



MCGRATH VIDEO LARYNGOSCOPE WITH MACINTOSH DIRECT LARYNGOSCOPE FOR THE EASE OF INTUBATION IN ADULT PATIENTS UNDERGOING ELECTIVE SURGERIES – A RANDOMIZED CONTROLLED TRIAL

Anaesthesiology

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ABSTRACT

Background: Tracheal intubation, a life-saving technique used in a variety of medical contexts. Nevertheless, complications with intubation can have grave, even fatal, repercussions. **Aim:** To compare McGrath video laryngoscope with Macintosh Direct laryngoscope for the ease of intubation in adult patients undertaking elective surgeries. **Method:** This was a randomized Controlled trial, conducted in Aarupadai Veedu Medical College & Hospital among all patients with elective surgeries undergoing general anaesthesia. The study participants were randomized into two groups, Group A and B, each consisting of 80 participants. Group A is difficult airway considering the mallampatti score (III and IV) and group B was normal airway. Then Group A patients again randomly divided into group AV (McGrath video laryngoscope) and Group AD (Macintosh Direct laryngoscope) and group B was also randomly divided into group BV (McGrath video laryngoscope) and Group BD (Macintosh Direct laryngoscope) each group consisting of 40 participants. we assess both laryngoscope intubation difficulties and success rate. The Statistical Package for Social Sciences (SPSS IBM) 21 was used to analyse the data. Frequency, percentage, and Mean and SD were used to express the quantitative data. Chi square test, Mann Whitney U test, and Kruskal Wallis test were used. P value of < 0.05 was considered significant. **Results:** The first attempt success rate was raised in McGrath video laryngoscope than Macintosh Direct laryngoscope in group AV than group AD. Time taken for intubation was better in group AV than AD. In group B there was no significant difference in terms of success rate of 1st attempt intubation **Conclusion:** We propose that McGrath video laryngoscopy is superior to traditional Macintosh direct laryngoscopy for patients with expected airway difficulty.

KEYWORDS

Mcgrath video laryngoscope, Macintosh direct laryngoscope elective surgeries.

INTRODUCTION:

In this study Tracheal intubation using a laryngoscope is the standard method for managing the airway during general anaesthesia. Macintosh; it quickly gained popularity and became the most widely used laryngoscope blade for oral intubation. Video laryngoscopes (VLs) have unique advantages over Macintosh direct laryngoscopes since they do not necessitate the orientation of the oral-pharyngeal-tracheal axes to view the vocal cords instead employ a fiberoptic camera put at the device's end for direct viewing of the glottis [1], it also increases the POGO (Percentage Of Glottic Opening) score in comparison with McIntosh direct laryngoscope.

Video laryngoscopy are believed first-attempt success of airway intubation. Research shows video laryngoscopy can help prevent clinician exposure to droplet-borne pathogens and further improve your safety. Recent guidelines highlight the risks of contracting COVID-19 among those caring for infected patients. The McGrath video laryngoscope is proven to improve first-time success rate, reduce time and lessen hemodynamic response to intubation when compared to the traditional direct visualization technique.

However, despite good view of the laryngeal inlet with video laryngoscope, endotracheal intubation may Macintosh; it quickly gained popularity and became the most widely used laryngoscope blade for oral intubation.

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However, despite good view of the laryngeal inlet with video laryngoscope, endotracheal intubation may prove to be difficult. This is because though view is obtained around the corner, intubation still needs some alignment of axis as the endotracheal intubation keeps going posteriorly.

In this study we compared McGrath laryngoscope with standard McIntosh for ease of endotracheal intubation in adult patients.

MATERIAL & METHODS :

After obtaining ethical approval from institutional ethical committee, a hospital based Prospective randomized control study was conducted in Department of General surgery Aarupadai Veedu medical college and hospital, from March 2021 to September 2022. Patients age between 18-60 years of either sex, ASA grade I & II posted for elective surgeries under general anaesthesia were included. Patient refusal to give consent for the study, Pregnant patients, Patients where detailed airway assessment was not possible or done were excluded. After obtaining pre anaesthetic check-up patients were posted for surgery. All the cases were divided into Group A or Group B. According to clinical assessment of airway patients with (MMP ≥ 3 ; TMD < 6 cm, Neck extension $< 35^\circ$, BMI ≥ 30 kg/m²) assigned to Group A (n=80) and patients with (MMP < 3 ; TMD > 6.5 cm, BMI < 30 kg/m²) assigned to Group B (n=80). Then Group A patients again randomly divided into group AV (McGrath video laryngoscope) and Group AD (Macintosh Direct laryngoscope) and group B was also randomly divided into group BV (McGrath video laryngoscope) and Group BD (Macintosh Direct laryngoscope) each group consisting of 40 participants.

And finally Before putting the data into the Microsoft Excel spread sheet, the acquired information was verified for accuracy. At regular intervals, the data's validity was reviewed. The Statistical Package for Social Sciences (SPSS IBM) 21 was used to analyse the data. Frequency, percentage, and Mean and SD were used to express the quantitative data. Chi square test, Mann Whitney U test, and Kruskal Wallis test were used. P value of < 0.05 was considered significant.

RESULTS:

The mean age of the study participants among group A and B was 44.79 respectively, There was no significant difference between the group. The gender of 60% and 48.8% of the study participants in group A and B were female respectively. There was no significant difference between the groups. Majority of the study participants in both the groups had ASA I. (53.8% and 51.25% in group A and B respectively). There was no significant difference between the groups.

S No	Clinical test	Group A		Group B	
		Group AV	Group AD	Group BV	Group BD
1	MPG				
	I	0	0	21 (52.5)	23 (57.5)
	II	0	0	19 (47.5)	17 (42.5)
	III	18 (45)	25 (62.5)	0	0
	IV	22 (55)	15 (37.5)	0	0

2	TMP >6.5 cm <6 cm	0 40 (100)	0 40(100)	40(100) 0	40(100) 0
3	Neck extension >35 <=35	0 40(100)	0 40(100)	40(100) 0	40(100) 0

In Group AV, 45% and 55% was MPG grade III and IV respectively. In group AD, 62.5% and 37.5% was MPG grade III and IV respectively. 100% of group A had TMP of less than 6 cm and neck extension of less than or equal to 35. In group BV, 52.5% and 47.5% was MPG grade I and II respectively. In group BD, 57.5% and 42.5% was MPG grade I and II respectively. 100% of group B had TMP of more than 6 cm and neck extension of <35.

S No	Systolic Blood Pressure	Group A		P value	Group B		P value
		Group AV	Group AD		Group BV	Group BD	
1	During intubation	129.05 (3.36)	129.45 (4.47)	0.508	129.63 (4.03)	128.43 (4.04)	0.187
2	2 minutes	103.65 (6.59)	103.73 (6.03)	0.946	104.25 (6.89)	102.6 (7.36)	0.239
3	5 minutes	129.35 (1.12)	129.53 (1.26)	0.524	129.4 (1.08)	129.48 (1.03)	0.773
4	10 minutes	127.88 (4.36)	127.83 (3.80)	0.843	128.98 (3.94)	128.58 (3.88)	0.657

There was no significant difference in systolic blood pressure between group AV and AD and also between group BV and BD.

S No	Diastolic Blood Pressure	Group A		P value	Group B		P value
		Group AV	Group AD		Group BV	Group BD	
1	During intubation	83.73 (1.96)	84.28 (2.13)	0.247	84.03 (2.06)	84.43 (1.85)	0.370
2	2 minutes	73.7 (3.55)	72.78 (4.46)	0.379	73.08 (3.73)	73.88 (3.85)	0.360
3	5 minutes	85.5 (2.51)	85.6 (2.16)	0.709	85.25 (2.35)	85.8 (2.04)	0.257
4	10 minutes	83.33 (1.34)	83.18 (1.39)	0.629	83.08 (1.36)	83.1 (1.41)	0.926

There was no significant difference in diastolic blood pressure between group AV and AD and also between group BV and BD.

S No	Mean arterial Pressure	Group A		P value	Group B		P value
		Group AV	Group AD		Group BV	Group BD	
1	During intubation	98.83 (1.61)	99.33 (1.95)	0.230	99.22 (1.84)	99.09 (1.92)	0.862
2	2 minutes	83.68 (3.57)	83.09 (4.06)	0.503	83.47 (2.92)	83.45 (3.61)	0.981
3	5 minutes	100.11 (1.83)	100.3 (1.51)	0.619	99.97 (1.61)	100.35 (1.39)	0.217
4	10 minutes	98.17 (1.75)	98.05 (1.44)	0.965	98.37 (1.52)	98.25 (1.51)	0.671

There was no significant difference in mean arterial pressure between group AV and AD and also between group BV and BD.

DISCUSSION :

A potentially life-saving treatment utilised in a variety of clinical settings is tracheal intubation. However, issues with intubation can result in serious, sometimes fatal consequences. More than one third of adverse respiratory events in the American Society of Anaesthesiologists Closed Claims study were attributable to difficult tracheal intubation and oesophageal intubation, which both resulted in death or irreparable brain damage. The method for intubating a patient's trachea that is most frequently utilised is direct laryngoscopy utilising a Macintosh laryngoscope. However, learning this skill is challenging. Today's frequently used airway management method, video laryngoscopy, may be simpler for new and inexperienced practitioners to master. In individuals with healthy airways and those whose direct laryngoscopy has failed repeatedly or ineffective, the McGrath video laryngoscope provides excellent laryngoscopic views. The present study showed that the mean age of the study participants among group A and B was 44.79 ± 4.51 and 44.44 ± 4.75 respectively. 60% and 48.8% of the study participants in group A and B were female respectively. The mean BMI was 30.94 ± 0.81 and 26.11 ± 2.03 respectively in group A and B respectively.

The present study has shown that time taken from tip of blade crosses

incisors to glottis visualisation and time from picking up of a tracheal tube to confirmation by ETCO₂ or by auscultation was significantly better in McGrath video laryngoscopy than Macintosh direct laryngoscopy in group A and B. Wallace CD et al^[2] showed that time to intubate or the frequency of problems did not differ between the groups. Between the Macintosh laryngoscope and the McGrath MAC utilised as an indirect video laryngoscope, there was no statistically significant difference in the assessed performances. Hoshijima H et al^[5] showed that comparing the McGrath to the Macintosh, tracheal intubation success rates were equal although the McGrath needed a longer intubation time.

Visualisation of glottis assessed with Cormack Lehane grade showed that in group A, majority of the study participants had 2B and 3 and in group B, majority of the study participants were in group 1 and 2A. This variation in the glottis's visualisation may be the result of the McGrath MAC video laryngoscope's ability to provide a video-enhanced view of the vocal cords. Taylor AM et al^[3] showed that when using the McGrath laryngoscopes, all patients had a Cormack and Lehane grade 1 or 2 view, as opposed to 45 (51%, $p=0.0001$) when using the Macintosh laryngoscopes. Arici al^[8] & showed that the Cormack Lehane perspective does not significantly differ between the two laryngoscopes.

None of the study participants had any complications. There were no appreciable variations in the hemodynamic parameters the Macintosh direct laryngoscope and the McGrath video laryngoscope. Despite the fact that successful intubation seldom results from strong glottis visibility utilising indirect video laryngoscopy, the anaesthesiologist was able to successfully intubate the trachea at the first try with the help of the McGrath MAC video laryngoscope. This could be the case given that the McGrath MAC video laryngoscope has a Macintosh-style blade and flexible endotracheal tube. Haemodynamic or the success rate of intubation did not substantially differ between the two groups, according to research by Kim JE et al^[4].

CONCLUSION :

We conclude that in individuals with a likely difficult airway, McGrath video laryngoscopy is preferable to traditional Macintosh direct laryngoscopy. Inclusion of Wilson's or the Airway Difficulty Score which has increased sensitivity and good negative predictive . Despite our study population's little experience to the McGrath, using it to manage a problematic airway resulted in a greater success rate, suggesting that the McGrath system is simple to integrate into standard clinical . Limitations. First, just four of the numerous potential indicators of challenging direct laryngoscopy were chosen because they are widely known and reflect circumstances that the average anaesthesiologist encounters regularly. The goal of the research was to identify the approach that should be used as a first resort for managing a challenging airway. Therefore, just one intubation attempt was used as the success indicator. Because more laryngoscopy efforts are linked to morbidity, the inclusion of further intubation attempts was done for patient safety. Providers were immediately acquainted with the idea of the laryngoscopy procedure utilising the McGrath since these McGrath blade designs mimic a Macintosh laryngoscope. practice.

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