The Effect of Body Position on Performance of Tracheal Intubation

Harry Pugh, Elaine O'Shea, Gavin Teague, Richard H. Riley

Department of Anaesthesia and Pain Medicine, Royal Perth Hospital, Perth, Australia

Introduction. Tracheal intubation is an anaesthetic skill that requires eye-hand coordination, manual dexterity and speed. Earlier studies have shown that forces generated during intubation are reduced with experience and that gender was not a factor in performance¹. Intubation is generally performed in the standing or sitting position, with the sitting position favoured by Australasian anaesthetists. Because it has been shown that manual dexterity is improved while seated², we studied intubation of a manikin in both positions.

Methods. Following Ethics Committee approval, 30 volunteer anaesthetists (21 male, 9 female), aged 28-53 were studied while performing timed tracheal intubation of a Laerdal manikin in both positions with a #3 Macintosh blade. Forces (axial force, torque) were measured using a calibrated force-transducing laryngoscope that was interfaced via an analogue capture card to a laptop computer using LabVIEW data acquisition software. Each intubation was performed 3 times in both positions.

Results. Successful laryngoscopy / intubations were performed with one exception: one male participant failed to intubate in the standing position on his final attempt. All laryngoscopic views were classed as 1 or 2. Force data were not normally distributed. There were no differences in geometric mean or maximal axial or torque forces between positions. Longitudinal analyses of duration of intubation using a random-effects and mixed models showed that there was small decrease with each run for standing, but not sitting.

Conclusion. We conclude that forces generated during laryngoscopy are independent of body position but that there is small effect of learning when performing intubation in the standing, but not sitting, position. Performing intubation in the standing position was slightly reduced but this was not statistically significant. Anaesthetists should generally use their preferred position to perform intubation to decrease procedural time.

References.