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CORRESPONDENCE

Emergency front-of-neck access: a survey of Canadian anesthesiology residency program teaching curriculums

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To the Editor,

Emergency front-of-neck access (eFONA) in the "cannot ventilate cannot oxygenate" (CVCO) scenario is an important competency for anesthesiologists. In most cases, eFONA refers to cricothyroidotomy. The techniques can be categorized into surgical *vs* needle cricothyrotomy. Based on a nationwide survey from 2005, most Canadian anesthesiologists prefer a needle-based cricothyroidotomy via either an intravenous catheter (51%) or a wire-guided technique (28%).[1] Nevertheless, in 2011, the 4th National Audit Project (NAP4) from the UK identified that needle cricothyroidotomy was associated with a high failure rate, while surgical techniques were far more reliable.[2] A subsequent nationwide survey in 2014 among Canadian anesthesiologists showed a persistent preference for needle-based cricothyroidotomy.[3] In 2015, the Difficult Airway Society (DAS) guidelines supported the use of a scalpel-bougie technique over all other methods of eFONA.[4] Given this discrepancy in the preference of eFONA technique among Canadian anesthesiologists, we distributed an 11-item survey to all 17 anesthesia residency program directors in Canada to find out how and how much eFONA was taught to anesthesia residents.

Fourteen out of 17 (82%) of the distributed surveys were returned. Results can be found in the Table. A median [interquartile range] of 8 [3–10] hr of formal teaching (didactic teaching and simulation) was dedicated to eFONA during residency. Modalities used to teach eFONA included 14/14 (100%) simulations, 11/14 (79%) didactic methods, and 3/14 (21%) videos. Simulation modalities included high-fidelity simulation, and part-task training (mannequins, animal models, or cadavers). Didactic methods included formal academic teaching and airway courses.

Across all 14 programs the "single most preferred method" of eFONA taught to residents in a CVCO scenario in adult anesthesia was the scalpel-bougie technique. We also found that eFONA techniques taught in residency programs varied, with scalpel-bougie (13/14, 93%) and Seldinger techniques (7/14, 50%) being the most often selected. In addition, the number of different eFONA techniques taught by each program varied from one to six, with most programs, teaching two or more methods. For pediatric practice, the results varied more, which reflects the lack of definitive recommendations in current guidelines.

It is reassuring to note that the majority of residency programs are favoring scalpel-bougie cricothyrotomy, given its superior success rate in the emergency setting when compared with needle-based cricothyroidotomy.[2] We infer that this preference among residency programs reflects the most recent evidence and aligns with the

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Table Teaching variation among eFONA methods within Canadian residency programs

Type of eFONA technique	Number of residency programs $N = 14$
Single most preferred method—adult, n/total *N* (%)	
Scalpel-bougie	10/14 (71%)
Scalpel-open surgical[a]	3/14 (21%)
Seldinger[b]	1/14 (7%)
Single most preferred method—pediatric, n/total *N* (%)	
Defer to tracheostomy by surgeon	6/14 (43%)
Scalpel-bougie	2/14 (14%)
Seldinger[b]	2/14 (14%)
Other	2/14 (14%)
Scalpel-open surgical[a]	1/14 (7%)
IV catheter	1/14 (75%)
Number of different eFONA techniques taught, *n*/total *N* (%)	Number of residency programs $N = 14$
1	6/14 (43%)
2	2/14 (14%)
3	2/14 (14%)
4	2 /14 (14%)
5	1/14 (7%)
6	1/14 (7%)

Results are according to 14 out of 17 surveys that were returned from Canadian residency programs in anesthesiology

[a] Indicates scalpel-open surgical method, not including scalpel-bougie method

[b] Also known as the wire-guided method

eFONA = emergency front-of-neck access

DAS 2015 difficult airway guidelines.[4] More recently, in 2021, the Canadian Airway Focus Group updated its guidelines and now also supports the recommendation of the scalpel-bougie technique.[5]

One troubling finding is that most programs are teaching multiple techniques. We suggest that it is preferable to teach a single technique. Motor skills, cognitive processing, and vision deteriorate with stress. Having multiple options could further increase cognitive load and delay action. Simplicity in critical situations increases success; this has been shown with military medics who have a higher success rate of 67% with eFONA[6] when taught only a single surgical technique compared with anesthesiologists who had a success rate of 36% in the NAP4 study.[2] Emergency front-of-neck access is an intrinsically rare event; therefore, it is primarily rehearsed in simulated environments. To decrease cognitive load in emergencies and acquire a higher degree of technical skill, we would argue it is best to practice one eFONA technique multiple times rather than multiple techniques a few times each. Considering current evidence, this should be the scalpel-bougie technique. We suggest that it is not attainable to maintain, on a large scale, a high quality of technical skill in eFONA by practicing multiple different techniques.

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References

1. *Wong DT, Lai K, Chung FF, Ho RY*. Cannot intubate-cannot ventilate and difficult intubation strategies: results of a Canadian national survey. Anesth Analg 2005; 100: 1439–46. https://doi.org/10.1213/01.ane.0000148695.37190.34
2. *Cook TM, Woodall N, Frerk C, Fourth National Audit Project*. Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. Part 1: anaesthesia. Br J Anaesth 2011; 106: 617–31. https://doi.org/10.1093/bja/aer058
3. *Wong DT, Mehta A, Tam AD, Yau B, Wong J*. A survey of Canadian anesthesiologists' preferences in difficult intubation and "cannot intubate, cannot ventilate" situations. Can J Anesth 2014; 61: 717–26. https://doi.org/10.1007/s12630-014-0183-0
4. *Frerk C, Mitchell VS, McNarry AF, et al*. Difficult Airway Society 2015 guidelines for management of unanticipated difficult intubation in adults. Br J Anaesth 2015; 115: 827–48. https://doi.org/10.1093/bja/aev371
5. *Law JA, Duggan LV, Asselin M, et al*. Canadian Airway Focus Group updated consensus-based recommendations for management of the difficult airway: part 1. Difficult airway management encountered in an unconscious patient. Can J Anesth 2021; 68: 1373–404. https://doi.org/10.1007/s12630-021-02007-0
6. *Mabry RL, Frankfurt A*. An analysis of battlefield cricothyrotomy in Iraq and Afghanistan. J Spec Oper Med 2012; 12: 17–23. https://doi.org/10.55460/fyqg-8e49