

## Case Report

# Endosonography Diagnosis with a New ProCore 20G of Mediastinal Metastasis from a Malignant Cutaneous Melanoma

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**Cite this article as:** Galante Romanini S, Ferraz de Almeida A, Silveira Lima de Castro J, Pablo Román Serrano J, Trindade Torres I, Celso Ardengh J. Endosonography diagnosis with a new ProCore 20G of mediastinal metastasis from a malignant cutaneous melanoma. *Turk Thorac J.* 2021; 22(3): 267-270.

## Abstract

Melanoma is an uncommon tumor and represents about 1.5% of all neoplasms. In the mediastinum, it presents as a primary neoplasm or metastasis. Diagnosis is essential for the adoption of the best therapy. Endosonography-guided fine needle aspiration (EUS-FNA) obtains cell samples and, when associated with other auxiliary exams such as immunohistochemistry, is useful to identify and differentiate primary and/or metastatic mediastinal lesions from a wide variety of other neoplasms. The endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) sensitivity is low and similar to endobronchial ultrasound-guided transbronchial needle biopsy (EBUS-TBNB) performed with the ProCore 25G or 22G needle. Thus, the diagnosis of this type of tumor becomes a great challenge. The authors report the first case in the literature of metastatic mediastinal melanoma derived from malignant cutaneous melanoma, which was submitted to Endosonography-guided fine needle biopsy (EUS-FNB) with the new ProCore 20G, to obtain tissue, being confirmed by histological examination of the specimens obtained with a single puncture.

**KEYWORDS:** Melanoma, endosonography, lymph nodes, mediastinal neoplasms, neoplasm staging, ultrasonography, interventional, fine needle biopsy

**Received:** May 14, 2020

**Accepted:** August 11, 2020

## INTRODUCTION

Melanoma is uncommon and represents about 1.5% of all neoplasms. In the mediastinum, it can present as a primary neoplasm or metastasis.<sup>1,2</sup> Generally, lymph nodes are involved as a consequence of a wide-spreading process of a primary tumor.<sup>3</sup> Although there are reports of primary mediastinal melanoma, metastasis is more common.<sup>1-3</sup> In this study, 5% of metastasis in the mediastinum and lungs come from malignant cutaneous melanomas.<sup>3</sup> Correct diagnosis is essential for the adoption of the best therapeutic strategy.<sup>4</sup> Mediastinal biopsies accurately detect this type of disease and allow the best treatment to be established.<sup>2,4,5</sup> The cytological material obtained by endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) associated with additional auxiliary study methods, such as immunohistochemistry and mRNA screening is useful to identify metastatic mediastinal lesions in a variety of neoplasms, such as Hodgkin's lymphoma, non-Hodgkin, melanoma, hepatoma, breast, lung, colon, kidney, endometrium, and other types of carcinoma.<sup>2</sup> The accuracy and diagnostic sensitivity of EBUS-TBNA are low<sup>6</sup> and similar to the 25G and 22G ProCore needles used to obtain core biopsy.<sup>7</sup>

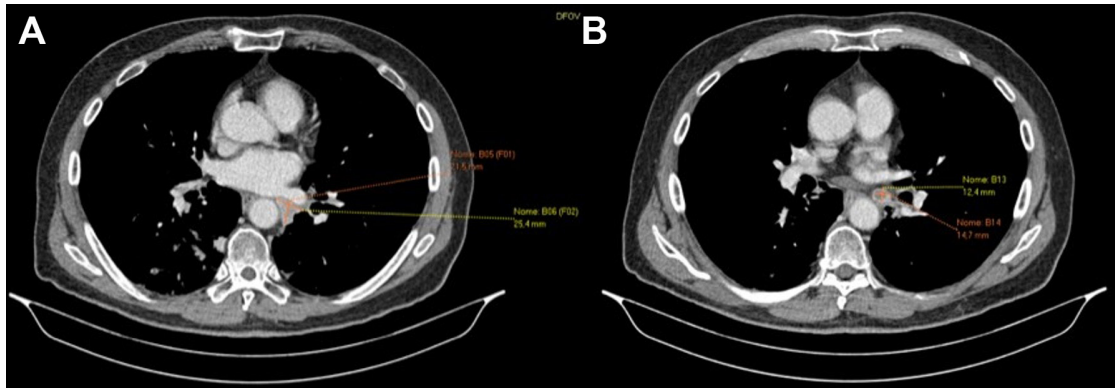
The authors report the first case in the literature of mediastinal metastasis derived from malignant cutaneous melanoma, submitted to Endosonography-guided fine needle biopsy (EUS-FNB) with the new ProCore 20G with an inverted bevel to obtain tissue, confirming the diagnosis of metastasis of a melanoma cutaneous malignancy in the histological specimen.

## CASE PRESENTATION

An asymptomatic, 68-year-old man with a past medical history of systemic arterial hypertension, dyslipidemia, and benign prostatic hyperplasia. Twenty-one months ago, he noticed a rapidly growing left scalp lesion. He was submitted to a biopsy that revealed melanoma (pT4a) 9 mm deep (Breslow V), 6/10 mitoses, with perineural/lymph node invasion and without vascular invasion. The surgical margins were enlarged, and the investigation of sentinel lymph nodes revealed metastasis of left temporal melanoma and 2 left auricular lymph nodes, one measuring 2.5 mm with capsular leak and the second measuring 3.5 mm without capsular leakage. Magnetic resonance imaging (MRI) of the central nervous system was normal. Computerized tomography (CT) of the chest, abdomen and pelvis showed non-calcified micronodules

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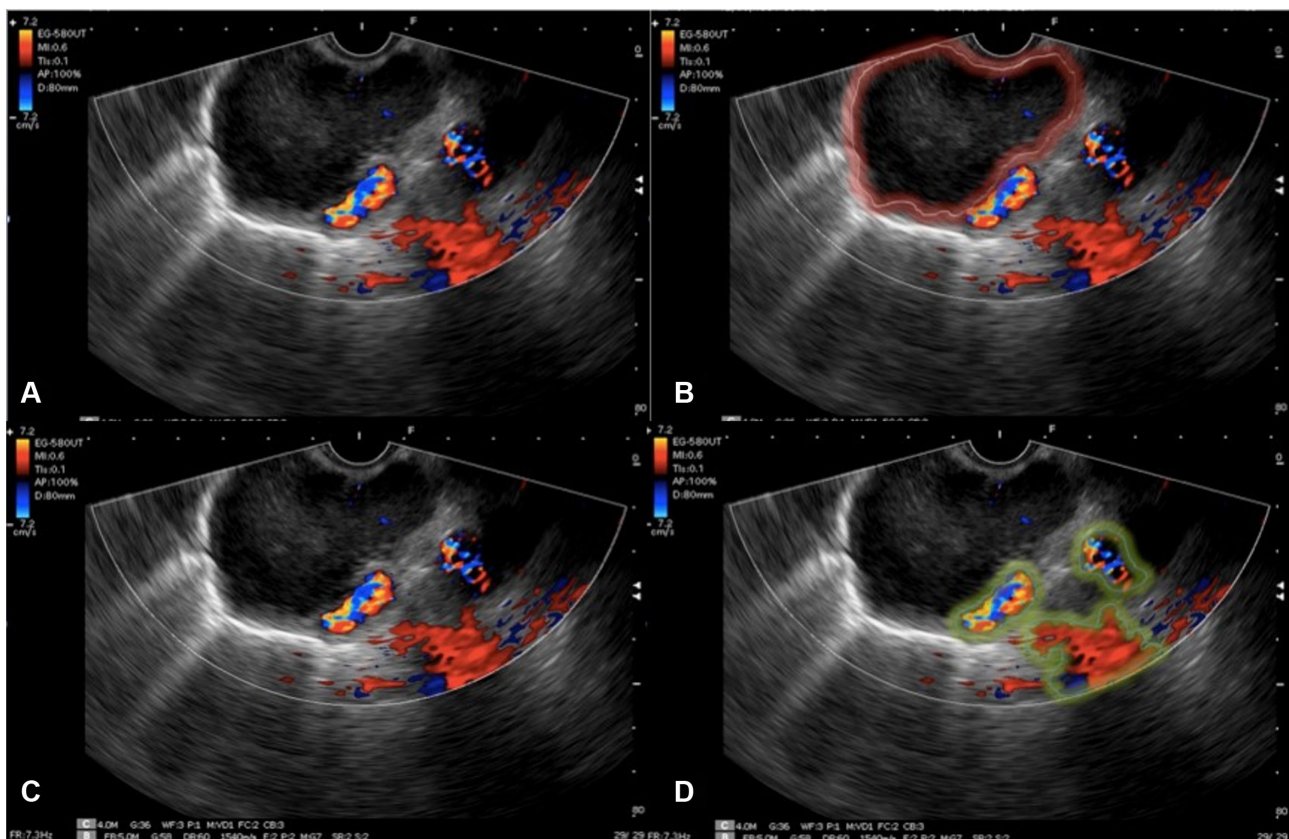
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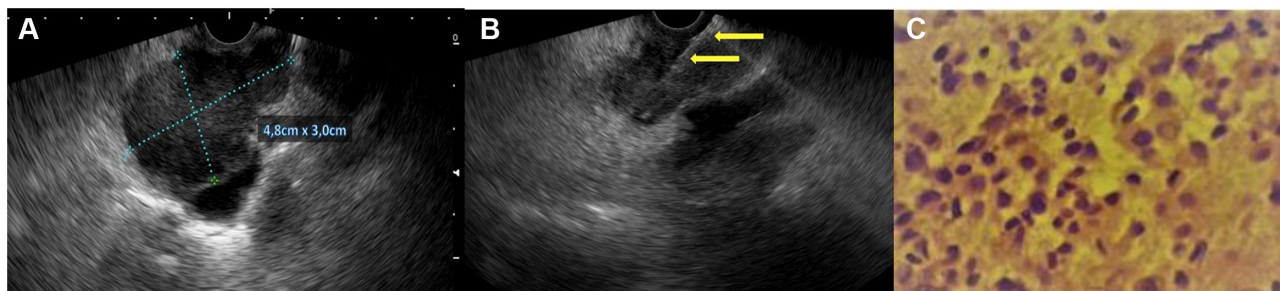
**Figure 1.** Left paraesophageal mediastinal lymph node, which was estimated to be 2.5 × 2.1 cm (a), and lymphonomegaly along the right lower lobar bronchial bifurcation measuring 1.4 × 1.2 cm (b).

(3 mm) in both lungs and thoracic spondylarthrosis. Cervical MRI revealed small rounded lymph nodes in the left chain IIa. He started treatment with Nivolumab (1 year) and underwent cervical dissection and parotidectomy that revealed the presence of compromised lymph nodes. Radiotherapy was started in the primary site and drainage areas (left parotid and left lymph node chains Ib, II, III, and IV) for 6 months. Fifteen months after diagnosis, the patient underwent new imaging exams that revealed left paraesophageal mediastinal lymph node, measuring 2.5 × 2.1 cm, and enlarged lymph nodes along the right lower lobar bronchial bifurcation measuring 1.4 × 1.2 cm (Figure 1). He was referred for EBUS, but the CT showed a periesophageal mass, so it has opted for mediastinal endosonography (EUS), which confirmed the finding

of the CT, with a well-defined, lobulated, hypoechoic lesion close to the esophagus and pulmonary vessels, suggestive of a lymph node measuring 4.8 × 3.0 cm in its major axes (Figure 2). A single puncture was performed during EUS-guided fine needle biopsy (EUS-FNB) with the new ProCore 20G (Cook Medical, Cook Medical, Bloomington, IN, USA) (Figure 3). Histological analysis of the material obtained in abundance revealed (Figure 4) anaplastic pigmented cells in solid and discoid arrangement, with the presence of focal and mild desmoplasia; findings compatible with secondary melanocytic neoplasia (metastatic melanoma). Treatment was dabrafenib and trametinib for a period of 4 months. PET-CT after treatment unveiled a good metabolic and anatomical response, and the patient is now waiting for the beginning of



**Figure 2.** Sectorial scanning of the mediastinum. Adjacent to pulmonary vessels, with prominent edges (red), well-defined, lobulated, hypoechoic lesion compatible with mediastinal lymph node (a, b). Sectorial scanning of the mediastinum (c, d). Anatomical relationship of the pulmonary vessels (highlighted in green) with the lesion.



**Figure 3.** Measurements performed by sectorial scanning of the mediastinal lesion (a). (b) EUS-FNA with ProCore 20G needle (arrow yellow). (c) Material obtained through EUS-FNA and sent for histological study. Pigmented anaplastic cells in solid or discoid arrangement, with presence of focal and mild desmoplasia; findings compatible with secondary melanocytic neoplasia (metastatic melanoma).

radiotherapy (Figure 4). The patient's clinical progress was monitored and followed up with EUS and other imaging exams, and no changes were found.

## DISCUSSION

Mediastinal melanotic tumors are rare. Among them, we can mention pigmented extra-adrenal paraganglioma, pigmented carcinoid tumor of the thymus, melanotic schwannoma, melanotic neuroectodermal neoplasia, and primary malignant melanoma.<sup>3</sup> We describe this case of a diagnosis of mediastinal melanoma metastasis to draw the attention of thoracic surgeons and pulmonologists to the safe and effective use of EUS-FNB with the new ProCore 20G in the diagnosis of mediastinal tumors next to or at a distance of up to 2, 0 cm from the esophagus.<sup>2,4</sup> EUS-FNB with the new ProCore 20G requires a 3.7 mm working channel, has an insertion catheter of 7.95 Fr and the adjustable needle length varies between 0 and 8 cm. The cutting bevel is located in the body of the needle just above the tip bevel, but in the same direction, allowing it to cut the tissue, which is kept inserted in the body of the needle, with the fragment in its lumen. This device allows obtaining enough tissue to be analyzed using hematoxylin-eosin using auxiliary techniques such as immunohistochemistry, as occurred in our patient. The results of this technique are excellent in solid pancreatic lesions and other tumors around the gastrointestinal tract. This seems to

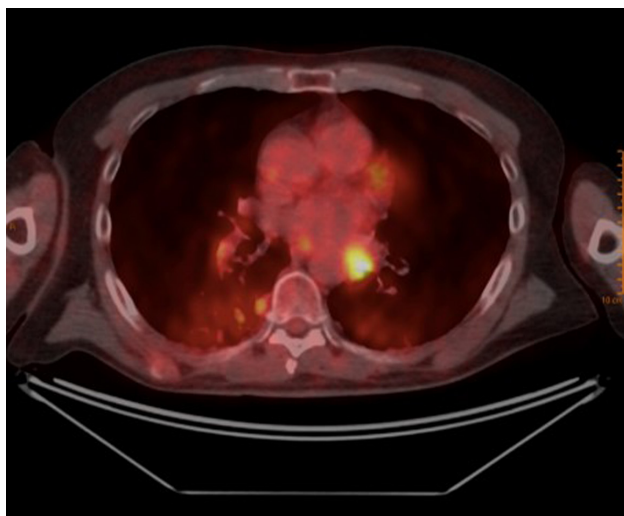
be the first case report of a diagnosed mediastinal metastasis of cutaneous melanoma using this technique.<sup>8,9</sup>

EBUS has become the first line in the investigation of mediastinal lesions suspected of malignancy. However, the gauge and type of needle are factors that explain the low sensitivity of this method. Generally, TBNA with 22G and 25G needles and TBNB with ProCore (22G and 25G) has a sensitivity of 77 and 92%, respectively. Patients undergoing TBNA and TBNB require mediastinoscopy or CT-guided FNA as complementary methods to confirm the diagnosis in 30 and 15%, respectively.<sup>10</sup>

Another study compared EBUS-TBNB with ProCore 25-G and EBUS-TBNA with the 22G needle to obtain mRNA yield and the occurrence of adverse events in the assessment of mediastinal and hilar lymphadenopathy. The diagnostic accuracy was similar for the needles and the ProCore 25-G had a shorter time and number of punctures compared to the 22-G needle.<sup>7</sup>

Thorough radiological analysis using CT or MRI accurately locates the mediastinal mass to be submitted to EUS-FNB. If it is close to or within 2.0 cm of the esophagus, the use of EUS-FNB allows for a better approach compared to EBUS-TBNA and mediastinoscopy.<sup>4</sup> EBUS is limited to cases where the mediastinal mass cannot be accessed by conventional EUS, as in this case initially referred to EBUS by the thoracic surgeon. A fundamental point is obtaining tissue and not cells by the EUS-FNB with the new ProCore 20G. EBUS-TBNA is made with needles ranging from 22G to 25G, thinner than the new ProCore 20G, preventing the obtaining of tissue and decreasing diagnostic yield.

The authors emphasize the importance of outpatient follow-up after treatment and the performance of control tests. In the eventual possibility of new local recurrence, EUS-FNB may be indicated. In addition, we must always be aware of the secondary lesion in patients who have already been diagnosed with cancer, even if in unusual organs.



**Figure 4.** PET-CT showing the <sup>18</sup>F-fluorodeoxyglucose uptake area in topography of mediastinal left paraesophageal lymph node.

**Informed Consent:** Written informed consent was obtained from the patients who agreed to take part in the study.

**Peer Review:** Externally peer-reviewed.

**Author Contributions:** Supervision – J.C.A.; Design – S.G.R., J.S.L.C.; Resources – J.P.R.S.; Materials – J.P.R.S., I.T.T.; Data Collection and/or

Processing – J.P.R.S., I.T.T.; Analysis and/or Interpretation – J.C.A., J.P.R.S., I.T.T.; Literature Search – J.S.L.C.; Writing Manuscript – S.G.R.; Critical Review – J.C.A.

**Conflict of Interest:** The authors have no conflict of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

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