

Commentary: Comparative Study of Indocyanine Green Intravenous Injection and the Inflation-Deflation Method for Assessing Resection Margins in Segmentectomy for Lung Cancer: A Single-Center Retrospective Study

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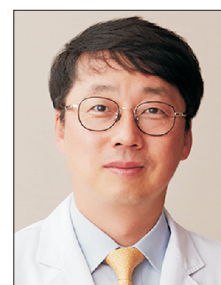
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Recent findings from the JCOG0802 and CALGB alliance randomized control trials have demonstrated favorable short-term and long-term outcomes for segmentectomy in patients with peripheral, early-stage non-small cell lung cancer measuring 2 cm or less [1,2]. This evidence has increased interest in the procedure, which is considered technically more demanding than lobectomy. One of the primary technical challenges is identifying the intersegmental plane (ISP) during minimally invasive surgery.

The study by Bae et al. [3] compared the perioperative outcomes and resection margins of 2 methods used in segmentectomy for lung cancer: indocyanine green (ICG) intravenous injection and the inflation-deflation (ID) method. This retrospective analysis evaluated the effectiveness and safety of these approaches in 319 patients who underwent segmentectomy for clinical stage I lung cancer. The results showed no significant differences in resection margins, specifically bronchial and parenchymal margins, between the ICG and ID methods. Additionally, the length of hospital stay and complication rates were similar between both groups. These findings indicate that both the ICG and ID methods are viable for guiding segmentectomy

procedures, offering comparable outcomes in terms of resection margins and perioperative factors. This is particularly relevant as the use of segmentectomy increases for early-stage lung cancer, supporting the flexibility of choosing either method based on surgeons' preferences and patient-specific factors.

While both ID and ICG methods are effective for ISP identification, it is essential to understand the advantages and limitations of each method to maximize their effectiveness. The ID method is straightforward and easy to perform, and it does not require additional specialized equipment, making it a cost-effective option. However, issues with collateral ventilation may lead to less distinct boundaries between the inflated and deflated segments. In some patients, particularly those with compromised lung function, visualizing the ISP may be challenging, potentially resulting in longer operation times. Conversely, the ICG method provides clear, real-time visualization of the ISP using fluorescence imaging, which can potentially shorten surgery time by making the ISP more easily identifiable without interrupting the surgery. However, the ICG method requires additional equipment and ICG dye, which

can increase the overall cost of the procedure.

It is important to master both methods for identifying the ISP; however, it is even more crucial to understand the tumor's location and the precise anatomical structures involved [4]. Consequently, the European Society of Thoracic Surgeons guidelines strongly recommend preoperative 3-dimensional reconstruction in most cases to define the tumor's location more accurately, identify potential anatomic vascular variants, and ensure adequate surgical margins.

Although this study has limitations, including its retrospective, single-center design and limited long-term outcomes, it significantly contributes to the field of thoracic surgery. It provides evidence that both ICG and ID methods are effective for achieving intraoperative margins during minimally invasive segmentectomy.

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Author contributions

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Conflict of interest

No potential conflict of interest relevant to this article was reported.

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