



## Case report

## Endobronchial ultrasound convex probe for lymphoma, sarcoidosis, lung cancer and other thoracic entities. A case series



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## ABSTRACT

Endobronchial ultrasound endoscopy is a state of the art diagnostic endoscopic procedure for the thorax. Firstly it was designed mainly for the staging of lung cancer and of course for the diagnosis of suspicious findings in large central airways. The main limitation of the equipment is the diameter of the instrument and therefore it can only be guided through large airways. However; the diameter of the working channel also provides a large tissue sample nowadays with the 19G biopsy needle. We will provide our experience with the 22G needle of the endobronchial convex-probe in several medical situations of the thorax.

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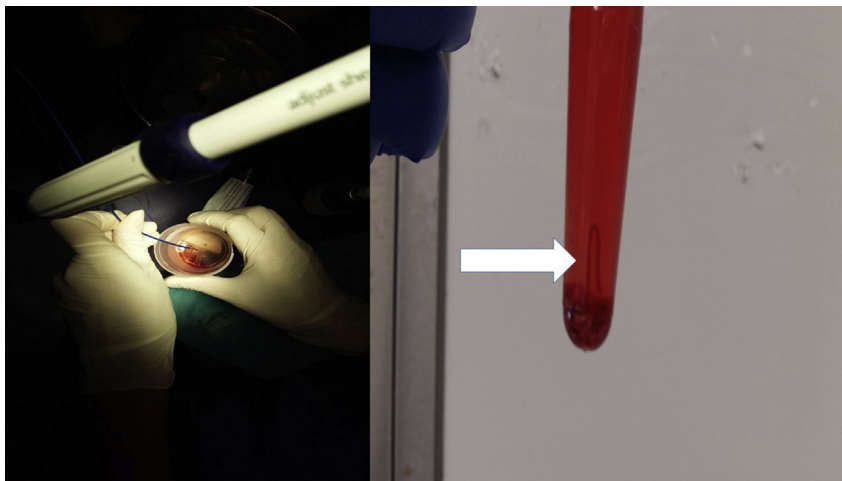
## 1. Introduction

Bronchoscopy used to be the first endoscopic procedure to be performed for diagnosis of suspicious findings in the thorax. Bronchoscopy is performed with mild sedation or local anesthesia (lidocaine) based on the centers' experience and equipment. However; there are several cases where a more advanced

equipment was necessary in order to diagnosed central findings next to large vessels without endobronchial findings. Therefore the convex-probe endobronchial sound (EBUS) was designed [1]. This equipment was also designed in order to supplement the positron emission tomography (PET-CT) by taking biopsies from the lymph nodes of 7 different positions within the thorax. Until now PET-CT cannot replace mediastinoscopy and therefore lymph node biopsy is necessary with the convex – probe EBUS [2,3]. We will present a case series where diagnosis was performed with a convex-probe EBUS 22G needle, we will try and focus on the pathological findings/technique and materials used.

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**Fig. 1.** On the left side: after the biopsy, cleaning the 22G needle, on the right side: a tissue core from the lesion (Figures by Paul Zarogoulidis).

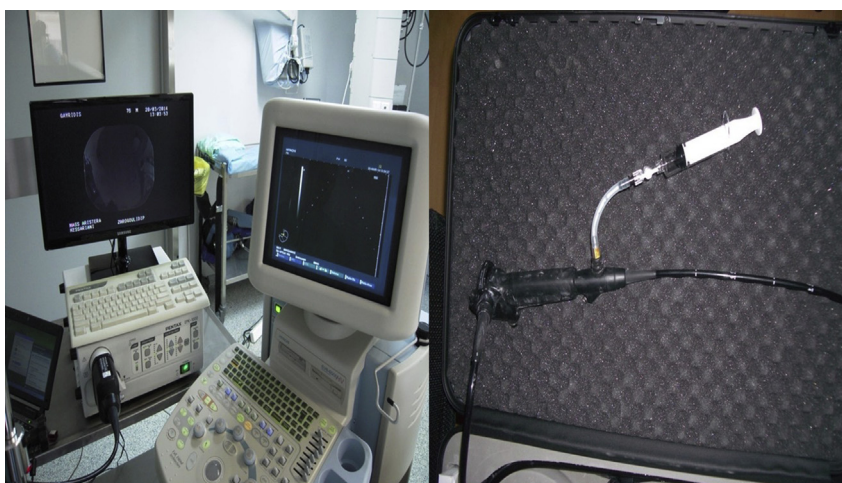
## 2. Material and methods

EBUS guided tissue material undergone by three-steps procedure. First step is the infiltration of visible tissues that can be selected by a niddle surgical forchep. This material is treated like histological specimen and followed by graduated over-night dehydration and then embedded in paraffin. Three micron tissue sections were taken for histological examination after Haematoxylin/Eosin (H/E) stained. The second step is the centrifugation of the rest material that provides a viscous deposit, full of small tissue fragments, that can be selected by a pipette and create a cell block. This material is also treated like a tissue one, followed by overnight dehydration and embedded in paraffin. Tissue sections can be taken for histological examination. The third step is, the treatment of the rest complete liquid material, as a cytological material. This is centrifugated in a cytostatic centrifuge and the precipitate is coated on positive charged slides and stained by "Papanikolaou" (PAP) stain. More unstained slides can by prepared for cytochemical evaluation. The material that result by the two first steps, is a histological material, that can provide numerous sections for histological and

immunohistochemical procedures. It is also suitable for molecular tests due to the adequate amount of DNA that can be extracted of the paraffin embedded tissues. All the biopsies were performed with a 22G Mediglobe needle (Fig. 1). In our case series we used a Pentax Convex-Probe-Endobronchial Ultrasound (Fig. 2).

## 3. Case 1 (b-cell lymphoma)

A 45 year old woman was refered to a tertiary hospital for investigation of pulmonary hypertension. Upon CT of the chest lymphnode enlargement was observed  $\leq 3$ cm and endobronchial ultrasound was performed. Figs. 3 and 4. The FNA material of the station 4 R included numerous lymphoid cells. These cells were small to medium sized and provided a monotonous appearance. The cytoplasm was minimal and the nucleus rounded to oval shaped partially convoluted or dark with inconspicuous nucleolies. The features of the lymphoid cells were like lymphoplasmatoid or monocytoid cells (Fig. 5). The immunohistochemical examination revealed that the neoplastic cells were negative for Cytokeratin 8/18 and synaptophysin, excluded the diagnosis of an epithelial



**Fig. 2.** On the left side: the equipment of Pentax, an EPK-1000 and EUB-6500HV, on the right side: a EB-1970UK EBUS endoscope (Figures by Paul Zarogoulidis equipment in the Private Hospital "Saint Luke").

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