Continuous Respiratory Surveillance with Capnography and Oximetry after Bariatric Surgery with Low-opiate Anesthesia

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Introduction: A predictive patient score (PRODIGY) to evaluate the risk of postoperative respiratory complications has been recently proposed, from a large multicenter study evaluating a variety of surgical procedures (1). Use of this score resulted in better patient outcomes and reduced hospital costs and length of stay. We applied this score to a cohort of bariatric surgery patients and collected postoperative continuous monitoring, to measure respiratory complications.

Methods: As part of this IRB approved study, continuous surveillance for respiratory complications was performed after robotic bariatric surgery in PACU, and continued after discharge, with capnography and peripheral oximetry (Capnostream 35, Medtronic Inc.). Preoperative workup included sleep studies, weight optimization, and evaluation of risk for opioid-induced respiratory depression (low, intermediate or high, using PRODIGY scoring). All patients received multimodal intra operative no-opioid anesthesia and postoperative low-opioid analgesia. After surgery all patients received continuous respiratory surveillance continued after discharge to the Ward (average duration 141 minutes). Respiratory complications were measured using the five standard published categories (1) by ex-vivo analysis of the respiratory traces, completed by blinded observers.

Results: Of the 29 patients evaluated (7 male), 20 patients had obstructive sleep apnea with CPAP use (OSA) and 9 patients did not (Control). We encountered 44 respiratory depression events across the 29 patients. The most frequent respiratory event recorded was a transient desaturation below 85%, which usually lasted 20-30 sec and resolved spontaneously in 3 to 5 min: most episodes followed IV opioid analgesia administration during recovery. All episodes resolved without nursing or medical action. Respiratory events occurred more frequently in patients with OSA (1.65 per patient versus 1 per patient in Controls). This difference did not reach significance (p = 0.21 by t-test). A linear regression of the number of events by PRODIGY score adjusted by OSA status did not show a significant trend (p=0.94).





Conclusion: The predictive value of the PRODIGY score on this small group of bariatric patients was not robust: still, OSA patients had an increasing frequency of postoperative events. Patients with intermediate or high-risk score showed a non-significant trend to more frequent respiratory complications, compared to low-risk patients. We attribute the results to opioid-free anesthesia, early CPAP utilization on admission to PACU and light postoperative narcotic requirements. (Supported in part by an Equipment Grant from Medtronic Inc. to Dr. Camporesi)

REFERENCE: Khanna, A K et Al. : *Anesth Analg* 2020; 131 [4]: 1012-1024