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ORIGINAL ARTICLE

TRACHEAL INTUBATION USING McGRATH VIDEO LARYNGOSCOPE IN MYASTHENIA GRAVIS PATIENTS

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ABSTRACT: BACKGROUND: McGrath video laryngoscope has been successfully used for managing difficult intubation in various clinical scenarios. In this case series, we aimed to evaluate the success rate and time taken to complete intubation without using muscle relaxants in myasthenia gravis patients coming for thymectomy. **METHODS:** We prospectively evaluate the use of Mcgrath video laryngoscope for intubation in ten myasthenia gravis patients coming for thymectomy. Intubation time, total time to complete tracheal intubation, laryngoscopic view (Cormack & Lehane grade), and patients tolerance of the procedure were recorded. **RESULTS:** The procedure was successful in all patients the mean (SD) intubation time and total time to complete the tracheal intubation was 4.82 (0.53) and 10.21 (0.81) min, respectively. The laryngeal view was grade I in five and grade II in four patients. **CONCLUSION:** The Mcgrath Video Laryngoscope allowed a quicker intubation time, fewer intubation attempts and greater ease of intubation in myasthenia gravis patients coming for thymectomy.

KEYWORDS: McGrath Video Laryngoscope, Myasthenia gravis, Thymectomy.

INTRODUCTION: Management of airway is one of the crucial responsibility of and an essential skill for anesthesiologists. In order to minimize perioperative morbidity and mortality resulting from airway mismanagements, it is important for anesthesiologists to be well versed in various airway management techniques. In recent years the popularity of video laryngoscopes is getting increased.[1-6]

These devices provide a better view of glottis from a video-camera inserted in the laryngoscope. The Mcgrath video laryngoscope, combining video and direct visualization of vocal cords supports routine to more difficult intubations thereby raising the global standard of care. The Mcgrath slim-line blade removes blade width at the mouth area, giving you greater ability to maneuver the device without pressing on the teeth. This can be a benefit in all cases but particularly in small a mouth openings, nasal intubations and preoperative assessments.[7]

We evaluated the use of mcgrath video laryngoscope for intubation in myasthenia gravis patients coming for thymectomy. Myasthenia gravis is an autoimmune disorder of the neuromuscular junction. Auto-antibodies against the α-subunit of the muscle-type nicotinic acetylcholine receptor destroy acetylcholine receptors of the neuromuscular junction and cause classic transmission failure with muscle weakness and fatigue. The number of active acetylcholine receptors get decreased either by a functional block, or by increased rate of degradation of receptors or by complement mediated lysis.[8] Although the efficacy of thymectomy is based on retrospective data, it is a widely accepted therapy for myasthenic patients, particularly those with thymoma and early-onset generalized myasthenia gravis.[9,10]

Patients with myasthenia gravis exhibit more sensitivity to non-deporalizing muscle relaxants, so it is better to avoid them during surgical procedure.[11] Our study aims at using mcgrath

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video laryngoscope in thymectomy patients for intubation without using non-deporalizing muscle relaxants in the anesthesia technique.

Image 1: Mcgrath Video Laryngoscope

MATERIALS & METHODS: The prospective study was conducted in NRI General Hospital on ten consecutive patients (8male, 2female) with the age group of 40-60yrs who underwent elective trans-sternal thymectomy. Prospective data of the patients were collected over a period of one year. Patient's age, gender, body weight, body mass index and airway assessment were recorded.

Patients were given 5mg diazepam night before surgery and were kept nil by mouth six hours. On arrival in the operating room standard monitoring was commenced for all patients which included electrocardiography, invasive arterial blood pressure, pulse oximetry, Endtidal carbondioxide. The patient was pre-oxygenated with 100% 02 for 3min and inj. glycopyrrolate (0.2mg), Inj. Fentanyl (3mg/kg) and midazolam (1-2mg) were given as premedication. Next the patient was induced propofol (2.5mg/kg) and intubated by means of mcgrath video laryngoscope using adequate sized portex endotracheal tube after spraying lignocaine 4% onto the vocal cords.

After the confirmation of correct placement of the tracheal tube, the general anesthesia was maintained with propofol infusion (200mcg/kg/min), O_2, N_2o and sevoflurane. During the procedure we collected the data of intubation time, total time to complete tracheal intubation, the best view of the larynx (Cormack and lehane grade), over all tolerance of the procedure by the patient (Vas scale). After the surgery patient was extubated and kept in post-operative intensive care unit.

The primary objective of our study was to observe the ease of intubation with mcgrath video laryngoscope during which we observed the hemodynamic parameters, intubation time and patients tolerance to the procedure.

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RESULTS: The patient's characteristics and pre-operative assessment data of ten patients were shown in table 1. The procedure was successful in all (100%) patients and all were intubated in first attempt only.

The mean intubation time and total time to complete tracheal intubation in all patients were expressed as mean and standard deviation in table2. The Cormack & Lehana grading is also observed during the intubation procedure and was recorded. None of patients sustained any oral injury or dental damage during the procedure.

Sl. No.	Patient Data	Total number, mean (range)
1.	Age (yrs)	48.3 (40-60)
2.	Male; Female	8:2
3.	Weight; Kg	68.4 (62-76)
4.	BMI [x]; kg m^{-2}	31.1 (27-35)
5.	ASA Score	
	1	6
	2	3
	3	1
	4	-
6.	Mouth opening in cm	
	<2	-
	2-3	3
	>3	7
7.	MP Score	
	1	5
	2	4
	3	1
	4	-

Table 1: Patients characteristics

BMI: Body Mass Index.
ASA: American Society of Anesthesiologists.

Table 2:	
Parameters observed score	
Intubation time (minutes): Mean (SD)	4.82 (0.53)
Total time to complete tracheal intubation (minutes): Mean (SD)	10.21 (0.81)
Coughing reflex: None/mild/moderate/severe	5/3/2/0
Gagging reflex: None/mild/moderate/severe	4/4/2/0
Cormack & Lahene grading: Grade 1/2/3/4	5/5/0/0

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DISCUSSION: The video laryngoscopes are increasingly being used now a days for intubation in patients with both normal and difficult airways.[12] Recent metanalysis showed that video laryngoscopes offer better glottic view than direct laryngoscopy technique. The available video laryngoscopes are categorized into three main types: standard macintosh blade type, one with angulated blade type, and one with a channel for passage of endotracheal tube. Here in these case series we used mcgrath video laryngoscope for intubation in myasthenia patients coming for thymectomy with 100% success rate.

As the glottic visualization during video laryngoscopy is independent of oral-pharyngal-layngeal axes alignment, there will be lesser chance of airway manipulation. This allows better hemodynacmic stability and better patient tolerance. The main advantage of use of video laryngoscope for intubation is its similarity to conventional macintosh laryngoscopy.[13] The mcgrath video laryngoscope is portable and easier to learn and use.[14]

An improvement of the grade of laryngoscopic view can be obtained with mcgrath video laryngoscope whilst using a conventional laryngoscopy technique. The glottis can also be visualized directly via the camera, similar to the traditional macintosch view, thus reducing the risks of trauma. As the mcgrath video laryngoscope can be used for routine straight forward intubations, in more difficult cases also viewing of the camera image reduces the possibility of blind tube insertion.

The mcgrath video laryngoscope blade has a less pronounced curvature than the traditional macintosh blades which allows easy lifting of the anatomy during intubation. As the stylet can be avoided maximally using mcgrath video laryngoscope, the traumatic complications are minimal during the procedure.

Several techniques of anesthesia have been described for myasthenia gravis patients.[15,16,17] The use of non-deporalizing muscle relaxants in myasthenia gravis patients is associated with longer extubation time and longer postoperative ventilation. So here in our study we avoided muscle relaxants throughout the procedure and used propofol infusion and sevoflurane for deepening of anesthesia to provide adequate surgical conditions. For intubation we used the mcgrath video laryngoscope and the procedure was facilitated with the use of 4% lignocane spray to the vocal cords to avoid coughing and gagging reflexes. As the Mcgrath video laryngoscope is designed to fit into the natural anatomy of the oratracheal conduit, it requires less vertical force to achieve glottic alignment. So there is less hypertensive response to intubation. However, familiarity with the device must be acquired by using it in routine intubation of anesthetized patients before using in myasthenia gravis patients.

CONCLUSION: In conclusion mcgrath video laryngoscope has advantages over routine macintosh laryngoscope like decreased intubation time and ease of larygoscopy without the use of muscle relaxants in myasthenia gravis patients coming for thymectomy.

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