**Case report**

**The Importance of Diagnosing Emergency Situations in Mediastinal Hematoma Following Superficial Blunt Trauma**

**Abstract**

**Introduction:**
Mediastinal hematomas typically result from high-energy trauma or vascular injuries and often require urgent diagnosis and intervention. However, their occurrence following minor, superficial blunt trauma without skeletal or major vascular damage is exceptionally rare and can pose diagnostic challenges.

**Case Presentation:**
The case of a 22-year-old male construction worker who presented to the emergency department with chest pain following a minor blunt trauma to the anterior chest wall was reported. Physical examination and vital signs were unremarkable except for mild erythema over the sternum. Initial radiography was normal, but thoracic CT revealed a 32×22 mm anterior mediastinal hematoma. The patient was hemodynamically stable and managed conservatively with bed rest, analgesics, and close monitoring. He was discharged on the fifth day after clinical improvement and radiological regression of the hematoma.

**Discussion:**
This case underscores the importance of maintaining a high index of suspicion in seemingly benign thoracic trauma. Early CT imaging was critical in detecting the hematoma, preventing diagnostic delay. Conservative management was effective due to the absence of active bleeding or compression symptoms.

**Conclusion:**
Superficial blunt thoracic trauma may conceal serious complications like mediastinal hematoma. Prompt imaging and careful evaluation are vital for early diagnosis and optimal management, even when clinical signs appear minimal.

**Keywords:** Mediastinal hematoma, blunt chest trauma, computed tomography, conservative treatment, emergency diagnosis

**Introduction**

Mediastinal hematomas represent clinical conditions which most often develop as a consequence of high-energy trauma or surgical/non-traumatic vessel ruptures requiring immediate recognition and treatment. Mediastinal hematoma has been reported in association with cardiac tamponade in multiple settings, including nonaortic mediastinal haemorrhage from cervical spine fractures, aortic and carotid aneurysmal rupture, mediastinal penetrating trauma, and cardiac penetrating trauma (Rodgers-Fischl et al., 2021).

It is a rare but severe complication of neuro-interventional procedures involving transradial access. Excessive manipulation leading to vascular perforation can occur when guidewires or catheters pass through the brachial, subclavian, and brachiocephalic arteries (Ma et al., 2024; Ibrahim et al., 2022). Large vascular structures such as the aorta, vena cava and brachiocephalic arteries can be injured, resulting in these hematomas, and the condition may be linked with sternum or thoracic vertebral fractures (Hoshika et al., 2022). It shares some overlapping causes with cervical hematoma (Yamada et al., 2025). Previous case reports have demonstrated that mediastinal hematomas may occur even after seemingly minor trauma, such as a fall from standing height or low-impact traffic accidents, highlighting the need for careful evaluation despite the absence of external injuries (1,2). Early imaging and a high index of clinical suspicion are crucial in diagnosing such hematomas. However, failure to detect the condition may result in severe consequences, including cardiac tamponade, airway compression, or hemothorax, all of which can be fatal. This article describes a rare case of a mediastinal hematoma that occurred after a blunt trauma to the anterior chest wall and had no association with any sternal or major vascular injuries, and was managed conservatively. The patient was a young adult male who was brought to the emergency department with mild symptoms.

**Case Presentation**

**Patient Information and Medical History:**

A 22-year-old male came to the emergency department with chest pain as the main complaint. The patient was a construction worker with no chronic diseases and no family history of cardiovascular diseases or smoking, or alcohol use.

**History of Present Illness:**

The patient stated that he developed blunt chest pain 1.5 hours before admission after a metal profile he was carrying fell and hit his anterior chest. The pain was dull in nature, non-localised, and non-radiating, and was not affected by respiration. He did not have shortness of breath, cough, palpitations, syncope or loss of consciousness.

**Physical Examination Findings:**

**Vital signs on admission were stable:**

 • Blood pressure: 122/78 mmHg

• Heart rate: 84 bpm

 • Respiratory rate: 18 breaths/min

• Temperature: 36.7°C

* Oxygen saturation: 98% on room air

On physical examination, mild superficial erythema was observed over the midline of the sternum, but no haematoma, swelling, crepitus or guarding was present. No other sounds or murmurs were heard during cardiac auscultation. Lung sounds were normal bilaterally. Abdominal and neurological examinations were unremarkable.

**Laboratory and Imaging Findings:**

• Haemoglobin: 14.2 g/dL

• White blood cell count: 8,400/mm³

 • Platelets: 243,000/mm³

• Troponin I: Negative

 • C-reactive protein: Within normal limits

• ECG: Normal sinus rhythm

Chest radiography was unremarkable. Nonetheless, on account of the persistence of the chest pain, thoracic CT was undertaken. CT showed a heterogeneous-density fluid collection measuring approximately 32×22 mm in the anterior mediastinum, posterior to the sternum, compatible with haematoma. The contours of the bony structures were intact. No signs of dissection or rupture of the major vascular structures were identified. The lung fields appeared normal.

**Treatment Plan and Clinical Course:**

 Consultations were made with the thoracic surgery and cardiovascular surgery departments. Conservative management was started since the patient was stable and there was no active bleeding on imaging. The patient was admitted, his vital signs were monitored, and analgesics were prescribed (parenteral paracetamol and NSAIDs as necessary).

**Follow-Up and Outcome:**

There was no hemodynamic instability throughout the first 24 hours. The patient’s chest pain improved gradually. On the third day, thoracic CT performed again showed that the mediastinal hematoma was smaller in size. The patient remained stable and was discharged on the fifth day to follow up as an outpatient.

**Discussion**

However, as demonstrated in previously published reports, the occurrence of mediastinal hematoma following minor blunt trauma remains exceedingly rare, with only a limited number of cases documented in the literature involving diagnostic challenges and surgical considerations (3,4).

This case presents a clinical entity that may be easily missed because there is no external evidence of trauma, the patient is haemodynamically stable upon admission and has an unremarkable general physical examination. Nevertheless, persistent localised pain prompted further imaging, which enabled early diagnosis of the mediastinal hematoma. Computed tomography represents the most definitive imaging technique used to diagnose such medical conditions. The combination of CT imaging with contrast material enables accurate detection of bleeding and vascular injuries and related medical conditions. Patients with stable hemodynamics who show no signs of active bleeding can safely receive conservative treatment. In cases where mediastinal hematomas are associated with suspected vascular injuries or hemodynamic deterioration, particularly involving thoracic aortic disruption, timely diagnosis through CT angiography is essential to guide the need for surgical intervention (5).

The case demonstrates the need for intense clinical awareness in blunt chest trauma management while showing that prompt CT imaging helps reduce diagnostic delays.

**Conclusion**

 The external appearance of minor superficial blunt thoracic trauma often hides dangerous life-threatening conditions like mediastinal hematoma. The assessment of such cases requires immediate use of proper imaging techniques together with complete history collection and physical examination. The prevention of adverse outcomes requires both high clinical suspicion and multidisciplinary approaches in clinical practice.

**Patient Consent and Ethical Notes**

A patient provided written consent for publishing and presenting this case report for scientific research purposes. All personal identifiers from the report have been completely removed to ensure patient confidentiality. No recognisable characteristics exist within these images.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

 **References**

1. Pasumarthy, L. (2007). *Posterior mediastinal hematoma – a rare case following a fall from standing height: a case report.Journal of Medical Case Reports, 1, 185.* https://doi.org/10.1186/1752-1947-1-185
2. Suzuki, K., Shiono, S., Hayasaka, K., & Endoh, M. (2020). *A surgical case of mediastinal hematoma caused by a minor traffic injury.Journal of Cardiothoracic Surgery, 15, 12.* https://doi.org/10.1186/s13019-020-1065-x
3. Ruan, Y., Li, X., Shen, J., & Ye, M. (2020). *Video-assisted thoracoscopic surgery for large anterior mediastinal hematoma.* *Journal of Thoracic Disease, 12(3), 1133–1135.* https://doi.org/10.21037/jtd.2019.12.95
4. Zhang, Z., Huang, Y., Zhao, L., & Zhao, B. (2025). *Radiological challenges in differentiating Occult Traumatic Pulmonary Hematoma from mediastinal tumor: a case report and literature review.* *Journal of Cardiothoracic Surgery, 20(1), 111.* https://doi.org/10.1186/s13019-024-03243-3
5. Methodius-Ngwodo, W. C., Burkett, A. B., Kochupura, P. V., Wellons, E. D., Fuhrman, G., & Rosenthal, D. (2008). *The role of CT angiography in the diagnosis of blunt traumatic thoracic aortic disruption and unsuspected carotid artery injury.* *The American Surgeon, 74(7), 580–585.* <https://doi.org/10.1177/000313480807400703>
6. Rodgers-Fischl, P. M., Makdisi, G., & Keshavamurthy, S. (2021). Extrapericardial tamponade after blunt trauma. *The Annals of Thoracic Surgery*, *111*(1), e49-e50.
7. Ma, P., Gong, Z., Du, M., Zhu, D., Li, P., & Fang, Y. (2024). Mediastinal hematoma after trans-radial cerebral angiography: a case report. *BMC neurology*, *24*(1), 231.
8. Ibrahim, R., Yadav, S., Waqar, S., Hermann, J. R., Sarwar, A., & Shah, S. (2022). Superior vena Cava syndrome due to right anterior mediastinal hematoma: a case report. *Cureus*, *14*(7).
9. Hoshika, Y., Shibuya, J., Nakano, H., Kodani, E., & Shimizu, W. (2022). A case of acute myocardial infarction due to coronary artery compression by mediastinal hematoma associated with thoracic aortic aneurysm rupture. *Journal of Cardiology Cases*, *25*(3), 173-176.
10. Yamada, T., Yanagaki, S., Satani, N., Kagaya, Y., Sato, T., Matsuura, T., ... & Ohta, N. (2025). Spontaneous cervical and mediastinal hematoma due to rupture of inferior thyroid artery. *Radiology Case Reports*, *20*(2), 1145-1149.