26290 - MANUAL IN-LINE STABILIZATION INCREASES THE INTUBATION FAILURE RATE

**François Thiboutot MD, Pierre C Nicole, MD FRCPC; Claude A Delalaitue, MD FRCPC; Martin R Lessard,
CHA Hôpital Enfant-Jésus, Université Laval, Québec, QUÉBEC, Canada**

INTRODUCTION: Manual in-line stabilization (MILS) is applied to limit movement of the head and the cervical spine during endotracheal intubation in patients with a known or suspected cervical spine instability. The study hypothesis was that MILS makes tracheal intubation more difficult. The objective was to evaluate the rate of failed intubation when MILS is applied.

METHODS: Hospital research ethics committee approval and patients informed consent were obtained. Patients scheduled for elective surgery were randomly allocated to two groups. In the MILS group, the head of the patient was positioned directly on the operating table and stabilized in a neutral position by firmly grasping the patient's mastoid processes to prevent any movement of the head during the intubation attempt. MILS was applied by the same investigator in all patients. In the control group, the head rested in a position considered optimal for intubation by the anesthesiologist. One of seven experienced anesthesiologists intubated the trachea of all patients with a Macintosh No.3 laryngoscope blade. A standardized intravenous anesthesia induction with muscular paralysis was administered. No tool or any other maneuver to facilitate intubation was allowed. The primary endpoint was the failure to intubate the trachea within a 30 sec attempt. Secondary endpoints included time for intubation and Cormack & Lehane laryngoscopy grades. Using a one-tailed hypothesis, it was calculated that 510 patients were required to detect a clinically significant increase of the intubation failure rate from 4% to 10% with type I and type II errors of 5% and 20%, respectively. An interim analysis was done when 200 patients were included in the study. The Student t-test was used for continuous data and the Fischer's exact test for proportions. A P value < 0,05 was considered significant.

RESULTS: Patients recruitment was stopped at the interim analysis, after 200 patients had been included. The anthropometric characteristics and predicting factors for difficult intubation were similar between the two groups. One patient had to be excluded from the analysis because of study protocol violation. The rate of failed intubation at 30 sec was 50% (47/94) in the MILS group and 5.7% (6/105) in the control group ($P < 0.0001$). Grade 3 and 4 laryngoscopic grades were more frequent in the MILS group (Figure; $P < 0.0001$). The intubation time for the successful intubations was 15.8 ± 8.5 sec for the MILS group and 8.7 ± 4.6 sec for the control group ($P < 0.0001$).

DISCUSSION: MILS increases the intubation failure rate and worsens laryngeal visualization during direct laryngoscopy. A difficult intubation should be anticipated when MILS is applied.