Respir Case Rep 2025;14(3):98-101 DOI: 10.5505/respircase.2025.53533

A Case of Giant Mediastinal Teratoma Occupying the Anterior Mediastinum

Anterior Mediasteni Kaplayan Dev Mediastinal Teratom Olgusu

Tayfun Kermenli[1], Cebrail Azar[2], Tamer İmamoğlu[3]

Abstract

Mature cystic teratomas are rare tumors of the anterior mediastinum that may, in rare cases, contain pancreatic cells and can reach considerable sizes, depending on their structure. The currently preferred treat-ment for benign mediastinal tumors is video-assisted thoracoscopic surgery (VATS). We present here a case of a giant mediastinal mature cystic teratoma with a pathological finding of pancreatic islets that was success-fully treated with bilateral VATS. Our findings support the use of VATS in such cases, regardless of size.

Keywords: *Mature Cystic Teratomas, Mediastinal Tumors, Anterior Mediastinum.*

Öz

Matür kistik teratomlar, anterior mediastenin nadir tümörleridir. Nadiren pankreas hücreleri içerebilirler. Bazen, yapılarına bağlı olarak, dev boyutlara ulaşabilirler. Videotorakoskopi cerrahisi artık bu iyi huylu mediastinal tümörlerde yaygın olarak kullanılmaktadır. Olgu sunumumuzda, bilateral videotorakoskopik cerrahi ile tedavi edilen dev mediastinal olgun kistik teratom olgusunu sunduk. Hastanın patolojik sonucunun pankreas adacıkları içermesi olguyu daha da ilginç hale getiriyor. Videotorakoskopik cerrahinin bu tür olgularda boyuttan bağımsız olarak başarıyla uygulanabileceğine inanıyoruz.

Anahtar Kelimeler: *Matür Kistik Teratom, Mediastinal Tümörler, Ön Mediasten.*

[1]Department of Thoracic Surgery, Elazığ Medikal Hospital, Elazığ, Türkiye
[2]Department of Thoracic Surgery, Elazığ Fethi Sekin City Hospital, Elazığ, Türkiye
[3]Ahenk Pathology Laboratory, Elazığ, Türkiye

[1]Elazığ Medikal Hospital Hastanesi, Göğüs Cerrahisi Servisi, Elazığ
[2]Elazığ Fethi Sekin Şehir Hastanesi, Göğüs Cerrahisi Servisi, Elazığ
[3]Ahenk Patoloji Laboratuvarı, Elazığ

Submitted (Başvuru tarihi): 03.02.2025 *Accepted (Kabul tarihi):* 27.05.2025

Correspondence (İletişim): Tayfun Kermenli, Department of Thoracic Surgery, Elazığ Medikal Hospital, Elazığ, Türkiye

e-mail: tayfunkermenli@gmail.com

Mature cystic teratomas are rare mediastinal tu-mors that usually develop in the anterior mediasti-num, but may also occur in the posterior medias-tinum, and account for 3–12% of all mediastinal tumors (1). The most common extra-gonadal loca-tion of germ cell tumors is the anterior mediasti-num, accounting for 15% of all anterior mediasti-nal tumors in adults (2). Most tumors of this kind are benign and slow-growing, and so are most commonly found incidentally (3). Their low malig-nant potential makes surgical resection the treat-ment of choice, providing excellent long-term disease-free survival (3). We present here a case of a giant mature cystic teratoma that was treat-ed with VATS and was completely resected.

CASE

A 23-year-old male patient was referred to our unit after a two-view chest X-ray performed at another center to investigate a cough revealed a giant mediastinal mass (Figure 1). The patient underwent a contrast-enhanced thoracic CT scan, revealing a giant cystic mass with an axial length of approximately 19 cm in the anterior mediastinum (Figure 2). The patient's medical history and physical examination results were unremarkable. Surgical excision was proposed, and after giving written consent, the patient was prepared for video-thoracoscopic resection. Following left double lumen intubation, the patient was placed in the left lateral 45-degree position, and the thorax was entered via an incision between the right 6th and 8th intercostal spaces (ICS) along the anterior axillary line. The mass was visualized with a 30-degree optical aid (Figure 3). No invasion of the mediastinum by the mass was noted, and the cyst was subsequently released from the right mediastinal surface and perforated using an energy device.

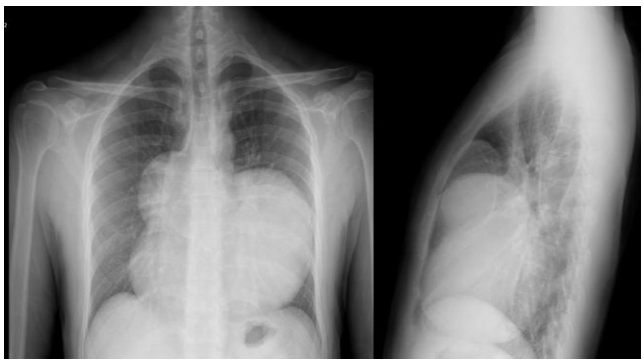

Figure 1: PA and lateral chest radiograph image of mature cystic teratoma

The cystic content was aspirated and the cyst volume was reduced. The patient was then placed in the right lateral 45-degree position, and incisions were made for the left hemithorax through the same intercostal spaces used for the right side. The mediastinal pleura was dissected, and the mass was explored and separated from the mediastinum. The incision was then widened and a cystic mass measuring approximately 19 cm was removed from the thoracic cavity with the help of a thoracoscopic specimen bag (Figure 4), after which, a hemovac drain was placed in the mediastinum. The procedure was completed without complications, and the patient was discharged on the 2nd postoperative day. The mass was identified as a mature cystic teratoma in a pathological examination, which also revealed pancreatic islets and cystic structures within the tumor tissue (Figure 5). No problems were reported at the 6th postoperative month follow-up.

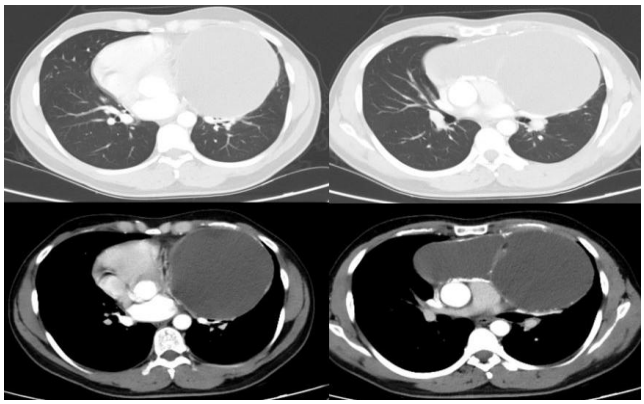

Figure 2: Thoracic CT image of mature cystic teratoma

DISCUSSION

Mature cystic teratoma is the most common type of mediastinal germ cell tumor, and is a benign tumor that does not spread through neoplastic metastasis. The etiology of mediastinal teratomas has yet to be fully explained, but two embryological theories have been proposed. The first refers to an abnormal differentiation of exocrine pancreatic tissue occurring as a result of the settlement of pluripotent epithelial cells from the ventral primary foregut and heteroplastic tissue in the mediastinum, while the second refers to the potential migration or localization of cells in the pancreas to different regions. A similar case to ours of mature cystic teratoma containing pancreatic islets was reported previously by Cansever et al. (4). Of particular significance in the presented case is the pathological identification of pancreatic islets within the giant 19 cm mediastinal mass removed from the patient, and the use of video-assisted thoracoscopic surgery (VATS) in its removal. VATS is used for many different surgical procedures, and is today frequently considered in cases of teratomas, cystic lesions of the mediastinum and other mediastinal lesions.

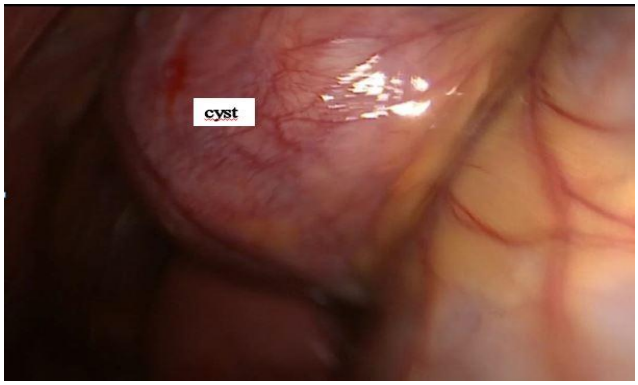

Figure 3: Perioperative view of the cyst

There have been several reports to date describing the use of VATS and RATS for the management of mediastinal masses (5,6). Ramcharran et al. (5) described the use of robot-assisted thoracoscopic surgery (RATS) in the successful excision of a mediastinal teratoma in a 43-year-old female patient. Tian et al. (7), on the other hand, reported that in a large case series of 108 mediastinal teratoma cases, 22 patients underwent surgery with VATS, while around 80 underwent thoracotomy. A simple neck collar incision was made in one case, while five cases underwent median thoracotomy combined with neck incision. Similar cases to ours involving giant mediastinal teratomas have also been presented in the literature (8).

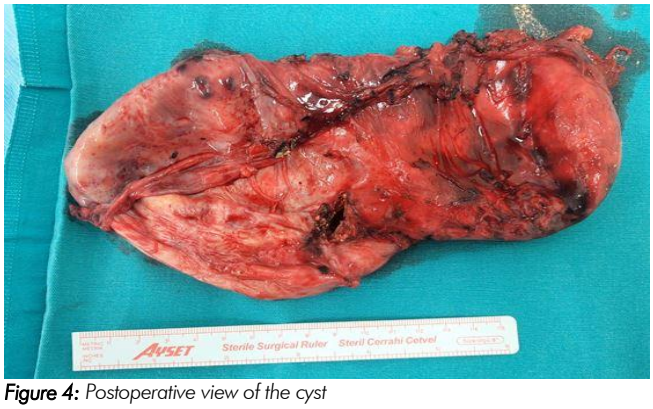

Figure 4: Postoperative view of the cyst

Zhang et al. (1) reported the successful excision of a giant mediastinal teratoma measuring 129 mm using the VATS method in a case with a ruptured teratoma resembling an encapsulated empyema. In another study, Zúñiga-Garza et al. (9) described a case in which VATS was used to excise a giant 15 cm mediastinal mature cystic teratoma that was found on gross pathological examination to have a wall structure composed of epidermis and dermis with some hair follicles. A subsequent microscopic examination of the mass revealed mucosecretory glands containing columnar epithelium, serous acini and ducts lined by columnar epithelium. Luo et al. (10), on the other hand, presented a case of a giant mediastinal teratoma located in the right middle and upper mediastinum that was compressing the deep section of the azygos vein arch and the superior vena cava. In this case, the tumor tissue was destroyed due to the presence of vascular adhesions that prevented its removal en bloc. In our case, there was no invasion of any vascular structure, allowing the tumor tissue to be removed en bloc from both the right and left pleural spaces using VATS. Carcinoids are rarely observed in pathological examinations of mediastinal mature cystic teratomas. Ohno et al. (11) reported a rare case in which a carcinoid tumor, identified as originating from a mature cystic teratoma of the mediastinum in a 30-year-old patient who presented with chest pain, was completely resected with VATS. A subsequent histological examination revealed a 3 mm carcinoid component in the capsule with no pathological necrosis, a MIB-1 index of 1%.

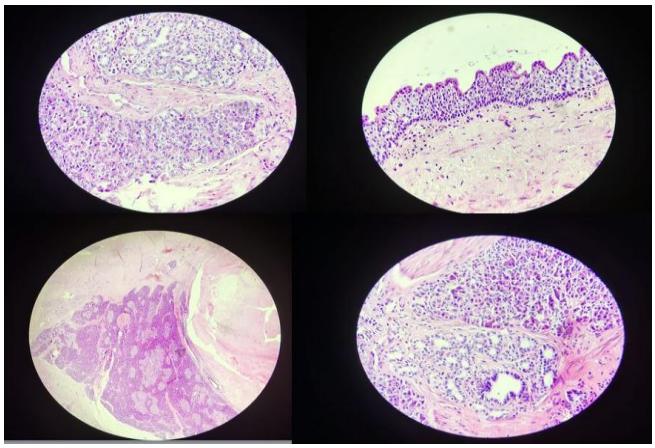

Figure 5: Postoperative pathological images of mature cystic teratoma (H&E X20)

CONCLUSION

We present this case in support of the use of VATS for the excision of giant mature cystic teratomas, regardless of the size of the mass. Of particular note in the presented case is the identification of tissues containing pancreatic islets. We believe that VATS should be considered a safe treatment option in cases of benign mediastinal masses.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - T.K., C.A.; Planning and Design - T.K.; Supervision - T.K., C.A., T.İ.; Funding - T.K., C.A., T.İ.; Materials - T.K., T.İ.; Data Collection and/or Processing - T.K., C.A.; Analysis and/or Interpretation - T.K., C.A., T.İ.; Literature Review - T.K.; Writing - T.K., C.A., T.İ.; Critical Review - T.K., C.A., T.İ.

REFERENCES

1. Zhang J, Zhu X, Jiang M, Lv Y. A Ruptured Giant Mediastinal Mature Teratoma Mimicking an Encapsulated Empyema. Interact Cardiovasc Thorac Surg 2022; 34:159-61. [CrossRef]
2. Tarladaçalışır T. A Mature Cystic Teratoma Located in the Posterior Mediastinum. Turk Gogus Kalp Dama 2014; 22:450-3.
3. El-Zaatari ZM, Ro JY. Mediastinal Germ Cell Tumors: A Review and Update on Pathologic, Clinical, and Molecular Features. Adv Anat Pathol 2021; 28:335-50. [CrossRef]
4. Cansever L, Kocatürk Celalettin İ, Aydoğmuş Ü, Ürer N, Yılmazbayhan D, Bedirhan AM. Mature Cystic Teratoma, Ectopic Mediastinal Pancreas: A Case Report. Turkish J Thorac Cardiovasc Surg 2010; 18: 71-73.
5. Ramcharran H, Wallen J. Robotic-Assisted Thoracoscopic Resection of Anterior Mediastinal Cystic Teratoma: A Case Report and Literature Review. J Cardiothorac Surg 2022; 17: 67. [CrossRef]
6. Pulle MV, Bhan A, Bishnoi S, Asaf BB, Puri HV, Bangeria S, et al. Surgical Outcomes in Mediastinal Mature Teratoma. Indian J Thorac Cardiovasc Surg 2025; 41:541-51. [CrossRef]
7. Tian Z, Liu H, Li S, Chen Y, Ma D, Han Z, Huang C. Surgical Treatment of Benign Mediastinal Teratoma: Summary of Experience of 108 Cases. J Cardiothorac Surg 2020; 15:36. [CrossRef]
8. Xiao-Dong L, Li Z, Xiu-Mei D, Ming-Bo T, Xiao-Cong W. Identification of A Giant Mediastinal Teratoma by Echocardiography: A Case Report. J Clin Ultrasound 2019; 47:380-3. [CrossRef]
9. Zúñiga-Garza E, Aldape-Mora A, Chávez-Fernández DA, Rodríguez-Osuna JA, Onofre-Borja M, López-Saucedo RA. Giant Mature Cystic Teratoma of the Mediastinum Resected by VATS: A Case Report. J Surg Case Rep 2021; 10:rjab474. [CrossRef]
10. Luo Q, Qu W, Chen C, Liu Y, Wei Y, Song Y, et al. Compression of Superior Vena Cava and Azygos Vein by a Giant Mediastinal Mature Cystic Teratoma: A Case Report. Transl Cancer Res 2021; 10:4577-81. [CrossRef]
11. Ohno N, Yamada E, Muro M. Mature Cystic Teratoma of the Mediastinum with Carcinoid Component. Kyobu Geka 2020; 73:671-4.