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THORACOSCOPIC THYMECTOMY FOR STAGE-1 THYMOMA WITH MYASTHENIA GRAVIS USING LEFT-SIDED THREE-PORTAL APPROACH

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ABSTRACT Thymoma is a rare tumor of thymic epithelial cells, often found in association with myasthenia gravis. Surgical resection is the treatment of choice for thymoma, and thoracoscopic thymectomy is a minimally invasive approach that has shown comparable outcomes to open thymectomy. Thoracoscopic thymectomy for thymoma with myasthenia gravis is a safe and effective surgical technique. It allows for complete resection of the tumor while minimizing postoperative complications. This approach provides excellent visualization and access to the thymus and surrounding structures, allowing for precise dissection and tumor removal. Additionally, the use of thoracoscopy reduces postoperative pain and shortens hospital stays compared to open thymectomy. Our case report details the successful use of the left-sided three-portal approach for thoracoscopic thymectomy in a patient with stage-1 thymoma and myasthenia gravis. The minimally invasive nature of this surgical technique not only allowed for complete resection of the tumor but also contributed to a reduction in postoperative pain and shorter hospital stays for the patient. The excellent visualization and access to the thymus and surrounding structures provided by this approach facilitated precise dissection and tumor removal, resulting in favorable outcomes for the patient.

KEYWORDS : Thymoma, Myasthenia Gravis, Thoracoscopic Thymectomy

Case Report

Thymoma or thymic carcinoma is a rare slow-growing tumor of thymic epithelial cells that has an incidence of 0.15/100000 in the US, common in the 4th-6th decades of life with no sexual predilection [1,2,4]. Thymoma accounts for 47% of the anterior mediastinal mass. [1,3] In 1939, Alfred Blalock incidentally found a strong association between Thymoma and myasthenia gravis. [2] Myasthenia gravis, a neuromuscular junction disease, is found in 1/3rd of thymoma cases, characterized by muscular weakness and fatiguability. [3]

In Myasthenia gravis patients with predominant symptoms of ocular, neck, and respiratory system rather than constitutional limb symptoms should raise a strong suspicion of Thymoma.

Patients with thymoma usually present in one of the following ways -

1. Asymptomatic; tumor detected on imaging
2. Symptomatic due to local mass effect on surrounding structures
3. Symptoms of paraneoplastic syndrome; myasthenia gravis being the most common. [3]

CT scan or MRI forms an important part of diagnostic workup. [6] However, diagnosis can be confirmed only by tissue diagnosis. Different modalities of treatment are available for Thymic tumors like chemotherapy, steroids, immunotherapy, tyrosine kinase inhibitors, or surgical resection depending on stage and type of tumor [2,3].

For surgical resection of Thymoma, various approaches have been employed in the past ranging from the classic transsternal approach, transcervical approach, and subxiphoid approach to minimally invasive techniques. [7] In this case report we are reporting a complete thoracoscopic approach.

Case Report

A 59-year-old caucasian lady, with no known co-morbidities presented with drooping of the left upper eyelid for the last 7 months and more severe toward the end of the day. The patient also had complaints of difficulty in swallowing, speech, and cough for the last 5 months for which she took conservative management outside.

CECT chest done which was suggestive of 2.7x4x4.2 cm mass in the prevascular area of the mediastinum abutting ascending aorta superomedially, main pulmonary artery inferiorly, sternum anteriorly with no bony erosion. (Figure1)

The Acetylcholine receptor antibody level was more than 8 (elevated), anti-musk antibody level 0.57 (normal), TSH level 3.39 (normal). For tissue diagnosis, CT-guided core needle biopsy was done suggestive of Thymoma type B1.

The case was discussed in a multidisciplinary team and it was decided to first optimize the patient followed by surgical resection using thoracoscopic approach. The patient was started on tablet pyridostigmine 60mg twice daily and tablet prednisolone 10mg daily which was gradually increased to 40mg daily over a period of 2 months. There was partial relief in symptoms. Preanesthetic workup done including pulmonary function test and cardiac stress test which were within normal limits.

Following induction of general anesthesia and intubation with a 35Fr double-lumen endotracheal tube, the patient was positioned in the partial right lateral decubitus position with the left arm in a swimmer position. Painting and draping was done. The right lung was selectively ventilated. On left side thorax, one 12 mm camera port in the 5th intercostal space in mid axillary line, second right hand port in 6th intercostal space in anterior axillary line and third left hand port in 3rd intercostal space in the anterior axillary line as shown in Figure 2 with the help of a safety trocar and pneumothorax created using carbon dioxide at flow rate of 8 litre per minute at 8mm of Hg pressure. Thoracoscope was introduced and the entire hemithorax evaluated. On thoracoscopy - the left dominance of Thymoma was noted (Figure 3). Thymoma mass was seen in anterior superior mediastinum closely abutting pericardium and ascending thoracic aorta and adherent to left pleura. (Figure 4 a, b).

Thymoma was dissected en bloc using a combination of sharp and blunt dissection by preserving vital structures.

Endobag removal of specimen done through 12mm port. Haemostasis achieved. 28 Fr. Intercostal drainage (ICD) tube placed. The ports were closed using Non-absorbable monofilament polyamide 2-0 suture.

The post-operative stay was uneventful and on day 2 ICD was removed. The patient was discharged on day 3 with pyridostigmine 60mg twice daily and prednisolone 20mg once daily.

Meanwhile histopathological report of the specimen showed Thymoma type B1; Modified Masaoka Staging I-ll; AJCC TNM staging - stage l (T 1 a/b N0 M0) with myasthenia gravis.

On follow up there was improvement in myasthenia gravis symptoms and gradual dose adjustment of neuromuscular blocking drugs was done. Post surgery for 3 months, the patient reported no complications.

DISCUSSION

Thoracoscopic thymectomy was first developed in 1992 with the goal of reducing surgical problems, improving aesthetic outcomes, and increasing patient acceptance. However, many surgeons do not believe

that this method is interchangeable with a traditional transsternal thymectomy which is the gold standard method for Thymoma. There are numerous accounts on thoracoscopic method's effectiveness in the literature, notwithstanding this debate. Over time, thoracoscopic thymectomy has evolved into a minimally invasive, well-tolerated, and time-saving surgery with a low rate of conversion and fewer complications.

We had a stage 1 case (T1 N0 M0). Therefore, we opt for a minimally invasive approach over the standard open technique for complete resection of mass. Since the thymoma mass was left dominant, we are performing three port thymectomy on the left side solely. Three ports were used: 12mm, 5mm, and 5mm. The specimen was delivered using endobag.

CONCLUSION

Thoracoscopic thymectomy, a recent minimally invasive technique for thymoma offers a shorter hospital stay and cosmetically acceptable outcome. However, due to paucity of cases a multicentric study needs to be done to check for effectiveness and outcomes.

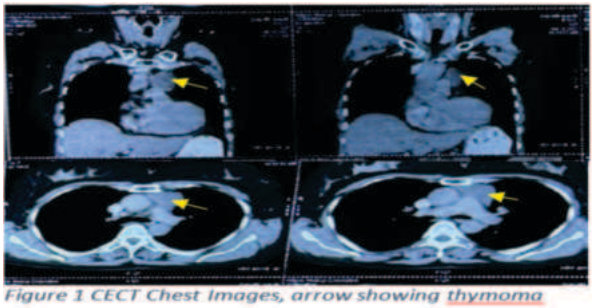

Figure 1 CECT Chest Images, arrow showing thymoma

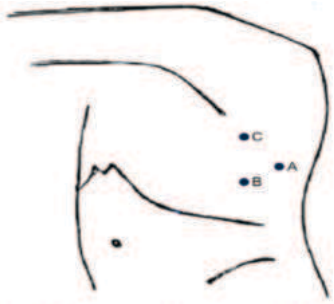

Figure 2 Showing port placement on the left side thorax- A. camera port, B. right hand port, C. left

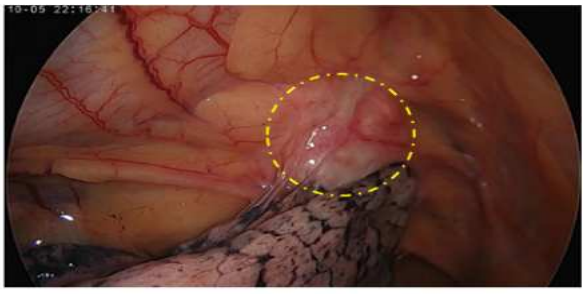

Figure 3 Left dominant Thymoma

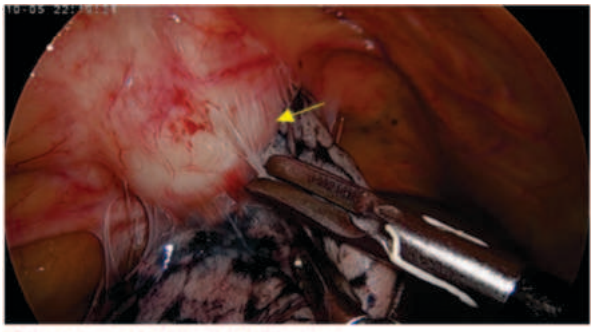

Figure 4a Left pleural adherence

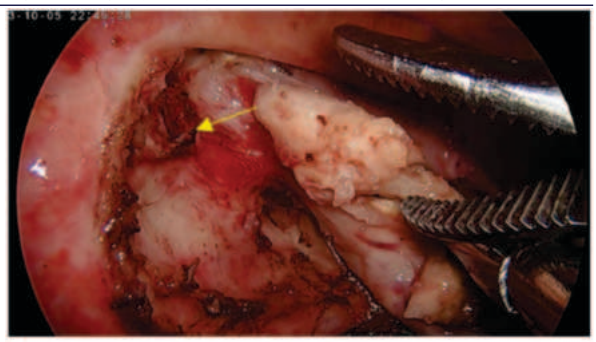

Figure 4b Adherent Pericardium

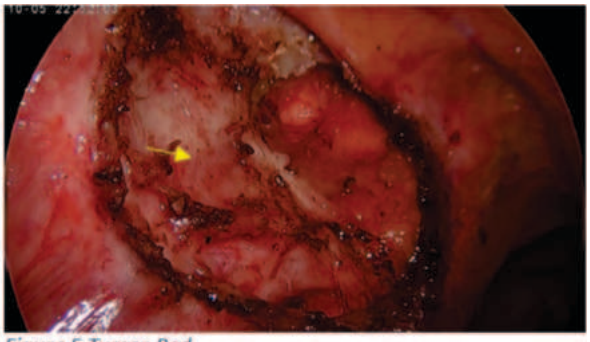

Figure 5 Tumor Bed

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