



Anesthesiology

MINI DOSE SUCCINYLCHOLINE FACILITATING LARYNGEAL MASK AIRWAY INSERTION UNDER PROPOFOL ANAESTHESIA POSTED FOR SHORT SURGICAL AND GYNEACOLOGICAL PROCEDURES

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ABSTRACT

Laryngeal mask airway is an ingenious supraglottic airway device for general anesthesia. Propofol is agent of choice for LMA insertion as it obtunds oropharyngeal reflexes. The aim of our study was to assess ease of insertion of LMA with low dose of succinylcholine and its reduced intraoperative and post operative complications.

KEYWORDS : LMA – laryngeal mask airway anesthesia, succinyl choline, propofol

INTRODUCTION

Anesthesia with LMA insertion has become more popular to give short general anesthesia. Minor surgical and gynecological operations which approximately last for an hour are often performed under short general anesthesia with face mask or intubated general anesthesia. laryngeal mask airway is an ingenious supraglottic air way device for such procedure and being often used by the anesthesiologist all over the world. The LMA is a niche between the face mask and endotracheal tube and was described by Dr Archie Brain in 1981.¹ Insertion of LMA requires attenuation of air way reflexes. This can be obtained by use of topical anesthetics, muscle relaxants and sedatives. Propofol is most popular induction agent at dose of 2mg/ kg body weight. if propofol alone used, it may be associated with coughing, gagging and patient movement while insertion of LMA and hence high dose of propofol may require, which may associate with hypotension and prolonged apnoea etc. This can be minimized by using low dose of succinylcholine.² if succinylcholine alone used at the dose of 1-2mg /kg body weight to insert LMA is also associated with severe myalgia apnoea and bradycardia.³ Combination of low dose of propofol and scoline can minimize these adverse effect drugs when used alone. This study is taken up to evaluate the efficacy of use of mini dose of succinyl choline and propofol,

AIM OF STUDY

The aim of the study was to assess jaw relaxation., ease of insertion of LMA, incidence of coughing, gagging, laryngospasm, post-operative myalgia and sore throat, monitor the hemodynamic stability of combination of two drugs.

MATERIAL AND METHODS

After institutional ethical committee approval, a double blind randomized study was conducted on 80 patients undergoing elective short surgical and gynaecological procedures. Adult patients of physical status ASA I & II are included in the study. Written valid, informed consent was taken. Patients with risk of aspiration, full stomach, severe obesity, history of allergy, more than 2 failed attempts were excluded. Patients were randomly divided into two groups with 40 patients each based on envelope method. Group A (n= 40), received I. V induction bolus dose with propofol 2mg/kg and Succinylcholine 0.1mg/kg diluted in 2ml of normal saline. Group B (n= 40) received I. V induction bolus dose with propofol 2mg/kg and 2ml of normal saline. The study drug was given to the investigator by an anesthesiologist unrelated to the study and the drug was not revealed both to the investigator and the patient.

A uniform general anesthesia technique was used in all patients. Patients were premedicated with Inj.Glycopyrrolate 0.01mg/kg, Inj.Midazolam 0.01mg/kg, Inj.Fentanyl 1mcg/kg IV and induced with Inj.Propofol 2mg/kg IV over 15 seconds. 30 seconds later, patients received drugs according to the group. 30 seconds after that, LMA was inserted by a blind investigator using a semi-inflated LMA. Additional doses of Propofol was given where conditions for LMA insertion were

poor or before second attempt. Patients were kept on spontaneous respiration. Anesthesia was maintained with 1% Halothane, 60% Nitrous oxide and 40% Oxygen. after completion of the procedure nitrous oxide and halothane were stopped and LMA removed. 100% oxygen was continued for three minutes using face mask. Preinduction heart rate, systolic blood pressure, diastolic blood pressure, mean arterial blood pressure, and saturation were recorded. The same were recorded post induction and post insertion of the LMA. Patients were monitored using standard methods of monitoring with the electrocardiogram, noninvasive blood pressure, pulse oximetry, and end-tidal Co₂.

Assessment of jaw relaxation was done according to young's criteria- Absolutely relaxed with no muscle tone: 1, Moderately relaxed with some muscle tone: 2, Poorly relaxed with full muscle tone: 3. Assessment of coughing, gagging, laryngospasm and movements of head and limb was done according to modified scheme of Lund and Stovener- Excellent: no gagging or coughing, no patient's movement or laryngospasm: 1, Good: mild to moderate gagging, coughing or patient's movements with no laryngospasm: 2, Poor: moderate to severe gagging, coughing or patient's movement with no laryngospasm: 3, Unacceptable: severe gagging, coughing or patient's movement or laryngospasm: 4. Ease of insertion of LMA and the overall insertion conditions was evaluated as follows: Easy :1, Difficult :2, Impossible :3. Hemodynamic parameters: HR, SBP, DBP, SpO₂, RR. Baseline values were recorded and the above parameters were recorded after insertion of LMA at 0, 1, 3 and 5 minutes. Postoperative complications like myalgia, sore throat, nausea and vomiting were also observed.

STATISTICAL ANALYSIS

Sample size was 16 based on power of study being 80% and confidence interval of 95%. We considered sample size of 40 in each group. Statistical analysis was done using IBM-SPSS version 21.0. Chi-square test was used for non parametric data. Student 't' test for parametric data. p value <0.05 is considered to be statistically significant.

OBSERVATION AND RESULTS

Jaw relaxation	Group A	%	Group B	%	Total	%
Score 1	35	87.50	25	62.50	60	75.00
Score 2	4	10.00	12	30.00	16	20.00
Score 3	1	2.50	3	7.50	4	5.00
Total	40	100.00	40	100.00	80	100.00
Chi-square =6.6673 P = 0.0362*						

Coughing, gagging scores	Group A	%	Group B	%	Total	%
Score 1	35	87.50	29	72.50	64	80.00
Score 2	4	10.00	7	17.50	11	13.75
Score 3	1	2.50	3	7.50	4	5.00

Score 4	0	0.00	1	2.50	1	1.25
Total	40	100.00	40	100.00	80	100.00

Chi-square =3.3831 P = 0.3373

Ease of insertion scores	Group A	%	Group B	%	Total	%
Score 1	35	87.50	30	75.00	65	81.25
Score 2	5	12.50	8	20.00	13	16.25
Score 3	0	0.00	2	5.00	2	2.50
Total	40	100.00	40	100.00	80	100.00

Chi-square =3.0727 P = 0.2151

Post-op myalgia and sore throat status	Group A	%	Group B	%	Total	%
Absent	38	95.00	40	100.00	78	97.50
Present	2	5.00	0	0.00	2	2.50
Total	40	100.00	40	100.00	80	100.00

Chi-square with Yates's correction = 0.5132 P = 0.4741

Demographic - Both the groups were comparable to each other in terms of age and sex. No drop out cases were there in our study. There was no significant difference in terms of hemodynamic parameters. p-value was 0.0362 for comparison of jaw relaxation which is statistically significant. 87.5% of patients in Group A had score 1 compared to 62.5% in group B.

There was no statistically significant difference between both the groups in terms of incidence of coughing, gagging, laryngospasm, head and neck movements but however, patients in group A had better scores compared to group B. 87.5% patients in group A had score 1 (excellent) compared to 72.5% patients in other group. There was no significant difference between the two groups in terms of ease of insertion but patients in group A had better scores compared to the other. Group A did not have significant complications like myalgia and sore throat compared to group B.

DISCUSSION

LMA is gaining popularity and is used as frequently as endotracheal tube. LMA has better hemodynamic stability compared to endotracheal intubation as it causes minimal disturbances in cardiovascular and respiratory systems.² However, some complications including gagging, coughing and laryngospasm may occur in response to inserting an LMA which may make correct positioning difficult or impossible.³ Various induction and co-induction agents have been used for insertion of LMA. Propofol is the most commonly used induction agent for LMA insertion. Dose upto 2.5mg/kg may be needed in order to achieve complete relaxation. propofol obtunds oropharyngeal reflexes, suppresses cough reflex and decreases the sensitivity of upper airway. When it is used at high dose it may cause bradycardia, hypotension and prolonged apnoea. This can be minimized by using minidose of succinylcholine. Various agents like benzodiazepines, opioids, muscle relaxants have been used along with propofol in order to reduce dosage of propofol and thereby its side effects like hypotension, apnoea. Succinylcholine acts by depolarization of motor endplates. It is used in the dose of 1-2 mg/kg. 4,5. It may lead to complications when used in this dose like myalgia, hyperkalemia, bradycardia cardiac dysrhythmia. Myalgia is the most common complication seen in patients when scoline alone is used. When used in low doses, relaxation can be achieved with reduced dose of propofol along with decreased complications of succinylcholine.⁹ In our study, we used dose of 0.1 mg/kg of succinylcholine to achieve better relaxation along with decreased complications. Our study showed significant difference in terms of jaw relaxation⁷. whereas study done by A. Yoshino et.al and Shilpi Solanki et al showed no change in jaw relaxation. scores Incidence of coughing, gagging, head and neck movements and laryngospasm 4,5 K.M. Ho et al showed significant difference in terms of incidence of coughing, gagging, head and neck movements between the groups 11. Korula et al. 8 compared succinylcholine 0.35 mg/kg with 0.08 mg/kg of atracurium for LMA insertion during thiopentone induction and they found that succinylcholine provided better insertion conditions as there was no coughing or gagging, and minimal patient movement. Our study did not have significant difference. Study by Yoshino et al showed insignificant difference between the groups in terms of ease of

insertion. our study was comparable to this study in terms of ease of insertion.

We had few limitations in our study. We did not assess severity of myalgia noted in scoline group. Subsequent doses of propofol was not calculated. It was observed by Aghamohammadi D,¹⁰ et al Propofol as the only anesthetic was not helpful in ease of insertion of LMA but in combination with mini dose succinylcholine, LMA was easily inserted. It seems that use of mini dose succinylcholine, reduces upper airway reflexes, Jain et al have also reported that combination of low dose of succinylcholine and propofol is effective in insertion LMA and minimizes the complications when propofol used alone. 6

CONCLUSION

Propofol is the better induction agent for LMA insertion. Succinylcholine facilitates LMA insertion leading to reduced dose of propofol and good relaxation conditions compared to propofol alone. Use of low dose of succinylcholine also has least side effects.

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