

Subxiphoid uniportal video-assisted bilateral surgery: right upper lobectomy and left upper wedge resection S3

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Abstract: Traditional approach of bilateral lesions usually involves bilateral approaches instead of classical thoracotomy or video-assisted thoracoscopic surgery (VATS) surgery, and often at two different times. During visit of Dr. Gonzalez Rivas at Master Class to Málaga, we performed right upper lobectomy and S3 wedge resection left upper lobe of a two synchronous bilateral lung lesions case with subxiphoid single incision approach. We are reporting the first case of a lobectomy combined with a wedge resection performed through an uniportal subxiphoid bilateral VATS in Spain.

Keywords: Subxiphoid approach; uniportal video-assisted thoracoscopic surgery (uniportal VATS); segmentectomy; lobectomy; uniportal subxiphoid

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Introduction

Recently, minimally invasive surgery has revolutionized conventional thoracic surgery, as it changes completely all of its paradigms. It is a less aggressive procedure that also comes with better outcomes, such as the case of the uniportal (1) and subxiphoid approach (2).

The traditional approach for bilateral lesions usually involves bilateral approaches, either by classical thoracotomy or video-assisted thoracoscopic surgery (VATS) surgery, and often at two different times (3). We currently have one of the most innovative techniques, as it is the subxiphoid one, that led us to a bilateral access to treat different lesions located one in both hemithorax, with a single incision. In our case we treat synchronous pathologies and perform a right superior lobectomy and a wedge resection (4) of a nodule of benign characteristics. They were located at the right upper lobe (5,6) and left upper lobe, respectively. Taking advantage of the visit Dr. Gonzalez Rivas at the Master Class in Málaga (Figure 1), the first subxiphoid bilateral lobar and segmental resection

of Spain and Europe was performed. It is a very infrequent procedure, rarely reported in literature.

Clinical case

A 53-year-old male with heavy smoking history, in CT scan that showed two lesions located the right upper lobe and left upper lobe (Figure 2). PET-CT showed a 26-mm nodule in the posterior segment of the right upper lung with high activity (SUVmax: 13.6) that suggested a malignancy. It also reveals a 16-mm node in the anterior segment (S3) of the left upper lobe with low activity (SUVmax: 1.6), that suggested very low malignant probabilities. Pulmonary function tests were normal.

The patient was proposed for uniportal VATS subxiphoid right upper lobectomy and wedge resection S3 of the left upper lobe.

Surgical technique (Figure 3)

The surgical procedure was performed under general



Figure 1 Dr. Gonzalez Rivas with Department of Thoracic Surgery team at the Master Class in Málaga, Spain.

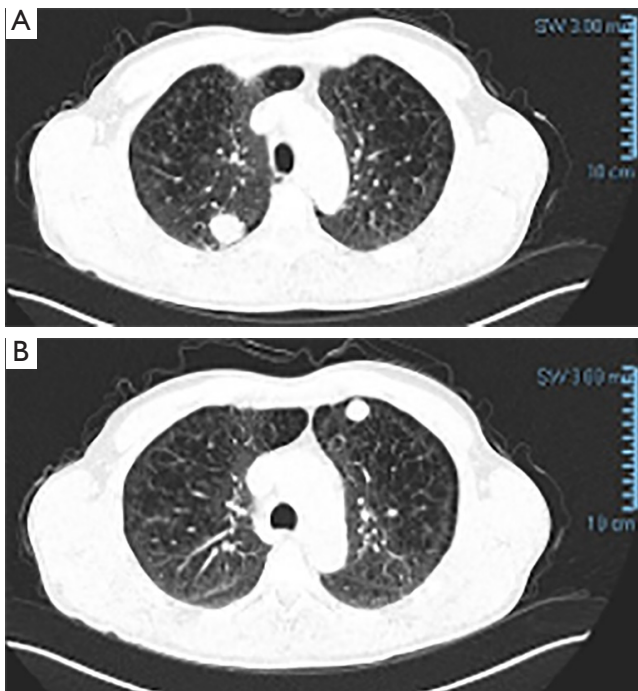


Figure 2 CT scan showing two lesions located the right upper lobe (A) and left upper lobe S3 (B).



Figure 3 Subxiphoid uniportal video-assisted thoracoscopic, two lesions, right upper lobe and left upper lobe (7).

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Figure 4 The patient in lateral position with 45 degrees of inclination.

anesthesia, and double lumen endotracheal intubation. The patient was placed in the right semi-supine position with 45 degrees of inclination (*Figure 4*). A 3.5-cm-long longitudinal skin incision below the xiphoid process, the xiphoid process was partially resected, with blunt dissection of mediastinal fat. A wound protector improved the exposure and allowed bimanual instrumentation through the subxiphoid incision (*Figure 5*).

A 30-degree 10-mm thoracoscope combined with several specific longer VATS instruments was used (*Figure 6*), all of them through the same subxiphoid incision. The cavity was explored, finding a lesion at the right upper lobe. Mediastinal and hilar adhesions were released with harmonic scalpel. Then, mediastinal artery, superior pulmonary vein, recurrent artery, posterior ascending artery, superior lobe bronchus and the major



Figure 5 A wound protector, bimanual instrumentation through the subxiphoid incision.



Figure 6 Specific longer subxiphoid VATS instruments. VATS, video-assisted thoracoscopic surgery.

fissure, were also released sequentially with specific uniportal subxiphoid instruments and endo-stapler. Removal of the piece by endo-bag G4-G7-G8 systematic lymphadenectomy and pulmonary ligament release was performed.

Immediately after, left hemithorax approach was performed through the same subxiphoid incision. It started with left mediastinal pleura and thymus fat dissection. Mediastinal adhesion was released by harmonic scalpel, and the cavity was explored lesion was located. Wedge resection S3 left upper lobe with large margins of resection was made by endo-stapler. It was sent to the pathologist who confirmed the presence of a hamartoma. Argile 24F

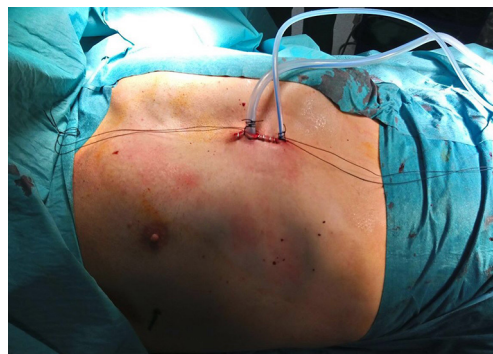


Figure 7 Argile 24F type thoracic drainage system was placed in the right hemithorax and Blake 19F in the left.

type thoracic drainage system was placed in the right hemithorax and Blake 19F in the left (*Figure 7*). The stance at the hospital lasted three days followed by success hospital discharge. Pathology revealed a large-cell neuroendocrine carcinoma in the right lung and chondroid hamartoma in the left one.

Discussion

Traditional surgical approaches do not offer the same success rate in all different scenarios, we may need to consider combining selective approaches in order to improve the surgical outcomes.

In our specific case, the subxiphoid approach allowed us to access both cavities with just one incision and access both pulmonary lesions at the same setting (8). In addition, it provided us the benefits of a minimally invasive surgery, decreasing postoperative pain and the morbidity.

This technique requires specific angulated tools with higher dimensions than conventional VATS (9), but they can also allow an ergonomic way to approach thoracic structures. Experience in minimal invasive uniportal surgery is required to perform it successfully (9).

In this case, it was possible to approach both hemithorax without changing patient's position. A minor surgical table inclination was only required in order to improve the pulmonary structures manipulation. Despite the fact that subxiphoid access is quite limited for posterior structures, it does not prevent from performing an adequate lymphadenectomy.

In conclusion, the subxiphoid uniportal approach is a feasible surgical technique that allows bilateral hemithorax access when it usually requires another procedure and

surely, a second-time surgery, increasing postoperative morbidity.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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