

U-VATS Bronchus Intermediate Sleeve Resection for an Unsuspected Melanoma Metastasis

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Abstract

Malignant melanoma (MM) has a high tendency to spread along with disease evolution. Among those sites of recurrence, thoracic metastases frequently take place. However endobronchial presentations are not that common, accounting nearly 10% of all endobronchial metastases. We present a case of a 79-year-old male complaining of dyspnea and mild haemoptysis episodes having a history of a resected melanoma eleven years ago. Minimally invasive surgery and three-Dimensional (3D) planning play a fundamental role in the decision-making in the treatment for elder patients.

Keywords: Melanoma; Endobronchial Metastasis; U-VATS; Bronchial Sleeve; 3D Model Assistance

Introduction

Endobronchial lesions have many different histological causes, most of them are due to primary lung tumors [1] nevertheless, metastatic endobronchial tumors only reach 1.1% globally [2,3].

Despite being a highly potential metastatic tumor, rarely does MM spread to the airways. According to several publications, only 5% to 15% of pulmonary metastases are secondary to MM [2,4,5].

The median period from the primary tumor diagnosis and the occurrence of endobronchial metastases was 48 months (0 - 120) [6].

Most of the patients with metastatic MM spreading to airways have chronic cough and hemoptysis. Diagnosis of the lesions was made in the follow-up with fiberoptic bronchoscopy and computed tomography (CT) scan [7-9].

Case Presentation

We present a 79 years old male, referred to our hospital with a 4-month history of dyspnea and hemoptysis. He has medical records of hypertension, mild tobacco smoker history (22 pack/year) and an infiltrating MM resected in another institution 11 years ago. The specimen pathology analysis revealed a maximum diameter of 17 mm of vertical growth, III Clark level, and 1,5 mm of Breslow. Surgical margins were clear (more than 2 cm) and lymph nodes were not assessed.

CT scan only revealed an endobronchial lesion of 25 mm x 12 mm located at the bronchus intermediate (Figure 1A). Flexible fibreoptic bronchoscopy was performed (Figure 1C) for tissue sample biopsies and a complete assessment of the airway. The pathology review reports an endobronchial metastasis of MM.

Positron emission tomography and computed tomography (PET-CT) scan was performed showing a unique hypermetabolic lesion at the intermediate right pulmonary bronchus with a maximum Standardized Uptake Value (SUV_{max}) of 6.5, without other pathological images (Figure 1B). Multiple disciplinary teams and oncology meeting discussion recommend surgical resection.

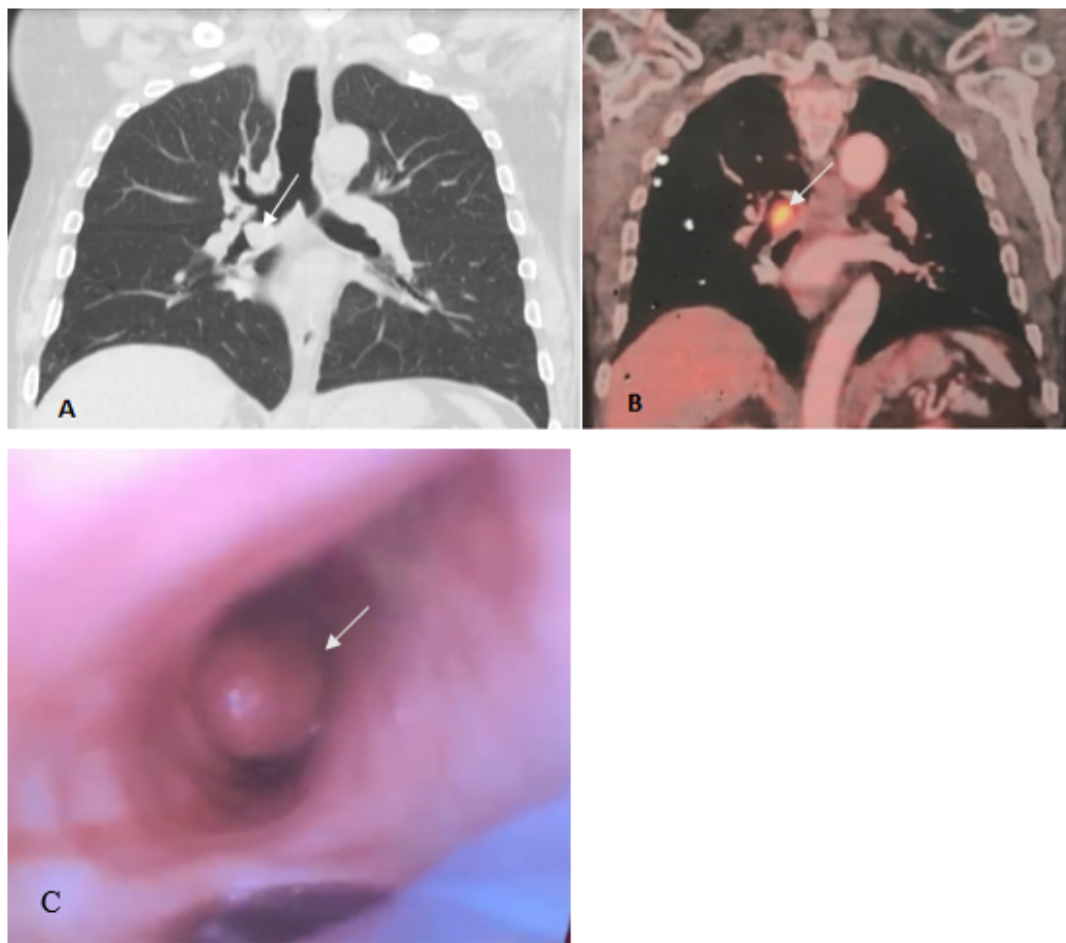


Figure 1: A- Computed tomography (CT) revealed an endobronchial lesion of 25 mm x 10 mm located at the bronchus intermedius (white arrow). B- Positron emission tomography showing the same lesion with hypermetabolic behaviour, maximum standardized uptake value (SUV_{max}) of 6,5 (white arrow). C- Video fibreoptic image of the endobronchial tumor (white arrow).

Three-dimensional planning (3D) was used to define surgical and technical alternatives considering a single endobronchial lesion, determining that bronchial sleeve resection was feasible (Figure 2).

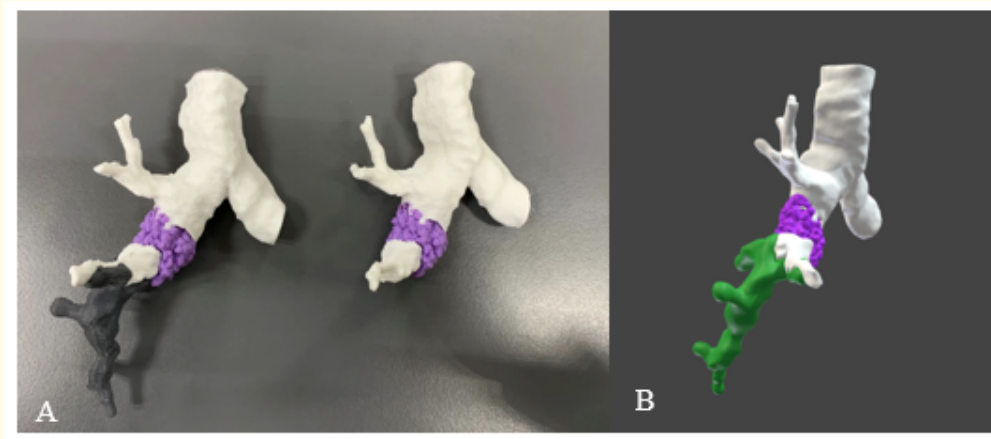


Figure 2: 3D printed model (A) and virtual model (B).

A bronchial sleeve by Uniportal Video-Assisted Thoracic Surgery (U-VATS) was performed. The first step was to perform lung spreading for intermediate bronchus exposure (Figure 3A). Before the bronchial section, intraoperative video fiberoptic bronchoscopy showed adequate margins. Once a complete resection of the intermediate bronchus, an intraoperative pathological examination was required for free margins confirmation. End-to-end bronchial anastomosis with continuous 3.0 polypropylene suture (Figure 3B). The last step was a fiberoptic bronchoscopy to check the anastomosis and mediastinal lymphadenectomy of stations 7, 8, 9, and 10.

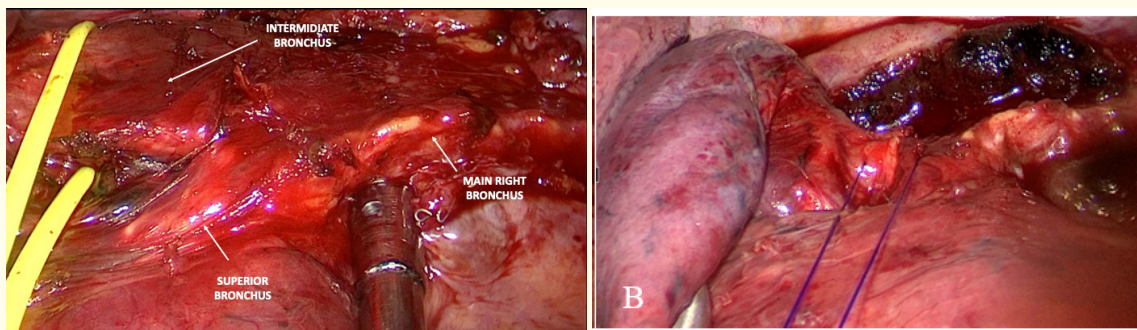


Figure 3: Video-thoroscopic image A- Anatomical references after resection. B- End-to-end bronchial anastomosis.

The Post-operative was uneventful. Pathologic specimen review confirms a metastatic amelanotic melanoma in the bronchial mucosa, sizing 25 mm x 21 mm, without cartilaginous affection and vascular invasion. The margins were free of disease, all mediastinal lymph node stages resected were free of disease too.

Twelve months follow up with non-recurrence and good quality of life according to his age (Figure 4).

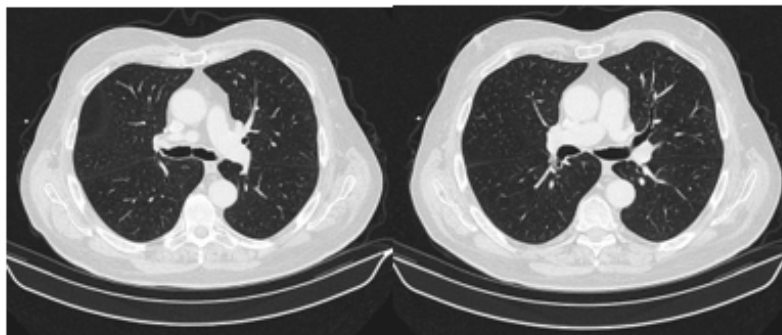


Figure 4: Computed tomography 12 month follow up.

Discussion and Conclusion

The presence of endobronchial metastasis of melanoma is a rare entity. Surgical resection remains controversial [11], even though when is feasible and a free margins surgery could be achieved, the risk must be taken [12-14].

The presence of pulmonary metastasis is a marker of bad prognosis and high mortality in MM. Overall survival of patients with endobronchial metastasis is poor, despite treatment, ranging from 8 to 16 months.^{8,15,16} Nevertheless, the SWOG (Southwest Oncology Group)-9430 study found that, in patients with stage IV solitary metastasis, the postoperative median overall survival (OS) was up to 19 months and the 5-year survival rate was 20%, which was far more than the previously reported median OS (6 - 8 months) of patients with stage IV disease [17].

Minimally invasive surgery assisted with 3D planning is a useful and safer combination providing excellent postoperative results [18].

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