

Innovations in anaesthetic management of complex thoracic surgeries

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Recent advancements in anaesthetic and surgical approaches to thoracic procedures have underscored the importance of individualised care strategies. In this issue of MyJA, Nik Nabil *et al.* present an interesting case of non-intubated video-assisted thoracoscopic surgery (NiVATS) and its complications. This minimally invasive approach has seen advancements, particularly in anaesthesia techniques, patient selection, and postoperative outcomes.

This report emphasizes the growing preference for spontaneous ventilation techniques in thoracic surgeries, which eliminate the need for muscle relaxants and possibly hasten recovery. The authors managed a complex case requiring multiple oxygenation strategies, including high-flow oxygen, manual jet ventilation, and intermittent cross-field ventilation.

This case underscores 2 critical advancements in the field: (1) the feasibility of using high-flow oxygen and cross-field ventilation in maintaining oxygenation during NiVATS, and (2) the need for vigilant monitoring and management in cases of unexplained hypoxemia. These developments highlight a key shift in thoracic anaesthesia toward minimally invasive, patient-specific interventions, albeit with readiness for adaptive measures in emergent situations.

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Initially, NiVATS was limited to low-risk patients. However, recent studies show successful outcomes in moderate-risk patients, including those with mild-to-moderate pulmonary and cardiac comorbidities. Moreover, recent case reports document the use of NiVATS in procedures like tracheal resection and lobectomy. NiVATS has been successfully adapted for surgeries requiring complex airway management by managing oxygenation using cross-field ventilation and high-flow oxygen.¹

Regarding the clinical outcomes and benefits of NiVATS, a meta-analysis by Deng *et al.* suggested that NiVATS exhibited good effects in improving short-term outcomes and yielded significantly shorter in-operating room time and hospital stays, as well as a significantly lower rate of postoperative complications than intubated VATS under general anaesthesia.² Additionally, patients often report less postoperative pain, reduced opioid requirements, and improved quality of life after NiVATS, as muscle relaxants are avoided and diaphragmatic and respiratory muscle function is preserved.³

A propensity-matched retrospective study on 104 patients who underwent NiVATS and intubated video-assisted thoracoscopic surgery (iVATS) under general anaesthesia showed comparable surgical and anaesthesia outcomes in both groups, with no differences in desaturation and higher peak ETCO₂, shorter anaesthesia induction time, and bleeding in the NiVATS group.

Despite advances, hypoxemia remains a challenge in NiVATS, particularly with spontaneous one-lung ventilation. Standardised protocols and training programs for anaesthesiologists are crucial to ensure widespread adoption.⁴ While short-term benefits are clear, more data are needed on long-term outcomes in NiVATS patients regarding their functional recovery, lung function, and recurrence rates in oncologic cases.

The case report reflects a broader trend in thoracic surgery and anaesthesia toward adaptive, minimally invasive strategies prioritising patient stability without sacrificing surgical efficacy. The refinement of NiVATS exemplifies a future where perioperative anaesthetic techniques can be tailored to the demands of complex thoracic cases. These developments pave the way for safer, more flexible anaesthetic and surgical interventions, essential for improving outcomes in high-risk patient populations. Continued research and case reporting in these areas are essential to refine these techniques, ultimately expanding the toolkit available for anaesthesiologists and surgeons facing complex thoracic challenges.

References

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