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

Alesandrini A1, Lopez L1, Carranza O2, Fuentes N3 and Matías Nicolás1*

1General Surgery Department, Thoracic Surgery Division, Hospital Privado de Comunidad, Mar Del Plata, Buenos Aires, Argentina
2Oncology Department, Hospital Privado de Comunidad, Mar Del Plata, Buenos Aires, Argentina
3Intensive Care Unit and Research Department, Hospital Privado de Comunidad, Mar Del Plata, Buenos Aires, Argentina

*Corresponding Author: Matías Nicolás, General Surgery Department, Thoracic Surgery Division, Hospital Privado de Comunidad, Mar Del Plata, Buenos Aires, Argentina.

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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 fibreoptic 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 fibreoptic 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 fibreoptic bronchoscopy to check the anastomosis and mediastinal lymphadenectomy of stations 7, 8, 9, and 10.

Figure 3: Video-thoracoscopic 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).

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. 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].

Bibliography

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