Original Article

Indian Journal of Anesthesia and Analgesia
Volume 9 Number 5 September-October 2022
DOI: http://dx.doi.org/10.21088/ijaa.2349.8471.9522.1

Comparison Between two Supraglottic Airway Devices: Ambu AuraGain & Pro Seal LMA

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How to cite this article:
Anjali Tripathi, Chandrika V Bhut/ Comparison Between two Supraglottic Airway Devices: Ambu AuraGain & Pro Seal LMA/Indian J Anesth Analg. 2022;9(5)219-222.

Abstract

Context:

Aims: To compare two supra glottic airway devices, Ambu auragain & proseal LMA in terms of their working performance & insertion characteristics during general anesthesia in patient undergoing elective laparoscopic surgery.

Settings and Design: After written informed consent, 60 patients of ASA I & II, aged 18 to 60 years, of either gender posted for laparoscopic surgery under general anesthesia were included in the study. Patients were divided into two groups of 30 patients each.

Methods and Material: In group A: airway was secured with Ambu Auragain & in group P: with Proseal LMA for general anesthesia. Working performance (in terms of oropharyngeal leak pressure) and insertion characteristics (insertion time, manipulations of device, number of attempts) were recorded at the time of induction. Haemodymanics (Heart rate, mean arterial blood pressure, SpO_2) & complications (if any) were recorded perioperatively.

Statistical Analysis used: Student t test for quantitative data & Chi square test for qualitative data.

Results: Oropharyngeal leak pressure was significantly higher & insertion time was significantly less in group A compared to group P ($P<0.0001$). There was no statistically significant difference in insertion characteristics, demographic data, haemodynamics, ease of orogastric tube & post operative complications in both the groups.

Conclusions: AmbuAuragain provides higher oropharyngeal leak pressure with lesser insertion time compared to ProSeal LMA.

Keywords: Ambu AuraGain; ProSeal LMA; Oropharyngeal leak pressure.

Key Messages: Ambu AuraGain is better 2nd generation supraglottic device in terms of working performance & insertion charecteristics.

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Received on: 26.05.2022

Accepted on: 28.06.2022

INTRODUCTION

General anesthesia require safe and open airway.[3] Till date, tracheal intubation is the gold standard method for maintaining a patent airway during general anesthesia.[4] However, this maneuver requires direct laryngoscopy by a skilled & trained person.[5] With advancement in anesthesia technique in airway management, it has

been progressed from using an endotracheal tube to a supraglottic airway device because of ease and speed of insertion, improved hemodynamic stability, reduce anesthetic requirement and less airway related postoperative complication.[6,7] Wide variety of supraglottic airway devices available today which are employed to protect the airway in both elective as well as emergency situations.[8]

MATERIALS AND METHODS

After approval from the Institutional Review Board (IRB no. 924/2019) this prospective, randomized, single blind study was carried out in the Department of Anesthesiology, Govt. Medical College and Sir T hospital Bhavnagar. After detailed pre-anesthetic evaluation, systemic examination and routine investigation, 60 patients in the age group of 18-60 years posted for laparoscopic surgery with ASA grade I-II were selected for the study.

Patients were randomized using computer generated random number sequence method into 2 groups: group A (Ambu Auragain was inserted) and group P (Proseal laryngeal mask airway was inserted). Monitoring for heart rate, non-invasive blood pressure and peripheral oxygen saturation was established and baseline vital parameters were recorded. IV access was secured and patients were premedicated with Ondansetron 0.08 mg/ glycopyrrolate 0.04 mg/kg, Midazolam 0.02mg/ kg and Fentanyl 2mcg/kg intravenously 20 mins prior to surgery. In the operation theatre multi parameter was attached, vitals recorded just before the induction were taken as baseline values for the present study. Patients were shifted to operation theatre oxygenated with 100% oxygen for 5 min by face mask with Bains circuit. Patients were induced with Inj propofol 2-2.5mg/kg IV slowly till loss of eyelash reflex, jaw relaxation, absence of movements and apnea. Patients were ventilated with Bains circuit, Inj. Succinyl choline 2 mg/ kg was given, pt was observed for appearance & disappearance of fasciculations. Insertion of SGA was done according to group assigned to the patients either with Ambu AuraGain or ProSeal LMA. The size of SGA was selected as per manufacturer recommendation. Correct positioning of device was confirmed by bilateral chest movement. Anesthesia was maintained with oxygen, nitrous oxide, sevoflurane, IPPV and intermittent dose of injection vecuronium.

The insertion characteristics were recorded in terms of number of insertion attempt, time taken for insertion (picking up of airway device to successful ventilation of lung), manipulation after insertion and failed insertion. Ease of gastric tube insertion was noted in both the groups.

The Working performance: Oropharyngeal leak pressure was measured by closing the adjustable pressure limiting valve against 5l/min fresh gas flow and recording the airway pressure at equilibrium when air leak was heard in the oropharynx to a maximum airway pressure of 40 cm of H_2O.

After insertion of device, appropriate sized orogastric tube was lubricated and placed into the stomach through the gastric channel. Hemodynamic parameters like heart rate, blood pressure as well as percentage peripheral oxygen saturation (SpO_2) was recorded before, during and after induction with Ambu AuraGain/ ProSeal LMA insertion at 1, 5 ,10 (min) and after removal of the devices. After the fulfilment of the criteria of emergence, the SGA was removed after thorough oropharyngeal suction and examined for blood stain & patient was observed for laryngobronchospasm. Patients were asked for the sore throat in post operative period & if present was treated conservatively by decongestant.

RESULTS

Oropharyngeal leak pressure was significantly higher & insertion time was significantly less in group A compared to group P.

Table 1: Insertion characteristics of the device

Variable		Group-A Mean ± SD (n=30)		Group-P Mean ± SD (n=30)		P value
		N	%	N	%	
Insertion attempts	First	28	93.33	26	86.66	0.6707
	Second	02	6.67	04	13.33	
Manipulation require after insertion to improve ventilation		05	16.67	07	23.33	0.7480
Failed insertion		00	00	00	00	

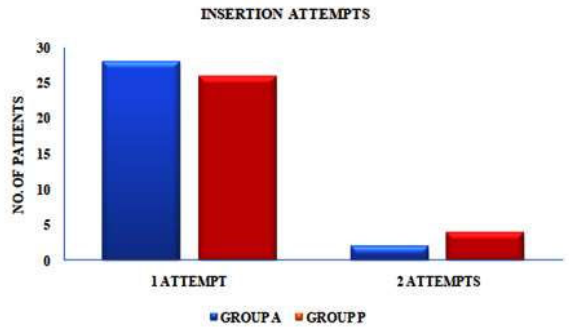
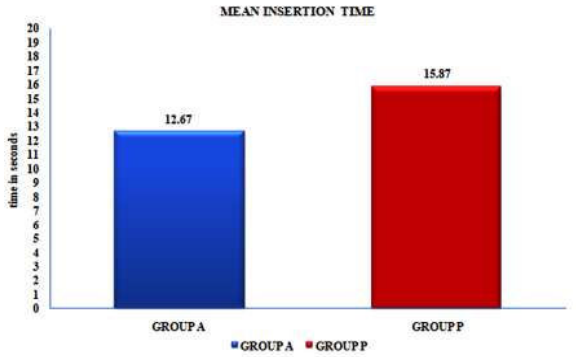


Table 2: Mean Insertion time of the device

Time	Group-A Mean ± SD (n-30)	Group-P Mean ± SD (n-30)	P Value
Duration (sec)	12.67 ±0.80	15.87 ± 1.35	<0.001



• The mean time of insertion was significantly less in group A as compared to group P. (p<0.0001)

Table 3: Orogastric tube insertion

Variable		Group A		Group B		P value
		N	%	N	%	
Ease of gastric tube insertion	Easy	27	90	23	76.67	0.299
	Difficult	03	10	07	23.33	

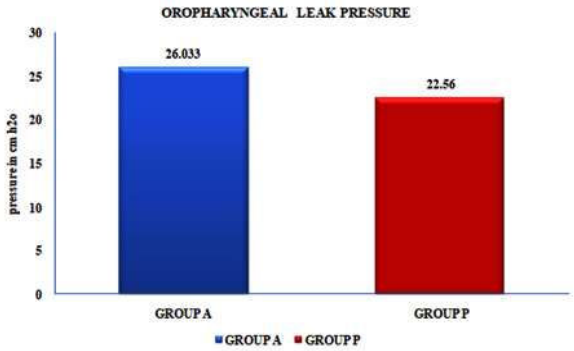
• Gastric tube could be inserted easily and successfully in more number of patients in group A than in group P but difference is not statistically significant. (P=0.299)

Table 4: Oropharyngeal leak pressures of the devices

Variable	Group-A Mean ± SD (n-30)	Group-P Mean ± SD (n-30)	P value
Oropharyngeal leak pressure (in cm h_2O)	26.033 ±+ 1.098	22.56 ± 1.006	<0.0001

DISCUSSION

The first insertion attempt was greater in group A as compared to group P but there was no statistical difference among the both groups (P



• There was statistically significant difference in Oropharyngeal leak pressure between group A and group P with higher oropharyngeal leak pressure in group a than in group P. This indicates the better working performance of Ambu Auragain in comparison to Proseal LMA. (P <0.0001).

Table 5: Post-operative complications

Variable	Group-A	Group-P	P value
	N	N	
Laryngo bronchospasm	00	00	
Blood stain	00	01	1.00
Sore throat	02	03	1.00

The complications rate in both the groups of patients were comparable. There was no statistical significance (P>0.05).

>0.05). The airway manipulations were statistically insignificant between group A and group P. The mean time taken for insertion in group A is 12.76 ± 0.80 sec and group P is 15.87 ± 1.35 sec (P<0.05). AAU insertion was quicker than Proseal LMA and, AAU has clinically high first attempt insertion rate; it can be used for cardio pulmonary resuscitation. Oropharyngeal leak pressure is higher with group A (26.033±1.098) as compared to group P (22.56±1.006) (P value <0.05). Orogastric tube was inserted easily in both the groups.

There was an increase in heart rate and mean arterial blood pressure after removal of the device but it was not clinically significant and no patient required any pharmacological intervention. Changes in heart rate and mean arterial blood pressure at intervals of intra op and post op period between the two groups were statistically insignificant and hence were comparable.

There were no serious complications in either of the groups. Blood staining of device after removal was seen in one patient in group P. It was not seen in any of the patients in group A. Sore throat was

complained by 2 patients in group A & 3 patients in group P. None of the patients experienced laryngo bronchospasm in the study.

CONCLUSION

We concluded the study "Comparison between two Supraglottic Airway Devices: Ambu AuraGain & ProSeal Laryngeal mask airway in patients undergoing elective laparoscopic surgery under general anesthesia: Randomised controlled trial" as follows:

- Ambu Auragain provides higher oropharyngeal leak pressure compared to Pro Seal LMA.
- Insertion time is less in Ambu Auragain compared to Pro Seal LMA.
- Other insertion characteristics & ease of orogastric tube insertion were comparable in both the groups.
- Haemodynamic parameters were stable in with both, Ambu AuraGain & Pro Seal LMA.
- No serious complications were observed in both the groups.

Thus, we concluded that Ambu AuraGain has better working performance as it provides higher Oropharyngeal leak pressure & less insertion time compared to Pro Seal LMA in laparoscopic surgery under general anesthesia.

Acknowledgement: I thank almighty, my guide & co-author Dr. Chandrika V Bhut for her constant support & guidance, my parents for their support & my subjects.

Conflict of Interest: NIL

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