

# A Novel Nasal CPAP Mask Assembly Maintained Spontaneous Respiration and Improved Oxygenation in a Morbidly Obese Patient with OSA, Difficult Airway and Severe Cardiopulmonary Diseases under MAC during Cystoscopy



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**Background:** Patients often receive IV sedation and O<sub>2</sub> via a nasal cannula (NC) during monitored anaesthesia care (MAC). Over-sedation and/or airway obstruction may cause severe desaturation, especially in obese patients with obstructive sleep apnoea (OSA).

A simple nasal CPAP mask assembly has been shown to maintain spontaneous respiration and improve oxygenation in deeply sedated OSA patients (Photo 1).<sup>1-3</sup>

We report its use in a morbidly obese OSA patient with difficult airway and severe cardiopulmonary diseases during cystoscopy.

**Case Report:** A 37 y/o morbidly obese male (BMI 62 kg/m<sup>2</sup>) with Class IV airway, OSA, pulmonary HTN, CHF, CAD, COPD/asthma requiring home NC O<sub>2</sub> (4 L/min) presented for cystoscopy, ureteroscopy and laser lithotripsy for ureteral stone.

Due to patient's severe cardiopulmonary diseases and physical habitus, the procedure was to proceed under MAC with difficult airway intubation equipment standby.

His O<sub>2</sub> saturation (Sat) was 87% with NC 4 L O<sub>2</sub>/min and would decrease with any change from sitting position.

With the patient lying supine, an infant mask with fully inflated air cushion was placed over his nose and secured with head straps and connected to a breathing circuit and the anaesthesia machine with 12 L/min O<sub>2</sub> and 5-6 cm H<sub>2</sub>O CPAP. His O<sub>2</sub> Sat increased to 92%.

The patient then received midazolam (2 mg) and fentanyl (50 mcg x 2). During the following 2 ½ hour procedure, he was maintained on conscious sedation titrated with ketamine (total 80 mg), dexmedetomidine (total 139 mcg) and a propofol infusion (40 mcg/kg/min for 25 min). He also received IV acetaminophen (1 g). He maintained spontaneous respiration and his O<sub>2</sub> Sat mid 80's%.

The patient tolerated the procedure well without any complication. He was doing well with facial CPAP in the PACU (Photo 2).

He was elated that endotracheal intubation was avoided and gave consent for photography and case report.

After a brief period on facial CPAP, he received his routine NC O<sub>2</sub> supplement. He was discharged home without any problem.



Photo 1. An infant mask with a fully inflated air cushion secured over the nose with head straps and connected to a breathing circuit.



Photo 2. The patient recovered from sedation comfortably with a facial CPAP in the PACU.

**Discussion:** This simple nasal CPAP assembly maintained spontaneous respiration and prevented severe desaturation in a morbidly obese patient with a difficult airway, OSA and severe cardiopulmonary diseases under procedure sedation.

It may improve patient safety.

**Ref:** 1. [www.tsemask.com](http://www.tsemask.com); 2. SAMBA 28<sup>th</sup> AM, 2013; 3. IARS AM: MCC1080, 2015

**Learning Points:** How to prepare a nasal mask assembly and how to provide CPAP in obese OSA patients and assisted nasal ventilation in deeply sedated patients with airway obstruction.