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SOCIETY FOR NEUROSCIENCE IN ANESTHESIOLOGY AND CRITICAL CARE

ARTICLE OF THE MONTH

The Shikani Optical Stylet as an Alternative to Awake Fiberoptic Intubation in Patients at Risk of Secondary Cervical Spine Injury: A Randomized Controlled Trial

Mahrous RSS, Ahmed AMM. *J Neurosurg Anesthesiol.* 2018 Oct; 30(4):354-358.

Welcome to the December 2018 installment of the SNACC Article of the Month. This month's selection investigates the use of an optical stylet in the airway management of patients with unstable cervical spines.

This month's article was selected by Dr. Mark Weller. Dr. Weller is an assistant professor of anesthesia at Columbia University and director of anesthesia at Daniel and Jane Och Spine Hospital in New York. His practice focuses largely on anesthesia for spine surgery, including a large number of cervical spine cases. We appreciate his insight into this important topic.

We encourage our readers to give us their feedback on the SNACC **Twitter** feed or on **Facebook**.

~ Adrian Pichurko, MD; Nina Schloemerkemper, MD; Oana Maties, MD

Commentary

Mark Weller, MD

Airway management in patients with unstable cervical spines due to trauma or in patients presenting with myelopathic changes due to cervical spinal cord compression presents a unique challenge for the anesthesiologist. Traditionally, the flexible fiberoptic bronchoscope has been the main choice for anesthesiologists dealing with these types of patients.

Over the last years several new airway devices, including videolaryngoscopes and optical stylets, have become available to assist with difficult intubations. In this article, the authors compare the efficacy of the Shikani optical stylet (SOS), a malleable intubating stylet coupled with an optical scope, with that of a flexible fiberoptic bronchoscope (FOB) in patients with cervical spine instability during awake oral intubation.

The authors enrolled 60 patients with cervical instability or at risk for secondary cervical injury and randomly assigned 30 patients each to a fiberoptic intubation group and a Shikani optical stylet group. In both groups, the time to successful intubation (defined as ETT crossing the glottic opening), number of attempts necessary,

incidence of coughing and/or gagging and hemodynamic parameters were recorded. All patients had a rigid cervical collar in place and were intubated awake. Topical anesthesia of the oral cavity and the larynx as well as a recurrent laryngeal nerve block were achieved in a standardized fashion. Patients additionally received atropine as an anti-sialagogue and midazolam and fentanyl for sedation. If intubation was unsuccessful (defined as taking longer than 180 seconds) or if desaturation was noted, the attempt was stopped and the patient was ventilated.

Demographically the two groups did not show any significant differences with regards to age, sex and weight. The mean time to successful intubation recorded was significantly shorter in the SOS group (53.2s $\pm$ 7.14s vs. 102.57s $\pm$ 10.98s). For three patients in the SOS group, two attempts were needed for successful intubation compared to successful intubation at first attempt in all patients in the FOB group. Four patients in the SOS group complained about a sore throat, whereas no patient in the FOB group had a sore throat. Both these differences were statistically insignificant. None of the patients experienced neurological deterioration due to the intubating process and changes in hemodynamics (heart rate and mean arterial blood pressure) were not significantly different between the two groups.

Injuries to the cervical spine during airway management and positioning are rare, but do occur. In this study, patients at risk for cervical spinal cord injuries were intubated awake and had a cervical hard collar in place for additional cervical spine protection. Furthermore, if necessary, the patients positioned themselves and neurologic testing was performed before induction of general anesthesia. One cannot imagine a higher degree of safety measures to avoid spinal cord injuries during the intubation and positioning process.

Time to successful intubation was significantly shorter in the SOS group, but three patients needed a second attempt for successful intubation and four patients complained about a sore throat after intubation. Both these differences were not statistically significant, but this might be different with higher numbers of enrolled patients. The low incidence of coughing and gagging during this study points toward a very effective airway topicalization technique and might play a significant role in the overall success of awake intubation and self-positioning. Overall the study shows the safety and feasibility of the Shikani optical stylet in the airway management of the unstable cervical spine and thus offers another tool in the armamentarium of the anesthesiologist to deal with the airway in these challenging situations.

References:

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