CASE REPORT

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Anterior mini-thoracotomy approach as minimal access surgery for thymoma: a case report

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ABSTRACT

Background: Thymomas, which account for about half of all mediastinal tumours, are the most common primary neoplasms in the anterior mediastinum. Since surgical excision provides the best chance of long-term survival, it continues to be the cornerstone of thymoma treatment. The anterior mini-thoracotomy approach is another minimally invasive option for thymoma resection that combines the benefits of a smaller incision with good surgical exposure. Therefore, this case report aims to describe a patient case with an anterior mini-thoracotomy approach as minimal access surgery for thymoma.

Case Presentation: A 38-year-old female presented to the Thoracic Surgery Clinic with complaints of chest pain radiating to the back and chronic cough. Chest radiography revealed mediastinal enlargement. Contrast-enhanced computed tomography of the thorax showed a mass in the left anterior mediastinum. The patient underwent resection of the mediastinal tumor through a left anterior mini-thoracotomy approach with a 5 cm incision. The patient was admitted to the intensive care unit for 1 day after drain removal and discharged on postoperative day 3. Pathological examination revealed a type AB thymoma. The final diagnosis was Masaoka Stage IIa with complete resection. Patient discharge with good chest X-Ray after surgery and subsequently underwent adjuvant radiotherapy.

Conclusion: The anterior mini-thoracotomy approach is a minimally invasive surgical option that can be applied for the management of thymoma, with good postoperative recovery outcomes. This technique may represent a promising alternative for patients with thymoma who meet the appropriate criteria.

Keywords: Anterior mini-thoracotomy, surgery, thymoma.
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INTRODUCTION

Thymomas, which account for about half of all mediastinal tumours, are the most common primary neoplasms in the anterior mediastinum.[1] The primary treatment for thymomas is still surgical excision since it provides the highest likelihood of long-term survival.[2] Traditionally, thymectomy has been performed through a median sternotomy, which provides excellent exposure but is associated with significant surgical trauma, pain, and longer recovery times.[2]

As alternatives to traditional open thymectomy, less invasive surgical techniques including robotic-assisted thoracic surgery (RATS) and video-assisted thoracoscopic surgery (VATS) have become more popular in recent years.[3,4] A number of benefits have been demonstrated for these minimally invasive procedures. Benefits include fewer surgical injuries, shorter hospital stays, and quicker recuperation without sacrificing cancer results.[5,6] For individuals with treatable disease, minimally invasive thymectomy might be a better choice because it reduces bleeding and hospital stays while providing long-term disease control on par with open thymectomy.[7]

The anterior mini-thoracotomy approach is another minimally invasive option for thymoma resection that combines the benefits of a smaller incision with good surgical exposure.[8] This technique involves making a small, 4-6 cm incision in the anterior chest wall to access the thymus gland, without the need for rib resection or or wide rib spreading. According to the prebious reports, the anterior mini-thoracotomy procedure has the following benefits: a shorter time of mechanical breathing, a reduced rate of stroke, a shorter duration of critical care and hospitalisation, and a lower transfusion rate.[9]

Therefore, this case report aims to describe a patient case with an anterior mini-thoracotomy approach as minimal access surgery for thymoma.

CASE DESCRIPTION

A 38-year-old female presented to the Thoracic Surgery Clinic with complaints of chest pain radiating to the back and chronic cough. Chest radiography revealed mediastinal enlargement (Figure 1A). Contrast-enhanced computed tomography (CT) of the thorax showed a mass in the left anterior mediastinum, which appeared isodense to muscle, with a well-defined border with the aorta on the medial side and a smooth surface, demonstrating homogeneous contrast enhancement, measuring approximately 6.12 x 6.2 x 7.1 cm. The imaging findings were suggestive of a benign soft tissue mass in the left anterior mediastinum, likely a thymoma (Figure 2).

The patient underwent resection of the

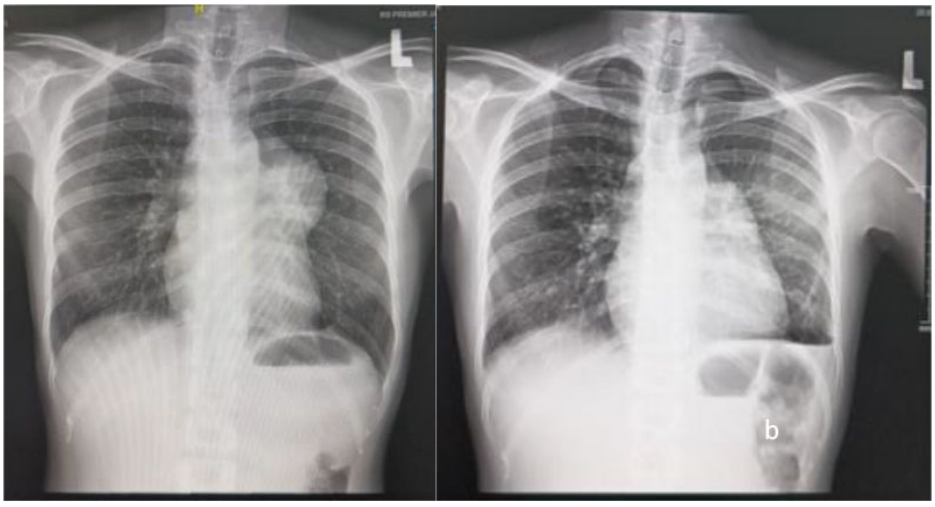

Figure 1. Chest X Ray Before (a) and After (b) Surgery.

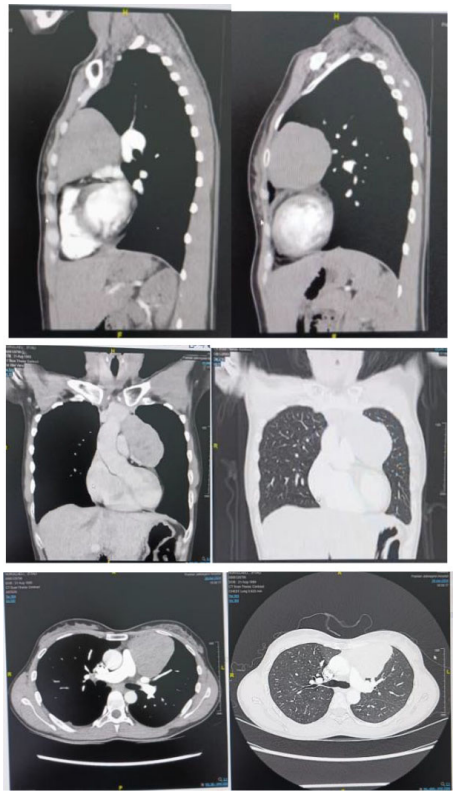

Figure 2. Chest CT Scan Contrast Before Operation.

Figure 3. Left anterior mini-thoracotomy approach with a 5 cm incision.

Figure 4. Complete Resection of Thymoma Tumor Removal.

mediastinal tumor through a left anterior mini-thoracotomy approach with a 5 cm incision. The patient was admitted to the intensive care unit for 1 day after drain removal and discharged on postoperative day 3 (Figure 3). Pathological examination revealed a type AB thymoma. The final diagnosis was Masaoka Stage IIa with complete resection (Figure 4). Patient discharge with good chest X-Ray after surgery (Figure 1B) and subsequently underwent adjuvant radiotherapy.

DISCUSSION

The thymus's epithelial cells are the source of thymomas, a kind of benign tumour. While thymoma is more commonly associated with patients with myasthenia gravis, cases of thymoma can also be found in young women without myasthenia gravis symptoms. Young women with asymptomatic thymomas are rather uncommon, but they should be taken into account when making a differential diagnosis for an anterior mediastinal tumour. When it comes to treating thymoma in this demographic, minimally invasive surgical techniques like an anterior mini-thoracotomy can be a viable choice because of their aesthetic benefits, quicker recovery times, and fewer risks when compared to traditional open surgery. The effectiveness and safety of minimally invasive techniques in cases of asymptomatic thymoma without myasthenia gravis, however, require more investigation.[3,4]

Clinical professionals work to strike a compromise between minimising surgical trauma, maximising patient recovery, and maintaining oncological completeness while managing thymomas surgically. In recent years, the adoption of minimally invasive approaches, such as VATS and RATS, has gained traction as viable alternatives to traditional open thymectomy.[3–6] This case study contributes to the expanding corpus of research on the anterior mini-thoracotomy procedure

as an additional minimally invasive thymoma resection option.[3–6]

The anterior mini-thoracotomy approach offers several advantages compared to open thymectomy. Firstly, the smaller 4-6 cm incision can lead to reduced surgical trauma, improved cosmetic outcomes, and faster postoperative recovery, without compromising the ability to achieve complete tumor resection. This is evidenced by the patient's short intensive care unit stay and hospital discharge on postoperative day 3 in the present case.

Additionally, the anterior mini-thoracotomy avoids the need for rib resection or wide rib spreading, which can be associated with increased postoperative pain and respiratory complications. This technique leverages the familiarity of thoracic surgeons with the anterior thoracotomy approach, potentially facilitating the learning curve compared to more technically demanding minimally invasive techniques, such as VATS and RATS.[9,10]

However, it is important to note that the anterior mini-thoracotomy approach may provide a more limited working space and visibility compared to VATS and RATS, which offer enhanced dexterity and three-dimensional visualization within the thoracic cavity. A surgeon's experience and resources, as well as the anatomy and tumour features of each patient, should all be taken into consideration when choosing a surgical strategy.[11,12]

Futhermore, the anterior mini-thoracotomy represents a viable minimally invasive option for the resection of thymoma, offering the benefits of reduced surgical trauma and faster recovery while leveraging the familiarity of thoracic surgeons with the anterior thoracotomy technique. The choice of approach should be based on the experience of the surgeon and the patient, and this strategy should be taken into consideration as part of the arsenal of minimally invasive surgical approaches for the management of thymoma.

Advantages of the anterior mini-thoracotomy approach are: (1) smaller incision. The anterior mini-thoracotomy typically involves a smaller incision, around 4-6 cm, compared to the larger incisions required for open thymectomy. This can lead to reduced surgical trauma and improved cosmetic outcomes. (2) Excellent exposure. Despite the smaller incision, the anterior approach provides good surgical exposure to the anterior mediastinum and thymus gland, allowing for safe and thorough tumor resection. (3) Avoidance of rib resection. Unlike some other minimally invasive techniques, the anterior mini-thoracotomy does not require rib resection or wide rib spreading, which can further reduce surgical morbidity. (4) Familiarity for thoracic surgeons. The anterior thoracotomy approach is a well-established surgical technique that many thoracic surgeons are already comfortable with, facilitating the learning curve.

Considerations Compared to VATS and RATS are: (1) Visibility and dexterity. VATS and RATS approaches may offer improved visualization and dexterity within the thoracic cavity compared to the smaller working space of the anterior mini-thoracotomy. (2) Surgical experience. VATS and RATS require specific training and expertise in minimally invasive thoracic surgery, which may not be as readily available as the anterior mini-thoracotomy approach. (3) Cost. The acquisition and maintenance costs of VATS and RATS systems can be higher than the equipment required for the anterior mini-thoracotomy approach.

The anterior mini-thoracotomy approach for thymoma resection represents a minimally invasive alternative that leverages the familiarity of thoracic surgeons with the anterior thoracotomy technique, while offering the benefits of a smaller incision and reduced surgical morbidity. However, VATS and RATS may provide enhanced visualization and dexterity in selected cases, depending on the surgeon's experience and available resources.[12–14] In this case report, we describe our experience with the use of the anterior mini-thoracotomy approach for the surgical management of a patient with thymoma.

The limitations of this case report include its retrospective nature and the lack of a comparative analysis with other minimally invasive techniques or open thymectomy. Recall bias may result from this case report since it is infrequently mentioned, making it easier for patients and doctors to recall odd results or presentations. Recall bias, when patients and doctors more readily recall atypical outcomes or presentations, might result from case reports' weaknesses. To further clarify the oncological and functional results of the anterior mini-thoracotomy method, larger patient cohorts and longer-term follow-up are required in future research.

CONCLUSION

The anterior mini-thoracotomy approach is a minimally invasive surgical option that can be applied for the management of thymoma, with good postoperative recovery outcomes. This technique may represent a promising alternative for patients with thymoma who meet the appropriate criteria. Further studies are needed with different study designs and larger samples for future development of this topic.

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DISCLOSURES

Ethical Considerations

None.

Conflict of Interest

The authors have no conflict of interest.

Author Contribution

From researching topics, gathering material, conducting factual investigations, and revising the paper, each author makes a comparable contribution to the thought process until the publication of the paper details the consideration.

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