Open Cricothyroidotomy vs. Seldinger Technique

Cricothyrotomy is required as a rescue technique in approximately 1% of emergency department intubations. Two methods are widely recommended: open surgical technique (OST) and percutaneous Seldinger technique (PST). Investigators in Austria evaluated the performance of cricothyroidotomy by emergency physicians who received brief training in the two techniques. Only one of the EPs had previously performed a cricothyroidotomy.

After attending a 30-minute training session without audiovisual aids, 20 EPs each performed five cricothyroidotomies by each method (in random order) over a 4-month period; the procedures were performed on 200 refrigerated fresh cadavers. Results from 13 cadavers were excluded from the analysis because of incomplete data. Among the remaining cadavers, those in the OST group had larger neck circumference (by an average of 1.6 cm) and were heavier (by an average of 7 pounds) than those in the PST group, but the two groups were otherwise anatomically similar.

PST and OST did not differ in the rate of successful placement of the airways (88.2% and 84.0%) or the percentage of aborted attempts (7% and 6%). Mean times to tracheal puncture and to ventilation were significantly shorter with PST than with OST (99 vs. 119 seconds, and 109 vs. 137 seconds). No injuries were identified in the PST group, whereas thyroid vessels were punctured six times in the OST group, a significant difference.

Comment: Either technique for cricothyroidotomy is acceptable and can be performed successfully with minimal operator training, so operator preference is the driving factor. The Seldinger technique was slightly faster in this well-designed cadaver study, but the differences are probably not clinically significant. In some circumstances, the condition confounding intubation may make cricothyroidotomy difficult, and in such cases, an open technique may be preferable. The take-home message, though, is: Cricothyroidotomy is an essential airway skill. Pick one method, learn it, and practice it.

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