

In Reply:

We thank Drs. Kracke and Olds for their comment regarding Daniel Bovet's Nobel Prize in 1957 "for his discoveries relating to synthetic compounds that inhibit the action of certain body substances, and especially their action on the vascular system and the skeletal muscles."^{1,2} We agree with the authors that Bovet's prizewinning research was central to anesthesiology, although its interdisciplinary character also relates to other fields. The official web site of the Nobel Prize categorizes it as "neurobiology"³; however, no prizes are labeled "anesthesiology" on this web site. Interestingly enough, debates about disciplinary boundaries are not unusual in the Nobel Prize context. As a consequence of its outstanding reputation, the award is used as a parameter for international university rankings (for example in the Shanghai ranking) and as a marketing tool for scientific associations and societies ("claim to fame"), even if the link between the laureate and institution/association in question sometimes is quite vague. As hinted in Kracke and Olds' letter, this is also true for some laureates and their medical field(s). Other examples are the Nobel prizes in physiology or medicine for Werner Forssmann (1956) for introducing heart catheterization and Charles B. Huggins (1966) for discoveries concerning hormonal treatment of prostatic cancer. Since both were trained as urologists, commentators have argued that they as laureates represent the field of urology. However, their prizewinning discoveries are perhaps more related to other fields, such as cardiology (Forssmann) and endocrinology (Huggins).^{4,5} Still, these discussions surrounding the Nobel Prize help us explore the cultural nature of celebration and commemoration in medicine and science.

Competing Interests

The authors declare no competing interests.

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REFERENCES

1. Hansson N, Fangerau H, Tuffs A, Polianski IJ: No silver medal for Nobel Prize contenders: Why anesthesia pioneers were nominated for but denied the award. *ANESTHESIOLOGY* 2016; 125:34–8
2. Available at: https://www.nobelprize.org/nobel_prizes/medicine/laureates/1957/. Accessed October 14, 2016
3. Available at: https://www.nobelprize.org/nobel_prizes/themes/medicine/lindsten-ringertz-rev/index.html. Accessed October 14, 2016
4. Hansson N, Moll F, Schultheiss D, Krischel M: Remembering Charles B. Huggins' Nobel Prize for hormonal treatment of prostatic cancer at its 50th anniversary. *Eur Urol* 2016; 69:971–2
5. Hansson N, Packy LM, Halling T, Groß D, Fangerau H: [From nobody to Nobel laureate? The case of Werner Forßmann]. [Article in German] *Urologe A* 2015; 54:412–9

(Accepted for publication October 13, 2016.)

As the Pendulum Swings from the Needle to the Scalpel, the Evolution of Emergency Airway Management Will Continue

To the Editor:

The recent editorial by Asai¹ addressing the challenges of cricothyrotomy for the management of "cannot intubate, cannot oxygenate" situations appropriately identifies the need for additional research as to how to optimally manage this airway emergency. Although the study by Heymans *et al.*² to which it refers addresses the advantages of an open scalpel-driven cricothyrotomy over a percutaneous approach, a fundamental aspect of cricothyrotomy, irrespective of the technique chosen, is the actual identification of the cricothyroid membrane itself.³ Recently, this was highlighted by a study that showed that neither anesthesiologists nor surgeons themselves are particularly good at finding this important airway landmark.⁴ So, whichever technique is chosen, it is important that adequate training in identification of the cricothyroid membrane has been first mastered.

It is also clear, both in this editorial and some of the other recent work that has published, that there is an ongoing evolution in the understanding of how to best manage the "cannot intubate, cannot oxygenate" emergency airway. An example of this evolution is seen in the swing in opinion away from needle cricothyrotomy (a long taught foundation in emergency airway management) back to an open scalpel-driven technique. However, before the percutaneous approach is abandoned, one must fully consider the evolution in research regarding its use. Indeed, abandoning the percutaneous route ignores the newer (and percutaneous compatible) devices that are now entering the marketplace that allow for effective and safer jet ventilation. Indeed, this would suggest that open or percutaneous do not necessarily need to be mutually exclusive. A hybrid model of sorts has been made possible by the recent regulatory approval of the Ventrain® (Ventinova, The Netherlands) device,⁵ which has recently been demonstrated to allow the use of ventilation through small-bore tubes, in part, due to its ability to allow active expiration, thus reducing the potential for hyperinflation from jet ventilation in situations of poor air egress. One could easily see this type of device being used not only for percutaneous cricothyrotomy, but also in a situation where one is beginning with a surgical cricothyrotomy but is only able to place a small-bore tube into the trachea.

Thus, as the pendulum swings away from percutaneous to open cricothyrotomy, one should keep an open mind and look to other hybrid techniques. The scalpel may be better, but perhaps it is too early to dismiss the needle just yet.

Competing Interests

The author declares no competing interests.

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References

1. Asai T: Surgical cricothyrotomy, rather than percutaneous cricothyrotomy, in “cannot intubate, cannot oxygenate” situation. *ANESTHESIOLOGY* 2016; 125:269–71
2. Heymans F, Feigl G, Graber S, Courvoisier DS, Weber KM, Dulguerov P: Emergency cricothyrotomy performed by surgical airway-naïve medical personnel: A randomized crossover study in cadavers comparing three commonly used techniques. *ANESTHESIOLOGY* 2016; 125:295–303
3. Law JA: Deficiencies in locating the cricothyroid membrane by palpation: We can’t and the surgeons can’t, so what now for the emergency surgical airway? *Can J Anaesth* 2016; 63:791–6
4. Hiller KN, Karni RJ, Cai C, Holcomb JB, Hagberg CA: Comparing success rates of anesthesia providers *versus* trauma surgeons in their use of palpation to identify the cricothyroid membrane in female subjects: A prospective observational study. *Can J Anaesth* 2016; 63:807–17
5. Lang SA: Emergency airway management: What are the roles for surgical cricothyroidotomy and the Ventrain® device? *Can J Anaesth* 2016; 63:997–8

(Accepted for publication October 26, 2016.)

In Reply:

I thank Professor Grocott for his comments on my editorial¹ on emergency cricothyrotomy. I fully agree with his statement that the major reason for failure in emergency cricothyrotomy is difficulty in identifying the cricothyroid ligament (as I wrote in my editorials^{1,2}).^{1–4} I also agree with his statement that we all should be trained to be competent in identifying the cricothyroid ligament, and I pointed out that training using ultrasonography is effective.^{3,5}

I further agree with Professor Grocott’s comments that there is an ongoing evolution in understanding of how to best manage the “cannot intubate, cannot oxygenate” situation, and that there is a swing in opinion away from needle cricothyrotomy to an open scalpel–driven technique. Having said that, I did not intend to advocate abandoning percutaneous route. I stated in my editorial¹ that a clear answer cannot be obtained as to whether or not percutaneous cricothyrotomy is truly less effective than surgical cricothyrotomy because randomized controlled studies are lacking. My point was that, in the era of evidence-based medicine, we should make recommendations based on the current state of knowledge and that studies have indicated that percutaneous cricothyrotomy is less effective than surgical cricothyrotomy. In particular, there is growing evidence that the use of jet ventilation through a small-bore needle is frequently ineffective and is associated with a higher incidence of life-threatening complications.^{6,7} What I pointed out was that “the main

reason for choosing surgical cricothyrotomy in an emergency situation is to identify the cricothyroid ligament correctly and quickly,” and I recommended a “hybrid” method: when identification of the cricothyroid ligaments is difficult due to a thick tissue over the larynx, we should incise the skin (and subcutaneous tissues) until we can identify the cricothyroid ligament and then puncture the ligament, using a Trocar-type “percutaneous” cricothyrotomy kit.¹

Lastly, I am sure that Professor Grocott would agree with my conclusion remarks made in my editorial¹ that “[e]vidence is still insufficient to conclude which method of cricothyrotomy is more reliable than another” (and thus it is too early to dismiss percutaneous method yet), but “[n]evertheless, the current state of knowledge indicates that surgical cricothyrotomy is more reliable than percutaneous cricothyrotomy as a rescue method in ‘cannot intubate, cannot oxygenate’ situation.”

Competing Interests

The author declares no competing interests.

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References

1. Asai T: Surgical cricothyrotomy, rather than percutaneous cricothyrotomy, in “cannot intubate, cannot oxygenate” situation. *ANESTHESIOLOGY* 2016; 125:269–71
2. Asai T: Emergency cricothyrotomy: Toward a safer and more reliable rescue method in “cannot intubate, cannot oxygenate” situation. *ANESTHESIOLOGY* 2015; 123:995–6
3. Siddiqui N, Arzola C, Friedman Z, Guerina L, You-Ten KE: Ultrasound improves cricothyrotomy success in cadavers with poorly defined neck anatomy: A randomized control trial. *ANESTHESIOLOGY* 2015; 123:1033–41
4. Heymans F, Feigl G, Graber S, Courvoisier DS, Weber KM, Dulguerov P: Emergency cricothyrotomy performed by surgical airway-naïve medical personnel: A randomized crossover study in cadavers comparing three commonly used techniques. *ANESTHESIOLOGY* 2016; 125:295–303
5. Kristensen MS, Teoh WH, Rudolph SS: Ultrasonographic identification of the cricothyroid membrane: Best evidence, techniques, and clinical impact. *Br J Anaesth* 2016; 117(suppl 1):138–48
6. Duggan LV, Scott BB, Law JA, Morris IR, Murphy MF, Griesdale DE: Transtracheal jet ventilation in the ‘can’t intubate can’t oxygenate’ emergency: A systematic review. *Br J Anaesth* 2016; 117(suppl 1):128–38
7. Cook TM, Woodall N, Frerk C: 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

(Accepted for publication October 26, 2016.)