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Developing a Realistic Medical Training Device for Teaching Effective Cricoid Pressure Technique

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Abstract

Cricoid pressure (CP), or Sellick's manoeuvre, is routinely used to prevent aspiration of gastric contents during induction of anaesthesia for emergency surgery and during rapid sequence intubations in the emergency department. The anaesthetic assistant must know exactly where to apply CP to prevent aspiration, but not impair visualisation of the larynx or make intubations more difficult. For CP to be effective the force applied to the cricoid cartilage should be >20 Newtons (N) [1]. Applying insufficient force is potentially unsafe, but excessive force can cause problems including trauma [2].

Several studies have shown many anaesthetic assistants cannot apply Sellick's manoeuvre correctly [3, 4]. Faults with their technique include: applying inadequate force, not maintaining sufficient force, and applying pressure to the wrong location. Training can improve performance, however there is currently no such device on the market to teach and train staff how to apply CP effectively.

An inexpensive and effective CP trainer has been developed. Features of the device include a compact, portable, and anatomically life-like design. Feedback is provided regarding the location, magnitude and duration of the applied force to the cricoid cartilage. A range of forces up to 50N are displayed to provide visual feedback on the pressure being applied to the cricoid cartilage. The position and lateral direction of the applied force, relative to the cricoid cartilage, are also indicated for teaching purposes. A timer function, ranging from 45 seconds to 5 minutes indicates the duration that CP should be maintained and signals the end of the procedure. The trainer allows anaesthetic assistants to develop and maintain the correct technique for applying Sellick's manoeuvre.

A study was undertaken to verify the need for improved training and teaching of CP technique [5]. Before training with the Cricoid Pressure Trainer only 10% of the study group was able to apply correct CP. After training with the device, 90% of the participants were able to apply the correct force. It was demonstrated that there is a need for a CP training device and that this can be fulfilled using the Cricoid Pressure Trainer.

References

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