



## Difficult airway: are we ever truly prepared?

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I read with interest the article titled, “Successful airway management with combined use of McGrath<sup>®</sup> MAC video laryngoscope and fiberoptic bronchoscope in a severe obese patient with huge goiter” by Chung et al. [1], published in the June 2018 issue of the *Korean Journal of Anesthesiology*. It is commendable that the authors were able to proceed with such a difficult intubation in an innovative way. The combined use of the fiber-optic bronchoscope and MacGrath<sup>®</sup> MAC video laryngoscope probably enabled better visualization of the airway and better control over the airway than either of the techniques individually.

The authors had their airway plans and safety back-ups in place. They methodically proceeded to move to the next plan each time one failed, including abandoning the procedure, rather than losing the airway and the patient, giving the impression of a therapeutic misadventure rather than a poorly planned case. I do, however, have a few reservations regarding the procedure.

Oxygen reserves and the time taken for desaturation during apnea are significantly shorter in morbidly obese patients than in non-obese patients. Since its description by Holmdahl in 1956, “apneic diffusion oxygenation” has been used as a technique to permit longer periods of apnea without concomitant desaturation. Various techniques have been described to draw ambient oxygen “en masse” into the lungs and maintain oxygenation, including the use of inexpensive, easily available facemasks, nasal cannulae, and suction catheters. Baraka et al. [2] demonstrated that the use of apneic oxygenation enabled morbidly obese patients to main-

tain a saturation of 100% even at 240 s after apnea was initiated, while desaturation was achieved in the control group in 153 s. The Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE) study demonstrated the ability to extend this period to over 30 min in patients with the use of high-flow humidified transnasal oxygenation [3]. This technique has been adopted for adult patients across many clinical areas. Obesity is also a known risk factor for difficult intubation, as reported by the authors themselves [1]. This makes it more important to increase the available apnea time. Had apneic oxygenation been provided, it is possible that the authors would have been able to proceed with intubation at the first attempt or would have had a longer period of time in hand before the patient desaturated. It was verified that the patient in question had obstructive sleep apnea. The use of high-flow humidified transnasal oxygenation would successfully create a splint and decrease respiratory obstruction in a sedated patient.

The authors used a MacGrath<sup>®</sup> MAC video laryngoscope to intubate the patient. One of the problems associated with its use is fogging of the lens during expiration [4]. The use of continuous oxygen insufflation during apneic oxygenation can potentially help prevent fogging, thus solving this problem and providing better visibility.

Finally, the patient in question was morbidly obese with a large goiter (right: 7.5 cm × 4.0 cm; left: 7.3 cm × 6.0 cm), which caused compression and deviation of the trachea. A soft tissue thickness of 51 mm anterior to the thyroid cartilage—revealed on computed tomography—would have made it difficult to achieve emergency front-of-neck access. Taking the same distorted anatomy into account, rigid bronchoscopy could have been planned as a rescue measure because the patient had a large, long-standing thyroid mass. Cook et al. [5] reported that while there is no consensus regarding the initial plan to approach a large thyroid mass, rigid bronchoscopy remained an important part of airway planning for experts.

To conclude, although the authors approach, when faced with a difficult airway situation, was indeed admirable, it is worth pondering whether the use of apneic oxygenation could have prevented the necessity of the second procedure altogether.

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