

## Case Report

# Role of EUS-FNA in Recurrent Lung Cancer: Maximum Results with Minimum (minimally invasive) Effort

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### ABSTRACT

Endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) is an excellent method for primary lung cancer staging. We describe a 66-year-old male who underwent EUS-FNA for the diagnosis of recurrent lung cancer. Two years after initial radiation therapy followed by complete remission, routine follow-up imaging study revealed a mass in the right hilum. Trans-esophageal EUS revealed a 1.3-cm mass and the result of EUS-FNA was consistent with non-small lung cancer. EUS-FNA can play an important role in diagnosis of recurrent lung cancer as well as primary staging avoiding the more invasive diagnostic technique.

**Keywords:** lung cancer; endoscopic ultrasound, fine-needle aspiration, minimally invasive

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### INTRODUCTION

Endoscopic ultrasound (EUS) and EUS-guided fine needle aspiration (EUS-FNA) can play an important role in staging of lung cancer as it is very useful for sampling mediastinal lymph nodes. We here present our experience with a patient suggesting an even greater role for EUS in lung cancer.<sup>1</sup>

### CASE REPORT

We present the case of a 66-year-old male with a history of squamous cell carcinoma in the right upper lobe in stage IA (T<sub>1a</sub>N<sub>0</sub>M<sub>0</sub>) enrolled in a stereotactic body radiation therapy protocol. He was in complete clinical and radiologic remission. Two years later a routine follow up combined positron emission tomography-computed tomography (PET-CT) scan revealed an enlarged fluorodeoxyglucose (FDG) - avid right lower lobe lesion measuring 1.3 cm × 1 cm in size (Fig. 1A, B). Due to the patient's significant co-morbidities (coronary artery disease, 5 coronary stents, bilateral carotid endarterectomy, renal artery stent placement, sleep apnea and chronic obstructive pulmonary disease)

and deep seated nature of the lesion, a CT-guided biopsy or a mediastinoscopy were considered to be too invasive and with increased risk. The oncologist referred the patient for EUS-FNA as the first minimally invasive procedure to possibly sample this lesion. EUS was performed with an Olympus linear echoendoscope after informed consent. A 1.3-cm hypoechoic lesion was identified in the hilum of the right lung very close to the esophageal wall correlating with the CT-PET findings (Fig. 2A). After identification of an avascular plane the lesion was sampled by trans-esophageal EUS-FNA with a 25-G needle (2 passes) and a 22-G needle (3 additional passes) and sent to cytopathology (Fig. 2B). There were no immediate or delayed post-procedure complications. The cytopathology diagnosis was consistent with non-small cell (squamous) lung carcinoma and the patient was referred to oncology for further therapy.

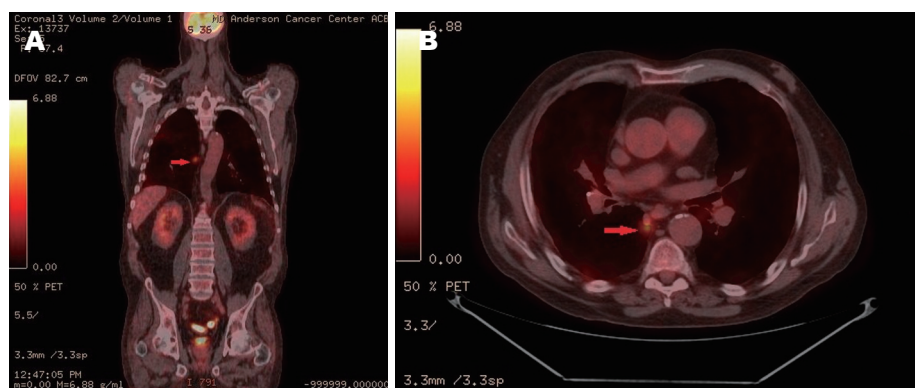
### DISCUSSION

EUS-FNA has been proven to be an excellent method for the detection, characterization and staging of mediastinal masses.<sup>1</sup> The method has been predominantly used to diagnose mediastinal lymphadenopathy of unknown origin and to stage lung cancer in a minimally invasive fashion. Patients with malignancies at high risk for recurrence after primary treatment are routinely followed with periodic imaging studies such as CT and more recently PET-CT.<sup>2,3</sup>

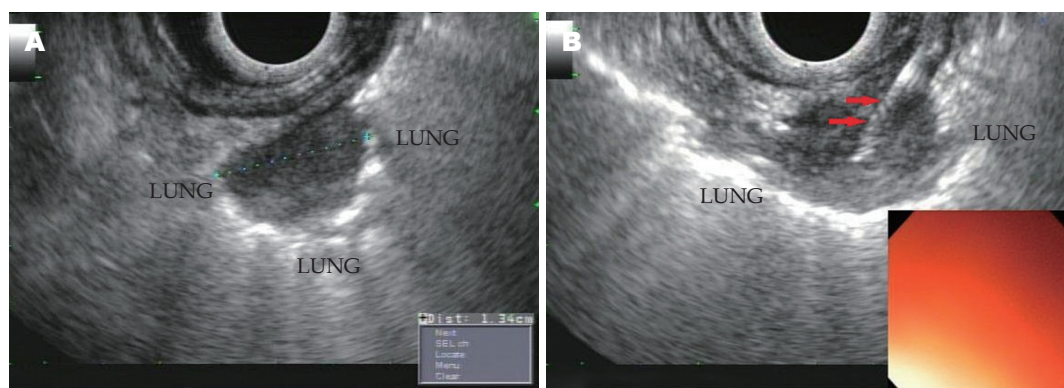
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**Figure 1.** FDG-PET/CT. A: Whole body coronal PET/CT image of a  $^{18}\text{F}$ -FDG uptake in the right lower lobe lesion (arrow); B: PET/CT image - transverse plane of  $^{18}\text{F}$ -FDG uptake in the right lower lobe lesion (arrow). FDG-PET/CT: fluorodeoxyglucose-positron emission tomography-computed tomography.



**Figure 2.** Images of hypoechoic, non-homogenous lung lesion of 1.3 cm  $\times$  1 cm surrounded by normal lung tissue, close to the esophageal wall. A: EUS; B: EUS-FNA. EUS-FNA: endoscopic ultrasound-guided fine needle aspiration.

However, a tissue confirmation of malignancy is usually needed after visualization of suspicious lesions during cross-sectional imaging.

Thoracoscopy, mediastinoscopy and CT-guided needle biopsy were previously considered the main techniques for the assessment of tissue diagnosis in lung cancer. All are invasive techniques associated with patient discomfort, high morbidity, as well as a rate of minor complication in the range of 2.5%–17% and major complications of 0.3%–1%.<sup>4,5</sup> This is why this patient was subjected to EUS-FNA as a minimally invasive alternative for the confirmation of tissue diagnosis. There are a number of papers that attest to the role of EUS-FNA in staging of lung cancer as well as in diagnosis of primary tumors.<sup>6–8</sup> But only a few have described the potential role of EUS-FNA in following patients with recurrent lung cancer after radiochemotherapy or curative treatment.<sup>9–11</sup>

Our case underlines the potential importance of EUS-FNA as a minimally invasive technique not only for staging but also for the diagnosis of recurrent lung cancer, thus preventing the need for more invasive techniques like thoracotomy, thoracoscopy and/or mediastinoscopy. EUS-FNA may be a part of post-treatment surveillance of patients with non-small cell lung cancer. However, further study is required to establish the role of EUS-FNA in comparison to other modalities used for the same purpose.

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