Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Cardiothoracic Surgery

Case Report: From Neck to Chest, a Surgical Quest to Address Complex Pericardial Cysts and Compressive Threats

Amyrul Azman[1*], Er CY[1], S Karuppiah[1]

[1]Department of Cardiothoracic Surgery, Hospital Sultanah Aminah, Johor Bahru, Malaysia

DOI: https://doi.org/10.36347/sjmcr.2025.v13i04.017 | **Received:** 10.03.2025 | **Accepted:** 15.04.2025 | **Published:** 19.04.2025

***Corresponding author:** Amyrul Azman
Department of Cardiothoracic Surgery, Hospital Sultanah Aminah, Johor Bahru, Malaysia

Abstract **Case Report**

Introduction: Pericardial cysts are rare and often asymptomatic. Hence may exist without its existence being known. However, when they are large enough and/or when they coexist with other conditions that cause compressive symptoms such as goitres, they can pose significant challenges. We present a case report of a 61-year-old lady with multiple co-morbidities and recurrent multinodular goitre (MNG) post-total thyroidectomy who had an incidental finding of a pericardial cyst with concurrent tracheal stenosis. ***Discussion:*** CT thorax revealed a large pericardial cyst at the right costophrenic angle and abutting the right heart border. The presence of both the pericardial cyst and the multinodular goitre contributing to airway compression necessitated a careful surgical planning involving multidisciplinary teams including cardiothoracic surgery, anaesthesiology & intensive care as well as breast & endocrine surgical team. The patient underwent a right video-assisted thoracoscopic surgery (VATS) pericardial cyst excision following a successful thyroidectomy with intraoperative neurophysiological monitoring (IONM) to relieve the airway compression by the goitre. ***Conclusion:*** The case highlights the successful excision of a large pericardial cyst with co-existing MNG with airway compression that required technical precision as well as interdisciplinary collaboration.

Keywords: Pericardial Cyst, Multinodular Goitre (MNG), Airway Compression, Multidisciplinary Approach.

INTRODUCTION

Pericardial cysts are rare and often asymptomatic. Hence it may be present without its existence being known. However, when they are large enough and/or when they coexist with other conditions that cause compressive symptoms such as goitres, they can pose significant challenges [1]. We present a case report of a 61-year-old lady with multiple co-morbidities and recurrent multinodular goitre (MNG)- post-total thyroidectomy, who had an incidental finding of a pericardial cyst.

CASE PRESENTATION

A 61-year-old lady with hypertension, bronchial asthma & a history of total thyroidectomy for MNG more than 40 years ago presented to the hospital with compressive symptoms where further imaging revealed a complex recurrent multinodular goitre and a substantial pericardial cyst, both contributing to obstructive symptoms.

Initial imaging in 2020 revealed a significant multinodular goitre with large cystic nodules in both thyroid lobes and a sizable pericardial cyst (7.3 x 8.6 x 9.6 cm) at the right costophrenic angle. Surgical planning was complex due to the airway compression from the goitre, necessitating multidisciplinary team (MDT) discussions on sequential management. Reassessment CECT of the neck and thorax in 2024 showed stable findings, with the pericardial cyst and goitre size largely unchanged. Imaging also identified tracheal stenosis with the narrowest segment measuring 1.3x 0.4 cm (AP x W) at the C7 level (no endoluminal lesion was seen). Echocardiography pre-operatively showed good LV function with an ejection fraction of 64% with normal chamber sizes.

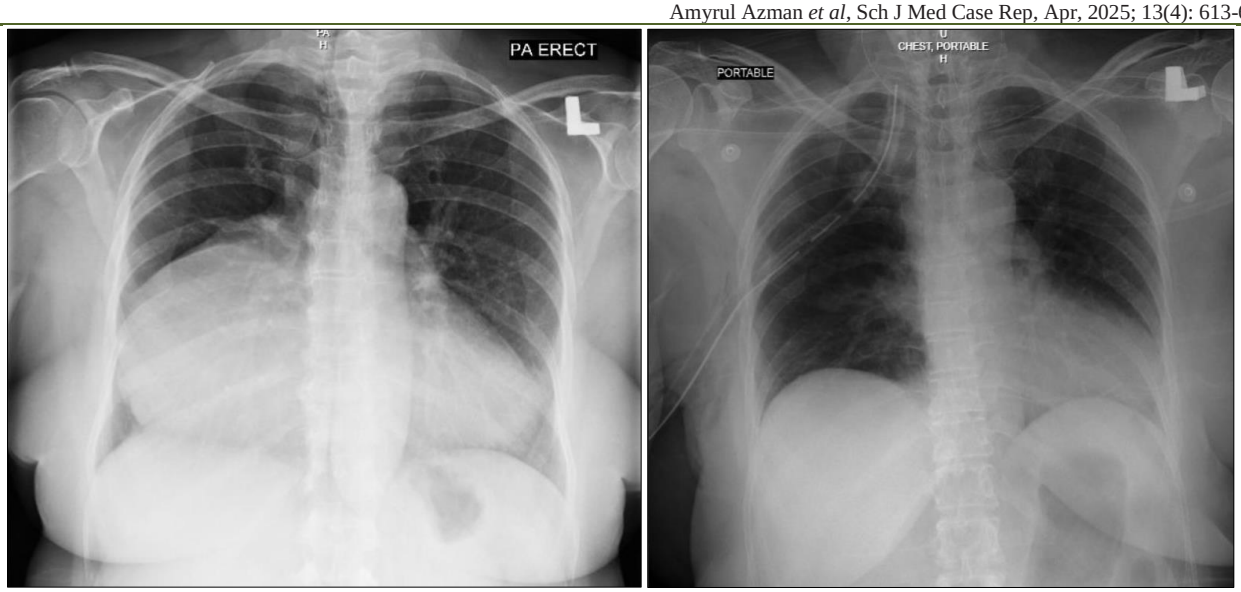

Figure 1:
Left Chest X-ray: There is a well-defined, right-sided mediastinal mass seen adjacent to the heart border.
Right Chest X-ray: Resolution of mediastinal mass with expanded lung fields post operatively.

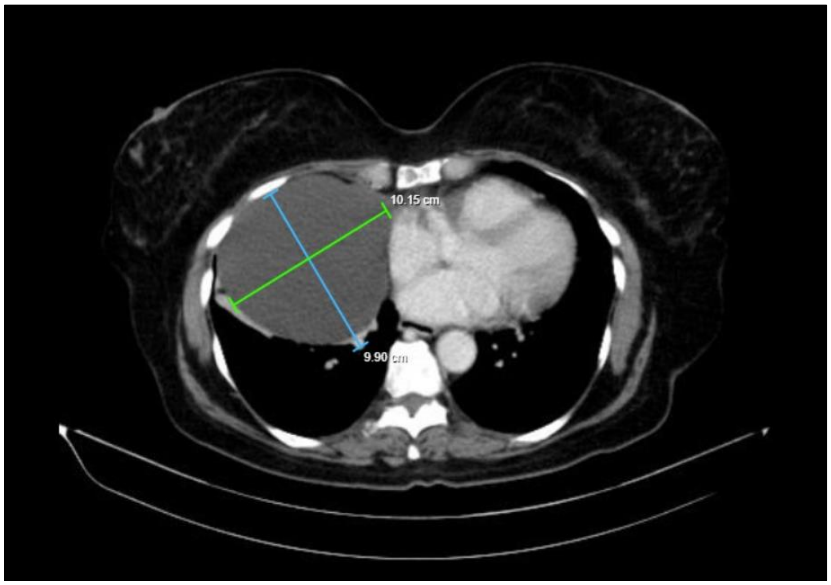

Figure 2: CT Thorax (Axial View): Confirms the presence of a large pericardial cyst, measuring approximately 10.15 cm x 9.90 cm. The cyst is adjacent to the right heart border, compressing the adjacent structures.

Surgical Course

The patient underwent a right uniportal VATS under general anaesthesia with bronchial blocker isolating the right lung. Thoracoscopy performed through right 5th intercostal space access to excise the pericardial cyst, which was found to contain 750 ml of clear fluid. This was followed by a secondary thyroidectomy with intraoperative nerve monitoring (IONM) to safeguard the recurrent laryngeal nerves and preserve parathyroid function. Chest tube size 32Fr was inserted through the VATS incision and left for 72 hours. Both procedures were successful. The patient was hemodynamically stable post-operatively and was then discharged well with no more compressive symptoms. Histopathological examination (HPE) of pericardial cyst wall showed fibrocollagenous cyst wall lined ciliated cuboidal to columnar epithelium, outer surface lined by mesothelial cells & negative for malignancy.

Figure 3: 1: A Video Assisted Thoracoscopic Surgery (VATS) image of the pericardial cyst prior to excision.

DISCUSSION

Most pericardial cysts presenting as mediastinal opacity are detected incidentally. The incidence of a pericardial cyst is 1 in 100,000 populations [2]. Their typical location is the right cardiophrenic angle, but they can be located at other sites. They are normally cystic in radiologic appearance but can be exceptionally solid too [3]. Approximately one fifth of all mediastinal masses are primary mediastinal cysts. They can originate from pleura, pericardium, tracheobronchial tree, gastrointestinal tract, neurogenic tissue, thymus gland or lymphoid tissue [4]. Differentials for any mediastinal masses are wide which should be divided systematically based on the anatomical origin - anterior, middle and posterior mediastinum. It includes bronchial cyst, localised pericardial effusions, teratoma, neuroenteric cyst, lymphangioma, congenital cysts of primitive foregut origin (bronchogenic cyst, gastroenteric cyst, and esophageal duplication cyst).

Embryologically, pericardial cyst is thought to be due to the failure of an embryological ventral diverticulum to fuse [5]. Clinically, most of the cases (50–75%) are asymptomatic and are diagnosed incidentally during radiological investigations ordered as routine investigation for medical illnesses. However, symptoms may appear due to compression of the nearby structures, such as heart, great vessels, oesophagus and the tracheobronchial tree due to its capability of increasing in size over the years [1]. Sometimes, it may cause disastrous complications such as compressive symptoms to surrounding structures - heart & lungs, inflammation which may lead to pericarditis, cardiac tamponade due to rupture of pericardial sac and sudden cardiac death.

The management of pericardial cysts is highly individualized, guided by the patient's clinical presentation, pre-existing comorbid conditions, and the anatomical characteristics of the cyst.. This case demonstrates the complex considerations that are necessary in treating co-existing compressive neck and mediastinal pathologies, specifically recurrent multinodular goitre with airway involvement and a large pericardial cyst. These conditions, especially in a patient with prior total thyroidectomy, requires precise management with interdisciplinary collaboration, which includes cardiothoracic, endocrine and anesthesiology teams. Various imaging modalities are available to confirm the diagnosis of pericardial cysts, with contrast-enhanced computed tomography (CT) and cardiac magnetic resonance imaging (MRI) being the most effective. Cardiac CT and MRI provide highly detailed anatomical characterization of pericardial lesions including the involvement of surrounding structures. On contrast-enhanced CT, pericardial cysts typically appear as well-defined, thin-walled, homogeneous, and oval-shaped fluid-filled masses [6].

Prioritizing airway patency explains the principle behind addressing the goitre in which a secondary thyroidectomy was performed as it was causing significant tracheal stenosis and deviation. Literature suggests a staged approach in cases of multinodular goitre with airway compromise, to ensure patient safety and optimal outcomes. In patients with tracheobronchial obstruction undergoing GA, the technique of induction and intubation depends on the site and extent of tracheobronchial obstruction. This can include awake fiberoptic intubation, inhalational induction, and routine intravenous induction [7]. In cases of a secondary thyroidectomy, altered anatomy must be considered, hence it is crucial to use advanced intraoperative nerve monitoring (IONM). This is to minimize the risk of recurrent laryngeal nerve damage and hypoparathyroidism, to enhance post-operative recovery and reduce long-term complications.

In our case, the single-port approach provided optimal visualization and precise control of mediastinal structures and the right lung, facilitating safe and complete excision of the cyst. Uniportal VATS possess

many benefits including: the involvement of only one intercostal space, no spreading of ribs, less postoperative pain, and better aesthetic results, when compared with other types of approaches [8]. The cyst's large size (over 9 cm) and location adjacent to critical mediastinal structures presented unique challenges, including mass effects, which contributed to the compressive symptoms and cardiopulmonary compromise. Morbidity is minimized with VATS, especially for patients with larger cysts as it allows for efficient fluid drainage and cyst wall resection without extensive thoracotomy, hence reducing recovery time. The single-port approach demonstrates its safety and advantages through minimal intraoperative blood loss, absence of intraoperative and postoperative complications, reduced early postoperative pain, limited pulmonary function impairment, and superior cosmetic outcomes [8].

This case showed the importance of individualized surgical planning, which includes comprehensive preoperative imaging and regular follow-ups to assess progression and indication for surgical management. Through the lens of this patient's complex presentation, the report underscores how a tailored, phased approach to treatment—supported by multi-specialty team coordination—can effectively manage compressive symptoms from extensive masses in the neck and mediastinum.

The case also highlights the efficacy of advanced surgical techniques such as IONM and VATS, reflecting the benefits of minimally invasive approaches in achieving favorable outcomes. Ultimately, this case emphasises the need for strategic planning in complex, multi-faceted surgical cases. It offers insight into the handling of large, symptomatic pericardial cysts and airway-compromising goitre, advocating for individualized, team-based care as the cornerstone of successful patient outcome.

CONCLUSION

The case highlights the successful excision of a large pericardial cyst with co-existing MNG with airway compression that required technical precision as well as interdisciplinary collaboration, using staged surgical approach and minimally invasive method with VATS.

REFERENCES

1. Meredith, A. (2023, January 4). Pericardial cyst. StatPearls [Internet]. https://www.ncbi.nlm.nih.gov/books/NBK562287/
2. Kar, S. K., & Ganguly, T. (2017). Current concepts of diagnosis and management of pericardial cysts. Indian Heart Journal, 69(3), 364–370. https://doi.org/10.1016/j.ihj.2017.02.021.
3. Weder, W., Klotz, H. P., Segesser, L. von, & Largiadèr, F. (1994). Thoracoscopic resection of a pericardial cyst: A case report. The Journal of Thoracic and Cardiovascular Surgery, 107(1), 313–314. https://doi.org/10.1016/s0022-5223(94)70490-2.
4. Kaul, P., Javangula, K., & Farook, S. A. (2008, May 21). Massive benign pericardial cyst presenting with simultaneous superior vena cava and middle lobe syndromes - journal of cardiothoracic surgery. BioMed Central. https://cardiothoracicsurgery.biomedcentral.com/articles/10.1186/1749-8090-3-32.
5. Lillie, W. I., McDonald, J. R., & Clagett, O. T. (1950). Pericardial celomic cysts and pericardial diverticula. Journal of Thoracic Surgery, 20(3), 494–504. https://doi.org/10.1016/s0096-5588(20)31588-9.
6. Patel, S., Hajmedi, P., & Fischbein, J. (2015). Common symptoms with rare entity: A giant pericardial cyst. The American Journal of Medicine, 128(10). https://doi.org/10.1016/j.amjmed.2015.05.043.
7. Ku, C. M. (2011). Anesthesia for patients with Mediastinal Masses. Principles and Practice of Anesthesia for Thoracic Surgery, 201–210. https://doi.org/10.1007/978-1-4419-0184-2_14.
8. Amore, D., Mazzella, A., Izzo, A., Cennamo, A., & Perrotta, F. (2016). Management of pericardial cyst in the mediastinum: A single-port approach. Jornal Brasileiro de Pneumologia, 42(4), 302–303. https://doi.org/10.1590/s1806-37562016000000134.