A Novel Nasal PAP Mask Assembly Maintained Spontaneous Ventilation and Continuous Oxygenation in a Patient with Difficult Airway due to Mandibular Fracture during Sequential Oral/Nasal Endotracheal Intubation

Primary Author: Andrea Poon MD
UCLA Anesthesiology and Perioperative Medicine

Co-Authors: Andrew Prusan, CRNA, APN, MSN; James Tse, PhD, MD; Krupa Desai, MD; Myroslav Figura, MD;

Introduction: Patients with difficult airway often receive inadequate oxygenation during nasal endotracheal intubation (ETI). A nasal PAP mask assembly has been shown to provide continuous oxygenation in sedated obese patients and patients with difficult airway during awake/asleep ETI (1-4). We reported its use in a patient with facial swelling and mandibular fracture during ETI.

Case Description: A 31-year-old male with right mandibular fracture sustained from an assault presented for mandibular repair requiring nasal ETI. He had large painful facial swelling and limited mouth opening. He was also mouth-breathing because of nasal congestion. His nasal breathing greatly improved after neosynephrine nasal drop treatment. An infant mask with a fully-inflated air cushion was secured over his nose with head-strap and connected to a breathing circuit and the anesthesia machine.

After pre-oxygenation with 4L O2 /min and 5-6 cm H2O CPAP, GA was induced with midazolam, fentanyl, lidocaine and propofol and sevoflurane (4-5%). He maintained spontaneous ventilation and 100% SpO2 during oral ETI using a video-laryngoscope (VL). While receiving ventilation support through the oral endotracheal tube (ETT), a well-lubricated nasal RAE tube (7.0) was insertedatraumatically using a 14 Fr. suction catheter as an introducer.

The nasal RAE tube was positioned next to oral ETT with VL guidance (Photo). It was advanced below vocal cords as soon as oral ETT was withdrawn and then connected to the breathing circuit. He maintained 100% SpO2 throughout sequential oral/nasal ETI. He tolerated the surgical procedure well and was extubated uneventfully.

Discussion: This nasal CPAP mask assembly maintained spontaneous ventilation and continuous oxygenation in a patient with difficult airway due to mandibular fracture during GA induction and oral VL ETI. With secured ventilation support, nasal ETI could be performed in a calm, unhurried manner. This combined technique may improve patient safety at a low cost.