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Comparison of Laryngeal Mask Airway (LMA) & Cuffed Oropharyngeal Airway (COPA) in Spontaneously Breathing Anaesthetized Patients for Short Surgical Procedure

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Abstract

Background: No anaesthesia is safe or satisfactory unless diligent efforts are made towards maintenance of functioning, unobstructed airway. LMA & COPA both devices can be used to establish an airway for spontaneously breathing anaesthetized patient with little difficult or trauma. Hence the attempt was made to organized randomized clinical comparative study with regards to usefulness & complications of LMA & COPA. *Method:* Total 60 patients of ASA Grade I and Grade II undergoing elective surgical procedures with both sexes, ranging in the age from 18 to 55 years were included. Informed written consent was obtained from each patient and the procedure explained to the patient. A through pre-operative examination and detailed history was competed according to the proforma. The patients were randomly assigned to either LMA or COPA placement. *Result:* The demographic data of all patients were comparable in both the groups ($p>0.05$). First time successful insertion rate was higher in LMA group (93.33%) than in COPA group (83.33%). Airway interventions required more often with COPA & "hands free" ventilation was better with LMA then with COPA. With respect to hemodynamic variables LMA & COPA are equivalents. *Conclusion:* Considering technical aspects of airway management, LMA is better than COPA with respect higher first time success rate of LMA. More airway manipulation is required with COPA. With respect to hemodynamic stability, LMA & COPA are equivalent. LMA is associated with more incidences of sore throat in immediate postoperative period than COPA. Postoperative late sore throat incidences are similar with LMA & COPA.

Keywords: Laryngeal mask airway; Cuffed oropharyngeal airway; Spontaneous breathing; Airway intervention.

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Introduction

Most frequent cause of difficulty or danger in administration of anesthesia is an obstruction of airway. No anaesthesia is safe or satisfactory unless diligent efforts are made towards maintenance of functioning, unobstructed airway.

At first, endotracheal intubation was the only mainstay of airway management during general anaesthesia, But is not without complications, most of which arised form need to visualize laryns & penetrate the laryngeal opening.

The facemask enables the anesthesiologist to administer gases from the breathing system to the patient without introducing any apparatus into the trachea. But the disadvantage is that anesthesiologist's hands remain engaged in, managing the airway & hands become fatigued.

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The golden mean between the face mask and endotracheal intubation can be achieved with the help of Laryngeal Mask Airway (LMA) and Cuffed Oropharyngeal Airway (COPA).

The concept of LMA was introduced by Archie j. Brain in 1981 [1]. The laryngeal mask secures the airway by means of low-pressure seal around the laryngeal inlet by us of an inflatable cuff.

In order to find an alternative, in 1992 Greenberg and Toung [2] introduced COPA, a disposable piece of equipment, which is cheaper but has a use similar to LMA. COPA is relatively a new device for maintenance of airway in spontaneously breathing anaeshetised patients. It is serves much the same role as the LMA, and indeed, the device is a direct competitor to the LMA, Both devices can be used to establish an airway for spontaneously breathing anaesthetized patient with little difficult or trauma. Hence the attempt was made to organized randomized clinical comparative study with regards to usefulness & problems of LMA & COPA is spontaneously breathing anaesthetized adult patients or short surgical elective procedures.

Objectives

The objective of the present study is to compare COPA with LMA in anaesthetized adult patients with respect to Placement success rate, Requirement of airway interventions, Cardiorespiratoty effects, Intra-operative and post-operative complications.

Material and Methods

Total 60 patients of ASA Grade I and Grade II undergoing elective surgical procedures were studied. Duration of the procedures being up to 60 minutes, patients of both sexes, ranging in the age from 18 to 55 years were included. Informed written consent was obtained from each patient and the procedure explained to the patient.

Patients with significant cardiovascular, respiratory, neurological or endocrine diseases, upper respiratory tract pathology, patients at high risk of aspiration were excluded from the study.

A through pre-operative examination and detailed history was competed according to the proforma. All the patients were kept nil by mouth overnight and informed consent was confirmed prior to operative procedure. The patients were randomly assigned to either LMA or COPA placement. The patients were laid supine on the tube in the operation theatre and intravenous access was secured on the dorsum of the left hand using 20G cannula. A sphygmomanometer cuff was tied around the right upper arm and pulseoximeter probe was applied on finger of the hand & SpO_2 noted. Inj. Midazolam 0.05 mg/kg IV, inj. Pentazocine 0.6 mg/kg, inj.glycopyrrolate 0.004 mg/kg, inj. Ranitidine 1 mg/kg & inj. Metoclopromide 0.1 mg/kg IV given 20 minute before induction of anaesthesia.

Patients were pereozygenated with 100% oxygen for 3 minutes. 20 minutes after premedication baseline reading of pulse & blood pressure were taken. All the patients were induced on injection thipentone sodium 4-6 mg/kg IV to lovss of eyelash reflex and injecti suxamethonium chloride 1.5 mg/kg was given intravenously facilitate airway placement. Proper size of airway was inserted. LMA was inserted according to standard technique described by BRAIN and COPA was inserted by Gauedel's or. Reverse Guedel's technique.

Patients were excluded from the study if the insertion of airway took more than two attempts. Proper placement of airway was confirmed by equal chest inflation, bilateral equal air entry on auscultation.

Anaesthesia was maintained with O_2+N_2O (40-60%), halothane (0.6-1%) with spontaneous respiration on Brain's Circuit. The hemodynamic data was obtained as baseline reading(20 minute after premedication), immediately after placement of airway and every one-minute after placement of airway.

At the end of procedure, postoperative complications like coughing, vomiting and straining were recorded. Pulse rate, systolic and diastolic blood pressure, respiration and SpO_2 were monitored throughout the procedure at the end of the procedure, airway was removed after thorough suction. The patients were followed up immediately after the procedure and later in the recovery room and ward.

Statistical Analysis

Descriptive statistics such mean, SD and percentage was used to present the data. Comparison between groups was performed by using t-test for quantitative data and chi-square test for qualitative data. A p-value less than 0.05 were considered as significant. Data analysis was performed by using software SPSS v16.0.

Results

Mean age in group A & group B were 34.86 ± 10.64 & 35.53 ± 11.36 years respectively. Two groups were comparable with respective age. p > 0.05 indicates, differences of age in two groups are insignificant. Male preponderance in seen in both groups (86.7%-Group A & 70%-Group B). Mean weight in patients of group A & group B were 48.83 ± 5.84 & 49.767 ± 6.926 respectively. p > 0.05 indicates differences of weight in both groups were insignificant. Thus it is clear from table 1 that, demographic data of all patients were comparable in both the groups (Table 1).

First time successful insertion rate was higher in LMA group (93.33%) than in COPA group (83.33%). This is by clinical observation. Second time success rates were 2 of 30 cases (6.66%) for LMA & 5 of 30 cases (16.66%) for COPA group. No Maneuvers were required for clear, unobstructed airway in group A while in 40% of patients of COPA group required maneuvers for clear, unobstructed airway. So airway interventions were required more commonly with COOPA group while no intervention were required for LMA group. "Hands free" ventilation was better in group A than in group B. So with respect to "hands free" ventilation, LMA is better than COPA (Table 2).

It shows baseline mean pulse rate per minute & immediately after insertion of airway & every one minute up to 10 minutes after insertion of airway in both groups. p values at each minute & also with baseline are > 0.05 i.e. insignificant. It means that there were no significant differences with respect to pulse rate after insertion of airway in 2 groups. So changes in pulse rate after insertion of LMA & COPA are equivalent (Table 3).

Baseline readings were comparable in two groups (p > 0.05 i.e. insignificant changes in two groups). At each minute P>0.05 i.e. there were no significant difference between two groups. So changes in mean systolic blood pressure after insertion of LMA & COPA are equivalent (Table 4).

Baseline readings are comparable in two groups.

Table 1: Patient demographic characteristics

Characteristics	Group A (n = 30)	Group B (n = 30)	p-value
Age (yrs)	34.86 ± 10.64	35.53 ± 11.36	0.81
Gender (M/F)	26 / 4	21 / 9	0.21
Weight (kg)	48.83 ± 5.84	49.767 ± 6.926	0.57

Table 2: Placement Success rate in both groups

Parameters	Group A		Group B	
	Number	Percentage	Number	Percentage
Number of attempts for insertion of airway				
First Attempt	28	93.33	25	83.33
Second Attempt	2	6.66	5	16.66
Airway Interventions				
Maneuvers required	0	0	12	40
Maneuvers not required	30	100	18	60
"Hands free" Ventilation				
Adequate Ventilation ("Hands free" Ventilation)	30	100	18	60
Adequate Ventilation with assistance (No "Hands free" Ventilation)	Nil	Nil	12	40

Table 3: Changes in mean pulse rate per minute

	Group A	Group B	P value
Base Line	78.33 ± 5.20	80.33 ± 6.86	P>0.05
Post insertion of airway (0)	89.86 ± 4.92	90.56 ± 6.43	P>0.05
1. (1 minute after insertion)	90.26 ± 4.88	90.5 ± 5.68	P>0.05
2	89.76 ± 4.66	90.00 ± 5.40	P>0.05
3	89.33 ± 4.72	89.93 ± 5.90	P>0.05
4	88.83 ± 4.67	89.08 ± 5.76	P>0.05
5	88.26 ± 4.63	88.56 ± 6.516	P>0.05
6	84.2 ± 4.61	83.01 ± 6.44	P>0.05
7	80.66 ± 4.99	80.01 ± 6.66	P>0.05
8	80.73 ± 4.88	79.11 ± 6.47	P>0.05
9	80.43 ± 5.02	79.12 ± 6.32	P>0.05
10	80.26 ± 5.10	78.01 ± 6.45	P>0.05

At each minute, $p > 0.05$ i.e. there are no significant differences between two groups. That means changes in diastolic blood pressure after insertion of the respective airway are insignificant between two groups (Table 5).

There is no significant difference in intraoperatively complication in both the groups. Coughing & gagging are observed in both the groups like laryngospasm, O_2 desideration & resurge. Hiiccup is also not seen in both the groups (Table 6).

There is no significant difference in two groups. But immediate sore throat is common in group A than in group B. So LMA is associated with move sort throat than COPA in immediate postoperative period. No patients had hoarseness of voice, dysphagia, lip swelling & ear pain in immediate post operative period. There are no significant differences in late complications in both the groups ($p > 0.05$) (Table 7).

Discussion

Mean age being 34.86 ± 10.64 years in group A & 35.53 ± 11.36 years in Group B. Maximum number of patients were between 25-35 years of age i.e 26

Table 4: Changes in mean systolic blood pressure in both groups

	Group A (mm of Hg)	Group B(mm of Hg)	P value
Base Line	127.8 ± 16.6	120.06 ± 11.5	P>0.05
Post insertion of airway (0)	140 ± 9.17	140.2 ± 10.27	P>0.05
1.(1 minute after insertion)	139.6 ± 9.02	140.2 ± 10.25	P>0.05
2	138.93 ± 9.27	137 ± 10.7	P>0.05
3	134.53 ± 10.10	132 ± 10.7	P>0.05
4	133.8 ± 10.56	132 ± 10.517	P>0.05
5	130.8 ± 12.23	130.3 ± 11.33	P>0.05
6	129.86 ± 12.13	125.2 ± 11.57	P>0.05
7	126.46 ± 13.19	122.73 ± 11.04	P>0.05
8	126.06 ± 13.24	122.467 ± 10.81	P>0.05
9	125.08 ± 13.08	121 ± 11.29	P>0.05
10	124.06 ± 13.225	120.33 ± 11.31	P>0.05

Table 5: Changes in mean diastolic blood pressure in both groups

	Group A (mm of Hg)	Group B(mm of Hg)	P value
Base Line	80.13 ± 6.01	78.93 ± 5.9	P>0.05
Post insertion of airway (0)	88.7 ± 5.16	86.13 ± 4.96	P>0.05
1.(1 minute after insertion)	87.46 ± 4.50	86.13 ± 4.98	P>0.05
2	87.13 ± 4.05	86.00 ± 4.85	P>0.05
3	85.4 ± 4.46	84.13 ± 4.98	P>0.05
4	85.06 ± 4.66	83.13 ± 4.823	P>0.05
5	84 ± 5.11	82.067 ± 4.711	P>0.05
6	82.4 ± 5.8	80.06 ± 5.09	P>0.05
7	81.93 ± 5.86	80.06 ± 5.20	P>0.05
8	80.06 ± 6.01	78.8 ± 5.16	P>0.05
9	80.33 ± 5.77	78.8 ± 5.162	P>0.05
10	79.93 ± 5.81	78.33 ± 5.121	P>0.05

Table 6: Intra-operative complication in both groups

Interoperative complication	Group A		Group B	
	Number	Percentage	Number	Percentage
Coughing	2	6.66	2	6.66
Gagging	2	6.66	1	3.66
No complication	26	86.66	27	90
Total	30	100	30	100

$X^2_c = 0.16$, $p > 0.05$ – non-significant

Table 7: Post operative immediate & late complication in both groups

Post operative complication	Group A		Group B		p-value
	Number	Percentage	Number	Percentage	
Immediate					
Sore Throat	8	26.66	2	6.66	0.08
No Sore Throat	22	73.33	28	93.33	
Late					
Sore Throat	3	10	2	6.66	
Lip swelling	Nil	0	1	3.33	0.13
Ear pain	1	3.33	2	6.66	
No Complications	26	86.66	25	83.33	

X^2_c=3.0, p=0.08

out of 50 patients (p > 0.05).

Patients included in present study were from age group 18 to 55 years. The other systemic diseases in patients more than 55 years were not included in the study.

It shows male predominance. Males being 86.66% in Group A & 70% in Group B while females being 13.33% in group A & 30% in group B. Bo mention has been made on influence of sex on LMA or COPA insertion.

They were comparable since means were 48.83 ± 5.84 & 49.83 ± 6.926 in group A & Group B respectively. (p > 0.05)

The assertion of appropriate size of LMA being put is according to weight.

No. of mask used	Weight	Volume of air used for inflation of cuff
3	Small adults (30-40 kg)	20 ml
4	Normal adults above (40 kg)	30 ml

In our study we have used LMA no. 3 & 4.

To select the correct size of OPA the distal tip of an upright COPA is placed at the angle of the mandible. The proximal tooth-lop guard should project one centimeter beyond the lips. The transition line of the colored proximal end and the clear airway should be at the teeth.

In our study we have used COPA no. 10 & 11.

The patients included were of ASA grade I & II and were posted for elective surgery. Those posted for emergency surgery were not included due to risk of aspiratin of gastric contents.

We used thiopentone sodium as an induction agent for insertion of LMA & COPA. Before that premedicatin is given with inj. Glycopyrrolate 0.004 mg/kg, inj pentazocine 0.6 mg/kg, inj. Midazolam 0.05 mg/kg, inj. Megoclopromide 0.1 mg/kg IV, & inj. Ranitidine 1 mg/kg IV. Then after preoxygenation, induction was done with thiopentone sodium (4-6 mg/kg) up to loss of eyelash reflex & then respective airway was inserted.

Out of 30 patients of LMA group, in 28 patients insertion of LMA was successful in first attempt while 2 patients required second attempt for insertion. In group B, insertion of COPA was successful in 25 patients out of 30 patients in first attempt while 5 patients of group B required second attempt.

For COPA placement, considering the rate, first time success rate was 93.33% in LMA group while it is 83.33% in COPA group.

So by clinical observation, it is concluded that first time success rate is higher in LMA group than in COPA group. But difference between first time success rate of two groups are insignificant (p>0.05).

LMA & COPA have been studied earlier by HSU YW, PAN MH, HUANG CJ with respect to first time success rate In their study, 80 ASA grade I & II patients scheduled for short elective procedures (less than 1 hr) were studied. Propofol is used as an induction agent & comparison was done between LMA & COPA with respect to first time success rate. First time successful insertion was possible in 76 out of 80 patients (95%) & 68 out of 80 patients (85%). The conclusion of the study was that first time success rate was higher in LMA group than in COPA group [3].

Another study done by GREEN BERG RS, BRAMACOMBGE J, compared COPA with LMA during spontaneously breathing anaesthesia. They studied total 453 patients, of which 302 received COPA & 151 received LMA, first time successful insertion was possible with 134 out of 151 patients (89%) of LMA group & 244 out of 302 (81%) of COPA group. By clinical observation, conclusion of

the study that LMA is better with respect to first time success rate then COPA. But no statistical significant difference was found with respect to first time success rate in two groups (p> 0.05) [4].

A study done by Brimacombe JR., Brimacombe JC, compared with COPA in 120 adult patients. Anaesthiesia was induce with propofol, The first time success rate was 88 of 60 cases (97%) for the LMA & 33 of 60 cases (55%) for COPA (p < 0.00001). Conclusion of their study, by clinical observation & by statistics was that with respect to first time success rate LMA is better than COPA [5].

Voyagis G.S., Dimitrou V.K. & Kyn'akis KP studied prolonged use of LMA & COPA in spontaneously breathing anaesthetized patients [6].

First time success rate was 95.6% for LMA & 94.5% for COPA group.

Conclusion of their study was that LMA & COPA are equivalent with respect to first tie success rate. In their study, anaesthesia was induced with propofol & maintained with sevoflurane, nitrous oxide & oxygen & they include 120 patients for study i.e. sample size is also more.

It was observed that, out of 30 patients of LMA group studied, no patient require maneuver for clear, unobstructed airway while 12 patients (40%) of COPA group requires maneuvers in the form of head lilt, chin lift, jaw thrust or continuous chin support for maintenance of clear airway. Airway interventions are required more commonly with COPA than with LMA.

In all 30 patients of LMA group studied, hands free ventilation was possible. But in COPA group, "hands free" ventilation was possible in 18 out of 30 patients (60%) and remaining 12 patients of COPA group required maneuvers for clear airway so "hands free" ventilation was 100% in LMA group while it 60% with COPA group. Hence by clinical observation, with respect to "hands free" ventilation LMA is better than COPA.

Brimacomber JR, Brimacombe JC, compared LMA Vs COPA with respect to airway interventions & reliability of "hands free" ventilation. They studied total 120 adult patients, randomly assigned to either LMA (n=60) on COPA (N=60) placement. Anaesthesia was induced with propofol & they observed that there were fewer minor & major interventions required with COPA (p>0.01), no airway manipulations are required with LMA. With respect to "hands free" ventilation LMA is better than COPA [5].

Heringlake M, Deorges M, compared COPA with the LMA during manually controlled positive pressure ventilation. They studied total 60 adult patients of ASA I & II. Patients were randomly assigned to either LMA (n=27) or COPA (n=33) placement. They observed that more airway interventions were required for COPA (p < 0.0001) & hands free ventilation was less often achieved with COPA (p < 0.02) [7].

Casati A, Fanelli G, Capelleri G studied LMA & COPA in anaesthetized adult patients during controlled ventilation. Total 120 patients of ASA I & II were studied. Patients were randomly assigned to either LAMA or COPA placement. They observed that 9 patients (30%) of COPA group required airway interventions while no patients of LMA group required airway interventions & "hands free" ventilation was better with LMA than with COPA [8].

Hsu YW, Pan MH compared COPA with LMA in spontaneously breathing anaesthetized patients. They concluded that airway manipulations were frequently needed (57.5%) after inserting COPA, but no patient of LMA group needed airway interventions & "hands free" ventilation is better with the LMA group than with COPA group [3].

Voyagis GS, Dimitriou VK studied prolonged use of COPA & LMA spontaneously breathin anaesthetized patients. They observed that airway manipulations were reported more frequently with COPA group 27.8% vs LMA 4.4% p=0.0005 & "hands free" ventilation was better with LMA than COPA [6].

Ruchi Gupta, Aditi Ghei et al. compared COPA with LMA in spontaneously breathing anaesthetized patients. They found that airway manipulations were reported more frequently with COPA group & "hands free" ventilation was provided better with LMA than COPA [9].

So the observation of our study, according to airway interventions required more often with COPA & "hands free" ventilation was better with LMA then with COPA, matches with the above studies.

Changes in mean pulse rate from baseline up to 10 minutes are shown, P value at each point is p > 0.05 i.e. insignificant. At baseline, p > 0.05 i.e. there were insignificant changes in mean pulse rate between two groups i.e. pulse rates of two groups were comparable. P value as each point is p > 0.05 i.e. there were insignificant changes in mean pulse rate between two groups. So changes in pulse rate after insertion of LMA & COPA are equivalents. Similar results are seen for systolic & diastolic pressures in

two groups.

L. Verichelen, M. Strvys compared hemodynamic & electroencephalographic response to insertion of a COPA with LMA. They studied 35 female patients. Hemodynamic measurements like systolic & diastolic blood pressure & heart rate were recorded as a baseline i.e. after premedication & after insertion of respective airway & compared between two groups. Anaesthesia was induced & maintained with propofol. Changes in heart rate, systolic & diastolic blood pressure between two groups were insignificant ($p > 0.05$) [10].

Casatti A, Capellen G, Fanelli G studied presser response after LMA or COPA insertion. After midazolam premedication, general anaesthesia was induced with propofol 2 mg/kg. 60 ASA I & II patients were studied, 30 of LMA group & 30 of COPA. Hemodynamic variable were recorded 20 minutes after premedicatinas baseline & then every 1 min until 10 minutes after insertion of airway. They maximum changes in hemodynamic variables were more marked after LMA placement then COPA placement. $p > 0.05$ i.e. there were significant differences in two groups with respect to hemodynamic variables [11].

So according to our study, hemodynamic variables LMA & COPA are equivalents. This observation is comparable with the observation done by L Versichelen, M. Struys.

In our study, 4 patients of LMA group had complications while 3 patients of COPA group had complications during intraoperative period. Out of 30 patients of LMA group studied 2 patients had coughing & 2 patient's reported gagging during intraoperative period while out of 30 patients of COPA group studied 2 patients had coughing & one patient reported gagging during intraopertive period. No patients of both the groups had laryngospasm, O_2 destruction, regurge & hichup during intraoperative period. There were no significant differences in two groups with respect to intraaopeative complications ($p > 0.05$).

Brimacomber JR & Brimacombe JC [5] compared LMA & COPA in 120 anaesthetized adult patients. They compared intraoperative complications in two groups. Their results were.

Complications	LMA	COPA	P value
Laryngospasm	0	1	Non-significant
Hypoxia (SpO_2 <90%)	2	5	Non-significant
Hiccup	4	1	Non-significant
Coughing	3	3	Non-significant

Conclusion of their study, by statistical analysis was that with respect to intraopertive complication LMA & COPA are equivalent.

Voyagis G.S., Dimitniou V.K. [6] compared prolonged use of COPA & LMA in spontaneously breathing anaesthetized patients. They observed that incidences of intraopertive coughing, gagging, laryngospam, O_2 desataration & hyercarbia were similar in both the groups.

Hsu YW, Pan MH [3] compared COPA with LMA in spontaneously breathing anaesthesia. They observed that LMA & COPA are equivalent with respect to intraopertive complications.

So according to our study, LMA & COPA are equivalent with respective intraopertive complications which is supported by above studies.

In the immediate postoperative period, out of 30 patients of LMA group 8 patients (26%) complained of sore throat while out of 30 patients of COPA group, only 2 patients (6%) had sore throat. In the immediate postoperative period, MA is associated with more incidences of sore throat the COPA. There are significant differences in the incidences of sore throat in the immediate postoperative period between LMA & COPA group ($p<0.005$). No patients of LMA & COPA group had hoarsenesess of voice, dysphagia, lip swelling & ear pain in immediate postoperative period.

Postoperative late (on the next postoperative day) complications in the both groups. LMA is associated with more incidences of sore throat in the immediate postoperative period & blood on device removal is more commonly seen on LMA then on COPA while postoperative late complication were similar in two groups.

Pusch F, Wilding E, compared COPA with LMA elective minor procedures in 252 female adult patients & they concluded that in immediate postoperative period, postoperative complaints & mucosal in injuries were higher with LMA than with COPA. Blood is detected more commonly on LMA than on COPA & conclude that LMA is associated with more sore throat in immediate postoperative period [12].

Ezri T, Ady N, compared use of COPA vs LMA in elderly patient & observed that postoperative immediate sore throat occurred in 20% patient of LMA group vs 10% of COPA group. Bloody secretions were present in two patients managed with LMA [13].

Greenbreg RS, Brimacombe J, compared COPA with LMA in spontaneously breathing anaesthetized patients. When airways were removed, blood was detected less oftenly on COPA than on LMA(COPA 5.8%, LMA 15.3% $p = 0.001$). The incidences of early & late sore throat were greater with LMA (early –

p=0.001 & late p=0.001) [4].

Ruchi Gupta, Aditi Ghei etc compared COPA with LMA in spontaneously breathing anaesthetized patients. The incidence was observed most commonly body movements 20% in both groups. Incidence of coughing, laryngospasm, trauma, blood on the device and postoperative sore throat was more with LMA [9].

LMA is associated with more sore throat than COPA in immediate postoperative period while incidences of complication in late postoperative period were similar in both groups. These observations of our study are supported by the above studies.

Conclusion

Considering technical aspects of airway management, LMA is better than COPA with respect higher first time success rate of LMA. More airway manipulations are required with COPA. With respect to hemodynamic stability, LMA & COPA are equivalent. LMA is associated with more incidences of sore throat in immediate postoperative period than COPA. Postoperative late sore throat incidences are similar with LMA & COPA.

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