A novel modified nasal TSE-PAP mask assembly maintained spontaneous ventilation and continuous active oxygenation in a cachectic patient with a large mandibular sarcoma, a large thyroid nodule and a difficult airway during video-laryngoscopy-guided oral fiberoptic intubation

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Background: A nasal PAP mask assembly was shown to improve oxygenation by maintaining spontaneous respiration in sedated obese OSA patients or patients with difficult airway during awake/sleep endotracheal intubation (ETI) (Fig. 1).¹⁻⁶

We report its use in a patient with a mandibular mass during ETI.

Case Report: A 66 y/o cachectic male with A-Fib, RBBB, HTN, anemia, NIDDM, bipolar disorder, schizophrenia, lung cancer s/p RUL lobectomy, thyroid mass (2.6x4.8 cm) and necrotic mandibular sarcoma (4.4x7.4 cm) presented for resection and reconstruction.

The mass extended to his lower lip. He had a Mallampati class IV airway and poor face-mask-fit.

The patient gave his consent for using a modified nasal mask and taking photographs for educational purpose.

A modified infant mask (Fig. 2) was secured over his nose with head-straps and connected to the anaesthesia machine via a breathing circuit. The APL valve was adjusted to deliver 5-6 cm H₂O CPAP with O₂ (4L/min).

Deep sedation was titrated with 100 mg lignocaine and small boluses of propofol (6x50 mg). He maintained spontaneous ventilation and 100% SpO₂ with pressure-control (PC) ventilation (PIP 13 cm H₂O, PEEP 5, RR 20). Video-laryngoscopy (VL) revealed a grade II laryngeal view (Fig. 3-5).

Rocuronium (50 mg) was administered to relax the vocal cords in order to advance FOB. However, ETT met resistance about 4 cm below the vocal cords. After inserting a rigid stylet, ETT was advanced smoothly. FOB revealed no tracheal bleeding.

The large mandibular mass was revealed after removing the dressing (Fig. 6).

He maintained 100% SpO₂ during intubation and tolerated the procedure well.

He was kept intubated and sedated (Fig. 7). The patient was extubated next afternoon.

Fig. 1. An infant mask with a fully inflated air cushion secured over the nose with head straps.

Fig. 2. Infant mask (size #2) (left) and the modified infant mask (right).

Fig. 3. Nasal mask providing continuous active oxygenation during VL guided FOB performed by 2 anaesthesia residents.

Fig. 4. Nasal mask providing continuous oxygenation during VL guided FOB.

Fig. 5. VL showing FOB approaching the vocal cords.

Fig. 6. The large mandibular mass extended to his lower lip

Fig. 7. The patient was kept intubated and sedated post-operatively

Discussion: This modified nasal CPAP mask assembly provided continuous active oxygenation in a patient with a large mandibular mass and difficult airway during VL-guided FOI.

It maintained spontaneous nasal ventilation and subsequently provided PC nasal ventilation.

It allows calm attempts to perform VL/FOI and may improve patient safety.

References: 1. www.TSEMask.com; 2. SAMBA 28th AM, 2013; 3. SASM 3rd AM, 2013; 4. ASAAM, 2013; 5. SAM AM, 2014; 6. ASAAM, 2014

Learning points: 1. How to construct this nasal PAP mask assembly.

2. How to provide optimum nasal CPAP to maintain spontaneous respiration.

3. How to perform awake/sedated combined FOB/VL ETI with continuous active nasal oxygenation.