

Thoracoscopic excision of a thymoma situated in an aberrant anatomical location

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Introduction

Mediastinal masses may be benign or malignant. The malignant ones could be due to primary or metastatic disease. According to published data, out of mediastinal masses about two thirds are benign, while thymoma being the commonest pathology in Sri Lanka. Other anterior mediastinal masses include teratoma, thyroid masses and lymphoma (1).

Thymus develops from the 3rd pharyngeal pouch together with inferior parathyroid glands. It reaches the normal adult position on the anterior mediastinum, in the first trimester of intra-uterine life. Therefore, most thymomas are located in the anterior mediastinum anterior to the brachiocephalic veins and superior vena cava but aberrant locations are described (2). Anterior mediastinum is the narrow and potential space between the sternum anteriorly and the pericardium posteriorly. Contents of anterior mediastinum are the thymus or its remnants, a few lymph nodes, internal thoracic arteries and their branches.

Thymic abnormalities are prevalent in form of hyperplasia in 60% - 70% and thymoma in 10% - 15%. There is an association between myasthenia gravis (MG) and thymoma. Myasthenia gravis is present in 15% - 20% of thymoma patients. Thymectomy is indicated in all cases of thymomas irrespective of the stage of myasthenia gravis (3). Thymectomy is best performed by thoracoscopy as it reduces morbidity associated with sternotomy (4).

Contrast-enhanced computerized tomography is helpful in making a preoperative diagnosis and provides accurate information regarding anatomical position and relationships, which is helpful to plan operative approach.

We present a patient on treatment for myasthenia gravis with a thymoma in an aberrant location and was treated by thoracoscopic thymectomy.

Case presentation

A fifty-year-old woman presenting with slurring of speech and bilateral ptosis was diagnosed to have myasthenia gravis. Chest X-ray was suggestive of mediastinal widening and contrast enhanced computerized tomography (CECT) demonstrated a right paratracheal lesion; 6 cm x 5.5 cm x 5.3 cm in size, located posterior to right brachiocephalic vein and superior vena cava. The azygous vein was skirting the posterior border of the mass (Figures 1 and 2).

She was medically managed with oral pyridostigmine 60 mg tds and mycophenolate mofetil 500 mg tds.

She underwent a thoracoscopic resection of the mass. Surgery was performed under general anaesthesia. Ventilation was with a standard single lumen tube. The patient was positioned supine with right arm abducted opening the axilla. A sand-bag was placed under right scapula. Camera port was placed in the fifth intercostal space in

mid axillary line. Two working ports were placed in 3rd and 8th intercostal spaces in anterior axillary line. The upper port was 10 cm and the lower was 5 mm.

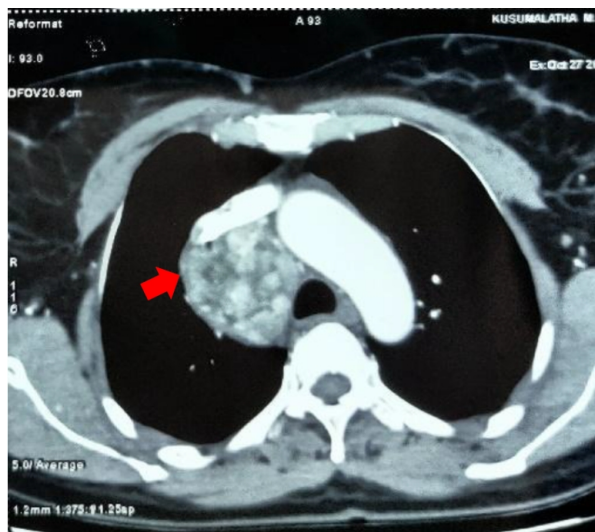


Figure 1: CECT view of thymoma in axial plane (red arrow)

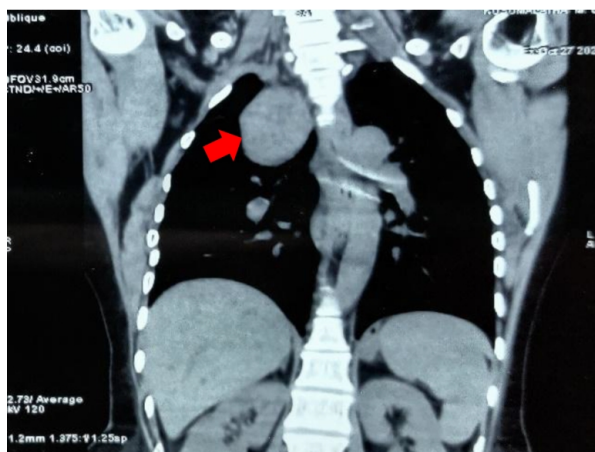


Figure 2: CECT view of thymoma in coronal plane (red arrow)

Lung collapse was achieved by insufflating CO₂ at a pressure of 8 mmHg. The mass, great veins and phrenic nerve were identified. Dissection was performed using bipolar diathermy and ultrasonic dissector. An incision was made on mediastinal pleura along the posterior border of great veins which was continued along the azygous vein. Dissection along the capsule of the mass was continued with the energy sources with titanium clips on two draining veins (Figure 3).

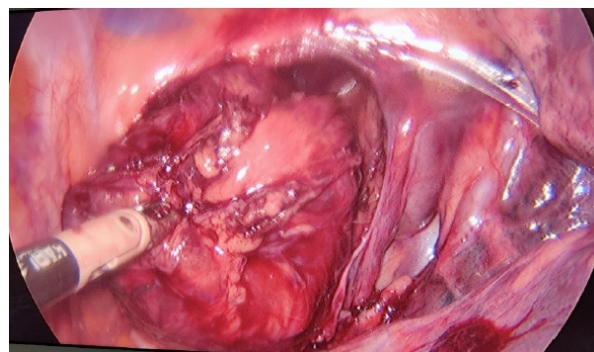


Figure 3: Right side thoracoscopic view of thymoma

The mass was placed in a plastic bag. Retrieval through an intercostal space is our standard technique. In this patient dissection under the veins extended well into root of neck. Therefore, we decided to remove the specimen via a neck incision as it will be easier than through an intercostal space. This was done via a transverse neck incision and the hand could be easily sent into thoracic cavity to grasp the bag and pull out (Figure 4).

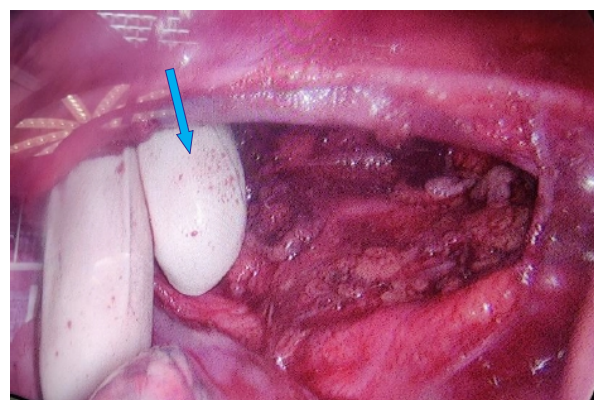


Figure 4: Right side thoracoscopic view of assistant's hand coming through neck incision (blue arrow)

The patient was extubated and managed in intensive care overnight. Feeding was established the same day and the patient was mobilized out of the bed. After removal of intercostal tube, the patient was discharged on the fourth post-operative day.

The histopathology showed a well circumscribed encapsulated lesion with lobular architecture.

Lobules are separated by fibrous septae and composed of ovoid to spindle-shaped cells. Appearance are those of thymoma, WHO type-A.

Discussion

Thymectomy is the standard treatment for thymoma and best performed by thoracoscopy due to associated low morbidity, compared to median sternotomy. Pre-operative determination of the anatomical location, especially the relationship to great vessels is important. The 75% are found in the anterior mediastinum, 15% in anterior and superior mediastinum, and 6% fully in the superior mediastinum. The remaining 4% are seen in the neck or posterior mediastinum. The rarest site is posterior mediastinum (2, 5).

An accurate understanding of the anatomical location and relationships, especially to great vessels is important prior to surgery.

This patient's pre-operative CT clearly demonstrated the location, behind superior vena cava. This allowed us to plan exposure from right side as well as correct planes to dissect, protecting great vessels.

The major concern during dissection is the risk of catastrophic bleeding due to damage to major intra thoracic vessels. Careful identification of anatomy, dissection along tissue planes using energy sources, control of draining veins allows safe surgery. The patient presented had resection with minimal blood loss, had a smooth recovery and discharged from hospital on the fourth post operative day.

The standard to retrieve thymectomy specimens is through an intercostal space. With a large tumour the required incision is long as the ribs need considerable retraction. In this patient we decided to perform retrieval via a neck incision as in a thoracoscopic excision of a retrosternal goiter. The dissection behind the brachio-cephalic veins was extending in to root of neck. It was easy to meet the dissected space in superior mediastinum via neck in front of trachea. The assisting surgeon could pass his hand to chest via neck to grasp specimen and pull out.

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