



Detection of a Self-Resolving Pulmonary Nodule utilizing Intraoperative C-Arm Based Tomography

Moreen Matti¹, Gene Cho BS¹, George Cheng MD, PhD², Russell Miller MD², Matthew Nobari MD²

¹University of California San Diego (UCSD), La Jolla, CA, United States, ²Division of Pulmonary, Critical Care, and Sleep Medicine, University of California San Diego (UCSD), La Jolla, CA, United States.

INTRODUCTION

- The leading cause of cancer death in the United States is lung cancer (1). With the new USPSTF guidelines, the number of eligible patients for lung cancer screenings has increased, leading to the identification of significantly more nodules (2,3).
- Using CT images obtained pre-procedure, the Body Vision platform utilizes real-time c-arm based tomography (CABT) to facilitate lesion confirmation and localization.
- We present a case illustrating the utility of using intraoperative CABT imaging for nodule reassessment on the day of procedure, preventing an unnecessary biopsy.

CASE REPORT

- A 65 year old male with a history of high risk acute myelogenous leukemia presented for evaluation of a pulmonary nodule.
- In April 2021, chest CT revealed a right upper lobe 1 cm nodule with no evidence of lymphadenopathy (Figure 1a).
- Fungal serologies were ordered with negative antibodies (IgG, IgM) for coccidioides and negative serum aspergillus galactomannan. Quantiferon TB and serum Histoplasmosis antigen were both negative.
- Given the nodule's peripheral nature and relatively small size, navigational bronchoscopy was performed in May 2021 with Body Vision's augmented c-arm based tomography (CABT). During CABT, no obvious nodule was visualized (Figure 1c, 1e).
- Radial endobronchial ultrasound probe was used and did not demonstrate a lesion (Figure 1d). Therefore, a biopsy was not performed on the patient.
- A postoperative chest X-ray on the same day confirmed a less conspicuous right upper lobe nodularity.
- A follow up chest CT was done in June 2021, confirming a resolving right upper lobe lung nodule (Figure 1b).

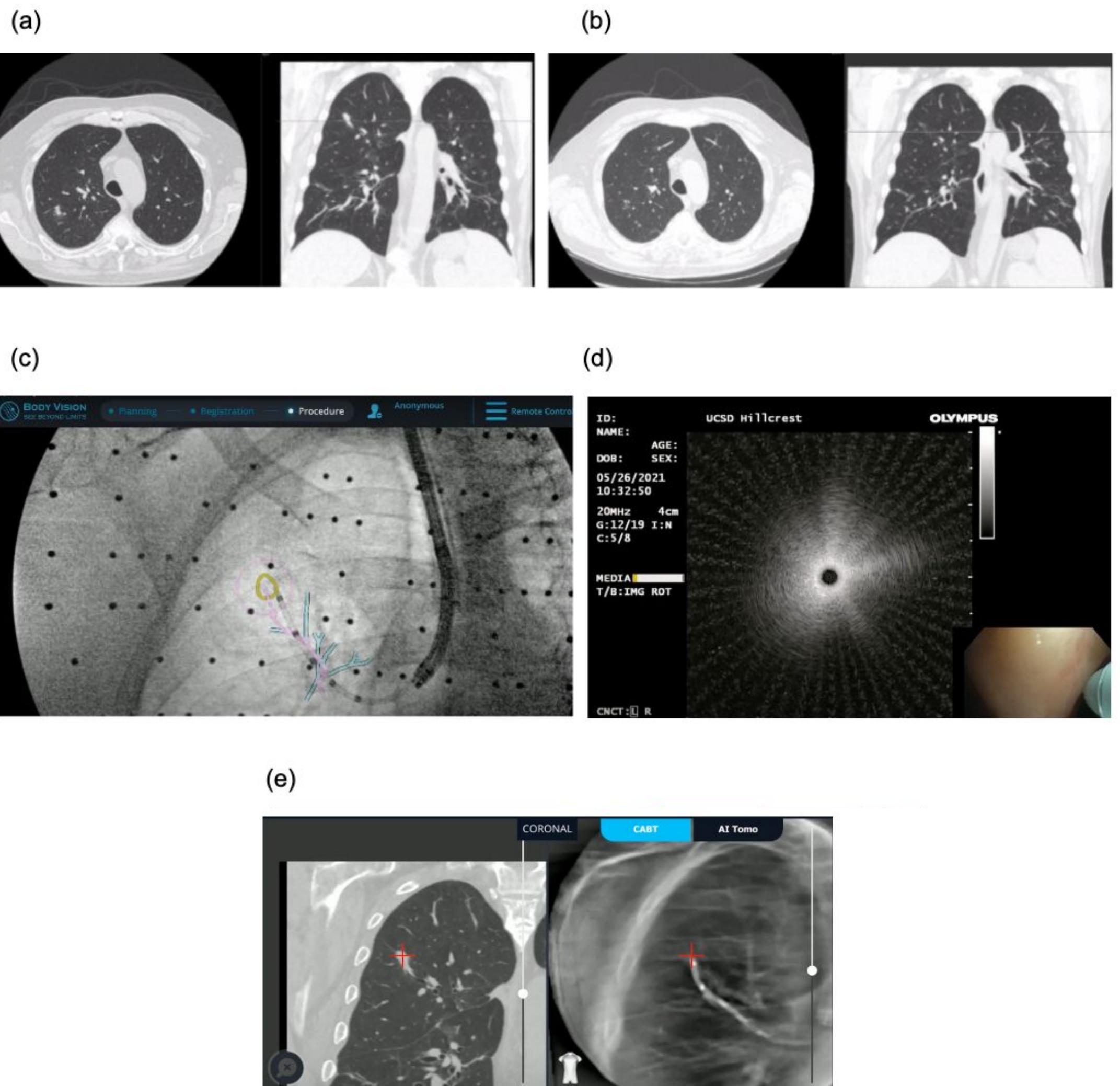


Figure 1. Axial and coronal chest CT ordered in April 2021 (a). Follow-up chest CT in June 2021 showing resolving right upper lung nodule (b). BodyVision 3D construction demonstrating the intended location of the nodule (c). Radial EBUS image during procedure (d). CABT augmented fluoroscopic image showing absent right upper lobe pulmonary nodule on day of procedure (e).

DISCUSSION

- Our case demonstrates the utility of real-time CABT in identifying scenarios during navigational bronchoscopy wherein pulmonary nodules may have self-resolved, negating the need for patients to undergo unnecessary biopsy.
- This patient was referred to us for an incidental pulmonary nodule. He underwent a bronchoscopy procedure several weeks later during which the nodule was not visualized.
- A bronchoalveolar lavage was obtained and was positive for gram negative diplococci, which may have been the culprit of the nodularity.

CONCLUSION

Utilizing Body Vision with augmented fluoroscopy can detect nodules that have resolved since the planning stage. While a postoperative CT confirmed the resolution of the nodule in this case, further studies are needed to validate the utilization of Body Vision CABT intraoperative imaging for this application.

REFERENCES

1. Torre, L. A., Siegel, R. L., & Jemal, A. (2016). Lung Cancer Statistics. *Advances in experimental medicine and biology*, 893, 1–19. https://doi.org/10.1007/978-3-319-24223-1_1
2. Henderson, L., Rivera, M., & Basch, E. (2021). Broadened Eligibility for Lung Cancer Screening: Challenges and Uncertainty for Implementation and Equity.. *JAMA*, 325(10), 939-941.
3. Jewani, S., Johnson, J. (2021). Advancing Bronchoscopy: Reaching the Unreachable. *CHEST Physician*. <https://www.mdedge.com/chestphysician/article/243540/pulmonology/advancing-bronchoscopy-reaching-unreachable>