

# IMPLICATIONS OF VIVASIGHT-DL: PROCEDURAL IMPACT OF A CAMERA-INTEGRATED DOUBLE LUMEN TUBE

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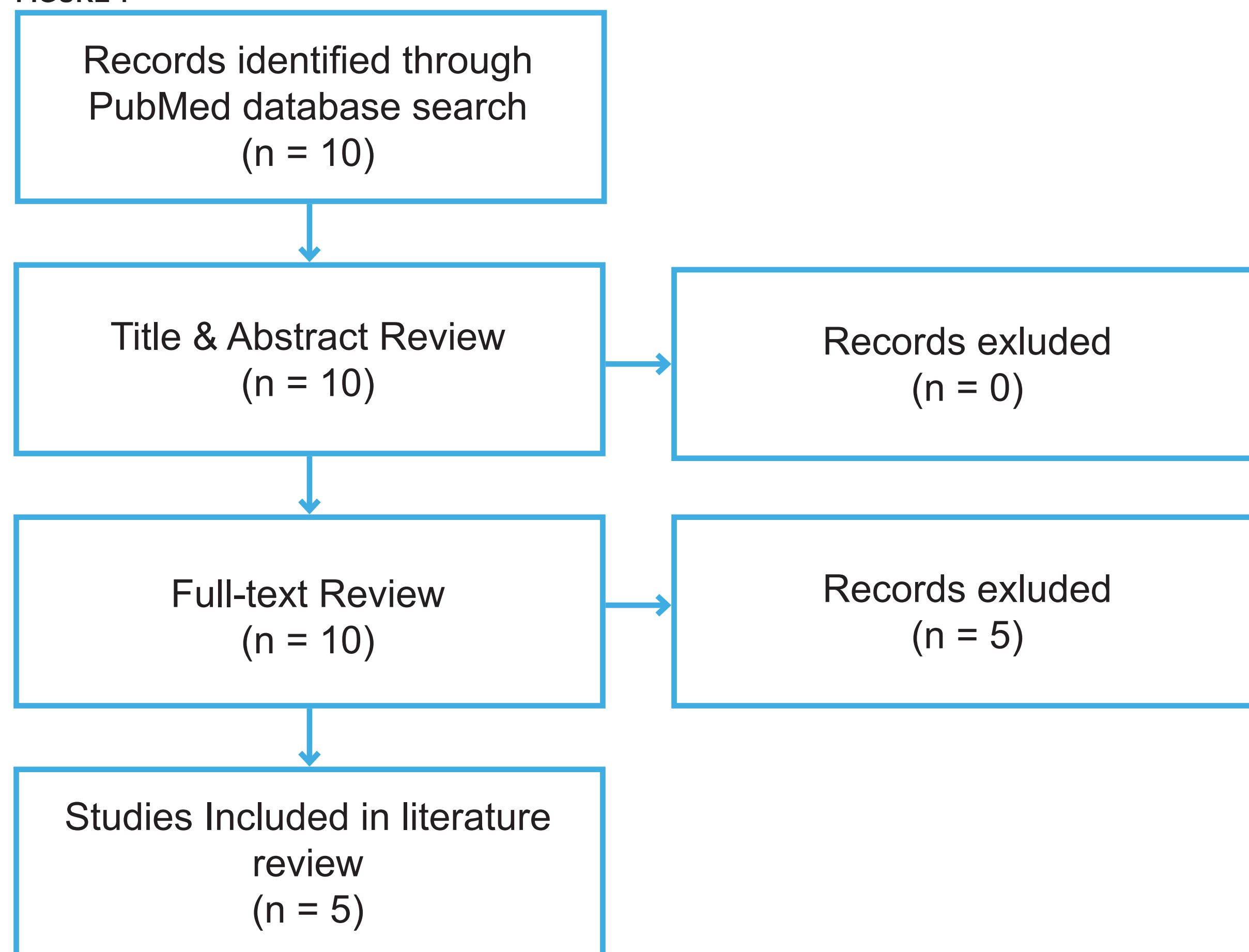
## INTRODUCTION

Conventional double-lumen tubes (cDLT) are commonly used in one-lung ventilation (OLV) procedures and require the use of a flexible bronchoscope (FB) to confirm correct positioning in the patient. The VivaSight-DL (VS) is a disposable, camera-integrated double-lumen tube and does not always require a FB for confirmation. By reducing the need for FB use, valuable procedure time may be saved when needing to correct and confirm placement of the double-lumen tube. The purpose of this study is to review and summarize the latest evidence of the procedural differences of the VS compared to cDLT.

## METHODS

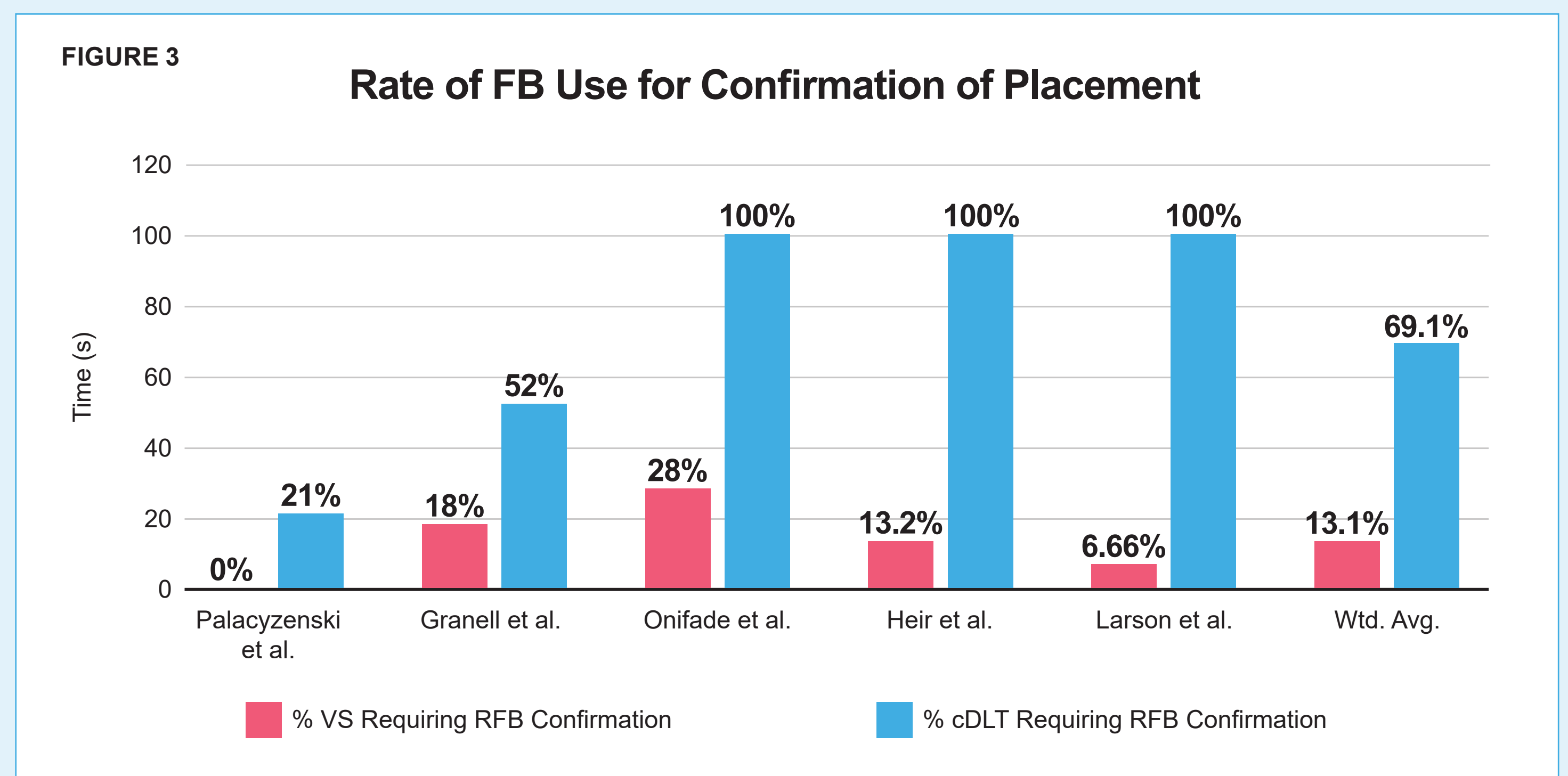
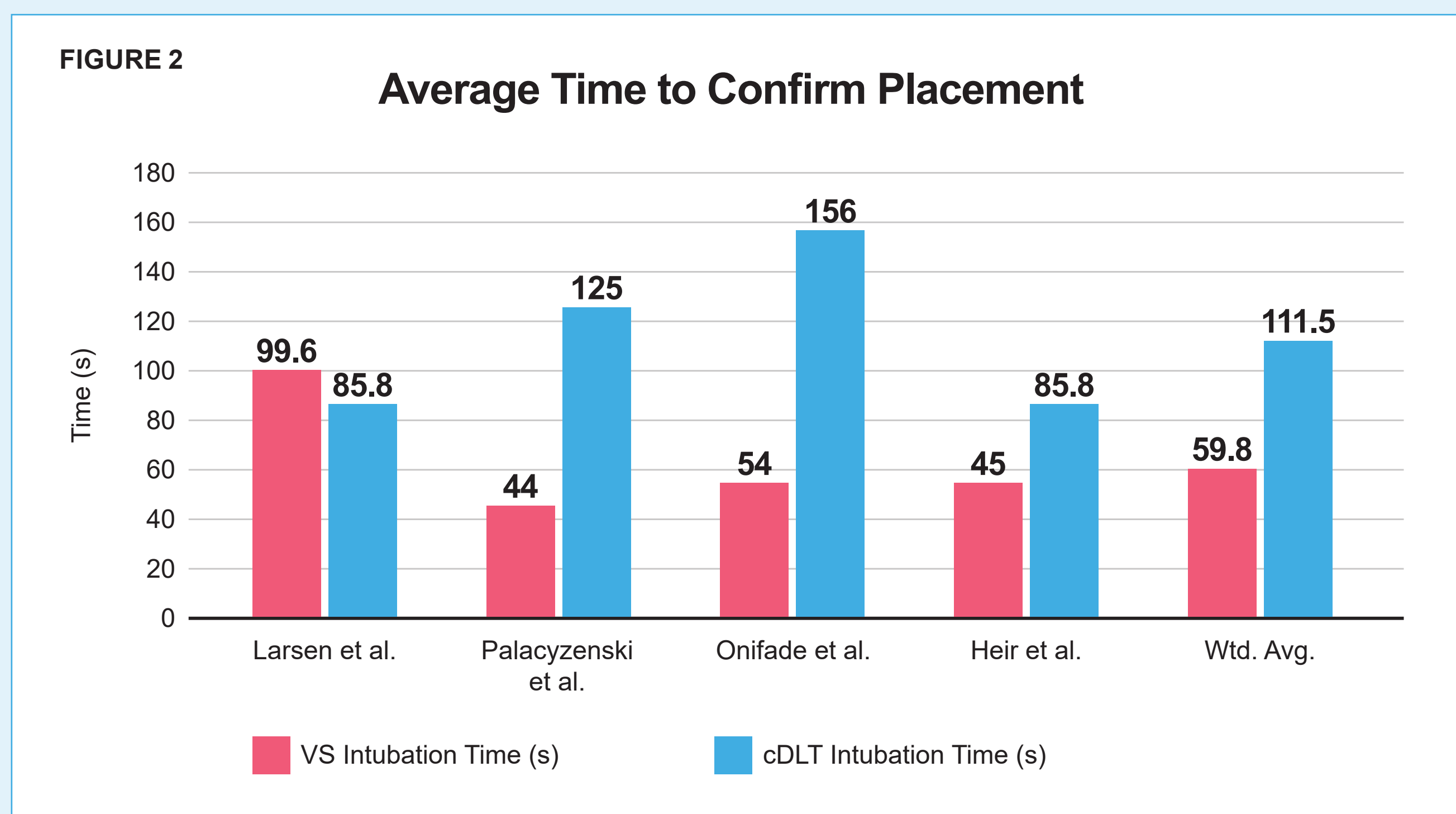
- PubMed database was searched for publications using the specific search terms “(vivasight) AND (double lumen)”.
- A date range of January 1, 2018 to June 19, 2023 was used.
- Title and abstract screenings were performed on the returned publications for relevancy.
- Remaining publications were reviewed in full for appropriate data inclusion.
- Article review and removal process can be found in Figure 1.
- The rates of required FB use to confirm placement of the VS and cDLT were identified in each article and were averaged to arrive at the average rate of required FB use.
- The time required to confirm placement of the VS and cDLT was identified in 4 out of 5 included articles and was averaged to arrive at the average time to confirm placement of each device.

FIGURE 1



## RESULTS

- The PubMed search returned 10 articles; all of which were reviewed in full following title and abstract screens.
- Following full review, 5 articles were excluded based on relevance. The average time to intubation and use of FB were calculated.
- OLV procedures utilizing **VS observed an 81% decrease in FB use compared to cDLT (13.1% v 69.1%)**.
- Additionally, **the average time to successful intubation was 46% faster when utilizing VS (59.8s v 111.5s)**.



## DISCUSSION

OLV is a procedure used to isolate a patient’s lung while letting the opposing lung collapse. This technique is utilized to gain surgical exposure to the thoracic cavity, or to prevent a healthy lung from coming into contact with contaminated secretions from the opposing lung.<sup>1</sup> Patients undergoing procedures such as video-assisted thoracoscopic surgery (VATS) and thoracic vascular surgery, or who experienced pulmonary hemorrhage and significant lung secretions, would require OLV during their respective procedures.<sup>2</sup> During OLV, it is important to maintain lung isolation and protection to prevent further lung trauma and risk of further patient infection, which can be difficult when utilizing cDLT.<sup>2</sup> A cDLT requires use of FB to confirm correct tube positioning every time it is placed and when the cDLT becomes dislodged during the procedure. Dislodgement can occur at any point of the procedure, especially during patient manipulation, and can increase the risk of further lung trauma and infection from the opposing lung. OLV procedures using VS observed faster successful intubation and significantly less FB use compared to cDLT.<sup>3-7</sup> By providing continuous visualization throughout OLV and subsequent surgery, physicians are able to correct tube placement without the need of a FB and monitor for additional complications such as malposition, dislodgement or mucosal injury.<sup>4</sup> Early detection of dislodgement or malposition with prompt correction can improve patient safety by reducing the risk of further lung trauma or contamination. The ability to perform OLV without the need for a FB and with improved intubation time and continuous monitoring is especially important from a time and cost perspective, especially for facilities with limited resources.

## CONCLUSION

- Continuous visualization offered by VS significantly reduces the time to intubation and need for FB use.
- The ability to have continuous visualization may enable early detection of dislodgment during patient repositioning and assist physicians in maintaining intubation throughout the procedure.
- The improved intubation time and early detection of tube malposition offered by VS may improve patient care by reducing the risk of additional lung injury and secretion contamination.
- In addition to improved patient care, the use of VS may present financial and procedural advantages for facilities with limited staff and available resources.

## SOURCES

1. Ma M, Stinger P. One Lung Ventilation: General Principles. October 20, 2022. Accessed October 20, 2023. <https://www.uptodate.com/contents/one-lung-ventilation-general-principles>.  
 2. Mehrotra M, Jain A. Single-Lung Ventilation. [Updated 2023 May 7]. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK538314/>  
 3. Palaczynski P, Misiolek H, Bialka S, et al. A randomized comparison between the VivaSight double-lumen tube and standard double-lumen tube intubation in thoracic surgery patients. J Thorac Dis. 2022;14(10):3903-3914. doi:10.21037/jtd-22-451  
 4. Onifade A, Lemon-Riggs D, Smith A, et al. Comparing the rate of fiberoptic bronchoscopy use with a video double lumen tube versus a conventional double lumen tube—a randomized controlled trial. J Thorac Dis. 2020;12(11):6533-6541. doi:10.21037/jtd-20-1595  
 5. Larsen S, Holm JH, Sauer TN, Andersen C. A Cost-Effectiveness Analysis Comparing the VivaSight Double-Lumen Tube and a Conventional Double-Lumen Tube in Adult Patients Undergoing Thoracic Surgery Involving One-Lung Ventilation. Pharmacoecon Open. 2020;4(1):159-169. doi:10.1007/s41669-019-0163-y  
 6. Granell M, Pettrini G, Kot P, et al. Intubation with vivasight double-lumen tube versus conventional double-lumen tube in adult patients undergoing lung resection: A retrospective analysis. Ann Card Anaesth. 2022;25(3):279-285. doi:10.4103/aca.aca\_43\_21  
 7. Heir JS, Guo SL, Purugganan R, et al. A Randomized Controlled Study of the Use of Video Double-Lumen Endobronchial Tubes Versus Double-Lumen Endobronchial Tubes in Thoracic Surgery. J Cardiothorac Vasc Anesth. 2018;32(1):267-274. doi:10.1053/j.jvca.2017.05.016