

COMPARATIVE STUDY OF SEVOFLURANE AND PROPOFOL FOR EASE OF I-GEL INSERTION IN ADULT PATIENTS UNDERGOING GENERAL ANESTHESIA FOR SHORT PROCEDURES.

Anaesthesiology

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ABSTRACT

Background: I-gel is a second generation supraglottic airway device designed to provide and maintain a seal around the laryngeal inlet for spontaneous ventilation and allow controlled ventilation at modest levels of positive pressure thereby endotracheal intubation can be avoided. Propofol has been the drug of choice due to its better safety profile, relaxation and suppression of airway reflexes among intravenous induction agents. Sevoflurane with its pleasant odor, non-irritating to the airways and due to its bronchodilator property are best among the volatile agents. We aim to compare induction characteristics and ease of I gel insertion with sevoflurane and intravenous propofol.

Methods: The study was conducted in 60 eligible adult patients undergoing general anesthesia for short surgical procedures in Pushpagiri Medical College and Research Centre. Group P received Propofol and Group S received Sevoflurane 8%. Consecutive subjects who satisfy inclusion criteria were randomly assigned into one of the two groups of 30 until sample sizes were achieved. I gel insertion attempted after adequate jaw relaxation. Ease of I-gel insertion assessed by a three-point scoring system. Data was analysed by SPSS software. The independent variables assessed in this study includes the drugs given and the comparison was done using unpaired t test.

Results: Sevoflurane group took more time for induction than Propofol group. It was found that insertion time for sevoflurane was higher than the propofol group. The ease of I Gel insertion based on three point scale showed that in Sevoflurane group overall insertion conditions was excellent in 36.7% ;satisfactory in 63.3% as compared to group Propofol group which was 83.3%; 16.7% respectively. The results were statistically significant ($p < 0.01$).

Conclusion: It can be concluded that sevoflurane can be considered as a safer alternative to propofol for I Gel insertion.

KEYWORDS

I gel ,Propofol ,Sevoflurane

INTRODUCTION

Major responsibility of the anesthesiologist is to provide adequate ventilation to the patient. The most vital element in providing functional respiration is the airway management which has come a long way since the development of endotracheal intubation by Macewan in 1880 to the present-day usage of sophisticated devices(1). Supraglottic airway devices are widely used now for maintaining airway in patients undergoing general anesthesia for surgery. Supraglottic airway devices (SAD) came into advent in 1983. The Laryngeal Mask Airway (LMA) is the first of its kind(2).

I gel(3,4) is a popularly used second generation supraglottic airway device designed to provide and maintain a seal around the laryngeal inlet for spontaneous ventilation and allow controlled ventilation at modest levels of positive pressure. With use of supraglottic airway devices ,muscle relaxation is not required, laryngoscopy is avoided and hemodynamic changes are minimized during insertion and may be used when such responses are desirable(5). Satisfactory insertion of I gel after induction of anesthesia requires sufficient depth for suppression of airway reflexes else it is associated with various complications(6). Ideal induction agent for supraglottic airway devices would provide loss of consciousness, jaw relaxation, absence of upper airway reflexes.

Propofol is the best intravenous agent and the most popularly used I.V induction for supraglottic airway devices(7-9) due to its better safety profile, relaxation and suppression of airway reflexes. On the other hand, sevoflurane with its pleasant odor, nonirritating to the airways and due to its bronchodilator property are best among the inhalational agents with advantage of better hemodynamic stability.

MATERIAL AND METHODS

This was an observational study with two groups of patients undergoing general anesthesia for short surgical procedures. Each group with 30 patients. Group P received Propofol 2.5 mg/kg weight at the rate of 40 mg was given in every 10 sec .Group S received Sevoflurane 8% was introduced into fresh gas till jaw relaxation attained .Patients received Fentanyl 2 mcg/kg prior to induction .The point of start of injection of propofol or introduction of sevoflurane 8% considered as the starting point of induction .Loss of eyelash reflex considered as the desired end point for induction in both techniques. I gel insertion attempted after adequate jaw relaxation. Condition of

insertion of I-Gel graded by three-point scale using six variables and is as follows.

Variables	Scoring		
Mouth Opening	Nil (1)	Partial (2)	Full (3)
Ease of Insertion	Impossible (1)	Difficult (2)	Easy (3)
Swallowing	Gross (1)	Slight (2)	Nil (3)
Coughing/Gagging	Severe (1)	Mild (2)	Nil (3)
Patient Movement	Vigorous (1)	Moderate (2)	Nil (3)
Laryngospasm	Severe (1)	Mild (2)	Nil (3)

Total Score of: 18- Excellent ; 16-17- Satisfactory ; <16- Poor

INCLUSION CRITERIA

- Patients of ASA grade I and II
- Age between 18 and 60 years
- Patients undergoing General Anesthesia for short surgical procedures (less than 1.5 hours).

EXCLUSION CRITERIA

- Patients requiring endotracheal intubation.
- Surgeries requiring muscle relaxation.
- Patients requiring head and neck surgeries.

RESULTS

Table 1: Age Distribution

Age	Sevoflurane		Propofol	
	Count	Percent	Count	Percent
<=30	9	30.0	8	26.7
31 – 40	6	20.0	9	30.0
41 – 50	7	23.3	7	23.3
51 – 60	5	16.7	1	3.3
61 – 70	3	10.0	5	16.7
Mean ± SD	40.8 ± 14.7		40.1 ± 15.8	

t=0.17, 0.866

Table 2: Comparison of time to insertion

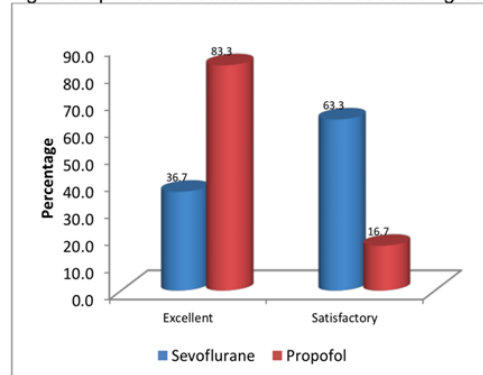
Group	Mean	SD	N	T	P
Sevoflurane	114.6	10.4	30	29.19	p<0.01
Propofol	49.9	6.2	30		

Table 3: Comparison of ease of insertion

Ease of insertion	Sevoflurane		Propofol		2	P
	Count	Percent	Count	Percent		
Excellent	11	36.7	25	83.3	13.61	p<0.01
Satisfactory	19	63.3	5	16.7		

*: - Significant at 0.05 level

Comparison of the ease of I gel insertion between groups

Fig. Comparison of ease of insertion based on group

DISCUSSION

In this study, 60 patients of ASA I and II were allotted randomly into group P (n= 30) and Group S (n=30). Demographic details of the patients were comparable with no significant difference in both the groups.

Sevoflurane group took more time for induction than Propofol group considering loss of eye lash reflex as the induction point and was statistically significant $p < 0.01$. It was also studied that insertion time for sevoflurane was higher than the propofol group and the results were statistically significant $p < 0.01$. In a similar study Priya et al (10) found that there was no difference in the mean time to insertion between the groups and induction was more rapid with IV Propofol. Chavan et al¹¹ found that sevoflurane took a longer time for induction and for SGA insertion as compared to propofol. A Thwaites, S Edmonds and Smith in their study observed that induction with sevoflurane was significantly slower when compared with propofol. Lian et al in their study achieved insertion of SGA with sevoflurane in 127 sec and concluded that sevoflurane takes more time for insertion.

Comparing the ease of I Gel insertion based on three point scale our results showed that in Group S (Sevoflurane group) overall insertion conditions were excellent in 36.7% ;satisfactory in 63.3% as compared to group P (Propofol group) which was 83.3%; 16.7% respectively. The results were statistically significant ($p < 0.01$). These results were comparable with study done by Shamsunnisha Rashdi et al (12) according to whom that 23 (76.7%) patient in group P and 12 (56.7%) in group S had excellent score. 7 (23.3%) in group P and 11 (36.7%) group S belonged to satisfactory score. 0% in group P and 2 (6.7%) in group S had poor score.

Soomro A et al (13) also found that ease of insertion was excellent in 28 (93.3 %) and satisfactory in 2 (6.7%) in group P. Similarly, excellent in 24 (80%) and satisfactory in 6 (20%) in group S. These results were also similar to study.

Priya et al (10) also found that excellent conditions were obtained in a significantly greater number of patients in Propofol group for SGA devices. Mean score in Group P was 17.5 ± 0.77 and 16.5 ± 1.15 in Group S ($P = 0.012$).

Chavan et al (11) in their study found that there was no statistically significant difference in the overall score for SGA devices insertion characteristics. These results were different from the one which we got.

CONCLUSION

So it can be concluded that sevoflurane can be considered as a safer alternative to propofol for I Gel insertion even though it takes more time for induction and insertion than propofol. Ease of I gel insertion is better with propofol but sevoflurane can be used. So sevoflurane can be

considered for I Gel insertion where Propofol can't be used.

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