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December 1996

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F A. Khan

*Aga Khan University*, [fauzia.khan@aku.edu](mailto:fauzia.khan@aku.edu)

M A. Afzal

R S. Kamal

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## Recommended Citation

Khan, F. A., Afzal, M. A., Kamal, R. S. (1996). Experience with larangeal mask airway in Pakistani patients. *Journal of Pakistan Medical Association*, 46(12), 276-278.

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# Experience with Larangeal Mask Airway in Pakistani Patients

Pages with reference to book, From 276 To 278

Fauzia A. Khan, Mussarat A. Afzal, Rehana S.Kamal ( Department of Anaesthesia, The Aga Khan University and Medical College. Karachi. )

## Abstract

One hundred and thirty seven adult patients undergo peripheral surgery were studied regarding ease of larangeal mask airway (LMA) insertion, airway maintenance during surgery and complication encountered during insertion, maintenance and in the postoperative period. In a majority (84%) of patients, the airway was positioned correctly at the first attempt, 3% patients had mild laryngospasm at insertion and in 85% a good airway was obtained. No airway related problems were encountered intraoperatively. Two percent patients had laryngospasm on removal of [MA. Postoperatively, the complaint of sore throat and uvular trauma was seen in 4% cases (JPMA 46:276, 1996).

## Introduction

Larangeal mask airway (LMA) was first invented and introduced by Brain in 1983<sup>1</sup> who designed it primarily as an alternative to endotracheal intubation. He used it in 23 patients for both spontaneous and controlled ventilation, It was released for use in United Kingdom in 1988 and since then, has gained wide popularity in current anaesthetic practice. There are many publications<sup>2-17</sup> on its use, advantages and disadvantages in the Western literature, but to our knowledge, not much formal data is available for the local population. We therefore, undertook a clinical trial to assess its suitability for use in the Pakistani adult population of patients breathing spontaneously during surgery.

## Patients and Methods

Permission was obtained from the Ethical Committee of the Aga Khan University Hospital. One hundred and thirty-seven adult male and female patients were enrolled in the trial. Size 3 LMA was used for females and size 4 for male patients. The patients included were those undergoing peripheral surgery which was Likely to last for less than ninety minutes and the patients could be left breathing spontaneously. Cases scheduled for emergency surgery, those at an increased risk of regurgitation and patients with a history of difficult airway were excluded. Premedication was with diazepam 10 mgs orally 1 .5 to 2 hours before surgery. Day cases did not receive any prernedication. The anaesthesia technique was standardized. Induction was with Thiopentone 5 mg/kg over 20 seconds followed by N2O/O2 66:33% given through a Magill's circuit. Sufficient anaesthetic depth was achieved with halothane 3-3.5% and a lubricated LMA was inserted. Correct insertion was checked by gentle inflation of the reservoir bag and chest auscultation. Airway patency was assessed by observing the excursions of reservoir bag and absence of out of phase respiratory movements of chest and abdomen. The airway was graded "good", if it was maintained without the need to support the jaw or extend the head. If any of the above manoeuvres were required, the airway was graded as "adequate". LMA was removed if airway was judged to be "poor". Although LMA insertion was performed by different level of anaesthetists one of the primary authors was always present and instructed the user regarding the method of insertion and removal. Patients were observed throughout, for adequate reservoir bag movements during spontaneous ventilation and for other signs of obstructed airway, i.e.. paradoxical chest movements and fall in oxygen saturation. Following data was collected each time the LMA was used: coughing or laryngospasm at insertion, number of attempts for correct replacement, use of

laryngoscope in correct replacement, quality of airway obtained, time of insertion and removal of mask and any complications during maintenance and removal were noted on a standard form. All patients were monitored by continuous ECG (Lead II), non-invasive blood pressure measurement and continuous oxygen saturation monitoring. All patients were visited by an anaesthetist unconnected with the study. two hours postoperatively and patients were specifically questioned regarding sore throat and the pharynx examined for any trauma.

## Results

Observations were recorded in 137 patients; eighty males and 57 females, age range was 17-82 years (mean=42) and mean weight was 64.2 kgs.

**Table. Demographic details of patients, values expressed as mean (SD).**

Males/Females		80/57
Age (years)		42.56 (15.4)
Weight (kgs)		64.20 (11.5)
Built:	Small	12
	Medium	95
	Large	30
Type of procedure:	Urological	70
	Gynaecological	13
	Orthopaedic	18
	General surgery	31
	Miscellaneous	5

Table shows the male female ratio, mean age and weight, distribution of built and type of surgery. Eighty-four percent insertions were successful at the first attempt, whereas, 12% patients required a second attempt and 4% a third attempt. There were no failed insertions. Nine percent patients had mild cough, 1% had severe coughing and 3% had mild laryngospasm at insertion. The last two complications mentioned settled by increasing the depth of anaesthesia. The oxygen saturation did not drop to less than 95% in any patient.

In 85% patients, a good airway was obtained, in 14% it was adequate and in 1 patient it was poor and the mask had to be reinserted. No other problems relating to the airway were seen intraoperatively, 2% patients had bradycardia (heart rate less than 60/minute), 6% had hypotension, i.e., (blood pressure less than 90 mm of Hg systolic) and 9% had dysrhythmias. At the time of removal of the mask. 3% patients had mild coughing, 1% had excessive cough and 2% had laryngospasm which was treated with oxygen alone. Postoperatively, 4% patients complained of sore throat, 6% had uvular congestion and 4% had obvious uvula Ear trauma. in two patients the LMA had some blood on it but the patients did not have any complaints.

## Discussion

Some advantages of LMA over the endotracheal tube are its ease of insertion, attenuated haemodynamic response, minimal interference with respiratory physiology, better tolerance and less effect on intraocular pressure<sup>2-4</sup>. It has a definite role in difficult airway as well. However, it has certain disadvantages, the foremost of which is the increased risk of regurgitation<sup>5</sup>. It is a blind technique and its exact position is therefore, not ensured<sup>6</sup>. Down-folding of epiglottis and backward rotation of mask has been reported in 10% patients<sup>7</sup>. Its use is now firmly established in modern day anaesthetic practice in spontaneously breathing patients with little risk of regurgitation and aspiration. LMA was designed following anatomical studies of adult cadaveric pharynx<sup>8</sup>. There is a possibility of racial variations in the size of epiglottis and position of larynx and the need for regional studies.

In our study, insertion was easy and done at the first attempt in 84% of cases. This compares favourably with McCirrick's experience<sup>2</sup> who had a success rate of 84%. compared to 80% by Brodrick<sup>7</sup>. An insertion rate of 76-96% has been claimed in different studies. Although most of the studies have used Propofol as the induction agent for insertion, we used Thiopentone since Propofol had not been introduced in Pakistan when the study was carried out. Had Propofol been used, the success rate may have been higher because failure at first attempt could have been due to difficulty in judging the adequate depth of anaesthesia. Only in one of our patients, the mask had to be removed in contrast to 10% patients in Brodrick's study<sup>7</sup>, who claimed this to be due to down-folding of the epiglottis and recommended an introducer to facilitate the insertion of LMA and decrease the incidence of this complication. Ninety-four percent of our patients had a clear airway within three attempts; this is comparable to other studies<sup>2,9</sup>. Coughing and laryngospasm were the two main problems encountered at insertion and were again thought to be related to the depth of anaesthesia. These complications have also been reported in studies where Propofol was used for induction<sup>2</sup>. Insertion of LMA in our study was done by different grades of anaesthetists but one of the primary authors was always present to ensure uniformity in the method of insertion. No statistical correlation has been established between grade of anaesthetist and success of insertion of LMA<sup>2</sup>. Sixteen alternative methods of insertion of LMA have been described<sup>9</sup> but the most commonly used is the one recommended by the manufacturer<sup>10</sup>. Five patients in our series had a history of difficult intubation. A satisfactory airway was achieved in all these patients within three attempts. LMA has been recommended by other authors for difficult intubation<sup>11,12</sup>. A controversy still exists regarding the removal of mask<sup>6,13</sup>. In this study we removed the mask in the operating room. The incidence of coughing and laryngospasm seen at removal of airway would again reflect a judgement of depth but this has also been reported in cases where removal was in awake patients<sup>7</sup>. The incidence of postoperative sore throat with LMA ranges from 3.9% to 30%<sup>14-16</sup>. In this study the incidence was 4% whereas, that of uvular congestion was 6%. No breach of mucous membrane was seen in any case. Serious uvular trauma has been reported in one case in McCirrick's study<sup>2</sup>. Blood on LMA was seen in 22% cases in one study<sup>14</sup>, while it was seen in only two patients in our study. Obvious regurgitation or aspiration was not seen in our patients but this could be due to the fact that we were not specifically looking for this complication. The incidence was 25% in studies which have specifically addressed this question<sup>5,17</sup>. We found LMA a useful and easily placed device which gave a satisfactory airway in 94% cases within three attempts and was not associated with any significant complications.

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