CASE REPORT

Mechanical Airway Obstruction from the Laryngeal Mask Airway Cuff.

V.A. Ofoegbu MB Bch, DA; (WACS), **C.N Mato** FWACS, FMCA
Department of Anaesthesia, University of Port Harcourt Teaching Hospital
Port Harcourt, Nigeria.

ABSTRACT

Background: *The laryngeal mask airway (LMA) classic™ has been found useful in airway management of both routine and emergency unexpected failed intubations.*

We report a case of mechanical airway obstruction from anterior in folding of the laryngeal mask airway classical™ cuff.

Method *The anaesthetic record of a 55years old 70kg female patient for a left sided total hip replacement that had a failed spinal and was augmented with the laryngeal mask airway.*

Result *Near complete airway obstruction developed after the size 4 laryngeal mask airway classic™ was inserted and the cuff inflated with 30ml of air. The reduced reservoir volume and the desaturation that ensued as detected by the portable handheld pulse oximeter alerted the anesthesiologist and called for a check which was not corrected by any head and neck manoeuvre. On withdrawal of the laryngeal mask airway, the cuff was noted to have folded unto the fresh gas aperture thereby obstructing ventilation and oxygenation of the patient.*

Conclusion: *Monitoring the monitors and quick reassessment of laryngeal cuff placement guaranties the evasion of anaesethetic catastrophes.*

KEYWORDS: *Laryngeal mask airway classic™; Obstruction; Pulse oximeter.*

Paper accepted for publication 10th October, 2005

INTRODUCTION

The laryngeal mask airway (LMA) was introduced by Brain in 1983[1] as a piece of equipment for the maintenance of the airway.

The LMA classic™ is an airway device with a large cuff that forms a seal around the larynx on correct placement and inflation of the mask cuff[2]. It has been found useful in airway management of both routine and emergency unexpected failed intubations[3, 4],with a good rate of success at insertion[5].

We report a case of mechanical airway obstruction from anterior infolding of the Laryngeal mask airway classical™ cuff.

CASE REPORT

A 55 years old 70kg American Society of Anesthesiologist (ASA) Class1 female presented for left sided total hip replacement secondary to chronic osteoarthritis, expected to last about 3hours. Her medical history was good, being non-hypertensive, non-diabetic nor asthmatic. Her preoperative airway assessment was unremarkably, Mallampati 1. She was counselled for regional anaesthesia (spinal) which was conducted safely and uneventfully till midway into the surgery that she complained of pain in the operation site, having been placed on lateral decubitus position, we stopped the surgery and turned her trunk supine. She was preoxygenated with face mask easily without guedels airway. We then resolved to complete the anaesthesia with general anaesthesia, using the LMA with relaxation. Anaesthesia was induced with propofol, 1.5mg/kg. The LMA size 4 was inserted easily; the cuff was inflated with 30ml of air and secured by tape to the chin. She was maintained on 0.75% halothane in 33% oxygen and nitrous oxide. Muscle relaxation was with pancuronium bromide 4mg. She was connected to the circle anaesthesia breathing system and manually assisted breathing was commenced. However, there was near complete airway obstruction with tidal volume of less than 200ml and a peak airway pressure of >30cmH_20, without oropharyngeal air leak as suggested by the arterial oxygen saturation through the pulse oximeter. The head and neck were moved to the sniffing position by applying chin lift, without any improvement in the situation. We could not visualize for correct placement since we did not have a fibreoptic laryngoscope. The LMA was immediately withdrawn and inspected to note that the mask cuff was permanently folded unto its aperture, a deformity that refused to return to normal even after manually manipulated, with intermittent inflation and deflation of the LMA cuff. We completed the surgery by conducting a tracheal intubation of the patient using a size 7.5mm endotracheal tube. The oxygen saturation improved immediately and patient recovered uneventfully from anesthesia after reversal and exturbation.

DISCUSSION

Major complications and malpositions have been described for the LMA. The first is when the LMA is not inserted deeply enough, resulting in the tip sitting in the midpharynx. This results in air leakage during positive pressure ventilation (PPV) and a poor seal. The second is when the LMA tip impacts against the glottis. This results in airway obstruction and air leakage[6]. For the "proseal"LMA, the cuff could be folded backward[7] this resulting in failure of the drainage tube to perform its intended functions, though it may have no impact on seal or ventilatory function.

In our case, the LMA "classic" was correctly position '

Correspondence to: **Dr. V.A. Ofoegbu**

'supposedly' because it had a good seal earlier and good ventilation and oxygen saturation, but subsequently failed as a ventilatory device when the cuff folded anteriorly to occlude the aperture.The cause of the obstruction being the airway closure from the folded cuff, we suspect that the change of position from the supine to the lateral decubitus, may have enhanced the anterior fold of the cuff which would have been displaced from its original position of fitness around the larynx, though the use of the LMA for cadiothoracic procedures, which are traditionally performed in the lateral decubitus position[2] has been documented.

There has been reports of mechanical closure of the vocal cords by the 'Proseal' LMA (PLMA)[8] in association with the cricoid pressure[9]. The movement of the head and neck which was attempted in our case could not reverse the obstruction, suggesting the obstruction was not physiological but mechanical and not to do with the patient, but the airway device. However, it is our observation that the high inflation volume cuffs impinges on the glottic inlet and may cause a degree of obstruction, due to epiglottic down folding.

We used the size 4 LMA in the female patient and inflated with 30millilitres of air, which is in accordance with the recommendations[10]. It is possible that a different LMA size and / or air cuff volume may have prevented this problem. We also observed that using and sterlising the LMA over the forty recommended times, which occurs in poor resource settings like ours may also see contributory.

CONCLUSION

We have reported mechanical airway obstruction from anterior in-folding of the LMA mask cuff, that occurred despite easy placement and after sometime into surgery.

We recommend complete monitoring, the monitor of the monitors by the anaesthesiologist and quick assessment up to the complete removal of the LMA for possible reinsertion, to avert preventable catastrophes.

REFERENCES

1. Brain AIJ: The laryngeal mask, a new concept in airway management. Br J Anaesth 1983; 55: 801-804.
2. Verghese C. LMA 'Classic'™ instructional manual. Henley-on-Thomas : The layngeal mask company limited, 2000.
3. Umeh B. The laryngeal mask airway: A critical analysis of first 100 consecutive cases. Afri J Anaesth Int Care 1996: 2: 57-62.
4. Faponle AF, Olabanji JK. The laryngeal mask airway in the difficult intubation a report of 2 cases. Afri J Anaesth 2001; 4: 28-30.
5. Brimacombe J, Keller C.The proseal laryngeal mask airway. A randomized crossover study with the standard laryngeal mask airway in paralysed anaesthesized patients. Anaesthesiology 2000; 93: 104-109.
6. Brain AIJ, Verghese C. Strube PJ. The LMA proseal'- a laryngeal mask with an oesophageal vent. Br J Anaesth 2000; 84: 650-654.
7. Brimacombe J. Keller C, Berry A. Gastric insufflation with the proseal laryngeal mask. Anaest Analg 2001; 92: 1614-1615.
8. Brimacombe J. Richarson C, Keller C, Donald S. Mechanical closure of the vocal cords with the laryngeal mask airway proseal™. Br J Anaest 2002; 88: 296-297.
9. Brimacombe J. Berry A. Mechanical airway obstruction following cricoid pressure with the laryngeal mask airway. Anaest Analg 1994; 78: 604-605.
10. The laryngeal mask company limited ©2000. issue: P019E / 2, 0200.