

Back-Up Intubation

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The case for this journal club was a 65 year-old morbidly obese male decompensating with a CHF exacerbation. Our discussion was regarding the merits of “back-up” positioning for optimal laryngoscopy and success with intubation. We considered some background articles that showed the progression of intubation positioning, from Magill et al in 1930, with his article about the “sniffing” position, to “ramped” positioning popularized in the late 1990s and early 2000s, and finally to “back-up” positioning.

The first discussion paper, *Feasibility of Upright Patient Positioning and Intubation Success Rates at Two Academic Emergency Departments (Turner 2016)*, was an observational study that found that with increasing back-up angulation, there was greater first-pass-success, fewer aspiration events and less incidence of hypoxemia. This study was especially attractive for us because it featured intubations by emergency medicine residents. More senior residents preferred the higher back-up angulation, and often it was the sicker patients that were kept supine, so confounding variables definitely existed. Not a definitive paper, but does support using back-up positioning where possible.

The second paper was *Head-Elevated Patient Positioning Decreases Complications of Emergent Tracheal Intubation in the Ward and Intensive Care Unit (Khandelwal 2016)*. This paper was different from the others in that it only involved anesthesia staff, but is still somewhat relevant to the work we do because it only included intubations in the inpatient setting, but outside of the OR and PACU, so the intubations can be presumed to have been somewhat emergent in nature. There is likely to be significant bias present given that the study was a retrospective chart review, however the conclusions were quite clear. In the study, complications were considered to be >3 intubation attempts, hypoxemia, esophageal intubation, or aspiration, and the complication rate with >30 degrees was 9.3% and with <30 degrees was 22.6%. (p = 0.005).

The third study, *Comparison of glottis views and intubation times in the supine and 25-degree back-up positions (Reddy et al 2016)* was performed in an ideal environment with non-emergency, surgery patients, and excluded patients with expected difficult airways. The study was 2-part, and for the first part, all patients were intubated supine. The second part had every patient in a 25-degree back-up position. The study was unique from the others, in that the operator had to classify the laryngoscopy view based on Cormack-Lehane and POGO scores. Results showed that the differences between groups were subtle—just a few seconds faster intubation and fewer laryngeal manipulation maneuvers with the back-up group. This was thought to be a weak study overall with a patient population quite different from our own.

In conclusion, after considering all the data covered in this journal club, it is reasonable to say that back-up intubation positioning is a feasible method of intubation. But the patients in whom this is most likely to be helpful, and the optimal angle, are not yet definitive. Back-up positioning may be of most benefit in those who are at increased risk of difficult intubation, or complications such as aspiration or hypoxemia.

Discussion Articles:

Khandelwal N, Khorsand S, Mitchell SH. Head-Elevated Patient Positioning Decreases Complications of Emergent Tracheal Intubation in the Ward and Intensive Care Unit. *Anesth Analg* 2016;122:1101–7

Reddy RM, Adke M, Patil P. Comparison of glottic views and intubation times in the supine and 25 degree back-up positions. *BMC Anesthesiology* 2016;16:113

Turner JS, Ellender TJ, Okonkwo ER. Feasibility of upright patient positioning and intubation success rates at two academic emergency departments. *Am J Emergency Medicine* 2017; Feb