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Comparison of Mcgrath, Pentax, and Macintosh Laryngoscope in Normal and Cervical Immobilized Manikin by Novices

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Abstract : Background: Several video laryngoscopes (VLs) were used to facilitate tracheal intubation in the normal and potentially difficult airway, especially by novice personnel. The aim of this study was to compare tracheal intubation performance regarding the time to intubation, glottic view, difficulty, and dental click, by a novice using McGrath VL, Pentax Airway Scope (AWS) and Macintosh laryngoscope in normal and cervical immobilized manikin models. Methods: Thirty-five anesthesia nurses without previous intubation experience were recruited. The participants performed endotracheal intubation in a manikin model at two simulated neck positions (normal and fixed neck via cervical immobilization), using three different devices (McGrath VL, Pentax AWS, and Macintosh direct laryngoscope) at three times each. Performance parameters included intubation time, success rate of intubation, Cormack Lehane laryngoscope grading, dental click, and subjective difficulty score. Results: Intubation time and success rate at the first attempt were not significantly different between the 3 groups in normal airway manikin. In the cervical immobilized manikin, the intubation time was shorter ($p = 0.012$) and the success rate with the first attempt was significantly higher ($p < 0.001$) when using McGrath VL and Pentax AWS compared with Macintosh laryngoscope. Both VLs showed less difficulty score ($p < 0.001$) and more Cormack Lehane grade I ($p < 0.001$). The incidence of dental clicks was higher with McGrath VL than Macintosh laryngoscope in the normal and cervical immobilized airway ($p = 0.005$, $p < 0.001$, respectively). Conclusion: McGrath VL and Pentax AWS resulted in shorter intubation time, higher first attempt success rate, compared with Macintosh laryngoscope by a novice intubator in a cervical immobilized manikin model. McGrath VL could be reduced the risk of dental injury compared with Macintosh laryngoscope in this scenario.

Keywords : intubation, manikin, novice, videolaryngoscope
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