

Comparison of Laryngeal Mask Airway (Classic) and I-Gel®; Ease of insertion

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ABSTRACT

Background: At the time of induction during general anaesthesia the different complication can occur with endotracheal tube. Supraglottic devices are alternative of endotracheal tube and it prevents such complications.

Aim: To compare the frequency of ease of insertion with lma and i-gel® during general anaesthesia.

Method: 270 patients of asa class p₁ & p₂ undergoing general anaesthesia for elective surgeries were included after taking informed consent. Patients were divided into two groups a (lma classic) & b (i-gel) by using random number table. Each group comprised of 135 patients. In both groups dose of propofol was 2.5mg /kg body weight was given intravenously within 30 sec along with nalbuphine 0.1 mg /kg body weight and midazolam 0.05mg / kg body weight. The study design was quasi experimental and sampling technique was purposive non probability convenience sampling. Chi square test was used and collected data was analysed with spss version 20. **Result:** The ease of insertion in the lma classic group was 82% while the ease of insertion in i-gel® was 84 %. Statistically there was no significant difference of ease of insertion between two groups (p value = 0.41).

Conclusion: Both devices have same level of ease of insertion.

Keywords: Lma (laryngeal mask airway classic), i-gel®, general anaesthesia, ease of insertion .

INTRODUCTION

Airway maintenance is a basic and challenging issue for a anaesthetist¹. A patent and safe airway is mandatory for all patients in hospitals. Endotracheal tube is a gold standard method for airway management². Endotracheal tube insertion requires laryngoscopy which causes presser response (haemodynamic changes) and cardiovascular effects^{3,4}. Such changes are more pronounced in diabetics and hypertensive patients⁵. Sometime laryngoscopy results in other complications like soft tissue injury, dental trauma and failure in unanticipated difficult airway^{6,7,8}. Supraglottic airway devices (sads) are also sometime called extraglottic airway devices (eads) or supralaryngeal irway devices. These are inserted in oral cavity. They create a great revolution in the airway management⁹. The supraglottis airway devices are now becoming famous for airway management and they are also very effective in difficult airway management^{10,11}. Lma are of different types like lma (classic), lma (supreme), lma (proseal), lma (protector), lma (flexible / reinforced), intubating lma (ilma), disposable lma (romsons)^{12,13,14,15}. I-gel® is a another type of supraglottic device. It is a second generation airway device which is made of thermoplastic elastomer. It is very soft and gel like structure which is less traumatic to soft tissue and is placed in hypopharynx of patients and causes minimal stress response at the time of insertion^{16,17}. In supraglottic devices block buster® lma and intubating laryngeal mask airway (fastrach®) are very effective conduit for blind endotracheal intubation and are very reliable gadgets^{18,19}.

The rationale of this study is to compare ease of insertion of i-gel and lma classic in patients undergoing general anaesthesia and find out the device which is more user friendly both in hands of experts and junior medical persons.

Received on 14-02-2022

Accepted on 27-07-2022

MATERIAL & METHOD

After the approval from ethic committee of National Hospital And Medical Centre, Lahore (DHA), 270 patients of asa class p₁& p₂ status under going general anaesthesia for elective surgeries were included. After obtaining informed consent and demographic detail. patients were divided into two equal groups a (lma)& b (i-gel)with random number table. Each group comprised of 135 patients all patients were npo after midnight. Two intravenous lines were maintained with 18 g cannula. Standard two monitoring was done in intraoperative period. Base line parameter were recorded. All patients of both groups received oxygen with face mask for 3 minutes. Before induction no muscle relaxant and surgical stimulus was given during study period. In both groups dose of propofol used was 2.5 mg /kg body weight intravenously within 30 sec along with midazolam 0.05mg / kg body weight and nalbuphine 0.1mg / kg body weight was given with in 30 sec before the propofol and 100 mg lignocaine was added in propofol to decrease the pain of propofol. During induction period sevoflurane 8 % was given with 100 % oxygen. After the insertion of supraglottic device muscle relaxant was given and n₂o was started and dose of sevoflurane was readjusted. The size of lma and i-gel was selected according to patients and were lubricated with lignocaine gel. Lma cuff were filled with appropriate volume of air. Position of devise was confirmed with capnography and auscultation of chest. During same time ease of insertion was recorded. The study design was quasi experimental and sampling technique was purposive non probability convenience sampling. With the level of confidence is 90% and margin of error was10 %. Data was analysed by using SPSS version 20 and chi square test was used. P value ≤ 0.5 was consider significant.

RESULTS

In group a there were 54(40%) male and 81(60%) female patients. In group b there was 62(46%) male and 73 significant difference between two groups and p value was 0.41.

Table 1: Comparison of frequency and percentage based on ease of insertion between the two groups of the patients

Easiness	Frequency/ %age	Study groups		Total
		Lma	I-gel	
Yes	Count	111	114	222
	%	82%	84%	82%
No	Count	24	21	48
	%	18%	16%	18%
Total	Count	135	135	270
	%	100%	100%	100%

Chi-square = 0.63 p value = 0.39 (> 0.05)

There is no statistical significance difference of ease of insertion between the two study groups

Table 2: Comparison of frequency and percentage of ease of insertion between the two groups of the patients stratified according to age

Age groups	Frequency/ percentage	Study group		P-value
		Lma	I-gel	
25 and below	Count	36	22	0.19
	Ease of insertion	29	17	
	%	80%	79%	
26 to 40	Count	70	87	0.19
	Ease of insertion	62	77	
	%	89%	88%	
41 to 60	Count	24	19	0.06
	Ease of insertion	19	15	
	%	80%	80%	
Above 60	Count	5	7	0.46
	Ease of insertion	4	5	
	%	80%	73%	

Table 3: Comparison of frequency and percentage of ease of insertion between the two groups of the patients stratified according to gender

Age groups	Frequency/ percentage	Study group		P-value
		Lma	I-gel	
Male	Count	54	62	0.18
	Ease of insertion	44	52	
	%	82%	83%	
Female	Count	81	73	0.19
	Ease of insertion	67	62	
	%	83%	84%	
Total	Count	135	135	0.39
	Ease of insertion	111	114	
	%	82%	84%	

Table 4: Comparison of frequency and percentage of ease of insertion between the two groups stratified according to surgery

Procedures	Frequency/ percentage	Study group		P-value
		Lma	I-gel®	
Orthopedic (lower limb)	Count	36	33	0.40
	Ease of insertion	29	28	
	%	80%	84%	
General surgeries (infra-umbilical)	Count	26	28	0.17
	Ease of insertion	21	23	
	%	81%	82%	
Gynecological (diagnostic laparoscopies)	Count	42	44	0.18
	Ease of insertion	35	37	
	%	83%	84%	
Urological	Count	31	30	0.29
	Ease of insertion	26	26	
	%	83%	85%	
Total	Count	135	135	0.39
	Ease of insertion	111	114	
	%	82%	84%	

DISCUSSION

General anaesthesia with ETT has numerous complications which can be due to difficulty in airway, soft tissue trauma, tooth injury and pressure response. All supraglottic airway devices has minimal complication as compare to ett and are very easy to use.

Such supraglottic devices can be inserted with and without the help of muscle relaxant like atracurium, suxamethonium and others²⁰ in this study we compare the ease of insertion i-gel with lma classic. I- gel is a novel extraglottic device²¹. In our study we found that both airway devices are equally user friendly and has same ease of insertion in patients. In the study of chi bun in et al (2019) they compare I-gel with lma supreme and found that insertion of i-gel is easier and faster than lma supreme and there results are different from the result of my study²². Similarly the results of the study of dilek erdogan ari et al (2015) are different from my results. They found that i-gel is more advantageous supraglottic airway devices as compare with lma classic ²³. Similarly the study of nishant kalra has different results which are opposite from my study result and they found that i-gel is batter then lma proseal regarding ease in insertion while according to my study there is no difference in ease of insertion and both are equally same ²⁴.similarly in a systematic review and meta-analysis by sun kyung park ease of insertion is same and his result favours the result of my study²⁵.in our study ease of insertion with lma classic was 82 % while with the i-gel it was 84 %. Statistically there is no difference with regard to ease of insertion between two groups and this study has not shown the superiority of either device on each other in terms of ease of insertion.

CONCLUSION

LMA classic and I-gel® has approximately same level of ease of insertion. The study has not shown the superiority of either device on each other in terms of ease of insertion.

Conflict of interest: Nil

REFERENCE

1. Rennolds Sf, Heffner J. Airway management of critically ill patients : rapid sequence intubation. Chest 2005 apr; 127 (4) : 1397 – 412. Doi : 10.1378/ chest . 127.4.1397.
2. Dar Sr, Hussain R, Nazeer T, Tahir A. Comparison of out come of lma and i-gel devises in patients undergoing general anaesthesia in elective surgeries. Pak j med health sci july sep 2015; 9 (3) : 1036-38.
3. Nazeer T, Tahir A, Khan Mba, Din St, Shoaib M, Asif M. Comparison of propofol and etomidate in haemodynamic changes at the time of induction of general anaesthesia. Pak j med health sci apr 2021 ; 15 (4) : 685 – 87.
4. Nazeer T, Hussain R, Chaudhary T, Ali M, Mehmood T, Younis M, Dar Th, Tahir A. Haemodynamic changes during induction ; comparison of propofol with mixture of propofol-ketamin. Pak j med health sci oct - dec 2012 ; 6 (4) :1006 – 09.
5. Nazeer t, Tahir A, Din St, Asif M, Alam A, Shoaib M, Ashfaq N. Level of physical activity among diabetic patients of rural and urban area pak j med health sci jan - mar 2020 ; 14 (1) : 219 – 22.
6. Dar s, Khan Ms, Iqbal F, Nazeer T, Hussain R. Comparison of upper lip bite test with mallampati classification, regarding assessment of difficult intubation. Pak j med health sci apr – jun 2017 ; 11 (2) : 767 – 69.
7. Shetty N, Shinde Vs, Chaudhary Ls. A comparative study of various airway devices as regard ease of insertion and hemodynamic responses. Indian j anaesth 2004 ; 48 : 134- 37.
8. Kloub R. Sore throat following tracheal intubation . Middle east j anaesthesiol. 2001 ; 16 : 29 – 40.
9. Sharma B, Sahai C, Sood J. Extraglottic airway devices : technology update. Med devices 2017 aug ; 10 : 189 – 205.
10. Chang je, Kim H, Lee Jm, Min Sw, Won D, Jun K, Hwang Jy. A prospective, randomized comparison of the lma protector and i-gel in paralyzed anaesthetized patient. Bmc anesth 2019 july ; 19 : 118. Doi : 10. 1186/s 12871 – 019- 0785-8.

11. Asim Ma, Hussain R, Nazeer T, Ali M. Blind endotracheal intubation through intubating laryngeal mask airway : is candy maneuver beneficial ? Pak j med health sci apr – jun 2013 ; 7 (2) : 496 – 99.
12. Karaaslan e, Akbas S, Ozkan As, Colak C, Begec Z. A comparison of lma supreme and ett use with respect to airway protection in patients undergoing septoplasty : a randomized single blind, controlled clinical trial. *Bmc anesthesiol* 2021 jan ; 21 : 5 . Doi : 10. 1186 / s 12871 – 020 – 01222 - 4.
13. Sng Bl, Ithnin Fb, Mathur D, Lew E, Han Nlr, Sia Ath. A preliminary assessment of the lma protector in non-paralysed patients. *Bmc anesthesiol* 20 17 feb ; 17 : 26. Doi : 10. 1186 / s 12871 – 017 – 0323 - 5.
14. Joshi S, Prakash S, Mullick P, Usha G, Pawar M. Clinical evolution of the cricoid pressure effects on bag mask ventilation, proaseal lma placement and ventilation. *Turk j anaesthesiol reanim* 2018 sep ; 46 (5) : 381 – 87. Doi 10 . 5152 / tjar . 2018 . 37531.
15. Liu y, Song Y, Wang M, Yang M, Shen H, Wang Z, Chen L, Yang J, et al. Lma protector in patients undergoing laparoscopic surgeries ; a multicentre prospective observational study. *Bmc anesthesiol* 2021 dec ; 21 : 318. Doi : 10. 1186 / s 12871 – 021 – 01535 - y.
16. Allahyari E, Azimi A, Zarei H, Bamdad S. Comparison of ett , lma and i-gel in children undergoing strabismus surgery. *J res med sci* 2021 jan ; 26 : 9. Doi 10 . 4103 / jrms . Jrms _ 325 _ 19.
17. An J, Nam Sb, Lee Js, Lee J, Yoo H, Lee Hm, Kim Ms. Comparson of the i-gel and other supraglottic airway in aduly manikin studies. *Medicine* 2017 jan ; 96 (1) : e5801. Doi : 10. 1097 / md . 0000000000005801.
18. Endigeri A, Ganeshnavar A, Varaprasad Bvs, Shivanand Yh, Ayyangouda B. Comparison of success rate of blockbuster® vs fastrach® lma as conduit for blind endotracheal intubation : a prospective randomized trial. *Indian j anaesth* 2019 dec ; 63 (12) : 988 -994. Doi 10. 4103 / ija . Ija _ 396 _ 19.
19. Dhimar Aa, Sangada Br, Upadhyay Mr, Patel Sh. I –gel versus lma classic as a conduit for tracheal intubation using ventilating bougie. *J anaesthesiol clin pharmacol* 2017oct – dec : 33b (4) : 467 – 72. Doi 10 . 4103 / joacp . Joacp _ 113 _16.
20. Shetabi h, Jebelli L, Shafa A. Comparing the safety and efficacy of three different doses of atracurium in facilitating the insertion of lma in patients undergoing phacoemulsification cataract surgery: a randomized clinical trial. *Adv biomed res* 2020 jul ; 9 : 28. Doi 10 . 4103 / abr abr_ 61 _ 19.
21. Singh I, Gupta M, Tandon M. Comparison of clinical performance of i-gel with lma proaseal in elective surgeries. *Indian j anaesth* 2009 june ; 53 (3) : 302- 305.
22. In Cb, Cho Sa, Lee Sj, Sung Ty, Cho Ck. Comparison of clinical performance of airway management with the i-gel and lma supreme in geriatric patients : a prospective and randomized study. *Korean j anesthesiol* 2019 feb ; 72 (1) : 39 – 46. Doi . 10 . 40 97 / kja.d . 18 . 00121.
23. Ari de, Ar Ay, Karip Cs, Siyahkoc I, Arslan Ah, Akgun Fn. Comparison of i-gel with classic lma regarding the ease of use and clinical performance. *Turk j anaesthesiol reanim* 2015 oct ; 43 (5) : 299 – 303. Doi 10 . 5152 / t jar . 2015 . 71542.
24. Kalra n, Gupta A, Sood R, Kaur M. Comparison of proaseal lma with i-gel supraglottic airway during the bailey manoeuvre in adult patients undergoing elective surgeries. *Turk j anaesthesiol reanim*. 2021 apr ; 49 (2) : 107 – 113. Doi 10 . 5152 / tjar . 2020 . 29569.
25. Park sk, Choi Gj, Choi Ys, And Ej, Kang H. Comparison of i-gel and lma proaseal during general anaesthesia : a systematic review and meta-analysis. *Plos one* 2015 ; 10 (3) : e 0119469. Doi 10 . 1371 / journal . Pone . 0119469.