

**SHORT  
COMMUNICATION**

Volume 9 Issue 2 2017

DOI: 10.21315/eimj2017.9.2.5

**ARTICLE INFO**

Submitted: 21-03-2017

Accepted: 17-04-2017

Online: 30-06-2017

## Cricoid Pressure for the Medical Student

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To cite this article: Weimer BC, Barger KM, Brisson M, Ruffin WC, Krautter DS, Brisson P. Cricoid pressure for the medical student. Education in Medicine Journal. 2017;9(2):47–50. <https://doi.org/10.21315/eimj2017.9.2.5>

To link to this article: <https://doi.org/10.21315/eimj2017.9.2.5>

### **ABSTRACT**

Healthcare providers worldwide utilise cricoid pressure to prevent aspiration of stomach contents upon induction to anaesthesia. It is possible that a medical student may be asked to apply cricoid pressure during clinical rotations in a medical emergency. Based on an initial search, no medical school in the United States provides training in the technique of cricoid pressure. Workshop organisers at The Edward Via College of Osteopathic Medicine, (VCOM) Auburn Campus, implemented a voluntary program to train preclinical medical students in the Sellick maneuver of cricoid pressure. Organisers surveyed the 34 participants prior to the workshop to gauge their familiarity with the Sellick maneuver, then observed them applying cricoid pressure to a model. Medical professionals provided instruction in the Sellick maneuver then observed performance once again. All 34 of the participating students successfully performed the Sellick maneuver in the post-training assessment. Since medical professionals utilise this technique worldwide, and misapplication has an impact on patient safety, medical schools should consider integrating cricoid pressure training into their pre-clinical curriculum.

**Keywords:** *Sellick, Cricoid pressure, Medical student, Training, Workshop*

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## **INTRODUCTION**

Every day, worldwide, healthcare providers utilise cricoid pressure to prevent aspiration of stomach contents during induction to anaesthesia. It is very likely that a medical student will observe a medical professional applying cricoid pressure during clinical rotations, and possibly the student may be asked to apply cricoid pressure to a patient in a medical emergency. Based on a thorough search of the medical literature, no medical school in the United States provides training to students in the proper technique of applying cricoid pressure. Additionally, no national course that trains providers in airway management offers specific hands-on training in the proper application of cricoid

pressure. Workshop organisers at the Edward Via College of Osteopathic Medicine (VCOM), Auburn Campus, implemented a voluntary program to train preclinical medical students in the Sellick manoeuvre of cricoid pressure.

## **METHOD**

VCOM faculty developed a voluntary cricoid pressure training course. Prior to initiation of training, organisers administered a survey to determine how familiar each student was with the Sellick maneuver. Students chose one of five options: 1) Not at all familiar, 2) Slightly familiar, 3) Somewhat familiar,

4) Moderately familiar, or 5) Extremely familiar. Following the survey, participants attempted to demonstrate the Sellick maneuver on a model of the trachea based on their pre-training knowledge. Experts in the application of cricoid pressure monitored the participants (Figure 3). Following a 30-minute presentation on the Sellick maneuver, participants demonstrated the technique again, under expert observation.

## RESULT

Of the 34 students who participated in the pre-training survey, only three (9%) reported any familiarity with the Sellick maneuver. None of the students correctly demonstrated the technique on the tracheal model pre training. All students ( $n = 34$ , 100%) who participated in post training skills testing, successfully demonstrated the appropriate application of the Sellick maneuver on the trachea model in their first attempt.

## DISCUSSION

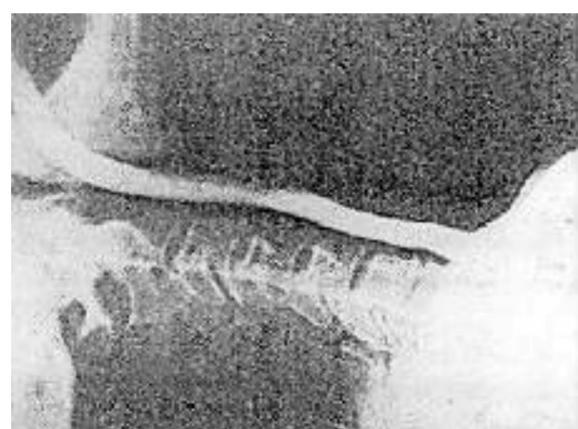
In 1961, Brian Sellick, a British anesthesiologist, reported that the application of cricoid pressure, utilising a three-finger technique, could prevent aspiration of stomach contents during induction of anesthesia (Figure 1). Sellick

demonstrated the effectiveness of his technique, now referred to as the Sellick maneuver, by successfully occluding the esophagus at the level of the fifth cervical vertebra (Figure 2) (1).

The proper application of cricoid pressure has been a longstanding issue. In 2010, Brisson and Brisson (2) reported their observation of 32 health care providers in the application of cricoid pressure. They observed ten different cricoid pressure



**Figure 1:** Sellick maneuver utilising the 3-finger technique to the midline of the cricoid cartilage (1).



**Figure 2:** Contrast study: Left, without cricoid pressure. Right, demonstrating the effectiveness of cricoid pressure in occluding the esophagus to prevent aspiration (1).



**Figure 3:** Students entering workshop entitled “Cricoid Pressure for the Medical Student”.

techniques; however, only three providers utilised the maneuver as described by Sellick (1).

In 2013, Johnson et al. commented on the 2010 Advanced Cardiac Life Support guidelines, which had recently recommended against the routine use of cricoid pressure as an adjunct in emergency airway management. They went on to state it was possible that the reason cricoid pressure was no longer recommended by the American Heart Association was due to widespread improper application (3).

## CONCLUSION

Medical professionals worldwide continue to utilise the Sellick maneuver on a daily basis to prevent aspiration of stomach contents upon induction to anesthesia. Medical students will definitely be exposed to cricoid pressure and it is possible that they could be asked to apply cricoid pressure in an emergency. Organisers of this workshop found that the Sellick maneuver is simple and easy to teach to pre-clinical medical students. Since misapplication of cricoid pressure can have an impact on patient safety, medical schools should consider

integrating cricoid pressure training into their pre-clinical curriculum.

## ACKNOWLEDGEMENTS

Special thanks to Brian Openlander, OMS II at the Edward Via College of Osteopathic Medicine, for his assistance with the cricoid pressure training course. In addition, thank you to Jana Schellinger, VCOM medical librarian, for formatting, editing and proofreading.

**Protection of Human Subjects:** The research team submitted this proposal for Institutional Review Board (IRB) approval, but it did not fall under IRB purview. Organizers received QA/QI (quality assurance and quality improvement) approval for this workshop and the corresponding survey.

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