

Use of THRIVE for Apneic Oxygenation in Transoral Laser Microlaryngeal Surgery: A Scoping Review

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Abstract

Objectives

Trans-nasal humidified rapid insufflation ventilatory exchange (THRIVE) has demonstrated utility in extending the apneic window in the perioperative setting. Its benefits in facilitating tubeless anesthesia are recognized during elective laryngotracheal surgeries. The use of THRIVE and administering higher fractional inspired oxygen concentrations in laser laryngeal surgery (LLS) remains controversial due to the theoretical risk of airway fires. A scoping review of the literature describing institutional experiences with THRIVE during LLS was conducted.

Data Sources and Review Methods

A systematic scoping review of the literature was performed including PubMed, Medline, Embase, Scopus, JBI EBP Database, and Cochrane Library from inception to April 2023.

Results

From the 472 articles identified in our review, nine articles were included representing 271 cases. THRIVE was used for preoxygenation and to maintain apneic oxygenation during LLS. Different institutional practices related to THRIVE parameters and intraoperative modifications during lasing were described in the literature, including cessation of THRIVE, reduction of FiO₂ to 30%, and continuous 100% FiO₂ oxygenation. One study described a brief ignition of the coating of a KTP laser fiber without injury to the patient. No adverse patient outcomes have been documented in the literature with THRIVE during LLS.

Conclusion

THRIVE is a safe and effective form of tubeless anesthesia and apneic oxygenation during LLS, with no adverse patient safety events reported in the literature. Key determinants to maintain safety include optimal patient and team selection, effective surgeon-anesthetist cooperation, and institutional protocols that govern intraoperative practice. *Laryngoscope*, 2024

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