A Super Obese Patient with OSA for Cholecystectomy: Induction of General Anesthesia Aided by a Novel Nasal PAP Mask Assembly Providing CPAP Pre-Oxygenation and Assisted Nasal Ventilation

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Introduction: Obese patients can be challenging for anesthesiologists to manage due to several factors that increase the difficulty of oxygenation and ventilation. A simple nasal PAP mask has been shown to improve oxygenation in sedated obese patients with OSA and provide continuous oxygenation in patients with difficult airway during GA induction (Fig. 1).1-5 We used this nasal PAP mask assembly in a super obese patient to provide CPAP pre-oxygenation and assisted nasal ventilation during GA induction.

Case Description: A 39-year-old super obese male (5'8", 482 lb, BMI 73 kg/m2) with acute cholecystitis/gallstone pancreatitis for laparoscopic cholecystectomy. He had HTN, asthma, OSA with nocturnal CPAP support.

The patient was placed in a beach chair position with the foam ramp device. An infant mask with a fully inflated air-cushion was secured over his nose with head straps and connected to a breathing circuit and the anesthesia machine. He was breathing comfortably with 4-5 cm H2O nasal CPAP by adjusting the APL valve with 8 L O2/min. Following pre-oxygenation with nasal CPAP, GA was induced smoothly with propofol (250 mg) and fentanyl (100 mcg). Nasal ventilation was easily accomplished by a new CA2 resident securing the nasal mask with one hand and delivering assisted ventilation with the other. Rocuronium (30 mg) was then given. With the nasal mask assembly providing continuous oxygenation, endotracheal intubation was accomplished with video-laryngoscopy. His SpO2 was maintained 100% throughout induction and intubation.

Subsequently, the patient developed hypotension and did not respond to phenylephrine and fluid boluses. TEE revealed volume depletion and normal wall motion and valvular function. His blood pressure improved with norepinephrine infusion and further fluid support. The laparoscopic procedure was converted to open. He tolerated the remaining procedure (5-hour) well and was transferred to SICU intubated. He was extubated the next day without complication and doing well with his own nocturnal CPAP machine postoperatively.

Discussion: Obese patients are at an increased risk for rapid desaturation during the perioperative period. This demographic can benefit from the use of nasal CPAP to improve SpO2 during pre-oxygenation and controlled ventilation during GA induction. By providing continuous oxygenation with this nasal mask, oral endotracheal intubation could be performed in a calm manner. This nasal PAP mask assembly using a pediatric face mask and the existing anesthesia equipment may improve patient safety at a low cost.