Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Index Copernicus value [ICV] =82.06

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of incidence of difficult laryngoscopy and intubation

Raj Krishna Srivastava

Associate Professor Department of Anaesthesiology Mayo Institute of Medical Sciences Gadia, Barabanki, Uttar Pradesh, India

ABSTRACT:

Background: Successful and safe tracheal intubation with induction of anaesthesia should prevent morbidity and avoid the serious consequences of failure to establish the airway. The present study was conducted to assess the incidence of difficult laryngoscopy and intubation. **Materials & Methods:** 78 patients of ASA physical status I and II adult patients scheduled for elective surgery under general anaesthesia requiring tracheal intubation of both genders. Airway characteristics and clinical factors were recorded and their association with difficult laryngoscopy (Cormack and Lehane grade 3 and 4) was analysed. Intubation difficulty scale score was used to identify degree of difficult laryngoscopy and patients were classified accordingly into group I with easy laryngoscopy and group II with difficult laryngoscopy. **Results:** Out of 78 patients, males were 40 and females were 38.Cormack and Lehane grade 1 was seen in 65% and 0, 2 in 35% and 0, 3 in 0 and 92% and 4 in 0 and 8%. With external laryngeal manipulation 1 was seen in 75% and 7%, 2 in 25% and 87% and 3 in 0 and 6%. IDS score 0 was seen in 53%and 0, 0-5 in 47% and 52% and >5 in 0 and 48%. Mallampati class 0 was seen in 4%and 0, 1 in 60% and 32%, 2 in 26% and 20%, 3 in 7% and 30% and 4 in 3%and 18% in group I and II respectively. The difference was significant (P< 0.05). **Conclusion:** Cormack and Lehane grade 1 was seen in easy laryngoscopy group as compared to difficulty laryngoscopy group.

Key words: Laryngoscopy, tracheal intubation, Cormack and Lehane

Received: 20 December, 2018 Accepted: 25 January, 2019

Corresponding author: Raj Krishna Srivastava, Associate Professor Department of Anaesthesiology Mayo Institute of Medical Sciences Gadia, Barabanki, Uttar Pradesh, India

This article may be cited as: Srivastava RK. Assessment of incidence of difficult laryngoscopy and intubation. J Adv Med Dent Scie Res 2019; 7(2): 216-219.

INTRODUCTION

Unanticipated difficult intubations remain a major concern for anesthesiologists due to the potentially serious consequences of failed endotracheal intubations. The identification of patients with difficult airways is crucial during preoperative evaluations.[1]

Successful and safe tracheal intubation with induction of anaesthesia should prevent morbidity and avoid the serious consequences of failure to establish the airway. Many different strategies and techniques to secure the airway have been described for both patients who are awake and those who are anaesthetized. A variety of tests are used to evaluate for a potentially difficult intubation in advance of the procedure. It is not clear; however, which test has the best predictive ability.[2]Recent studies have described alternative methods to establish the airway following an unanticipated, difficult or failed tracheal intubation. As well, guidelines for the recognition and management of the difficult airway have recently been developed. For the preoperative identification of patients with potentially difficult airways, several classifications have been proposed.[3,4]

Differences in patient characteristics due to race or ethnicity may influence the incidence of difficult laryngoscopy and difficult intubation.[5] The majority of studies of difficult laryngoscopy and intubation have been performed. Anthropometrically, Indians are different compared to the Americans or Europeans.[6] Adequate data of normal values in a given population may help the clinician to identify patients who are outside the range and therefore potentially challenging. Moreover, most studies do not provide a 'measure' of difficult intubation in patients with difficult laryngoscopy.[7]The present study was conducted to assess the incidence of difficult laryngoscopy and intubation.

MATERIALS & METHODS

The present study comprised of 78 patients of ASA physical status I and II adult patients scheduled for elective surgery under general anaesthesia requiring tracheal intubation of both genders. A written consent for the participation in the study was obtained from relatives.

Data such as name, age, gender etc. was recorded. Airway characteristics and clinical factors were recorded and their association with difficult laryngoscopy (Cormack and Lehane grade 3 and 4) was analysed. Intubation difficulty scale score was used to identify degree of difficult laryngoscopy and patients were classified accordingly into group I with easy laryngoscopy and group II with difficult laryngoscopy. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

Total- 78		
Gender	**Males**	**Females**
Number	40	38

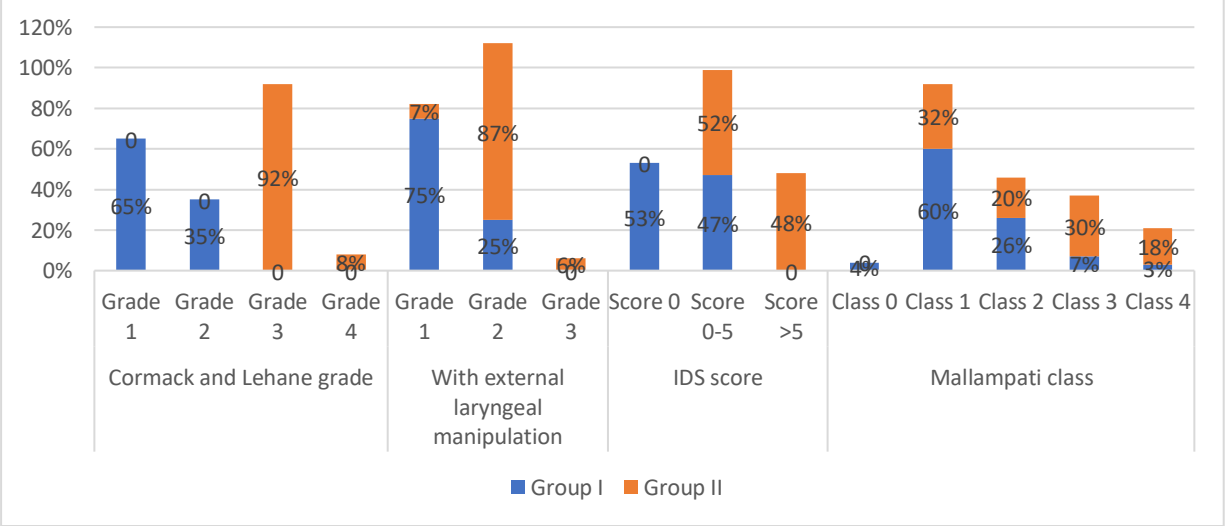
Table I shows that out of 78 patients, males were 40 and females were 38.

Table II: Assessment of parameters

Parameters	Variables	Group I	Group II	P value
Cormack and Lehane grade	Grade 1	65%	0	0.01
	Grade2	35%	0	
	Grade3	0	92%	
	Grade4	0	8%	
With external laryngeal manipulation	Grade1	75%	7%	0.04
	Grade2	25%	87%	
	Grade3	0	6%	
IDS score	Score 0	53%	0	0.02
	Score0-5	47%	52%	
	Score>5	0	48%	
Mallampati class	Class0	4%	0	0.05
	Class1	60%	32%	
	Class2	26%	20%	
	Class3	7%	30%	
	Class4	3%	18%	

Table II, graph I shows that Cormack and Lehane grade1 was seen in 65% and 0, 2 in 35% and 0, 3 in 0 and 92% and 4 in 0 and 8%. With external laryngeal manipulation1 was seen in 75% and 7%, 2 in 25% and 87% and 3 in 0 and 6%. IDS score0 was seen in 53% and 0, 0-5 in 47%and 52% and >5 in 0 and 48%. Mallampati class 0 was seen in 4% and 0, 1 in 60% and 32%, 2 in 26% and 20%, 3 in 7% and 30% and 4 in 3% and 18% in group I and II respectively. The difference was significant (P< 0.05).

Graph I: Assessment of parameters



DISCUSSION

Unanticipated difficult endotracheal intubations are the most common cause of anesthesia-related morbidity and mortality and are a major source of concern for anesthesiologists.[8] As a result, it is important to identify a clinical test that is quick and easy to perform during a preoperative evaluation in order to accurately predict potentially difficult endotracheal intubations with high sensitivity and specificity.[9]The present study was conducted to assess the incidence of difficult laryngoscopy and intubation.

We found that out of 78 patients, males were 40 and females were 38. Prakash et al[10]determined the incidence of difficult laryngoscopy and intubation, as well as the anatomical features and clinical risk factors that influence them. In 330 adult patients receiving general anaesthesia with tracheal intubation, airway characteristics and clinical factors were determined and their association with difficult laryngoscopy (Cormack and Lehane grade 3 and 4) was analysed. Intubation Difficulty Scale score was used to identify degree of difficult laryngoscopy.The incidence of difficult laryngoscopy and intubation was 9.7% and 4.5%, respectively. Univariate analysis showed that increasing age and weight, male gender, modified Mallampati class (MMC) 3 and 4 in sitting and supine positions, inter-incisor distance (IID) ≤3.5 cm, thyromental (TMD) and sternomental distance, ratio of height and TMD, short neck, limited mandibular protrusion, decreased range of neck movement, history of snoring, receding mandible and cervical spondylosis were associated with difficult laryngoscopy. Multivariate analysis identified four variables that were independently associated with difficult laryngoscopy: MMC class 3 and 4, range of neck movement <80°, IID ≤ 3.5 cm and snoring.

We found that Cormack and Lehane grade 1 was seen in 65% and 0, 2 in 35% and 0, 3 in 0 and 92% and 4 in 0 and 8%. With external laryngeal manipulation 1 was seen in 75% and 7%, 2 in 25% and 87% and 3 in 0 and 6%. IDS score 0 was seen in 53%and 0, 0-5 in 47%and 52% and >5 in 0 and 48%. Mallampati class 0 was seen in 4%and 0, 1 in 60% and 32%, 2 in 26% and 20%, 3 in 7% and 30% and 4 in 3%and 18% in group I and II respectively. Krishna et al[11] reported an incidence of 8.5%. However, they graded Cormack scores as the best view obtained with optimal laryngeal manipulation. In contrast, in a predominantly Kashmiri population, the incidence of difficult laryngoscopy was only 3.3%.[12]

Shiga T et al[13]evaluated common preoperative clinical tests to determine the risk of difficult endotracheal intubation in apparent "normal" adult patients undergoing surgical procedures.Preoperative assessment of airway risk stratification was performed by the following clinical tests: the mandible protrusion test (MPT), thyromental (TMD) and sternomental (SMD) distances, inter-incisor gap (IIG), and the modified Mallampati tests with tongue protrusion (MMT-TP) and without tongue protrusion (MMT-NTP). Grade C on the MPT, TMD ≤ 6 cm, SMD ≤ 12 cm, and MMT grades III and IV were considered to be predictors of difficult endotracheal intubations. A modified Cormack-Lehane grading (MCLG) of laryngoscopic views with backward, upward, and right-sided pressure on the thyroid and cricoid cartilages (BURP) maneuver was also documented, with grades 2B, 3, and 4 considered to be difficult airways for intubation.Fifteen patients (9.4%) were classified as MCLG 2B, 3, and 4, with age significantly associated with the MCLG grade (P = 0.028). The sensitivity and Youden's index of MMT-TP were found to be the lowest (40% and 0.29, respectively). The MPT was the most accurate and specific test (90.63 and 95.17%, respectively), with the highest PPV (50%), Youden's index (0.42), and area under the curve (AUC) (0.781). Bivariant analysis of MPT and the t-test of the mean TMDs and SMDs revealed significant associations between these airway tests and the difficulty of intubation (P values: < 0.001, 0.02, < 0.01, respectively).

The limitation the study is small sample size.

CONCLUSION

Authors found that Cormack and Lehane grade 1 was seen in easy laryngoscopy group as compared to difficulty laryngoscopy group.

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