

EFFECTIVENESS AND SAFETY OF THE McGRATH VIDEOLARYNGOSCOPE FOR LARYNGOSCOPY AND TRACHEAL INTUBATION IN PATIENTS WITH CERVICAL SPINE IN-LINE IMMOBILIZATION

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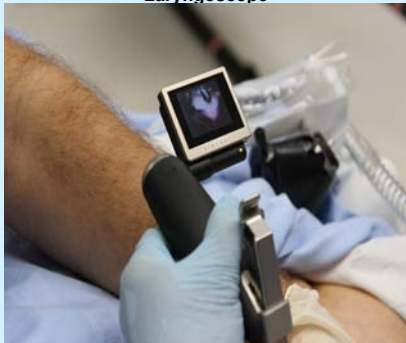
Introduction

- Manual in-line immobilization complicates laryngoscopy and tracheal intubation in trauma patients.
- The McGrath video-laryngoscope is a newly designed and portable airway adjunct that aims to facilitate laryngoscopy and tracheal intubation (Figures 1 and 2).

Figure 1. The McGrath Laryngoscope



Figure 2. Laryngoscopy with the McGrath Laryngoscope



Goal of the Study

- To determine the effectiveness and safety of this device as compared to traditional laryngoscopy using simulated difficult laryngoscopy with manual in-line c-spine immobilization in elective surgical patients following the induction of general anesthesia

Methods

- After obtaining IRB approval and informed consent, 80 ASA I and II patients undergoing elective surgical procedures were recruited.
- Following a standardized induction of anesthesia and muscle relaxation, the patient's C-spine was immobilized by a trained assistant.
- The Cormack/Lehane (C/L) glottic grade was evaluated using both the McGrath (MCG) and Macintosh (MAC) laryngoscopes in a randomized fashion by an experienced laryngoscopist.
- The first device was used solely to obtain the glottic grade and the second device was used for both obtaining the glottic grade and tracheal intubation.
- Failure to intubate, the time to intubate (TTI) for the second device, and complications were recorded.

Results

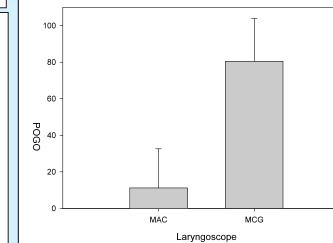
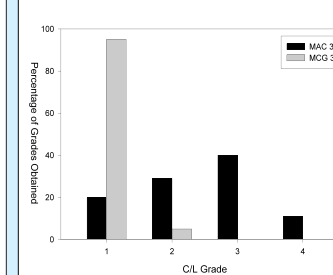
- Data are summarized in Table 1 and Figures 3 – 6.
- The mean (\pm SD) age, weight, height, and BMI was 52.1 (\pm 14.5) yr, 81.1 (\pm 19.3) kg, 1.68 (\pm 0.09) m, and 28.7 (\pm 6.4) kg.m⁻² respectively.
- The C/L grades with the MCG appeared to be better compared with the MAC (Grades I/II/III/IV were 76/4/0/0 for MCG vs. 16/23/32/9 for MAC).
- The mean percentage of glottic opening (POGO) score was higher for the MCG compared with the MAC (80.5 \pm 23.4 for MCG vs. 11.2 \pm 21.4 for MAC)
- In contrast, the TTI was faster in the MAC group (21.5 \pm 9.6 seconds for MAC vs. 37.8 \pm 20.7 for MCG) for all the successful intubations.
- Tracheal intubation using the MCG was successful in all 39 patients. However, only 23 tracheal intubation attempts employing the MAC were successful. The remaining 18 required intubation using the MCG as a rescue.

Table 1.

	Laryngoscope		
		MAC	MCG
C/L Grades (n = 80)	1	16	76
	2	23	4
	3	32	0
	4	9	0
	Mean (\pm SD) POGO (n = 80)	11.2 (\pm 21.4)	80.5 (\pm 23.4)
Successful Intubation (MAC n = 41, MCG n = 39)	Y	23	39
	N	18	0
Mean (\pm SD) TTI (sec.) for Successful Intubations (MAC n = 23, MCG n = 39)		21.5 (\pm 9.6)	37.8 (\pm 20.7)
Mean (\pm SD) TTI (sec.) for Rescue Device (MAC n = 0, MCG n = 18)		N/A	37.2 (\pm 12.2)
Complications (MAC n = 41, MCG n = 39)	Y	10	5
	N	31	34
Sore Throat (MAC n = 41, MCG n = 39)	Y	8	3
	N	33	36

Figures 3 - 5.

3. Percentage of C/L Grades Obtained When Using MAC and MCG



5. Percent of Successful Intubations When Using MAC and MCG

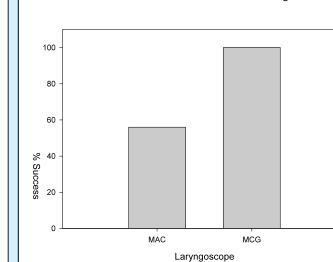
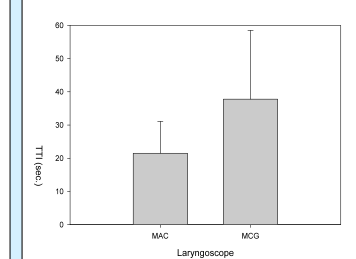


Figure 6.

Mean (\pm SD) TTI for Successful Intubations When Using MAC and MCG



Discussion

- The McGrath video-laryngoscope provides a better view of the glottis during manual in-line immobilization compared to direct laryngoscopy with a Macintosh laryngoscope.
- Although the former required a longer TTI, tracheal intubation was successful in all patients while intubation was only 56% successful with the later.
- In addition, all intubation failures with a Macintosh blade were resolved with the use of the McGrath video-laryngoscope.

Conclusion

- The results of this study suggest that the McGrath laryngoscope is a more effective device for laryngoscopy and tracheal intubation in patients with in-line immobilization of the C-spine compared with the conventional Macintosh laryngoscope in the hands of experienced laryngoscopists.