Acquisition of Intubation Skill with Difficult Airway Devices: A Comparison of Airtraq and Levitan Scopes in a Manikin

Abstract Type: Original Research
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Introduction: Airway skills fundamental to anaesthesia. Successful endotracheal intubation may require a range of techniques or approaches in addition to conventional laryngoscopy. Each technique, while ultimately resulting in the placement of a cuffed endotracheal tube in the larynx, has different skill requirements.

Objective: To compare skill acquisition patterns and device performance of the Airtraq and Levitan scopes for endotracheal intubation in a manikin model.

Methods: After informed consent, participants (anaesthetists who had not previously used the devices) were given standardised teaching and asked to perform seven consecutive tracheal intubations on a C&L 1 manikin (Bill II, VBM Medical) using a preassembled Airtraq (Group A) and Levitan (Group L) devices. End points were time to successful tracheal intubation, number of attempts and number of oesophageal intubations. The stabilization attempt was defined as the attempt after which no further improvement was observed.

Results: Thirteen anaesthetist trainees participated in the study. Time to intubation was greater in the group L than Group A during attempts 1, 2 and three and there was no different between groups thereafter (Figure 1). The stabilisation point occurred at the fourth and fifth attempts for Airtraq and Levitan respectively (Figure 1). There was no further difference in either group thereafter. The time to successful intubation became significantly shorter at the end of the study in both groups than that at the beginning of the study. There were eight oesophageal intubations in the group L and none (0.0%) in Group A (P = 0.011).

Conclusion: Skill acquisition is more rapid and performance time initially faster with Airtraq. Oesophageal intubations are less frequent in trainee anaesthetists using the Airtraq device. Performance however becomes comparable after 4 repetitions. A minimum of four repetitions is required for Airtraq and five for the Levitan device. The Airtraq may therefore offer an effective tool to improve first-time intubation success rates and reduce the incidence of misplaced tracheal tubes especially in difficult circumstances.

Limitations of this study: Translation of Manikin model into clinical performance is equivocal and thus requirement for clinical trials is needed. Again only trainee anaesthetists were involved in this study.

Time to Success

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[Graph showing time to success for Airtraq and Levitan]