

An Overview on the Use of the Laryngeal Mask Airway amongst Anaesthesia Practitioners in a Developing Country

Onyekwulu FA¹, Nwosu AD²

¹Department of Anaesthesia Faculty of Medical Sciences College of Medicine. University of Nigeria Enugu campus. Nigeria

²Department of Anaesthesia, National Orthopaedic Hospital Enugu Enugu State. Nigeria

ABSTRACT

BACKGROUND: The aim of this study is to provide an overview on the use of the Laryngeal Mask Airway (LMA) amongst anaesthesia practitioners in Nigeria

MATERIALS AND METHODS: This is a multicentre questionnaire based study involving eight tertiary health care institutions in Nigeria. The questionnaires were administered to anaesthetists.

They were standardised open- and close-ended questions which were completed in person. The questionnaire was subdivided into a set of questions which include: status of the anaesthetist; the routine use of LMA in general anaesthesia and as a device for airway management in difficult airway. Statistical analyses were done by simple percentages.

RESULTS: The numbers of respondents were seventy; 38 were junior residents, 20 were senior residents and 12 were consultants. Sixty (85.7%) respondent had personally used LMA, while 10 had never used it and they were all junior residents. Classic LMA was most commonly used (88%), followed by intubating LMA (7.5%), and proseal LMA (4.5%).

Most of the respondents (67.1%) have used LMA in difficult airway management while 10% of respondents had used it in airway management during cardiopulmonary resuscitation (CPR).

The reason for not using LMA routinely for general anaesthesia was due to unavailability in 15.7% of respondents, inexperience in 8.6% and habitual in 30%.

CONCLUSION: Airway management is a vital discipline in the specialty of anaesthesia. The use of LMA as an airway device in the practice of anaesthesia in our setting is inadequate. Training, re-training and continuous medical education of anaesthetists' very necessary to improve our practice.

KEY WORDS: laryngeal mask airway, anaesthetist, airway management.

trained anaesthetist. When correctly inserted into the pharynx and its cuff inflated (provides a seal against the upper esophageal sphincter, aryepiglottic folds, and distal epiglottis), it directs air into the trachea and avoids insufflation of the stomach.⁴

Laryngeal mask airway (LMA) is a supraglottic airway device introduced by Archie Brain in 1983 and its use has grown tremendously with the introduction of other variants of the device. This study therefore provides an overview on the use of the Laryngeal Mask Airway (LMA) amongst anaesthesia practitioners in Nigeria.

MATERIALS AND METHODS

This is a multicentre questionnaire based study involving eight tertiary health care institutions in Nigeria. The questionnaires were administered to anaesthetists at a conference of Nigerian Society of Anaesthetist, and by proxy to the various institutions in 2009. Nigeria is made up of six regions with an average of two tertiary health care centres in each region running a training programme in anaesthesia. They were standardised open- and close-ended questions which were completed in person without any inducement. The questionnaire was subdivided into a set of questions which include: status of the anaesthetist; the routine use of LMA in general anaesthesia and as a device for airway management in difficult airway and in cardiopulmonary resuscitation. Questions on the types and sizes of LMA available in the centres were asked. Questions related to personal experiences with its use as well as the common problems encountered with its use were also asked. Statistical analyses were done by simple percentages.

RESULTS

The numbers of respondents were seventy (response rate was 100%); 38 were junior residents, 20 were senior residents and 12 were consultants. Sixty (85.7%) respondent had personally used LMA, while 10 had never used it and they were all junior residents. Classic LMA was most commonly used 58 (88%), followed by intubating LMA 5 (7.5%), and proseal LMA 3 (4.5%). Eight (11.4%) respondent regularly use LMA, 15 (21.4%) often use it, while 39 (55.7%) occasionally use it and 4 (5.7%) rarely use it.

The sizes of LMA available were 1 (n=10), 2 (n=34), 2½ (n=25), 3 (n=54), and 4 (n=52). Sizes 3 and 4 comprises of 60.6% of the available LMA. Most of the respondents

Date Accepted for publication: 22nd April, 2013

NigerJMed 2013; 198-

Copyright©2013. Nigerian Journal of Medicine

INTRODUCTION

The LMA has an established role in elective and rescue airway management when used within operative and non-operative settings¹⁻³. The relative ease of insertion of LMA when compared with the endotracheal tube to secure the airway, and as a ventilatory device during anesthesia makes it an important tool in the hands of a

[n= 47 (67.1%)] have used LMA in difficult airway management while 22 (31.4%) had never used it. Seven (10%) respondents have used it in airway management during cardiopulmonary resuscitation (CPR) while 63 (90%) never used it for CPR.

The reason for not using LMA routinely for general anaesthesia was due to unavailability in 11 (15.7%) respondents, inexperience in 6 (8.6%) and habitual in 21(30%). Other reasons given included limited indications 3 (4.3%), inadequate airway protection 2 (2.9%), cost of propofol 4 (5.7%), and no reason was given by 6 (8.6%) respondents. Propofol was the preferred induction agent. The LMA was most commonly used for adult patients 65.6% (n= 42), paediatrics 15.6% (n= 10), and both 18.8% (n= 12). The LMA was most commonly used for spontaneous ventilation 74.3% (n=52), while controlled ventilation was 11.4% (n=8), and both 7.1% (n=5). Experience with the use of LMA was excellent in 11 respondents, satisfactory in 47, and fair in 6, no respondent reported any turbulence with the use of LMA. The commonest problem encountered with the use of LMA was improper placement (Table 1).

Table 1. Common problems with the use of LMA

	Junior resident	Senior resident	Consultant	n (%)
Improper placement	7	1	2	10 (23.2)
Retching	6	1	2	9 (21.0)
Cost of propofol	1	2	1	4 (9.3)
IPPV	-	-	1	1 (2.3)
Stability	6	2	1	9 (21.0)
Laryngospasm	2	1	1	4 (9.3)
Delay recovery	-	1	2	3 (7.0)
Cuff blocking the glottis	1	-	-	1 (2.3)
Regurgitation/ aspiration	-	1	-	1 (2.3)
Poor seal/ leakage of gasses	1	-	-	1 (2.3)
Total				43 (100)

n - Number of respondents

DISCUSSION

The laryngeal mask airway (LMA) can be used in a variety of airway management situations and is in many circumstances an alternative to the more technically demanding process of endotracheal intubation. Most (85.7%) respondents have been exposed to the use of LMA but only 11.4% use it regularly; and in centres where it is readily available 30% respondents habitually do not use it. The apathy toward the use of LMA could be due to lack of proper training in the technique of its insertion. It is suggested that effective use of the LMA requires learning proper insertion technique in normal patients undergoing routine surgical procedures with general anaesthesia⁵ However, there is also simulator training, ranging from low- to high-fidelity simulators, for learning practical clinical skills⁶⁻⁸. Practice on a mannequin before attempting the technique of LMA insertion on real patients is recommended^{5,9}.

In the centres under study 60.6% of the available LMA were adult sizes and therefore LMA was most commonly used for adult patients. The use of LMA in paediatrics is well established and even in the neonates¹⁰. Three respondents gave limited indication and 6 gave inexperience as reasons for not using LMA routinely for general anaesthesia. This buttresses the fact that training and workshop on the use of LMA is needed. Four respondents opined that cost of propofol is a reason for not using LMA routinely. Apparently propofol is commonly used as it depresses the laryngeal reflex and allows smooth insertion of LMA¹¹⁻¹⁴. In a resource poor setting and poverty amongst patients, perhaps this reason could be significant.

A good number of respondents have used LMA in difficult airway management. The use of LMA during anticipated and unanticipated airway difficulty provides the anaesthetist a sure alternative to airway management¹. The most commonly used LMA by respondents is the classic LMA. The ILMA and proseal LMA were grossly under-utilized. The ILMA offers the possibility for blind endotracheal intubation in difficult to intubate patients^{3,15-17}. When compared with PLMA the classic LMA is easier and quicker to insert, but the PLMA forms a better seal and facilitates easier and quicker orogastric tube placement¹⁸. There are many different types of LMA and the advantages from using them should be explored for better airway management¹⁹.

It is quite unexpected that 90% of our respondents have not used LMA for airway management during CPR. Reported cases suggest that the LMA can provide an effective rescue airway during resuscitation if both bag-mask ventilation (BMV) and endotracheal intubation (ETT) have been unsuccessful¹⁰. The European Resuscitation Council recommended the use of the laryngeal mask airway (LMA) during CPR²⁰.

The LMA is a versatile airway device and can be used for both spontaneous and mechanically ventilated patients. Only 7.1% of our respondents used it for both purpose. This shows gross under-utilization of LMA; hence a continuous medical education is needed to improve on the practice. Improper placement (insertion) was noted as the commonest problem encountered with the use of LMA followed by retching on the device by patients (Table1). Adequate training is therefore needed in order to produce an efficient and safe use of this airway device.

CONCLUSION

Airway management is a vital discipline in the specialty of anaesthesia. The use of LMA as an airway device in the practice of anaesthesia in our setting is inadequate. Training, re-training and continuous medical education of anaesthetists is very necessary to improve our practice.

REFERENCES

1. Onyekwulu FA, Nwosu ADG. Emergency airway management with laryngeal mask airway. *Niger J Clin Pract.* 2011; 14(1): 95-97.
2. Embu HY, Yiltok SJ, Isamade ES. Anaesthetic Management of Mentosternal Contractures Where Resources Are Limited. *Niger J Med* 2008;17:143-5.
3. Gerstein NS, Braude DA, Hung O, Sanders JC, Murphy MF. The Fastrach Intubating Laryngeal Mask Airway: an overview and update. *Can J Anaesth.* 2010; 57(6): 588-601.
4. Weiler N, Eberle B, Heinrichs W. The laryngeal mask airway: routine, risk or rescue? *Intensive Care Med* 1999; 25: 761-2.
5. Dierdorf SF: Education in the use of the laryngeal mask airway. *International Anesthesiology Clinics* 1998, 36:19-29.
6. Maran NJ, Glavin RJ: Low- to high-fidelity simulation - A continuum of medical education? *Medical Education* 2003, 37:22-28.
7. Kneebone R, Nestel D, Wetzel C, Black S, Jacklin R, Aggarwal R, et al: The human face of simulation: Patient-focused simulation training. *Academic Medicine* 2006, 81:919-924.
8. Laiou E, Clutton-Brock TH, Lilford RJ, Taylor CA. The effects of laryngeal mask airway passage simulation training on the acquisition of undergraduate clinical skills: a randomised controlled trial. *BMC Medical Education* 2011, 11:57.
9. Ander DS, Hanson A, Pitts S. Assessing resident skills in the use of rescue airway devices. *Ann Emerg Med* 2004; 44(4): 314-319.
10. Grein AJ, Weiner GM. Laryngeal mask airway versus bag-mask ventilation or endotracheal intubation for neonatal resuscitation (Review) *The Cochrane Library* 2009, Issue 1.
11. Cook TM, Porter MV. Randomized comparison of the classic Laryngeal Mask Airway™ with the Airway Management Device™ during anaesthesia. *Br. J. Anaesth.* 2003; 91(5): 672-677.
12. Aoyama K, Yasunaga E, Takenaka I, Kadoya T, Sata T, Shigematsu A. Positive pressure ventilation during fiberoptic intubation: comparison of the laryngeal mask airway, intubating laryngeal mask and endoscopy mask techniques. *Br. J. Anaesth.* 2002; 88(2): 246-254.
13. Goyagi T, Tanaka M, Nishikawa T. Fentanyl decreases propofol requirement for laryngeal mask airway insertion. *Acta Anaesthesiol Scand.* 2003; 47(6):771-4.
14. Handa-Tsutsui F, Kodaka M. Propofol concentration requirement for laryngeal mask airway insertion was highest with the ProSeal, next highest with the Fastrach, and lowest with the Classic type, with target-controlled infusion. *J Clin Anesth* 2005; 17(5):344-347.
15. Nakazawa K, Tanaka N, Ishikawa S, Ohmi S, Ueki M, Saitoh Y, et al. Using the Intubating Laryngeal Mask Airway (LMA Fastrach™) for Blind Endotracheal Intubation in Patients Undergoing Cervical Spine Operation. *Anesth Analg* 1999; 89: 1319-19.
16. Liu EH, Goy RW, Lim Y, Chen F. Success of Tracheal Intubation with Intubating Laryngeal Mask Airways: A Randomized Trial of the LMA Fastrach™ and LMA CTrach™ *Anesthesiology* 2008; 108: 621-6.
17. Van Vlymen JM, Coloma M, Tongier WK, White PF. Use of the intubating laryngeal mask airway: Are muscle relaxants necessary? *Anesthesiology* 2000; 93:340-5.
18. Brimacombe J, Keller C, Fullekrug B, Agrò F, Rosenblatt W, Dierdorf SF, et al. A multicenter study comparing the ProSeal and Classic laryngeal mask airway in anesthetized, nonparalyzed patients. *Anesthesiology.* 2002; 96(2): 289-95.
19. Awan R, Nolan JP, Cook TM. Use of a ProSeal™ laryngeal mask airway for airway maintenance during emergency Caesarean section after failed tracheal intubation. *Br J Anaesth* 2004; 92:144-6.
20. Guidelines for the advanced management of the airway and ventilation during resuscitation. A statement by the Airway and Ventilation Management Working Group of the European Resuscitation Council. *Resuscitation* 1996; 31: 201-230.