ORIGINAL ARTICLE

Blind Endotracheal Intubation through Intubating Laryngeal Mask Airway: is Chandy Manuever beneficial?

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ABSTRACT

Objective: To investigate the utility of ILMA for blind endotracheal intubation in patients undergoing elective surgery under general anaesthesia applying chandy manuever.

Material and methods: In this study 62 patients of American Society of Anaesthesiologist class P_1 and P_2 status, of age >18 yrs of both sex and height of less than 160 cm were included and divided into group A 31 patients with chandy manuever and group B 31 patients (without candy manuever). ILMA was inserted as per standard technique after inducing general anaesthesia. The lubricated endotracheal tube was passed through ILMA. After confirmation of successful endotracheal intubation, ILMA was removed. Ease of mask ventilation, time required for insertion of ILMA, number of attempts required for insertion of ILMA, time required to achieve intubation, number of attempts required for blind endotracheal intubations were recorded.

Results: Only one attempt was done for every patient and 90.3% successfully intubation in group A and 58.1% in group B.

Conclusion: Blind endotracheal intubation through ILMA is easy with the application of chandy manuever as compared to without this manuever.

Key words: Chandys manuever, endotracheal intubation, intubating laryngeal mask airway.

INTRODUCTION

Intubating laryngeal mask airway (ILMA) was introduced in 1997 by Archie Brain. The ILMA has an established role in the management of difficult airway, both for ventilation and as a conduit for intubation, where conventional mask ventilation and tracheal intubation proves difficult[1]. The ILMA is easy to use in acute resuscitation[2]. ILMA is also useful in pediatric patients for successful tracheal intubation[3]. ILMA is an alternative in case of fiberoptic bronchoscope unavailability[4].

ILMA has proven to be a useful difficult airway device both within and outside of operating room[5]. The ILMA is an easy to use airway with a high success rate of insertion and requires little training[6]. It causes minimal cardiovascular changes during placement[7]. For the placement of ILMA the chandy manuever was developed for the correct positioning of ILMA and to facilitates blind intubation through it[8].

MATERIAL AND METHODS

After the approval of study from hospital ethics committee 62 patients of ASA class P_1 and P_2 status, age > 18 years of both sex, height less than 160 cm, mallampatti class I to III with mouth opening $\geq$ 3 cm undergoing general anaesthesia electively were included in this study. Informed consent were taken from all patients on preoperative visit. These patients were divided into two group A and B by using random number table. Each group contained 31 pateints.

In group A blind intubation through ILMA was done after application of Chandy manuever. In group B blind intubation through ILMA without application of chandy manuever. In Operation Theater for all patients intravenous lines were maintained, standard II monitoring done, the patient head was supported on a silicon donut 4 cm in height and head and neck was kept in a neutral position. After pre-oxygenation for three minutes, anaesthesia was induced with nalbuphin 150 mcg/kg followed by 2 mg/kg propofol and atracurium 0.5 mg/kg. The lungs were ventilated with 1.2% isoflurane in 50% oxygen in nitrous oxide. After three minutes ILMA was inserted. The ILMA cuff was inflated with 20 ml air and lungs ventilated using a bain circuit.

ETT placement confirmed by using capnography. When the intubation through ILMA failed in either group, the trachea was intubated using the conventional laryngoscope. The primary outcome measure was the number of successful intubaiton in the first attempt while time taken for intubation and the additional manuevers required were recorded as secondary outcome variable. The chi square test was applied to analyze data and P value <0.05 was considered significant and SPSS version 10 was used.

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RESULTS

In group A mean age was 38.42±15.82. In group B mean age was 42.29±13.62. Time taken for intubations was high in group A (77.42±15.42) than group B (32.68±2.95). Overall success rate of blind endotracheal intubation with chandy manuever was higher (93.3%) than without chandy manuever (58.1%).

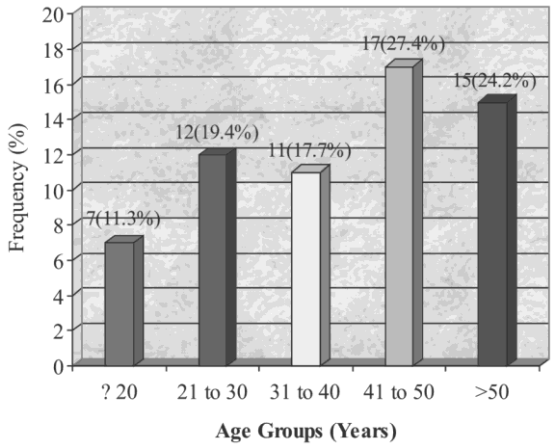

Fig.1: Age distribution

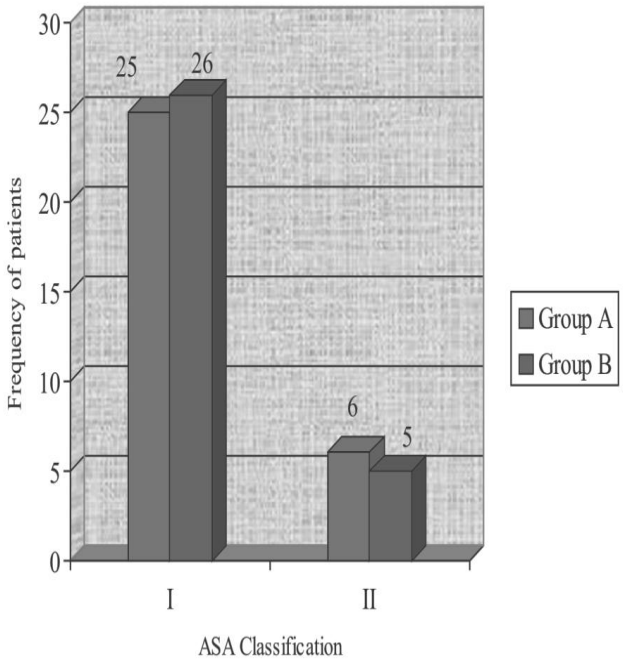

Fig.2: Groups n=62
ASA-I = 51(82.3%) ASA-II= 11(17.7%)
Chi-Square test= .11; DF=1, p=0.74

Table 1: Descriptive statistics of study characteristics of the patients n=62

Variables	Mean ± SD	95%CI	Median(IQR)	Max - Min
Age (Years)	40.35±14.77	36.60 to 44.11	42.5(25)	70-18
Weight (kg)	49.02±3.47	48.13 to 49.9	48.5(5)	56-40
Height (cm)	148.06±7.81	146.08 to 150.1	145(15)	162-138
Mouth opening(cm)	3.61±0.19	3.56 to 3.66	3.6(0.3)	4-3.2
Time Taken for intubations (sec)	55.05±25.1	48.68 to 61.42	53(39)	128-27

Table 2: Comparison of characteristic between groups

Variables	Group A (n=31)	Group B (n=31)	P-value
Age (Years)	38.42±15.82	42.29±13.62	0.31
Weight (kg)	48.42±3.5	49.61±3.4	0.17
Height (cm)	147.35±7.19	148.77±8.44	0.47
Mouth Opening	3.61±0.20	3.61±0.18	0.99
Time Taken for intubations (sec)	77.42±15.42	32.68±2.95	0.0005

Table 3: Comparison of gender between groups

Gender	Group A(n=31)	Group B(n=31)	Total
Male	7(22.6%)	13(41.9%)	**20(32.3%)**
Female	24(77.4%)	18(58.1%)	**42(67.7%)**

Chi-square= 2.657; df=1 p=0.103

Table 4: Comparison of success rate between groups

Outcome	Group A(n=31)	Group B (n=31)	Total
Success	28(90.3%)*	18(58.1%)	**46(74.2%)**
Fail	3(9.7%)	13(41.9%)	**16(25.8%)**

Chi-square= 8.42; df=1 p=0.004 (* significant), Group A = with chandy maneuver, Group B = without chandy maneuver

Table 5: Comparison of success rate between groups with respect to gender

Stratification of Gender	Group A	Group B	P-Value
Male	7	13	
Success	5(71.4%)	8(61.5%)	0.65
Fail	2(28.6%)	5(38.5%)	
Female	24	18	
Success	23(95.8%)	10(55.6%)	0.002*
Fail	1(4.2%)	8(44.4%)	

Table 6: Comparison of success rate between groups with respect to age

Stratification of Age	Group A	Group B	P-Value
≤ 40 Years	**16**	**14**	
Success	15(93.8%)*	9(64.3%)	0.044*
Fail	1(6.3%)	5(35.7%)	
> 40 Years	**15**	**17**	
Success	13(86.7%)*	9(52.9%)	0.040*
Fail	2(13.3%)	8(47.1%)	

Table 7: Comparison of success rate between groups with respect to weight

Stratification of weight	Group A	Group B	P-Value
40 to 48 kg	**18**	**13**	
Success	17(94.4%)	10(76.9%)	0.151
Fail	1(5.6%)	3(23.1%)	
49 to 56 kg	**13**	**18**	
Success	11(84.6%)*	8(44.4%)	0.023*
Fail	2(15.4%)	10(55.6%)	

Table 8: Comparison of success rate between groups with respect to height

Stratification of height	Group A	Group B	P-Value
138 to 145 cm	**16**	**16**	
Success	15(93.8%)*	9(56.3%)	0.037*
Fail	1(6.3%)	7(43.8%)	
146 to 162 cm	**15**	**15**	
Success	13(86.7%)	9(60%)	0.099
Fail	2(13.3%)	6(40%)	

DISCUSSION

Management of difficult airways and difficult intubation differs in pediatric and in adult patients[9]. The intubating laryngeal mask airway is a specially designed airway device that can be used for endotracheal intubation without direct laryngoscopy[10]. Oral injuries are more frequent with laryngoscopy as compare to laryngeal mask insertion[11]. In the study of Barnes DR et al they use LMA unique for blind tracheal intubation and found that was not very successful method in tracheal placement[12]. In the study of Sastre JA et al they compare I-gel with ILMA and found that ILMA enabled a higher number of intubation to be made than I-gel and with a lower incidence of post-operative dysphonia[13].

Similarly in the study of Darlong V et al they compared the ILMA with cobra perilaryngeal airway (CPLA) and concluded that CPLA can be used as an effective conduit for blind endotracheal intubation with cuffed PVC tube and has comparable efficacy is tracheal intubation as that with ILMA[14].

In the study of Wong DT et al they found that in failed intubation scenario, supraglottic airways such as the LMA classic as LMA Proseal can serve as conduit for tracheal intubation[15].

CONCLUSION

Blind endotracheal intubation through ILMA is easy with the application of chandy manuever as compared to without this manuever. It provides ease of placement without head and neck manipulation.

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