Non-Invasive Positive Pressure Ventilation in the Obese Patient Population: An Intervention to Enhance Oxygenation: A Quality Improvement Project

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Abstract

Obesity is a comorbidity that can be challenging to the anesthetist. Patients who are obese are at risk for rapidly desaturating after becoming apneic during the induction of a general anesthetic. This rapid desaturation is mainly attributed to their decreased oxygen reserve that is a result of their obesity. Mississippi is known to have a disproportionately higher percentage of citizens who are obese, compared to other states (Johnson, 2016). Desaturation in the obese is important to avoid because it leads to atelectasis and prolongs recovery. When an anesthetist is providing a general anesthetic to the obese patient population, it is important they use the most current evidence-based practice to prevent desaturations. In this population, current evidence-based practice and literature supports non-invasive positive pressure ventilation (NIPPV) during the period of pre-oxygenation prior to the induction of a general anesthetic. Literature supports the usage of an alveolar recruitment maneuver with the use of positive end-expiratory pressure after the placement of an endotracheal tube to further enhance oxygenation throughout surgery. An informal survey of anesthesia providers at a hospital in Southeastern Mississippi, where a predominately large number of patients are obese, revealed that they did not use non-invasive positive pressure ventilation or alveolar recruitment maneuvers during the induction of general anesthesia. A quality improvement (QI) educational project was prepared which included a comparison of intervention study between the usage of NIPPV and normal tidal volume breathing before the induction of general anesthesia. The usage of NIPPV resulted in enhanced oxygenation as evidence by a higher saturated oxygen level (SpO2%) on arrival to the post-anesthesia care unit as compared to the preoperative recording.