

Clinical Letter

Peripheral Lung Cancer Diagnosis with New-Generation Convex-Probe Endobronchial Ultrasound Bronchoscope: A Case Report

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is the standard for mediastinal and hilar lymph node staging in lung cancer [1]. For peripheral pulmonary lesions (PPLs), radial-probe EBUS (r-EBUS) with a guide sheath has been the preferred ultrasound-guided approach, though accessing small, distal lesions remains challenging [2,3]. Recently, peripheral EBUS-TBNA bronchoscopes have been developed to reach further into the bronchial tree. The Olympus BF-UCP190F, with a 5.9 mm outer diameter and 170° angulation, enables access to segmental and subsegmental bronchi. Primarily designed for distal N1 nodes, its role in parenchymal lesion sampling is barely reported [4]. We describe the first case in Spain, and among the earliest in Europe, where this device was used. This case illustrates a novel application of EBUS-TBNA, expanding its diagnostic use beyond nodal staging to peripheral lesions and highlighting the value of real-time ultrasound-guided aspiration.

We report a 64-year-old Spanish male smoker (70 pack-years) with a history of HIV on antiretroviral therapy and hepatitis C-related cirrhosis grade 2. He was referred from Infectious Diseases following an asymptomatic high-risk screening chest CT in June 2025. Physical examination was unremarkable. Chest CT demonstrated a 31 mm spiculated mass in the right upper lobe (RUL) with positive bronchus sign, focal scarring, and calcifications, without significant hilar or mediastinal lymphadenopathy (Fig. 1A). PET scan confirmed increased metabolic activity in the pulmonary mass (Fig. 1C). Initial flexible bronchoscopy with r-EBUS identified the lesion in the RUL apical sub-segment, but microbiological cultures showed no growth and brush cytology was negative for malignant cells. In a second bronchoscopy, we employed the Olympus BF-UCP190F, to navigate to the fifth bronchial generation within the RUL apical sub-segment (Fig. 1D). A hypoechoic lesion with hyperechoic borders was identified and sampled using a ViziShot2 25G needle (three passes). Subsequent r-EBUS (UM-S20-17S, Olympus) confirmed a hypoechoic lesion with air-lesion interface reflex distal to the puncture site (Fig. 1B). Cytology from peripheral EBUS-TBNA revealed abundant atypical epithelial cells consistent with



Fig. 1. (A) Chest CT with a 31 mm spiculated mass in the right upper lobe with positive bronchus sign. (B) Hypoechoic lesion with air-lesion interface in right upper lobe apical sub-segment. (C) PET-CT confirmed increased metabolic activity in 31 mm speculated mass in the right upper lobe. (D) Hypoechoic lesion with hyperechoic borders in contact with the lumen of right upper lobe apical sub-segment.

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non-small cell lung carcinoma. Finally, the patient was diagnosed with T2aNOMO lung cancer and deemed suitable for surgical resection.

The challenge of diagnosing PPLs has led to the development of advanced bronchoscopy-guided techniques, such as electromagnetic navigation bronchoscopy or robot-assisted bronchoscopy. Although these approaches can be effective, their cost and technical complexity limit their use in many hospitals. As illustrated in our case, which represents the first published report in Spain, the peripheral EBUS-TBNA bronchoscope may be a valuable alternative. This approach can complement the r-EBUS examination, and may even increase diagnostic yield in situations where the use of r-EBUS is limited by the absence of a bronchial sign [5]. In conclusion, this case demonstrates the potential of the new-generation EBUS bronchoscope to successfully navigate to and sample a pulmonary nodule in a very distal location. To our knowledge, this is the first published report demonstrating the feasibility of this technique for diagnosing a peripheral lung lesion. The ability to obtain a real-time ultrasound image and perform a guided needle aspiration of a parenchymal lesion so deep within the bronchial tree represents a significant technical advance.

Authors' contribution

All the authors of the article have contributed substantially to the elaboration of the manuscript.

Artificial intelligence involvement

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Conflicts of interest

The authors declare not to have any conflicts of interest that may be considered to influence directly or indirectly the content of the manuscript.

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Ana Pardessus^{a,b,*}, Roberto Chalela^{a,b}, Albert Sánchez-Font^{a,b}

^a *Servei de Pneumologia, Hospital del Mar-Parc de Salut Mar, UPF, CIBER de Enfermedades Respiratorias (CibeRes), ISCIII, Spain*

^b *IMIM (Hospital del Mar Medical Research Institute), Barcelona, Spain*

*Corresponding author.

E-mail address: anapardessusotero@gmail.com (A. Pardessus).