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Original article

Comparison of success rate of blind tracheal intubation on using LMA Fastrach and AMBU Auragain as an intubating device for general anaesthesia in adult patients.

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ABSTRACT

INTRODUCTION

LMA Fastrach (Intubating LMA) was designed by Dr Archie Bran. ILMA is designed to provide a dedicated airway and allow placement of moderate size tracheal tubes in both easy and difficult airways. The short rigid anatomically curved stem of ILMA leads to easy insertion even by novices but its potential to cause mucosal damage limits its use.

It has a soft inflatable laryngeal mask and a rigid anatomically curved airway tube terminating in standard 15mm connector and is wide enough to accept a cuffed 8mm tracheal tube. Device measures 20mm in transverse diameter at its widest point. An epiglottic elevator bar in mask aperture elevates epiglottis when endotracheal tube is passed through the aperture.

The ILMA permits single handed insertion from any operator position, without moving the head or neck from neutral position and without placing fingers in pt mouth. It can be used as an airway device in its own right, permitting ventilator support and oxygenation between intubation attempts.

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AIMS AND OBJECTIVES

Our aim in this study is Comparison of success rate of blind tracheal intubation on using LMA Fastrach and AMBU Aura gain as an intubating device for general anaesthesia in adult patients

The comparison was done on the basis of-

1. No of attempts needed for successful tracheal intubation using ILMA and AMBU Aura gain as a conduit for intubation.

2. Time taken for successful intubation using either of these.

3. Hemodynamic changes occurring during the intubation process, with either of these devices.

4. Post operative complications (bleeding and hoarseness of voice) after intubation using ILMA and AMBU Aura gain.

Kyewords: LMA Fastrach , AMBU Aura gain

METERIAL AND METHOD

This study aims to compare blind intubation success rate on using LMA Fastrach and AMBU Auragain as an intubating device for general anesthesia in adult patients.

We conducted a prospective randomized comparative study at SN Medical college, Agra, UP. A total of 130 adult patients of either sex aged 18- 60 yrs. ,belonging to ASA1 and ASA2 and scheduled to undergo elective surgery under GA in supine position were selected.

2 groups were allotted namely - Group AA and group LF, where group AA: Ambu auragain and group LF: Lma fastrach (ILMA) and each group takes equal no. of cases i.e. 65 patients.

Study analysis- The data collected from above mentioned study were analysed and concluded using students t-test and fishers exact test.

Inclusion criteria:

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1) Patients between age group of 18-60 yrs.
2) ASA grade 1 & 2.
3) Posted for elective surgery requiring general anaesthesia in supine position.
4) Informed written consent.
5) Solid food was not allowed for 6 hours preoperatively and clear liquids were permitted up to 4hrs prior to induction of anaesthesia.

Exclusion criteria:

1) Who are at increased risk of aspiration of gastric content.
2) If mouth opening was less than 2.5 cm.
3) Undergoing head and neck surgeries or any surgeries in non-supine position.
4) With h/o cardiovascular diseases, metabolic and central nervous system diseases.
5) Patients with respiratory tract infection.
6) Patients with ASA grade 3, 4, and 5.
7) Patients with any coagulation disorder.

MEASUREMENTS

Primary measure

1. Time to successful tracheal intubation

It is the time taken for successful SGA device insertion plus the time taken for ETT insertion through the SGA device. The stopwatch was started from the time when SGA device touched the incisors of the patient till the appearance of etco2 after successful ETT insertion through the SGA device.

2. Attempts to successful tracheal intubation.

a) One attempt

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b) Two attempts

c) Failure to intubate

Secondary measures

1. Hemodynamic changes during intubation.

a) Pulse rate

b) Mean arterial pressure

2. Any adverse airway events, adverse events mean patient spo2 falling below 90% during the intubation process

3. Postoperative complications

a) Trauma to the airway- blood stains on SGA device which is seen after removing the device after intubation.

b) Incidence of sore throat to patient.

CONCLUSION

Hence, we conclude that administration of [dexmedetomidine 2 μg/kg with 0.75%ropivacaine] in supraclavicular brachial plexus block is better modality in comparison to {dexmedetomidine1 μg/kg with 0.75% ropivacaine} in block and 0.75%ropivacaine in block plus intravenous dexmedetomidine without any side effects or hemodynamic changes in elective upper limb surgeries.

In the operation theatre; heart rate (HR), blood pressure (BP), mean arterial pressure (MAP), ECG, Oxygen saturation(SPO2), temperature were

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monitored and baseline value were recorded. Venous access was secured the night before.

Plan of anaesthesia: All patients were uniformly premedicated with IV midazolam 1gm , IV glycopyrrolate 0.2 mg and IV fentanyl 1.0-1.5 microgm/kg prior to induction of anaesthesia.

Anaesthesia was induced in supine position with patients head in neutral position with IV propofol 2-2.5 mg/kg and IV vecuronium 0.1 mg/kg. Anaesthesia was to be maintained with inhalational isoflurane, oxygen and nitrous oxide.

In both the groups after giving induction drugs, the patients were ventilated with bag and mask with 100% oxygen and then SGA device was introduced.

Group 1- ILMA or LMA Fastrach

ILMA size 3 and 4 were choosen according to ideal body weight (size 3 and 4 for person weighing 30 to 50 kg and 50 to 70 kg). The cuff of ILMA was deflated and the mask lubricated while maintaining neutral position of the

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head of the patient and providing manual in-line stabilisation of cervical spine, the mask of ILMA was flattened against hard palate and inserted with a rotational movement along the hard palate and the posterior pharyngeal wall. After its insertion,the cuff was inflated as per manufacturer's guidelines. Proper placement of device was confirmed by observing the chest rise and noting the presence of normal capanograph trace. Leak pressure and cuff pressure were measured and kept under 40cm H2O and 60cm H2O respectively. If the first attempt of insertion of SGA device was unsuccessful, a second attempt was undertaken and tongue depressor was used. It was planned that after two failure of SGA device placement and/or fall of SPO2 < 90%, the procedure would be abandoned and these would be considered as a failure case. However none of our patient fell in category of failure case. After the successful insertion of ILMA,high pressure cuffed, reinforced silicone endotracheal tube was selected (size of 7 and 8 for female and male respectively) and well lubricated to ensure smooth passage during intubation. Endotracheal tube was then passed through ILMA in trachea. When the first attempt of insertion of endotracheal tube was

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unsuccessful, a second attempt was undertaken using various manouverer. These included chandymanouvere and jaw thrust. If the endotracheal tube not placed in two attempt or oxygen saturations fall to 90%, procedure was abandoned and patient was intubated using direct laryngoscopy. these cases considered as a “failure case’ of study. Proper placement of endotracheal tube was confirmed by observing chest rise and nothing the pressure of normal capnograph trace. The efficacy of the ILMA as a ventilator device and blind intubation guide has been previously reported in patiets with normal and abnormal airways. The high success rate of blind tracheal intubation observed. Following this, ILMA was removed with help of a stabilising rod. Upon removal of ILMA, note was made of visibility of any blood on device. After this, general anesthesia was maintained through endotracheal tube. After completion of surgery, patient was reversed using injection neostigmine 0.05 mg / kg and injection glycopyrrolate 10 mcg / kg, both administered intravenously and trachea was extubated. The patient was questioned about the degree of sore throat before leaving the post anaesthesia care unit post operatively.

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Group 2- AMBU Auragain

COMPARISON OF NUMBER OF ATTEMPTS NEEDED FOR SUCCESSFUL INTUBATION

IN BOTH GROUPS

In the first attempt, in ILMA group, out of 65 patients total 59 patients were successfully intubated and remaining 6 patients were intubated in the second attempt. In AMBU Auragain group only 45 patients could be intubated in first attempt, while 15 patients were intubated in second attempt. 5 patients in AMBU Auragain group couldn't be intubated even after second attempt and they were labelled under "failed intubation". The difference between the 2 groups was found to be significant as p-value was less than 0.05. Fishers exact test was applied for the analysis.

AMBU Auragain sizes 3 and 4 were selected according to age and sex of the patient. ETT with which intubation was to be performed was kept. For size 3- 6 and 6.5mm were kept and for size 4- 7 and 7.5mm sizes were kept. After induction of anesthesia, an appropriate size well deflated and well lubricated AA was inserted with head in neutral position after application of jaw thrust, using midline approach. Then cuff was inflated and correct placement confirmed by observing visible chest rise and capnography. Then ETT was also well lubricated and also deflated. ETT was inserted through the AA, achieve the tracheal intubation. Correct placement of ETT was confirmed with the help of visible chest rise and capnography. AA was then deflated and removed after confirmation of correct tracheal intubation. An

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ETT of size 5.5 and 6.5mm for AA sizes 3 and 4 were used as tube stabilizer while removing AA. Pt was ventilated with 100% oxygen during this whole process.if intubation not successful in first attempt then maneuvres like neck extension and jaw thrust was performed and then patient tried for second attempt. If second attempt also failed then direct laryngoscopy was employed for intubation.. After completion of surgery, patient was reversed using injection neostigmine 0.05 mg / kg and injection glycopyrrolate 10 mcg / kg, both administered intravenously and trachea was extubated. The patient was questioned about the degree of sore throat before leaving the post anaesthesia care unit post operatively.

MEASUREMENTS

Primary measure

3. Time to successful tracheal intubation

It is the time taken for successful SGA device insertion plus the time taken for ETT insertion through the SGA device. The stopwatch was started from the time when SGA device touched the incisors of the patient till the appearance of etco2 after successful ETT insertion through the SGA device.

4. Attempts to successful tracheal intubation.

d) One attempt

e) Two attempts

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f) Failure to intubate

Secondary measures

4. Hemodynamic changes during intubation.

c) Pulse rate

d) Mean arterial pressure

5. Any adverse airway events, adverse events mean patient spo2 falling below 90% during the intubation process

6. Postoperative complications

c) Trauma to the airway- blood stain on SGA device which is seen after removing the device after intubation.

Incidence of sore throat to patient

NUMBER OF ATTEMPTS NEEDED FOR SUCCESSFUL INTUBATION

No. of attempts	AMBU		ILMA	
	No.	%	No.	%
One	45	69.23	59	90.77
Two	15	23.08	6	9.23
Failure	5	7.69	0	0.00
Total	65	100.00	65	100.00

p-value=0.0295*

Fisher exact test was applied

COMPARISON OF TIME TAKEN FOR INTUBATION IN BOTH GROUPS

When ILMA was used as a conduit for intubation it required 78.34 ± 6.11 sec for intubation. Whereas, time required for intubation using AMBU Auragain as a conduit for intubation is 83.43 ± 8.15 sec. However the difference between

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two was statistically significant (P value < 0.05). Students t-test was applied for the analysis.

TIME PERIOD FOR INTUBATION

	N	Mean	SD	t-value	p-value
AMBU	60	83.43	8.15	-3.970	0.0001
ILMA	65	78.34	6.11		

COMPARISON OF EPISODES OF DESATURATION OF PATIENTS IN BOTH GROUPS

7 patients faced episodes of desaturation in AMBU auragain group, while 5 patients faced same situation in ILMA group.

EPISODE OF DESATURATION

	AMBU (N=65)		ILMA(N=65)	
	No.	%	No.	%
Desaturation (<90%) adverse airway event	7	10.77	5	7.69

CONCLUSION

Hence, we conclude that administration of [dexmedetomidine 2 μg/kg with 0.75%ropivacaine] in supraclavicular brachial plexus block is better modality in comparison to {dexmedetomidine1 μg/kg with 0.75% ropivacaine} in block and 0.75%ropivacaine in block plus intravenous dexmedetomidine without any side effects or hemodynamic changes in elective upper limb surgeries.

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