Cricoid pressure: An enigma wrapped in a mystery or a hand wrapped around a throat? If I can't disprove a lie, does it become the truth?

Sellick's maneuver has been around for just over 50 years.[1] Initially, adopted very enthusiastically, it soon became the "standard of care." Even in Sellick's original study, with the patients head down and slightly turned, 12% of his patients regurgitated. This has to be considered in the light of use of ether at that time, which among its other side-effects also had a near 80% rate of post-operative nausea and vomiting! Sellick could not or did not, define the force required and neither does his paper clarify other clinical aspects of the aspirated cases. The safety and efficacy of cricoid pressure have not been demonstrated in five decades of its use and less than 40 trials have examined its effectiveness and none of them could prove it. By the way, the force required to compress an occluded 60 cc syringe full of air to about the 38 cc mark will equate to about 40 N. (I hope you will try this yourself and compare it to what you thought was appropriate pressure and maybe generate enough responses and discussion).

Some proponents of cricoid pressure (CP) point out to the decrease in maternal deaths since the acceptance of this technique. To ascribe all of this benefit solely to CP is either naïve, or worse, because it ignores all the other progress made in anesthetic care, which have obviously contributed to improved outcomes. From better agents to use of citrate antacids, intubation in a head up position etc., have all helped.

The protestations about CP come from the following arguments: Efficacy only demonstrated in cadavers, can relax the lower esophageal sphincter, aspiration can occur even in the presence of CP, esophagus is not directly behind the trachea, may make mask ventilation difficult or even impossible and can even make mask ventilation, fiber-optic bronchoscopy, laryngoscopy, laryngeal mask airway placement or tracheal intubation difficult or even impossible. As anesthesiologists, we would be held liable and possibly correctly so, with failed and mismanaged airway more frequently, than an incidental aspiration.

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This trapping and subsequent compression of the esophagus between the only complete cartilage ring and the vertebral bodies has the potential to help decrease aspiration risk. Consider this as well, loss or mismanagement of the airway is a much more frequent cause of morbidity and mortality than aspiration.

Some of our senior practitioners of anesthesia, (I couldn't say "old timers" since that could be considered pejorative or might be considered discriminatory on the basis of age!) who have practiced using CP and rapid sequence induction and intubation (RSII), insist on continuing to practice it, teach and even insist on it. Some newer (younger) practitioners have slowly and easily abandoned it and have no reason, until convincing clinical evidence shows otherwise, their practice to be detrimental, to change back to using it in the future. For example, among pediatric Anesthesiologists in UK, less than half use it, even in emergencies.[2] The American landscape is more variable and I think the regional variation is more a reflection of training and thereby practice habits than anything else. Among our colleagues in emergency medicine, the other group of practitioners who would be expected to utilize this, per the emergency medicine journal, Butler and Sen evaluated 241 manuscripts to determine if CP reduced aspiration during RSI. They found little evidence to support the widely held belief that CP reduces aspiration during RSI.[3]

In pediatric practice, a survey of a few hundred pediatric anesthetists in UK revealed that recent graduates were more likely to deviate from the practice of RSI, perhaps supporting the practice modification to the lack of being convinced of its utility during their training, even if forced to utilize it while being trainees![4] The surveyed doctors were more likely to utilize CP in pyloromyotomies than for scrotal explorations, which intuitively seem reasonable. Pediatric anesthesia practitioners in USA and UK have variable practice in doing RSII, even in non-fasted patients. Rate of estimated aspiration is <0.1%, mostly during induction, with no published mortality.

So what is practiced as "modified RSII?" Per a 2011 survey from Vanderbilt University, a modification of the standard RSII is followed in a majority of academic centers in the USA.[5] Of the nearly 500 surveys received, 93% of

responders reported using some form of modified RSII. The three defining features of modified RSII in this survey were (1) oxygenation prior to induction, (2) use of CP and (3) an attempt to ventilate the lungs prior to definitive securing of the airway. Is this our compromise to what has been taught and can't be easily disproved to be wrong? Since randomized trials have two major challenges; the incidence of aspiration is low and the ethical considerations of doing this study, if you believe that it may even have some benefits it would give conniptions to an Institution Review Board in approving a truly randomized study. Since the overall rate of aspiration is of the order of one every 3,000-4,000 it would be nearly impossible to do a randomized double-blinded study that statistically answers the question and changes practice.

Perhaps, the answer will come retrospectively from cases where aspiration occurred in the presence of CP/RSII being applied and by evaluating the technique: Was it appropriately applied? Who was the applicant of the CP: non-nurse, nurse, physician, trainee or consultant? Was the applicant of CP trained in applying CP in the correct manner? One caveat is that even trained applicants can misapply the pressure and make both ventilation and intubation difficult.

A common misconception among some practitioners of anesthesia is that an airway secured by a cuffed endotracheal tube is immune from aspiration. Neither a cuffed endotracheal tube nor a tracheostomy completely protects the lungs from aspiration.

The most common preventable cause of aspiration in the operation room is premature attempts at laryngoscopy (on non-paralyzed patients). When a very stimulating move; a laryngoscope blade being placed in the oropharynx, the reaction is predictable (gagging) with a potentially serious end result: aspiration.

Should we consider it "standard of care?" What about in the trauma patient with a cervical collar or the morbidly obese with a short large neck? What if laryngeal or neck trauma is present? The debate will continue, but it behooves us to be choosy in which cases we decide to skip it. It would seem that in some cases it is an intuitive maneuver and in some quite an overkill.

Ashish C Sinha

Department of Anesthesiology and Perioperative Medicine, Drexel University College of Medicine, Philadelphia, PA 19102, USA

Address for correspondence: Prof. Ashish C Sinha, Department of Anesthesiology and Perioperative Medicine, Drexel University College of Medicine, Philadelphia, PA 19102, USA.
E-mail: Ashish.Sinha@DrexelMed.edu

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