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ORIGINAL ARTICLE

A COMPARATIVE STUDY OF INHALATIONAL SEVOFLURANE VERSUS INTRAVENOUS PROPOFOL FOR INSERTION OF LARYNGEAL MASK AIRWAY IN ADULTS

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ABSTRACT: BACKGROUND: Inhalational sevoflurane and intravenous propofol have been widely used for anesthesia induction. This study compared the efficacies of inhalational sevoflurane and intravenous propofol inductions for laryngeal mask airway (LMA) insertion for minor surgical procedures. **METHODS:** Fifty adult patients of ASA I and II between the ages 18-60 years of either sex posted for elective, minor surgeries in general surgery, obstetric, gynecological, urologic and orthopedic surgeries, received anesthesia induction with inhalational sevoflurane and intravenous propofol. Induction time, quality and ease of LMA insertion, hemodynamic changes and complications were observed. **RESULTS:** LMA was inserted most rapidly with intravenous propofol (100.8±14.48 s) and less rapidly with inhalational sevoflurane (122±15.6 s). Anesthesia induction with intravenous propofol produced statistically significant difference with mean arterial pressure and heart rate at one minute, when compared with inhalational sevoflurane. The LMA insertion was excellent with intravenous propofol than inhalational sevoflurane. **CONCLUSION:** Inhalational sevoflurane provides a smoother induction with a stable hemodynamic profile, but requiring a longer time for LMA insertion in premedicated patients. The quality of anesthesia provided with intravenous propofol is superior. Thus inhalational sevoflurane is an acceptable alternative to intravenous propofol for LMA insertion in adults.

KEYWORDS: Laryngeal mask Airway insertion, Sevoflurane, Propofol, complications, Haemodynamic alterations

INTRODUCTION: The laryngeal mask airway has gained wide spread popularity for airway management during surgery. The laryngeal mask airway is an ingenious supraglottic airway device that is designed to provide and maintain a seal around the laryngeal inlet for spontaneous ventilation and allow controlled ventilation at modest levels (<15 cms of H2O) of positive pressure.[1]

Laryngeal mask airway has been used in millions of patients and is accepted as a safe technique, in variety of surgical procedures[2]. It ensures a better control of airway than the facemask, leaving the anesthesiologists hands free and avoids the disadvantages of endotracheal tube like pressor response during intubation and sore throat, croup, hoarseness postoperatively. Laryngeal mask also provides an effective and simple solution to many problems of difficult intubation. With use of LMA, muscle relaxation is unnecessary, laryngoscopy is avoided and hemodymanic changes are minimized during insertion.[2]

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Ideal induction agent for LMA insertion would provide loss of consciousness, jaw relaxation, absence of upper airway reflexes rapidly without cardio respiratory compromise. Most currently available induction agents have been used for LMA insertion, but propofol is probably the best intravenous agent and sevoflurane is the best volatile agent, though neither is idea.

IV propofol with or without opioid is the induction agent of choice for laryngeal mask airway insertion. Because of its favourable recovery profile and low incidence of side effects, propofol has become the drug of choice for insertion of laryngeal mask airway, but is associated with pain on injection and cardiovascular and respiratory depression.

Sevoflurane, a halogenated, volatile anesthetic agent is non-irritating to the airways, and mask induction with this agent is associated with a very low incidence of breath holding, coughing, and laryngospasm. In addition, low lipid solubility allows a fast, smooth induction, and a predictably shorter recovery. Induction technique using a high inspired concentration of sevoflurane and vital capacity breaths provides good conditions for the insertion of LMA. Recently, vital capacity breath inhaled induction of anesthesia with sevoflurane has been used as an alternative to IV induction in adults. This method is rapid, with little excitatory phenomena, high patient acceptance and good hemodynamic stability. Rapid insertion of LMA after vital capacity breath induction may allow the use of sevoflurane as a single drug for the induction and maintenance of anesthesia, which would ease the transition period and lead to cost saving.

AIMS AND OBJECTIVES:

1. To compare the induction with sevoflurane and propofol for LMA insertion.
2. To assess the quality of jaw relaxation with sevoflurane and propofol for LMA insertion.
3. To estimate the incidence of respiratory complications (laryngospasm, coughing, and gagging) and cardiovascular complications with sevoflurane and propofol.

MATERIALS AND METHODS: A prospective randomized study was conducted on 50 ASA grade I & II patients, aged between 18 – 60 years who are undergoing minor surgical procedures under general anesthesia at S.V.S Medical College & Hospital. Both inpatients and day cases were included in the study. They were randomized into two groups of 25 each.

Group S – sevoflurane group.

Group P – propofol group.

Inclusion Criteria:

- Patients of age between 18 – 60 years.
- ASA grade I & II patients.

Exclusion Criteria:

- Adults <18 years, >60 years.
- ASA III, IV.
- Morbidly obese.
- Patients requiring endotracheal intubation.
- Major procedures requiring muscle relaxation.

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A thorough pre-anesthetic evaluation was done on the previous day of surgery and was reviewed on the day of surgery. A detailed medical history was taken. Systemic examination was carried out and relevant investigations were advised. An informed written consent was taken from all patients. Nil per oral status was maintained for all patients.

Patients were premeditated with tab. Ranitidine 150 mg and Tab Ondansetron 4mg. On arrival to operation room-

1. 18G IV line was secured.
2. Monitors for ECG, NIBP and SPO2 were connected.

Patients received injection fentanyl 1.5 - 2µg/kg prior to induction. All patients were preoxygenated for 3 min with 100% oxygen using a fresh gas flow of 81/min. Patients were randomly allocated into group S and group. Patients baseline vital data like heart rate, NIBP, SPO2 was recorded.

Group P – received propofol 2 – 2.5 mg/kg body weight at the rate of 40 mg every 10 sec was given.

Group S – Sevoflurane 8% was introduced into fresh gas flow of 81 of oxygen and patients were instructed to take vital capacity breath and hold it as long as they could. The point of start of injection of propofol or introduction of sevoflurane 8% was considered as starting point of induction. Their anesthesia circuit was primed with 8% sevoflurane with O_2 at 8 L/min.

Loss of verbal contact was considered as the desired endpoint for induction in both techniques which was assessed by the response to calling out the patients name. Then the time of loss of eyelash reflex was noted. After this jaw relaxation was assessed by anesthesiologist after loss of eyelash reflex. If jaw relaxation was not adequate, it was reassessed after every 15 seconds. Once jaw relaxation was adequate, LMA insertion was attempted.

The following data was recorded;

1. Time taken from start of induction to loss of verbal contact, loss of eyelash reflex jaw relaxation and successful LMA insertion.
2. Number of attempts of LMA insertion.
3. Total dose of requirement of propofol in each patients.
4. NIBP, HR and SPO2 were monitored from beginning of induction upto 5 minutes of induction.

The conditions of insertion of LMA were graded by observer on a three point scale using 6 variables. Overall conditions for insertion of LMA were assessed as excellent, satisfactory or poor on basis of total score obtained by summing up the individual scores of each components. Maximum score of 18.

The following parameters are assessed during LMA insertion:

- Jaw relaxation.
- Ease of LMA insertion.
- Coughing.
- Biting.
- Gagging.
- Laryngospasm.
- Number of attempts of LMA insertion.

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Excellent 18, Satisfactory 16 – 17, Poor <16: LMA was inserted by the method described by Brain. After insertion of LMA, anesthesia was continued with 66% N2O±33%O2±isoflurane. The study ended when the patient was considered to reach an adequate depth of anesthesia and was well settled after insertion of LMA. Manual ventilation was employed if necessary.

Method of Statistical Analysis: The following methods of statistical analysis have been used in this study. The Excel and SPSS (SPSS Inc, Chicago) software packages were used for data entry and analysis.

The results were averaged (mean ± standard deviation) for each parameter for continuous data and numbers and percentage for categorical data presented in Table and Figure.

1. **Student "t" test:** The student 't' test was used to determine whether there was a statistical difference between male & female subjects in parameters measured. Student's test is as follows:

$$t\frac{x1-x2}{\sqrt{\frac{1}{n1}+\frac{1}{n2}}} \quad t_{n1\ +2\text{-}2} \text{ Where } s^2 = \frac{(nz-1)s12+(n2-1)s22}{(n1+n2-2)}$$

2. Proportions were compared using Chi-square test of significance.
   Chi-Square (x^2) test for (r x c tables).

Rows	Columns			Total
	1	2……..	c	
1	a_1	a_2	a_c	t_1
2	b_1	b_2	b_c	t_2
.	.	……..	.	.
.	.	……..	.	.
r	h_1	h_2	h_c	t_1
Total	n_1	n_2	n_c	N

a, b……h are the observed numbers

N is the Grand Total

$$X^2 = N\left[\frac{1}{t1}\sum^{e}\frac{a12}{n1}+\frac{1}{t1}\sum^{e}+\frac{b12}{n1}\ldots\ldots\ldots\ldots+\frac{1}{t1}+\sum^{e}+\frac{h12}{n1}-1\right]$$

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DF= (r-1)*(c-1), where r=rows and c=columns.

DF=Degree of Freedom (Number of observation that are free to vary after certain Restriction have been placed on the data).

In all the above tests a "p" value of less than 0.05 was accepted as indicating statistical significance.

RESULTS: Fifty adult patients of ASA I and II between the age group of 18-60 years of either sex posted for elective, minor surgeries in general surgery, obstetric, gynecological, urologic and orthopaedic surgeries were selected for the study. They were randomly divided into two groups- group P and group S. group P denotes patients who received propofol and group S denotes patients who received sevoflurane.

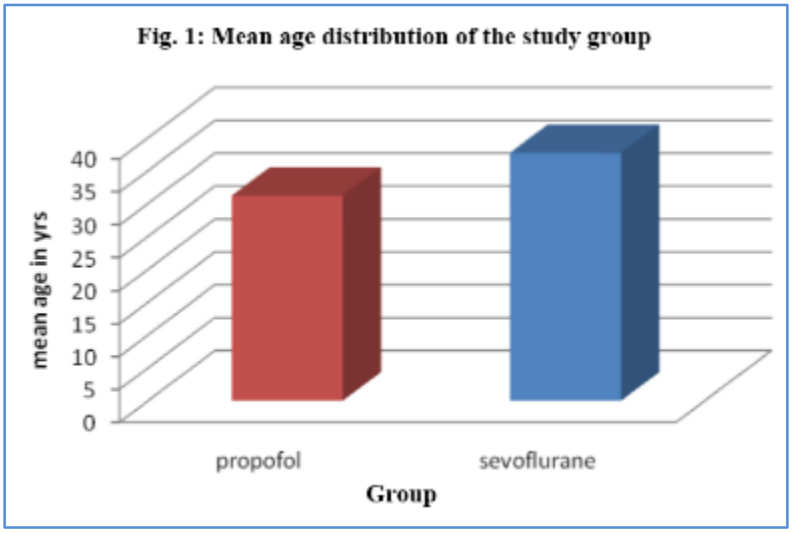
Statistically

p>0.05 not significant.
P<0.05 significant.
P<0.01 highly significant.

Demographic data:

Group	N	Mean age	Std. Deviation	Min	Max	't' value	'p' value	Significance
Propofol	25	31.16	11.09	18	53	-2.005	0.055	Not significant
Sevoflurane	25	37.68	11.89	18				

Table 1: Comparison of age in both groups



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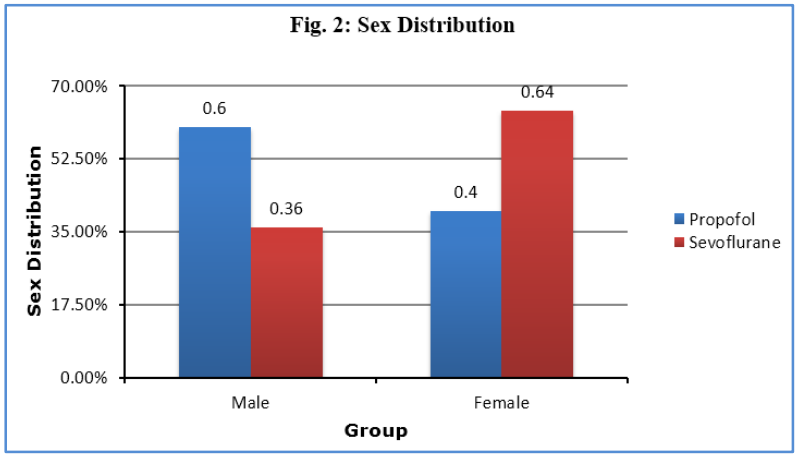
Inference: There is no statistically significant difference in age distribution. The data was compared using student t- test.

Group	Sex		Total
	Male	Female	
	15	10	25
Propofol	60.0%	40.0%	100.0%
	9	16	25
Sevoflurane	36.0%	64.0%	100.0%
	24	26	50
Total	**48.0%**	**52.0%**	**100.0%**

Table 2: Sex distribution

Chi-Square Value	d f	'p' value
2.885	1	0.089



Inference: Sex distribution was compared using chi square test and was not found to be statistically significant.

Group	Departments				Total
	OBG	Ortho	Surgery	Urology	
Propofol	3	14	7	1	25
	12.0%	56.0%	28.0%	4.0%	100.0%
Sevoflurane	9	3	6	7	25
	36.0%	12.0%	24.0%	28.0%	100.0%
Total	**12**	**17**	**13**	**8**	**50**
	24.0%	**34.0%**	**26.0%**	**16.0%**	**100.0%**

Table 3: Comparison of patients in various departments

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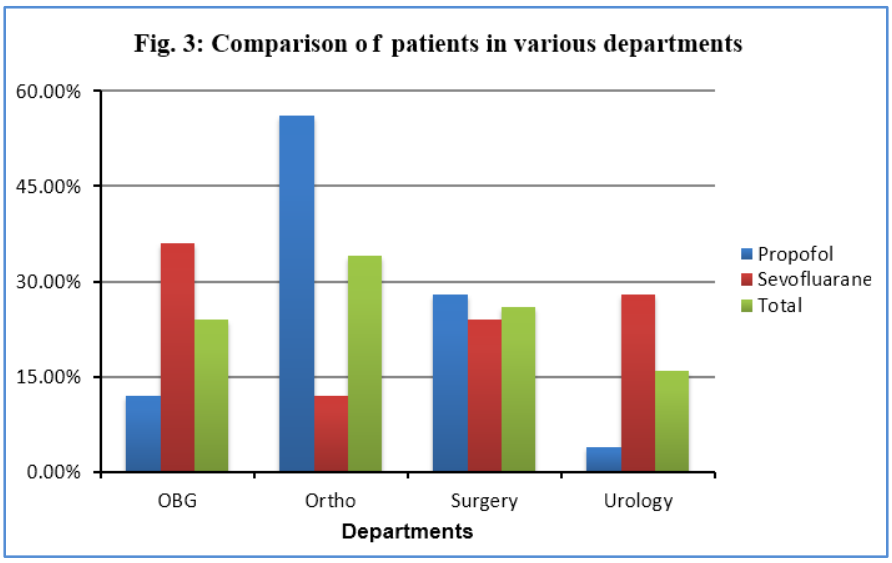
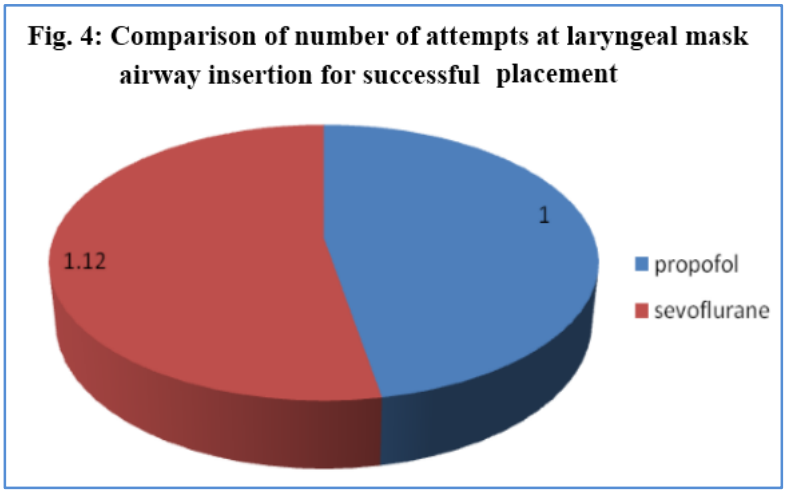


Inference: Patients belonging to various departments like orthopaedics, gynecology, surgery and urology took part in the study.

Group	N	Mean No. of attempts	Std. Deviation	Min	Max	't' value	'p' value
Propofol	25	1.00	0.00	1	1	3.273	0.077
Sevoflurane	25	1.12	0.33	1	2		

Table 4: Comparison of number of attempts at laryngeal mask airway insertion for successful placement



Inference: The number of attempts for LMA insertion was compared using student t test and was not significant.

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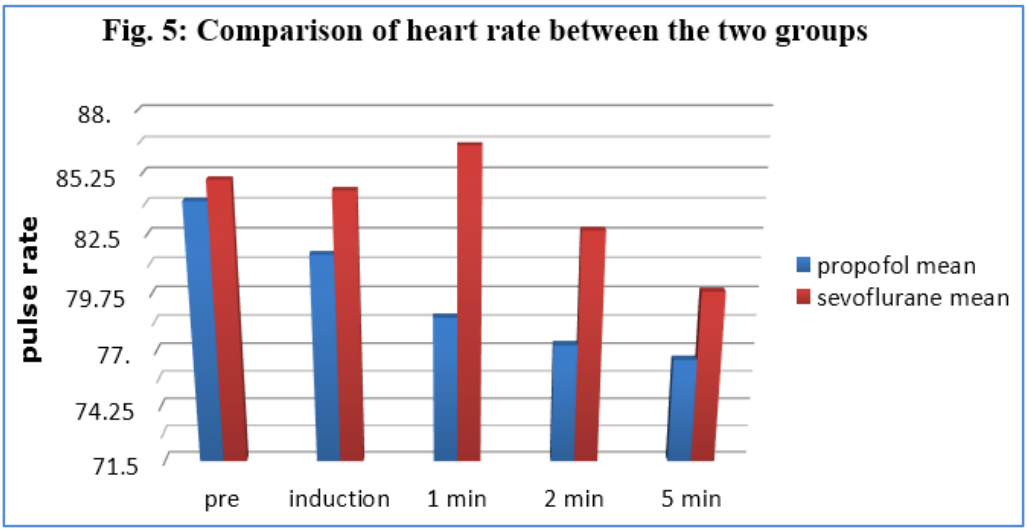
Hemodynamic Parameters:

Pulse Rate	Propofol			Sevoflurane			't' value	'p' value
	N	Mean	SD	N	Mean	SD		
Pre	25	84.00	8.22	25	84.96	7.71	-.426	0.672
Induction	25	81.56	7.92	25	84.48	8.20	-1.281	0.206
1 min	25	78.60	8.56	25	86.48	10.74	-2.868	0.006
2 min	25	77.28	8.99	25	82.68	11.76	-1.824	0.074
5 min	25	76.56	10.02	25	79.84	9.98	-1.160	0.252

Table 5: Comparison of heart rate between the two groups



Inference: Comparison of heart rate between the two groups was done using student t test. The heart rate at baseline and at the time of induction was not statistically significant. Heart rate at one minute after induction showed a fall with propofol which was statistically significant. No statistically significant difference was noted at 2 minutes after induction.

Systolic BP	Propofol			Sevoflurane			't' value	'p' value
	N	Mean	SD	N	Mean	SD		
Pre	25	124.72	8.66	25	128.88	8.15	3.061	0.087
Induction	25	119.44	9.23	25	125.36	12.01	3.819	0.057
1 min	25	111.52	9.10	25	118.36	11.06	5.706	0.021
2 min	25	107.84	7.96	25	112.56	9.01	3.855	0.055
5 min	25	103.04	9.14	25	104.44	11.45	.228	0.635

Table 6: Comparison of systolic blood pressure between the two groups

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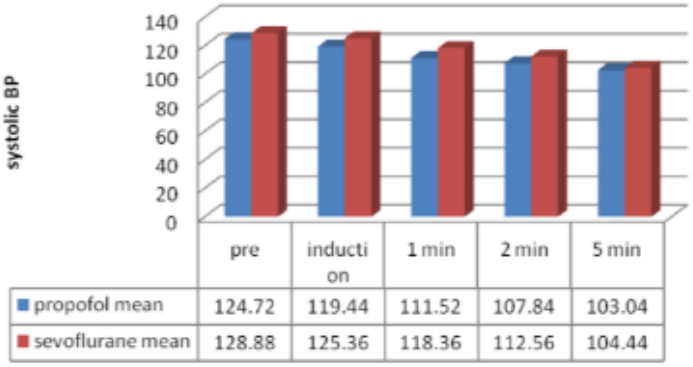
Fig. 6: Comparision of systolic blood pressure between the two groups



Inference: There was no statistically difference in systolic blood pressure in preoperative period between the two groups.

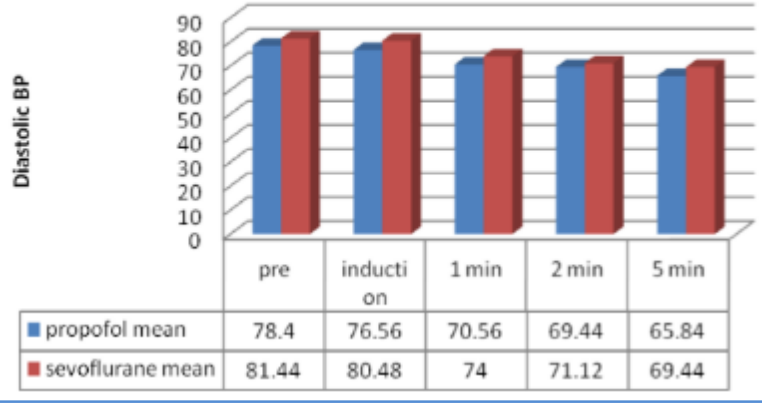
There is no significant difference in systolic blood pressure during induction.

There was statistically significant difference in systolic blood pressure at one minute and two minute when compared between the two groups. A fall in the systolic blood pressure in group P was noted when compared to group S. There is no statistically difference between the two groups at 5 minutes.

Diastolic BP	Propofol			Sevoflurane			't' value	'p' value
	N	Mean	SD	N	Mean	SD		
Pre	25	78.40	6.78	25	81.44	8.28	2.018	0.162
Induction	25	76.56	6.67	25	80.48	8.82	3.142	0.083
1 min	25	70.56	5.40	25	74.00	7.64	3.38 1	0.042
2 min	25	69.44	4.34	25	71.12	7.64	0.914	0.344
5 min	25	65.84	9.41	25	69.44	8.73	1.966	0.167

Table 7: Comparison of diastolic blood pressure between the two groups

Fig. 7: Comparison of diastolic blood pressure between the two groups



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Inference: There was no statistically significance difference in diastolic blood pressure in preoperative period between the two groups.

There is no significant difference in diastolic blood pressure during induction.

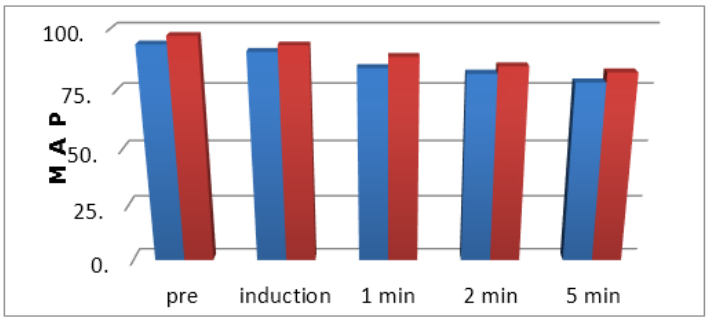
There was statistically significant diastolic blood pressure at one minute when compared between the two groups. A fall in the diastolic blood pressure in group P was noted when compared to group S at one minute.

There is no statistically difference between the two groups at 2 minutes & 5 minutes.

MAP	Propofol			Sevoflurane			't' value	'p' value
	N	Mean	SD	N	Mean	SD		
Pre	25	93.84	6.64	25	97.25	7.11	-1.755	0.086
Induction	25	90.85	6.11	25	93.44	8.40	-2.209	0.062
1 min	25	84.21	5.49	25	88.79	7.38	-2.487	0.016
2 min	25	81.88	4.88	25	84.93	7.72	-1.671	0.101
5 min	25	78.24	8.18	25	82.41	7.22	-1.913	0.062

Table 8: Comparison of mean arterial pressure between the two groups

Fig. 8: Comparison of mean arterial pressure between the two groups



Inference: There was no statistically significance difference in mean arterial blood pressure in preoperative period between the two groups.

There is no significant difference in mean arterial blood pressure during induction.

There was statistically significant mean arterial blood pressure at one minute when compared between the two groups. A fall in the mean arterial blood pressure in group P was noted when compared to group S at one minute.

There is no statistically difference between the two groups at 2 minutes & 5 minutes.

MAP	Propofol			Sevoflurane			't' value	'p' value
	N	Mean	SD	N	Mean	SD		
Loss of verbal contact	25	57.40	15.01	25	65.40	9.67	5.018	0.030
Loss of eyelash reflex	25	73.00	13.92	25	81.20	9.39	5.965	0.018
Jaw relaxation	25	89.20	15.52	25	103.20	12.07	12.675	0.001
LMA insertion	25	100.80	14.48	25	122.00	15.61	24.776	0.000
Loss of verbal contact	25	57.40	15.01	25	65.40	9.67	5.018	0.030

Table 9: Comparison of time for laryngeal mask airway insertion

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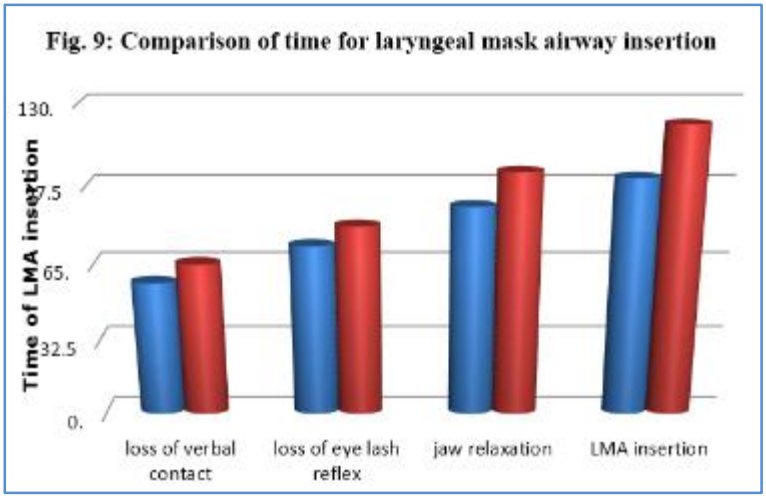

Inference: Sevoflurane has taken longer time for induction and LMA insertion. Verbal contact, eyelash reflex, jaw relaxation and LMA insertion was lost earlier with propofol and is statistically significant.

Parameter	Grade	Description	Group S	Group P
Jaw relaxation	3	Full	23	25
	2	Partial	02	00
	1	Difficult	00	00
Ease of LMA insertion	3	Easy	23	25
	2	Difficult	02	00
	1	Impossible	00	00
Coughing	3	Nil	23	25
	2	Transient	02	00
	1	Persistent	00	00
Biting	3	Nil	23	25
	2	Transient	02	00
	1	Persistent	00	00
Gagging	3	Nil	25	25
	2	Transient	00	00
	1	Persistent	00	00
Laryngospasm	3	Nil	25	25
	2	Partial	00	00
	1	**Total**	**00**	**00**

Table 10: Distribution of complications during induction of anesthesia and laryngeal mask airway insertion

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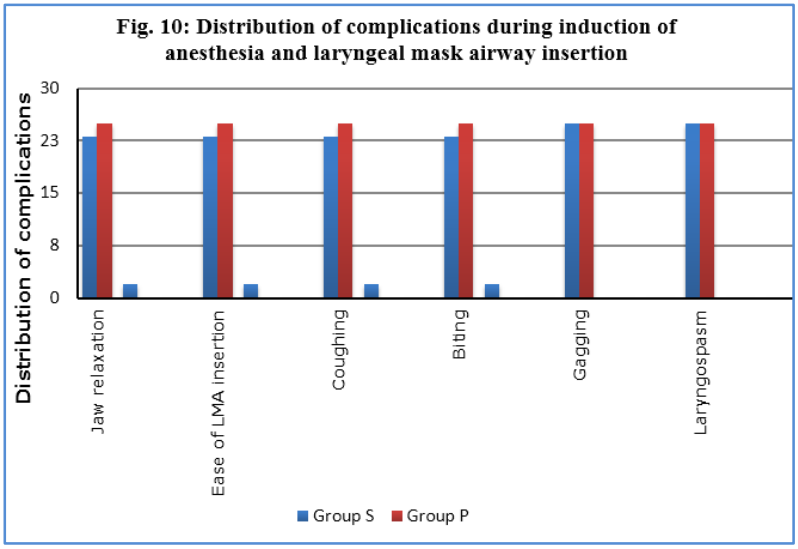
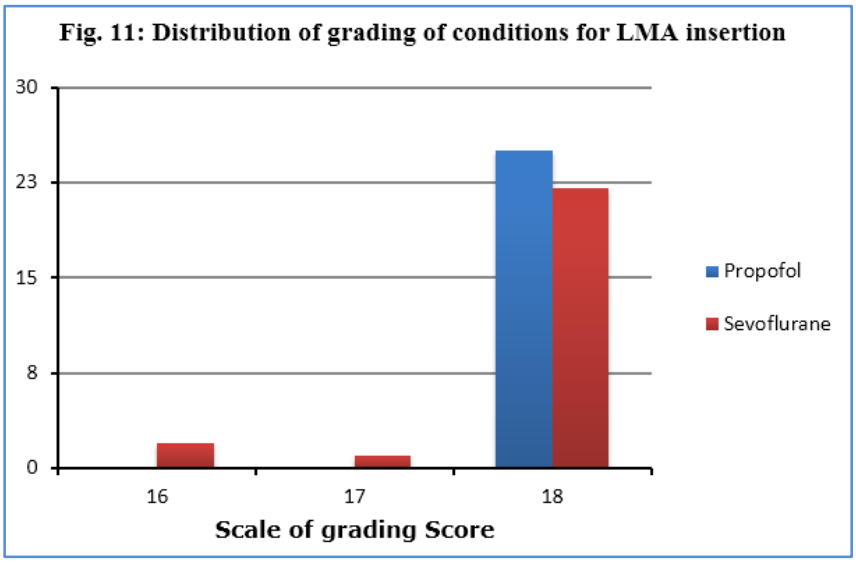


Inference: Occurrence of complications likes coughing, biting, jaw relaxation and laryngospasm during induction and LMA insertion did not reach statistical significance in our study.

Group	Complain Scores			
	16.00	**17.00**	**18.00**	**Total**
Propofol			25	25
			100.0%	100.0%
Sevoflurane	2	1	22	25
	8.0%	4.0%	88.0%	100.0%
Total	2	1	47	50
	4.0%	2.0%	94.0%	100.0%

Table 11: Distribution of grading of conditions for LMA insertion



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Inference: The overall insertion was excellent with propofol with all 25 patients scoring 18. With sevoflurane, 22 patients had excellent conditions for LMA insertion and 3 had satisfactory condition for LMA insertion when grading was done using 18 point score.

DISCUSSION: Satisfactory insertion of LMA after induction of anesthesia requires sufficient depth of anesthesia[3] Propofol is a common intravenous anesthetic agent used for LMA insertion because of its greater depressant effect on airway reflexes[4] Sevoflurane is suitable for inhalational induction technique even in high concentrations because of its low blood gas solubility and minimal respiratory irritant effect. The vital capacity induction technique with sevoflurane was used to make the technique similar to that of intravenous bolus injection of propofol.[5] Fentanyl was used as a co-induction agent because of known synergistic effect of opioids with both sevoflurane and propofol[6]

Propofol is a known induction agent for insertion of LMA with excellent jaw relaxation and allows easy insertion of LMA. But it is no means ideal as it has been associated with several adverse effects including hypotension, apnoea and pain on injection.[7] Recently single breath vital capacity breath inhaled induction of anesthesia with sevoflurane has been used as an alternative to IV induction in adults. This is associated with high patient acceptance and good hemodynamic stability.[8] So in this study, we compared the quality and speed of LMA insertion in adult patients after sevoflurane vital capacity breath inhaled induction and propofol intravenous induction of anesthesia.

Patients were randomly divided into two groups of 25 each. Group P (propofol) and group S (sevoflurane). Patient's response to LMA insertion was noted and graded. Gagging, coughing, biting, laryngospasm, jaw relaxation and ease of LMA insertion were graded. For assessing hemodynamic status – pulse rate, systolic and diastolic blood pressures, mean arterial blood pressures were recorded before induction (baseline), at induction, 1 minute, 2 minute and 5 minute after LMA insertion.

Timing of Insertion of LMA Insertion: In our study mean time taken from induction to successful laryngeal mask insertion was significantly shorter with propofol compared with sevoflurane. With sevoflurane group the LMA insertion has taken 122±15.6 seconds while propofol has taken 100.8±14.48 seconds. Jaw relaxation has taken a longer time in sevoflurane group with p.0.001 which is highly significant.

Priya et al[9] in their study noted that propofol is known to depress laryngeal reflexes facilitating LMA insertion. They concluded that propofol is better than sevoflurane for LMA insertion using the loss of eyelash reflex as the end point of induction probably due to better jaw relaxation. Even in our study propofol took lesser time for induction in comparison with sevoflurane.

A thwaites, S Edmends and Smith[10] in their study observed that induction with sevoflurane was significantly slower when compared with propofol (mean 84(SD24) sec vs 57 (SD11) sec) but was associated with lower incidence of apnoea and shorter time to establish spontaneous ventilation.

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In contrast Ravikumar Koppula and Anitha Shenoy[11] in their study noted that verbal contact and eyelash reflex with sevoflurane was lost earlier when compared to propofol.

But both propofol and sevoflurane took similar times to jaw relaxation (group S 98±10.34 vs Group P 93.75±16.34 sec) and sub sequent LMA insertion (group S 137.05±17.42 vs Group P 140.16±21.67 sec).

Lian et al[12] in their study achieved insertion of LMA with sevoflurane in 127 sec almost similar to the time taken in our study (122 sec). They concluded that prolonged jaw tightness after sevoflurane induction of anesthesia may delay LMA insertion.

Muzi et al in their study reported jaw tightness after sevoflurane anesthetic induction which resulted in failure to insert the LMA in several patients[13]

Haemodynamic changes while inserting LMA:

Pulse: The heart rate at baseline and at the time of induction did not show much difference. Heart rate at one minute after induction showed a fall in propofol group which was statistically significant with p value of 0.006 No. statistically significant difference was noted at 2 minutes and 5 minutes after induction.

Systolic blood Pressure: There was no statistically significant difference in systolic blood pressure in preoperative period and during induction between the two groups but was statistically significant fall at one and two minutes. A significant fall in the systolic blood pressure in-group P was noted when compared to group S.

There was no statistically significant difference between the two groups at 5 minutes. At 5 minutes fall in blood pressure was noted in both group as halothane was added by that time for maintenance of anesthesia.

Mean arterial Pressure: There was no statistically significant difference in mean arterial blood pressure in preoperative period and during induction between the two groups but was statistically significant at one minute. There is no statistically difference between the two groups at 2 and 5 minutes.

Induction of anesthesia with sevoflurane was associated with advantage that means arterial pressure was better maintained with sevoflurane compared with propofol. The relative hypotension associated with propofol may be disadvantageous in elderly and coronary artery disease.

A Thwaites, S Edmends and I Smith[10] while comparing the hemodynamic parameters noted induction of anesthesia with propofol was associated with decrease of approximately 20 mm Hg in MAP which occurred within 2 min and persisted for atleast 5 min of anesthesia. In contrast they noted that decrease with MAP with sevoflurane was only 10 mm Hg. Almost similar results were noted in our study also.

Lian et al[12] in their study found that compared with baseline, average decrease in MAP during the study was 18.7% and 17% in propofol and sevoflurane groups respectively.

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Priya et al[9] observed the hemodynamic responses were stable with both groups. There was statistically significant difference in MAP in propofol group three minutes after induction, which was comparable to our study.

Ravikumar Koppula and Anitha Shenoy[11] measured heart rate and blood pressure after induction and observed that sevoflurane and propofol seem to produce a small and comparable decrease in systolic and mean arterial pressure and a marked decrease in diastolic pressure.

Analysis of Condition for LMA Insertion and Patients Response: In this study, inadequate jaw relaxation was found in 2 patients in sevoflurane group. In the same patients ease of LMA insertion was difficult requiring second attempt. The statistical analysis using Chi square test revealed no significant difference between the 2 groups. Gagging, coughing and biting was found in 2 patients in sevoflurane group but was statistically not significant. In the patient in sevoflurane group both coughing and biting was noted.

All patients in propofol group had LMA inserted in first attempt. In sevoflurane group 2 patients had LMA inserted in second attempt, probably due to inadequate jaw relaxation.

The overall conditions of LMA insertion was graded as excellent in all 25 patients belonging to propofol group. 23 patients in sevoflurane group had excellent conditions with score of 18. 1 patient in sevoflurane group had score of 17 and other score of 16 with LMA insertion grading as satisfactory.

In a similar study conducted by Priya et al,[9] features like coughing, gagging and patient movements could not reach statistical significance. Priya et al in their study noted that jaw relaxation with propofol was much better. With sevoflurane they noted that induction took longer time because sevoflurane has less relaxation properties when compared to propofol.

Ravikumar Koppula and Anitha Shenoy[11] in their study found that both sevoflurane and propofol had similar quality for insertion of LMA and concluded that sevoflurane is a good alternative propofol for LMA insertion.

Lian et al[12] in their study found that more attempts at insertion of LMA were required in patients in sevoflurane group versus those in propofol group, they suggested that this was primarily because of incidence of initially impossible mouth opening.

Beverly. K. Philip et al[14] in their study noted more airway-related events (cough, hiccough) in the sevoflurane group and more hemodynamic events in the propofol group which is consistent with our study. The airway related incidents in our study was more in sevoflurane group when compared to propofol group but is not of any statistical significance. This cannot be commented as the study group is very small.

Drawbacks in the Study:

1. Depth of anesthesia between the two groups was not compared as it was difficult to compare the depth of anesthesia between inhaled and IV anesthetics.
2. It is a single blind study, as the anesthesiologists who assessed induction side effects were not blinded to the induction technique.
3. Hemodynamic measurements were recorded once every minute during induction, perhaps episodes of hypotension or hypertension were missed within this assessment interval.
4. Cost benefit calculation and patient satisfaction assessment could have been done.

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CONCLUSION:

1. In our study even though sevoflurane is associated with good hemodynamic stability but quality of anesthesia provided with propofol is superior.
2. Prolonged jaw relaxation with sevoflurane when compared to propofol may delay laryngeal mask airway insertion.
3. None of the patients had trauma during insertion as noticed by absence of blood in LMA after removal in both groups.
4. Patients who received propofol complained of pain while injection and patients who received sevoflurane complained of odour while mask was held.

Thus, sevoflurane is an acceptable alternative to propofol for LMA insertion in adults.

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