

# ASSESSMENT OF SAFETY AND EFFECTIVENESS OF THE LARYNGEAL MASK AIRWAY SUPREME FOR LAPAROSCOPIC CHOLECYSTECTOMICAL SURGERY

Nguyen Viet Quang  
Hue Central Hospital, Vietnam

## Abstract

**Background:** Laryngeal Mask Airway Supreme™ (LMA Supreme™) is a new single-use polyvinyl chloride supraglottic device that offers gastric access. To date, studies that have tested the LMA Supreme™ for use in laparoscopic surgery have been reported. We present the largest evaluative study that describes the use of this mask in anaesthesia for cholecystectomical laparoscopic surgery. **Method:** Hospital ethics board approval was obtained, and 40 fasted patients undergoing elective cholecystectomical laparoscopy were prospectively studied. We evaluated the ease of insertion of the device and the drain tube, the oropharyngeal leak pressure (OLP), incidence of postoperative sore throat, and other adverse events. **Results:** Insertion of the LMA Supreme™ was successful in all patients (first attempt, n = 39; second attempt, n = 1). Gastric tube insertion was successful in all patients (easy, n = 35; difficult, n = 5). Initial mechanical ventilation was adequate in almost all cases. Mean OLP at the level of 60mmHg cuff pressure was  $28.20 \pm 5.10$  mmHg. Mean peak airway pressure before pneumoperitoneum was  $17.00 \pm 3.50$  mmHg, and  $22.18 \pm 4.00$  mmHg, after pneumoperitoneum. Four patients (10%) complained of a mild sore throat postoperatively. Coughing occurred in 2 patients (5.0%), and blood was noted after removal of the LMA Supreme™ in 1 cases (2.5%). No other complications were reported. **Conclusion:** We conclude that LMA Supreme™ is an easy to insert, and effective ventilatory device for laparoscopic cholecystectomical surgery. It provides a functional airway seal with minimum adverse events.

**Key words:** Laryngeal Mask Airway Supreme™ (LMA Supreme™), laparoscopic, cholecystectomical.

## 1. INTRODUCTION

Laparoscopic cholecystectomical surgery is now very popular. General anesthesia is the method most used. Currently, in some health facilities people start using laryngeal mask airway Supreme in anesthesia for laparoscopic cholecystectomical surgery. This new method has several advantages, fewer accidents. Therefore, we chose this research subject to two objectives:

1. Evaluate the safety of the laryngeal mask airway Supreme for Laparoscopic cholecystectomical anesthesia.

2. Detection of complications when using laryngeal mask airway Supreme.

## 2. SUBJECTS AND METHODS

**2.1. Research methodology:** Prospectively, cross-sectional description

**2.2. Material:** Selection criteria for 40 patients, age from 20 to 65, ASA I- III, men: 22, ladies: 18, gall stones indicated laparoscopic cholecystectomical surgery, 10 emergencies surgery, 30 programs surgery. All patients were mechanically ventilated with VT 8ml/kg, breathing frequency 12/min, FiO<sub>2</sub> 40%.

### 2.3. Exclusion criteria

Patients with limited mouth opening < 2cm, oropharynx tumors.

### 2.4. Materials of research

Laryngeal Mask Supreme # 3 (30 - 50kg) and 4 (50 - 70kg)

Premedication when necessary: Midazolam dose of 0,05 mg/kg.

Induction: Patients breathe 100% oxygen 3-5 minutes before induction of anesthesia, fentanyl dose 2mcg/kg, propofol 2 mg/kg, rocuronium 0.40 mg/kg.

- Corresponding author: Nguyen Viet Quang, email: bsquang280@gmail.com

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Insert laryngeal mask airway Supreme after 2 minutes.

Maintain oxygen 40%, Desflurane 5-6%.

Collect the index :

Pulse, blood pressure, SpO<sub>2</sub> before and after insertion of laryngeal mask airway Supreme 1 minute and every 10 minutes during anesthesia.

Processing data on SPSS 13.0 software.

### 3. RESULTS

#### 3.1. The success rate of laryngeal mask airway Supreme insertion:

Laryngeal mask airway Supreme insertion success 40/40 (100%). The first time 39/40 reached 97.50%, second time of 1/40.

#### 3.2. The success rate gastric tube placed

Gastric tube inserted easily into the 35 occupied 87.50%, 12.50% difficult. Pressure cuff 20 - 60mmHg, averaging  $28.20 \pm 5.10$ mmHg.

#### 3.3. Airway pressure

Mean airway pressure without inflatable abdominal:  $17.00 \pm 3.50$ mmHg after abdominal inflatable  $22.18 \pm 4.00$ mmHg (inflatable abdominal pressure 8-10 mmHg).

#### 3.4. Operation time

Average operation time of  $62.10 \pm 14.20$  minutes

#### 3.5. The index pulse, blood pressure, SpO<sub>2</sub>

##### 3.5.1. Before and after insertion of laryngeal mask

	The time(min)	Value(mmHg)	p
Pules	1 minute before	90.34±14.20	>0.05
	1 minute after	97.10±16.42	
Blood pressure	BSP (1 minute before)	115.71±22.63	>0.05
	BSP (1 minute after)	120.55±87.00	
	BDP (1 minute before)	72.18±16.50	>0.05
	BDP (1 minute after)	73.88±17.42	
SpO <sub>2</sub>	Before insert laryngeal mask	99.56±0.42	>0.05
	After insert laryngeal mask	99.65±0.31	

BSP: Blood Systolic Pressure

BDP: Blood Diastolic Pressure

##### 3.5.2. Complications

Complications	n	R
Bleeding	1/40	2.50%
Sore throat	4/40	10%
Itchy, cough	2/40	5%
Reflux	0/40	0.00

### 4. DISCUSSION

Currently nationwide, method of endotracheal anesthesia for Laparoscopic cholecystectomical surgery is the most common method. Some places were used instead Proseal laryngeal mask endotracheal tube.

The Supreme laryngeal mask applied to anesthesia in laparoscopic cholecystectomical surgery has not been widely disseminated. Based on the special structure of the newly isolated mask airway, both tributaries drain the stomach contents, should avoid complications aspiration into the lungs. Anatomy of an inflatable ball that allows high pressure making it convenient for prolonged mechanical ventilation.

During the research we have reviewed the following characteristics:

#### 4.1. Age, sex

In the 40 patients studied, we selected age from 20 to 65, although we have many older patients but we exclude because we are very careful to use Propofol for over 65 years patients.

Sex is due to the random order in surgical patients in the study group will apply this method.

#### 4.2. Laryngeal mask size

We selected mask size according to the literature, most of us use a size 4 for patients weighing 50 - 70kg, size 3 for patients with thinner, weighs between 30 - 50kg. Cuff pressure between 50 and 60mmHg.

#### 4.3. The success rate of Supreme laryngeal mask insertion

In our study, the success rate of the first set 39/40 accounted for 97.50% rate, this result is higher than Narasimhan Jagannathan et al [4], Timmermann et al

(90%) [6] and lower than Seet E et al 98% [2]. There is a case to be placed 2nd for misjudging the weight of the patient, we replaced laryngeal mask and insert successfully.

#### 4.4. The modified pulse, blood pressure and SpO<sub>2</sub>

In our study, patients who are stable on the pulse, blood pressure, SpO<sub>2</sub>. The difference before and after the mask insertion of variables are not statistically significant. Our study of the same authors Belena JM, Gracia JL et al [1] and Seet E, Rajeev et al [5].

#### 4.5. Airway pressure

Mean airway pressure without inflatable abdominal:  $17.00 \pm 3.50$  mmHg after abdominal inflatable  $22.18 \pm 4.00$  mmHg (inflatable abdominal pressure 8-10 mmHg).

Our study results this is equivalent to Belena author JM et al ( $17.50 \pm 3.30$  mmHg) and  $22.90 \pm 4.00$  mmHg [1], [3].

#### 4.6. Complications

##### 4.6.1. Complications of reflux

Our study, 40 patients received one tablet Mictasol Bleu with a sip of water before surgery. After finishing the surgery, laryngeal mask withdraw, the mouth and throat screened not see the green of the drug. All patients received chest X Ray inspection within 24-48 hours after surgery are normal images .

##### 4.6.2. Complications of sore throat

Our study 4/40 patients accounted for 10% rate, this result is equivalent to A Author Timmermann et al [6]. In four patients patients had a second mask insertion. It shows, event rate

depending on qualifications and experience of the anesthetist.

## 5. CONCLUSION

Although our study was modest amount, but research results have many advantages and disadvantages:

### 5.1. Advantages

- Easy to insert, pulse, blood pressure, SpO<sub>2</sub> were stable during anesthesia, to avoid complications of intubation.

- Very good used in cases of difficult intubation.

- Can be used for emergencies and programs surgery.

### 5.2. Disadvantages

- The anesthetic must have experience

- Expensive Price

In summary, the Supreme laryngeal mask is effective and safe in anesthesia for laparoscopic cholecystectomical surgery. We hope the Supreme laryngeal mask in the future will be much better used in some other surgery to replace the endotracheal tube.

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