

Abstract

ONCODAILY MEDICAL JOURNAL

Impact of Total Intravenous Anaesthesia (TIVA) vs Volatile Anaesthesia (VA) on Oncologic Outcomes in Non-Small Cell Lung Cancer (NSCLC) Surgery: A Systematic Review of Retrospective Cohort Studies

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DOI:10.69690/ODMJ-018-0826-7688



2nd Annual National Undergraduate Oncology Conference
Northwest (NUOC Northwest 2026)

Published: August 25, 2026

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ABSTRACT

Introduction: NSCLC accounts for 85% of all lung cancers with early-stage resection being its curative treatment. 30-75% of all patients experience recurrence due to micro-metastases potentially from peri-operative anaesthetic use. VA could induce immunosuppression whereas TIVA may lead to more favourable outcomes. This review focuses on the influence of anaesthetic techniques in the recurrence of NSCLC.

Methodology: Systematic searches of PubMed, Embase, Scopus and Google Scholar were conducted between 2005-2026 comparing TIVA and VA techniques in adult patients undergoing NSCLC surgery. Retrospective cohort studies were included since there were no randomised-controlled trials (RCTs). Surgical approach was not standardised. Overall survival (OS) and recurrence-free survival (RFS) were used as the comparative outcomes.

Results: Six retrospective cohort studies were included. Outcomes were from 5601 patients (TIVA – 2929; VA – 2672). Four studies recorded both OS and RFS whereas two studies looked at only one of OS and RFS. TIVA was associated with a significantly higher RFS in only two studies ($p=0.047$, $p=0.03$) and another study deduced VA to have a worse RFS ($p=0.031$). One study found

TIVA to have a significantly higher OS ($p<0.001$). Varying sample sizes, follow-up times and cancer stages limited generalisability.

Conclusion: There is limited evidence to conclusively argue in favour of TIVA. The lack of RCTs means we cannot conclusively argue in favour of TIVA. For more accurate comparisons, there must be greater focus on early-stage NSCLC with different anaesthetics techniques and OS and RFS should be measured in all future RCTs to act as standard outcomes."

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