Comparison of Airtraq™ double lumen and McGRATH™ MAC video laryngoscope for double-lumen endotracheal tube intubation by an experienced anesthesiologist: a prospective randomized clinical trial.

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Background and Goal of Study: Recently, different types of video laryngoscopes have been reported for use in double-lumen tube (DLT) intubation. However, the advantages and disadvantages between them remain undetermined for DLT intubation. This study aimed to compare the utility of Airtraq™ double lumen (Airtraq DL) and McGRATH™ MAC (McG) video laryngoscope for double-lumen endotracheal tube intubation in patients undergoing elective surgery by one experienced anesthesiologist.

Materials and Methods: This study was approved by the institutional review board of Tokai University, School of Medicine, and written informed consent was obtained from each patient. A total of 37 patients who were scheduled for elective surgeries were enrolled in this study and randomly allocated to one of two groups; in each group, Airtraq DL attaching the original, universal, phone adapter and an iPod to the scope (an iPod of the hospital management was used to protect personal information) or McG was used for tracheal intubation. After regular induction of anesthesia, tracheal intubation with a video laryngoscope was performed by one experienced anesthesiologist. Our primary outcome measure was the intubation time. The intubation time was defined as the time from insertion of the device into the oral cavity to removal of the device from the oral cavity. The chi squared test or Fisher's exact test was used for comparison of gender, Mallampati classification, and ULBT. Mann–Whitney's U test was used for comparison of other data. Data are presented as mean ± SE. P < 0.05 was considered statistically significant.

Results and Discussion: All the patients in the study were intubated successfully at the first attempt without any adverse effect. Exposure time was comparable between groups (P>0.05). Intubation time was significantly shorter in the Airtraq DL group compared with the McG group (Airtraq DL: 15.9 ± 0.8 seconds vs McG: 18.2 ± 0.6 seconds, P=0.033, respectively).

Conclusion: When using video laryngoscopes for DLT intubation, Airtraq DL is superior McG in intubation time by one experienced anesthesiologist.

★The exposure time was defined as the time from insertion of the device into the oral cavity to observe a clear glottis view.

Source: Wan L, Lias M, Li L, et al. McGrath Series 5 videolaryngoscope vs Airtraq DL videolaryngoscope for double-lumen tube intubation: A randomized trial. Medicine (United States) Volume 95, Issue 51, 2016, Page e5739

Conflict of Interest : There are no conflict of Interest.

Fig 1. (a)The phone adapter (b)Attaching the phone adaptor to an iPod (c)The Airtraq DL with a DLT inserted in the adjacent channel (d)DLT with the McGRATH MAC with its own stylet within the tube for fitting along the curve.

Table 1 Demographic data and airway assessments	Airtraq (n=18)	McGRATH MAC (n=19)	P-value
Age (years)	61 ± 4 (24-81)	64 ± 4 (20-84)	0.558
Gender (male/female, n)	13/5	14/5	0.920
Wight (kg)	58.7 ± 2.2 (38-75.6)	61.8 ± 2.4 (47-79)	0.538
Height (cm)	165 ± 2 (142-176)	164 ± 2 (148-177)	0.869
Body mass index (kg m-2)	22 ± 1 (16-26)	23 ± 1 (18-26)	0.258
ASA physycail status (1/2/3)	1/15/2	1/14/4	0.620
Mouth opening (cm)	4.2 ± 0.1 (3.5-5)	4.5 ± 0.1 (4-5.5)	0.134
Thyromenta distance (cm)	7.5 ± 0.3 (5.5-9.5)	7.6 ± 0.2 (5-9.5)	0.964
Mallampati classification (I / II / III / IV, n)	7/11/0/0	7/12/0/0	0.898
A-OJM (>30, n)	18	18	0.514
ULBT (A/B/C, n)	14/4/0	17/2/0	0.335

Data are presented as means ± standard errors (range) or numbers of patients. ASA= American Society of Anesthesiologists. A-OJM = atlanto-occipital joint movement; ULBT= upper lip bite test, A: lower incisors can bite the upper lip above the vermillion line; B: lower incisors can bite the upper lip below the vermillion line; C: lower incisors cannot bite the upper lip.

Table 2 Intubation data of the two laryngoscopes	Airtraq (n=18)	McGRATH MAC (n=19)	P-value
Initial glottic view with Machintosh (1/2/3, n)	12/5/1	8/8/3	0.169
Glottic view with study videolaryngoscope (1/2/3, n)	30/0/0/0	30/0/0/0	N.A.
Exposure time (s)	5.7 ± 0.3(4.2-8.3)	5.9 ± 0.4(4.2-12.6)	0.964
Intubation time (s) ★	15.9 ± 0.8 (10.3-21.9)	18.2 ± 0.6 (14.3-22.6)	0.033*
Success rate of first intubation attempt (n, %)	18 (100%)	19 (100%)	N.A.
Ease of laryngoscope insertion (0/1/2/3, n)	12/4/2/0	12/5/1/1	0.685
Ease of tube advancement (0/1/2/3, n)	11/6/1/0	9/7/3/0	0.391
DLT size (37 F/35 F, n)	13/5	14/5	0.920
Blade size (#4/#3, n)	-	3/16	N.A.

Ease of laryngoscope insertion and tube advancement (0 = very easy, 1 = easy, 2 = difficult, 3 = very difficult). Data are presented as mean ± standard errors (range) or as numbers of patients. *statistically significant difference between two groups. N.A.: not analyzed

Fig. 2 Box plot (median, interquartile range [IQR], and range) of exposure time in the Airtraq and McGRATH MAC groups.

Fig. 3 Box plot (median, interquartile range [IQR], and range) of intubation time in the Airtraq and McGRATH MAC groups. *P <0.05 was considered significant.