Anaesthetic Techniques for Microlaryngoscopic Surgery: Our Experience with using THRIVE (Transnasal Humidified Rapid-Insufflation Ventilatory Exchange) in a DGH.

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Introduction

Anaesthesia for microlaryngoscopic surgery is traditionally provided by Jet Ventilation or IPPV delivered with a microlaryngoscopic tube (MLT). An MLT will restrict surgical access and obscure the posterior glottis. Jet Ventilation meanwhile risks barotrauma.

Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE) has an unobstructed view of the larynx without the risk of barotrauma [1]. THRIVE has seen increasing use in tertiary hospitals, although its use is limited within DGH's. We report on our experience of THRIVE at a DGH in South London.

Method

Over a six month period, data was collected from patients undergoing microlaryngoscopy. The subjects must be >18yrs, with a BMI <35 and an ASA grade <3.

All patients were pre-oxygenated with THRIVE for 5 minutes at 35 L/min. After TIVA, oxygenation was increased to 70 L/min until a definitive airway could be secured. This airway was maintained until BIS <40. Apnoea time was measured from surgical start time, and ended upon airway intervention.

Results

The study encompassed 19 female patients and 12 male. The average apnoea time was 20 minutes with a range of 7- 42 minutes. The average ETCO₂ was 6.5 kPa.

However, two patients desaturated although this can be attributed to a loss of airway patency. Two further patients required 30-60 seconds of jet ventilation, and another patient had to be intubated with an MLT.

Conclusion

THRIVE has been well documented in large tertiary hospitals. To our knowledge we are the only DGH using this technique routinely. This study demonstrates that THRIVE is well tolerated by patients, simple to use and therefore has become standard practice for microlaryngoscopy at our DGH. Advantages of THRIVE over traditional techniques include the reduced risk of barotrauma compared to Jet Ventilation and the greater surgical access than IPPV due to the absence of an MLT.

However, THRIVE is an advanced airway technique and is no substitute for appropriate airway management. THRIVE is not appropriate for every patient and strict criteria must continue to be applied. Finally, laser safety must be considered and further data on the matter is expected shortly from Nekhendzy et al. [2].

Figure 1: Patient positioning for microlaryngoscopy with THRIVE

Figure 2: Minimal information on the anaesthetic console

Figure 3: Equipment intensive and positioning must be considered

Figure 3: Jet ventilation on standby

Figure 5: Patient being pre-oxygenated with THRIVE

References

[1] Patel A, Nouraei SAR. Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE): a physiological method of increasing apnoea time in patients with difficult airways. Anaesthesia [Internet]. 2015 [cited 2018 Mar 9];70:323–9.
[2] Ward P. THRIVE and airway fires. Anaesthesia [Internet]. 2017 [cited 2018 Mar 9];72:1035–1035. Available from: <http://doi.wiley.com/10.1111/anae.1399>