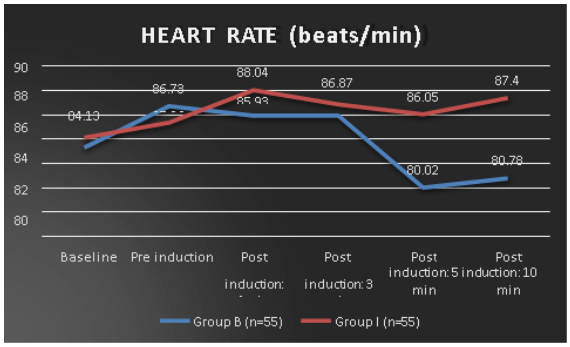

Figure 1: Comparison of Heart rate (beats / min) between the two study groups

Average MAP (mm/Hg) in Group B & Group I was statistically insignificant at all intervals of time. [Figure 2]

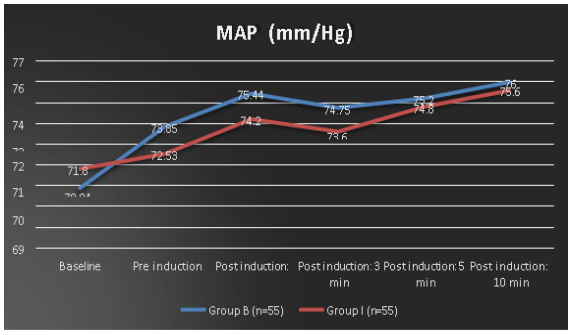

Figure 2: Comparison of MAP (mm/Hg) between the two study groups

The difference in the distribution of complications among two groups failed to reach the level of significance. [Figure 3]

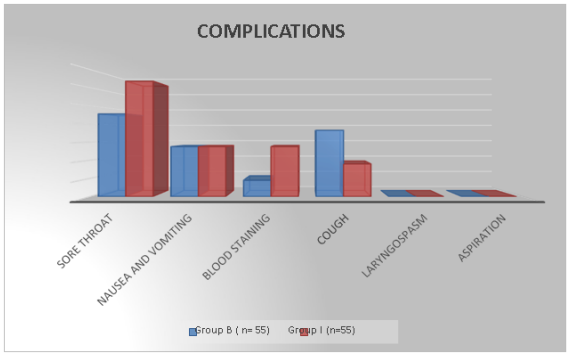

Figure 3: Comparison of complications in the two study groups

In the present study, there was no significant difference in mean SpO2 levels except at post induction 1 min, where statistically significantly lower SpO2 was seen for the block buster group. However, the difference was clinically insignificant.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

DISCUSSION

In recent times, SADs have emerged as an alternative to endotracheal intubation as these devices do not produce any intubation response, nor do they stimulate laryngeal reflexes. Additionally, they require fewer anaesthetic medications and thus have fewer complications.[12]

Nowadays, SADs are routinely being used to provide general anaesthesia.

I gel was originally developed as a ventilating device, but shape of the cuff and airway tube make it conducive for endotracheal intubation through it.

The Blockbuster®LMA is a relatively new addition to the LMA family. In the limited studies conducted on it, it has shown promising success for intubation through it, especially using the endotracheal tube that is manufactured by the same company. The Blockbuster®endotracheal tube is a silicone wire reinforced touhy-tip tube which is pliable and easy to manoeuvre inside the LMA, thus ensuring better chance of success at intubation.

Henceforth the present study was first attempt to compare the success rate of two commonly used second generation LMAs as a conduit for endotracheal intubation.

In the present study, it was seen that the patients of two groups were comparable in terms of demographical characterstics. ASA physical status distribution was comparable in the between the two groups. Also average duration of surgery, mouth opening and MMP grade was statistically insignificant among two groups.

Brimacombe score and ease of insertion was comparable in between the two groups. However, Khare et al reported significantly easier insertion with Blockbuster®LMA as compared to I-gel®.[13]

Time required for insertion of LMA was comparable in both the groups. In our study, average time of LMA insertion (sec) with Blockbuster®and I-gel® LMA was 13.54 ± 2.74 and 13.58 ± 1.98 respectively .This is in contrast to the study by Khare et al who reported lesser time for Blockbuster®LMA insertion(24.30 ± 3.91s) as compared to I-gel® LMA(29.50± 12.5 s).[13] Henlin T et al (2015),[14] reported insertion time of 74.4 ± 41.1 s with I-gel® LMA .This difference is probably due to fact that in the study of Henlin T et al, the operators were untrained and junior doctors. Also , they included the time needed for SAD preparation (which include removal from the package, lubrication) apart from insertion, cuff inflation (if applicable), and confirmation of effective ventilation in calculation of insertion time. Modi et al also reported insertion time of 24.76 ±12.14 s with Blockbuster®LMA.[15]

In the present study, 92.7% of the patients were intubated in the first attempt with Blockbuster®LMA and 81.8% with Igel. Overall success rate was 96.3% with Blockbuster®LMA and 83.6% with I-gel®. These findings are in agreement to that reported by Endigeri A et al (2019),[11] where the first-attempt success rate of tracheal intubation was 90% in Group B (Blockbuster®LMA), while the overall success rate of intubation was 96.6% in Group B. Modi et al also reported first attempt success rate of 96% with Blockbuster®LMA.[15] Wang et al,[16] reported successful intubation in first attempt with Blockbuster®LMA in 50% of the patients, while 43.3% of the patients required second attempt and 6.6% required third attempt at intubation. This difference in the finding with Wang et al could be due to the fact that they compared intubation through Blockbuster®LMA with respect to varying sevoflurane concentration.[16] Henlin T et al (2015) reported first attempt insertion success rate of 87.9% with I-gel®, a finding which is similar to our study.[14] Kapoor S et al (2014) reported first attempt tracheal intubation success rate of 66% with I-gel®, while overall success rate of tracheal intubation was 82% with I-gel®.[17]

The high success rate of intubation with the Blockbuster®LMA could be due to the LMA's appropriate anatomy and alignment. It has a short airway tube with >95° angulation, which help in the alignment with oropharyngeal curve. Also the Parker flex, inverted tip of the Blockbuster®endotracheal tube helps to overcome tube impingement on the anterior tracheal wall during intubation, and the angle made by the Blockbuster®tube while coming out of the cuff is around 30°, which again is advantageous in intubation through LMA. Whereas, in I-gel® LMA although the anatomy of the LMA is conducive for both LMA insertion as well as intubation, but angle made by the PVC tube while coming out of cuff is slightly lesser than 30°. Again, nonavailabiltiy of LMA specific endotracheal tube might be the contributing factor towards lesser first attempt success rate of I-gel® LMA as compared to Blockbuster®LMA. [Figure 4,5]

In our study, the time for intubation was lesser in Blockbuster®LMA (21.90 ± 5.59 s) compared to I-gel® LMA (24.45 ± 4.59 s). Thus, time required for intubation through LMA was more with I-gel® LMA as compared to Blockbuster®LMA. Modi et al reported time for ETT insertion via Blockbuster®LMA was significantly lower in Blockbuster®LMA(12.14±2.01 seconds) as compared to Fastrack LMA(13.22 ±3.098 seconds).[15] Kapoor S et al (2014),[17] mentioned that the time taken for successful tracheal intubation through I-gel® to be 24.04 seconds, finding which is consistent with our study. Endigeri et al reported that time for intubation was lesser in Blockbuster®LMA (18.2 ± 2.7s) compared to Fasttrack LMA (31.8 ± 3.9s).[11] The reason for lesser time for intubation in Group B could be due to the shape and anatomy of the LMA.

In the present study, there was no significant difference in mean heart rate for both the groups till 3 minutes after induction. However increased in

ISSN (O): 2687-5365; ISSN (P): 2753-6556

heart rate was noted at 5 and 10 minute after induction in group I as compared to group B , which is statistically significant . Khare et al reported similar findings.[13] This was not in accordance to that reported by Sagar et al (I-gel® and LMA Fastrach) where hemodynamic changes were comparable during induction, SAD insertion, intubation and throughout the surgery.[18]

In the present study, there was no significant difference in MAP for both the groups at all time intervals, This was similar to that reported by Sagar et al (I-gel® and LMA Fastrach) where hemodynamic changes were comparable during induction, SAD insertion, intubation and throughout the surgery.[18]

In our study, in Group B, 9.1% patients had sore throat, 5.5% had nausea and vomiting, 1.8% blood staining and 7.3% had cough while in Group I, 12.7% patients had sore throat, 5.5% had nausea and vomiting, 5.5% blood staining and 3.6% had cough, with no statistical significance between the groups. This is in agreement to the findings of Endigeri A, et al,[11] Khare et al,[13] who also reported lesser complications with Blockbuster®LMA. Kapoor et al,[17] reported similar complication rates with both Fastrach and I-gel® LMA.

Because of the emergence of supraglottic airways, the practise of anaesthesia, critical care medicine, and pre-hospital management has changed dramatically over the previous 35 years.

The technological sophistication of the latest generation devices have significantly improved the safety profile, and it is expected that this trend will continue with the next generation of supraglottic airways in development. Supraglottic airways are a newer generation of airways that have a higher safety profile than endotracheal tubes, have significantly enhanced the functioning and clinical utility. Despite this, there is still apprehension about using these devices in certain patient populations. Anaesthesiologist have specific concerns such as ventilatory failure, airway injury, and pulmonary aspiration of gastric contents. This can be overcome by careful patient selection and using appropriate techniques for the successful use of these devices.[19,20]

Despite the difficulties in creating a SAD that is perfectly suited to all procedures and patients, innovators and manufacturers continue to enhance their designs in search of the ideal SAD that could eventually replace all others. Every year, new equipment are released, necessitating the ongoing education of practising anaesthetists. A thorough understanding of the various SADs available and their unique characteristics is required to provide the foundation for an informed, well-considered, and, above all, safe anaesthetic practise.

CONCLUSION

Time required for insertion of LMA as well as ease of insertion was comparable for both Blockbuster®as well as in I-gel® LMA. However Blockbuster®LMA requires lesser time for intubation through it as compared to I-gel® LMA.Also time required for removal of LMA after intubation was lower in Blockbuster®LMA. Blockbuster® LMA demonstrated better hemodynamic profile. Post operative complications like nausea, vomiting ,sore throat etc were comparable in both LMAs.

Limitations of our study – The scale used for ease of LMA placement was a subjective scale so there could be a bias. Moreover, since it is a observational study, again there is a possibility of bias. Blockbuster®LMA cuffs were inflated to the manufacturer's specifications; however, we did not measure the pressure required to achieve a good seal in blockbuster. Furthermore, as patients with anticipated difficult airway were excluded from the study, further studies would be required to assess the performance of these devices in difficult airway situations.

[Figure 4] Angle of emergence of endotracheal tube from the cuff of BlockBuster® LMA

[Figure 5] Angle of emergence of endotracheal tube from the cuff of I-gel® LMA.

REFERENCES

1. Myatra SN, Shah A, Kundra P, et al. All India Difficult Airway Association 2016 guidelines for the management of unanticipated difficult tracheal intubation in adults. Indian J Anaesth. 2016;60:885-98.
2. Wakling HG, Bagwell A. The intubating laryngeal mask airway in emergency failed intubation. Anaesthesia 1999;54:305 6.
3. Combes X, Leroux B, Saubat S. Use of intubating laryngeal mask airway in obese patients. Anesthesiology 2003;99:1491.
4. Michalek P, Hodgkinson P, Donaldson W. Fiberoptic intubation through an I-gel® supraglottic airway in two patients with predicted difficult airway and intellectual disability. Anesth Analg 2008;106:1501 4.
5. Michalek P, Donaldson W, Graham C, Hinds JD. A comparison of the I-gel® supraglottic airway as a conduit for tracheal intubation with the intubating laryngeal mask airway: A manikin study. Resuscitation 2010;81:74 7.
6. Zhu Xiaojun, Zhu Hairong, Lu Lei, et al. The Clinical application of Blockbuster®Laryngeal Mask Airway introducing endotracheal tube. Hainan Medicine Journal 2015;26: 3085.
7. Xiufeng Z, Tian M. The effect of Blockbuster®laryngeal mask equipped with ET Tube topatients under general anesthesia. J Pract Med 2016;32:506 7.
8. ShuaiZ, Jing Z, Ye Z, Fang X, Ming T. Application of blind orotracheal intubation via Blockbuster®laryngeal mask in patients undergoing general anesthesia. Int J Anesth Resus. 2016;10:917 24.
9. Jagannathan N, Sohn LE, Sawardekar A, Gordon J, Shah RD, Mukherji II et al. A Randomised trial comparing the Ambu Aura iTM with air QTM intubating LMA as a conduit for tracheal intubation in children. Paediatr Anaesth 2012;22:156 60.
10. Brimacombe J, Berry A. A proposed fibrer optic scoring system to standardise the assessment of laryngeal mask airway position. Anesth Analg 1993;76:457.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

11. Endigeri A, Ganeshnavar A, Varaprasad BV, Shivanand YH, Ayyangouda B. Comparison of success rate of Blockbuster®versus Fastrach® LMA as conduit for blind endotracheal intubation: A prospective randomised trial. Indian Journal of Anaesthesia. 2019;63:988.
12. Jannu A, Shekar A, Balakrishna R, Sudarshan H, Veena GC, Bhuvaneshwari S. Advantages, Disadvantages, Indications, Contraindications and Surgical Technique of Laryngeal Airway Mask. Arch Craniofacial Surg 2017;18:223.
13. Khare A, Awana P, Thada B, Mathur V, Kumar P. A Randomised comparative study to observe the safety and efficacy of I gel and blockbuster` laryngeal mask airway used in aprients undergoing short surgical procedure under general anaesthesia. Indian Anaesth Forum 2022;23:111-7.
14. Henlin T, Sotak M, Kovaricek P, Tyll T, Balcarek L, Michalek P. Comparison of five 2nd-generation supraglottic airway devices for airway management performed by novice military operators. BioMed Res Int. 2015;2015:201898. doi:10.1155/2015/201898.
15. Modi K, Pathak R, Kanchanaa SP. A study of Blockbuster®laryngeal mask airway versus Fastrach/Intubating laryngeal mask airway versus Fastrach/Intubating laryngeal mask airway as a conduit for blind oro-tracheal intubation: A prospective randomized controlled study. Indian J Clin Anaesth 2022;9:422-7.
16. Wang H, Gao X, Wei W, Miao H, Meng H, Tian M. The optimum sevoflurane concentration for supraglottic airway Blockbuster®insertion with spontaneous breathing in obese patients. BMC Anesthesiol 2017;17:156 64.
17. Kapoor S, Jethava DD, Gupta P, Jethava D, Kumar A. Comparison of supraglottic devices I-gel®) and LMA Fastrach(®) as conduit for endotracheal intubation. Indian J Anaesth. 2014;58:397-402.
18. Sagar H, Jheetay GS, Varshney RK. Comparison of Supraglottic Devices I-gel® and LMA Fastrach R as Conduit for Endotracheal Intubation. Int J Res Health Allied Sci 2018;4:85-92.
19. Almeida G, Costa AC, Machado HS. Supraglottic airway devices: a review in a new era of airway management. J Anesth Clin Res. 2016;7:2155-61.
20. Ramaiah R, Das D, Bhananker SM, Joffe AM. Extraglottic airway devices: A review. Int J Crit Illn Inj Sci. 2014;4:77-87.

ISSN (O): 2687-5365; ISSN (P): 2753-6556