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High-Fow Nasal Cannula in Nonlaser Microlaryngoscopic Surgery: A Prospective Study of 19 Cases in a Chinese Population

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Background: High-Fow Nasal Cannula (HFNC) is a new type of oxygen therapy, but its application in surgery remains unclear, we tried to describe the application of HFNC in microlaryngoscopic surgery for the Chinese population.

Methods: Nineteen adults, American Society of Anesthesiology class (ASA) 1–2 patients with body mass index<30 kg.m−2 underwent microlaryngoscopic surgery using HFNC for airway management. Outcomes included apnoea time, intraoperative oxygenation, carbon dioxide value, lactate value and the relationship between the duration of apnoea time and carbon dioxide levels.

Results: A total of 19 patients underwent vocal cord tumor resection under a microlaryngoscope with HFNC as the sole method of ventilation. The mean age was 39.7 years old and the mean BMI was 23.9 kg.m−2 The mean apnea time was 21.5 min. The SpO2 of 18 patients remained above 90% and only 1 patient dropped to 88%. The average basal lactate and highest lactate value was 0.58 mmol. L−1 and 0.68 mmol.L−1. The diference between basal and highest lactate values was statistically signifcant (P<0.05). The average highest PaCO2 value was 79.4 mmHg. The PaCO2 increased by 1.68±0.12 mmHg every minute linearly.

Conclusions: In the case series we have observed that HFNC would be safe and efective oxygenation and ventilation technique for selected Chinese patients undergoing non-laser microlaryngoscopic surgery within 30 min. The tubeless technology reduces the complications of tracheal intubation and jet ventilation and clears the surgical field of vision.

Trial registration: Chinese Clinical Trial Registry (ChiCTR100049144).

Keywords: High-fow nasal cannula, Transnasal humidifed rapid-insufation ventilatory exchange, Microlaryngoscopic surgery, Airway management, Apneic oxygenation

Figure 1: Intraoperative conditions of the application of HFNC.

A: Using HFNC as the ventilatory technique under general anesthesia. HFNC was administered using an Optifow system (Fischer & Paykel Healthcare, Auck land, New Zealand), which delivered 37°C, 100% humidity, a FiO2 of 95% oxygen through a nasal cannula at 60 L/min.

B: The left vocal cord cyst could be seen clearly in the microlaryngoscope intraoperatively by using HFNC as the ventilatory technique.

C: Excision of the left Vocal Cord Cyst using HFNC with the adequate feld of view intraoperatively. HFNC=High-fow nasal cannula

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Biography

Liu Fei has worked and studied in the Department of otolaryngology for 10 years, laying a solid foundation for scientific research and accumulating rich clinical experience. In recent years, he is mainly engaged in the basic and clinical application research of nasopharyngeal carcinoma and laryngopharyngeal voice and he is good at microlaryngoscopic surgery.