

Images in  
Cardiovascular Medicine



# Hemopericardium With Cardiac Tamponade After Percutaneous Vertebroplasty

Jeong Tae Byoun , MD, Seung-Yul Lee , MD, Jae Young Cho , MD, Kyeong Ho Yun , MD, and Seok Kyu Oh , MD

Department of Cardiovascular Medicine, Regional Cardiocerebrovascular Center, Wonkwang University Hospital, Iksan, Korea



**Received:** Apr 11, 2022  
**Revised:** Apr 30, 2022  
**Accepted:** May 18, 2022  
**Published online:** Jun 23, 2022

**Correspondence to**  
Seung-Yul Lee, MD

Department of Cardiovascular Medicine,  
Regional Cardiocerebrovascular Center,  
Wonkwang University Hospital, 895,  
Muwang-ro, Iksan 54538, Korea.  
Email: seungyul79@gmail.com

Copyright © 2022. The Korean Society of  
Cardiology

This is an Open Access article distributed  
under the terms of the Creative Commons  
Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>)  
which permits unrestricted noncommercial  
use, distribution, and reproduction in any  
medium, provided the original work is properly  
cited.

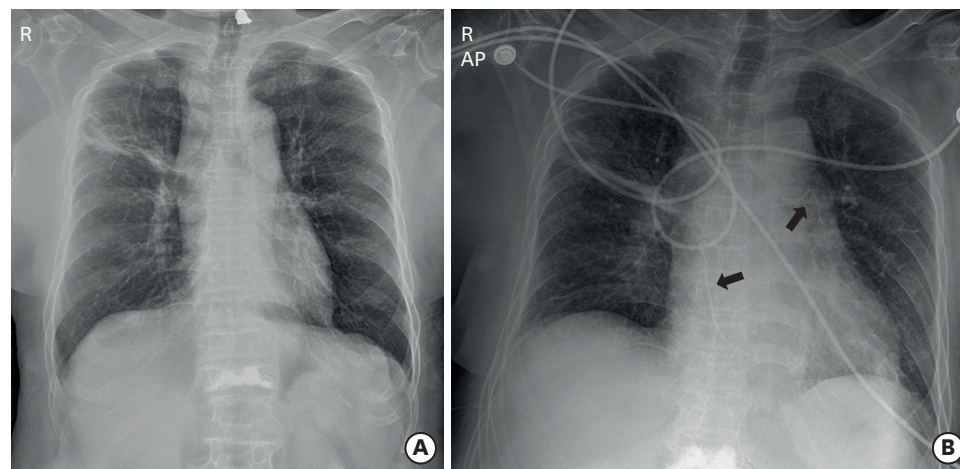
### ORCID iDs

Jeong Tae Byoun   
<https://orcid.org/0000-0002-0407-2568>  
Seung-Yul Lee   
<https://orcid.org/0000-0002-9039-9806>  
Jae Young Cho   
<https://orcid.org/0000-0001-7972-6223>  
Kyeong Ho Yun   
<https://orcid.org/0000-0003-4911-8854>  
Seok Kyu Oh   
<https://orcid.org/0000-0001-7545-0143>

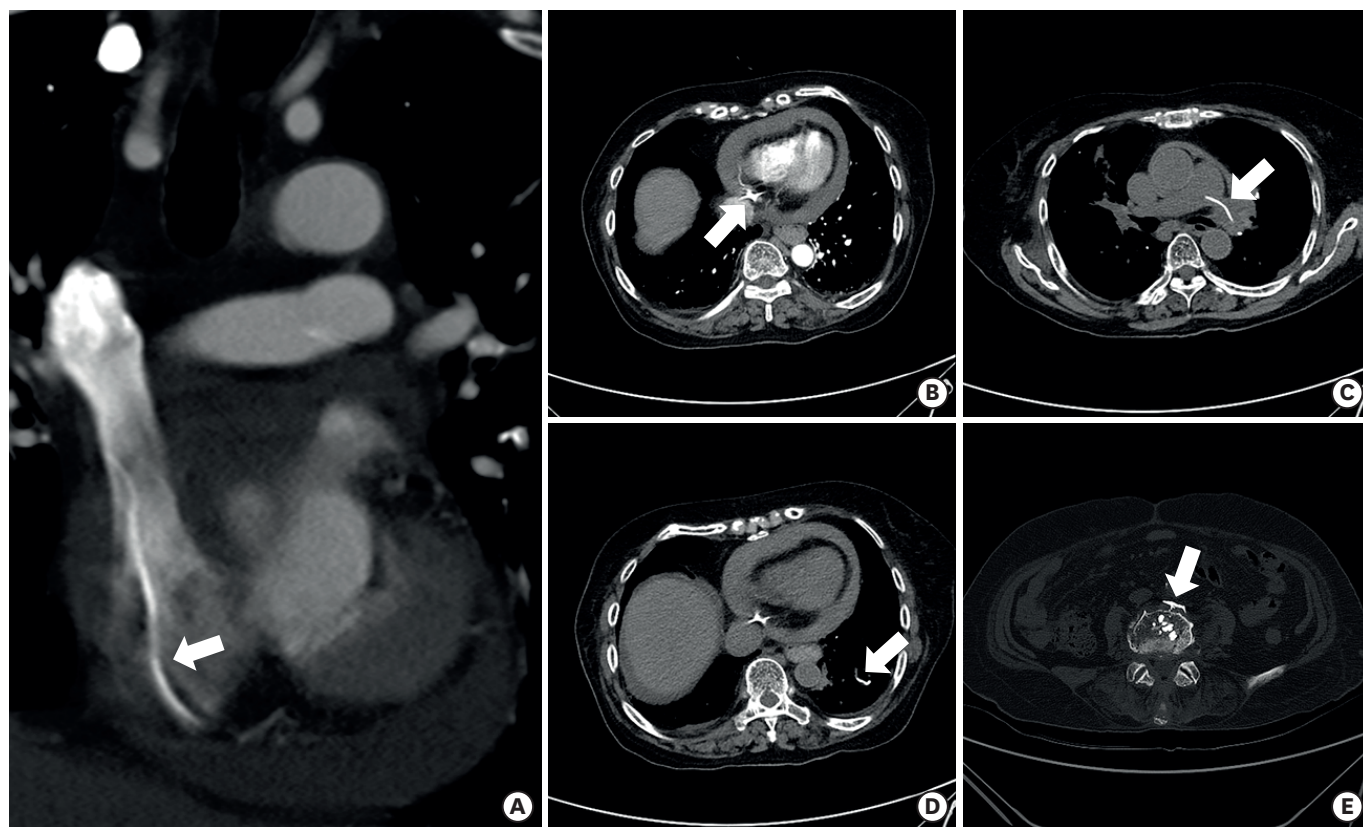
### Funding

This paper was supported by Wonkwang  
University in 2022.

An 83-year-old female patient was transferred to our emergency center due to shock of unknown cause. The patient complained of shortness of breath with agitation and underwent percutaneous vertebroplasty using bone cement due to the compression fracture of lumbar spine in other hospital one day ago. The blood pressure was 70/40 mmHg and heart rate was 108 beats per minute. With rapid fluid resuscitation, electrocardiography did not show specific findings. However, chest radiography demonstrated linear radio-opaque materials within heart and left hilum, but without a definite cardiomegaly (**Figure 1**). Computed tomography for the further evaluation of radiographic findings revealed pericardial effusion and linear and sharp-edged materials in superior vena cava, right atrium, pericardial space, left main/subsegmental pulmonary arteries, and paravertebral vein, being suspicious of hemopericardium caused by cement embolism (**Figure 2**). Bedside echocardiography showed a moderate amount of pericardial effusion with the diastolic collapse of right ventricle. Under the diagnosis of cardiac tamponade, we performed emergent pericardiostomy using 8 Fr pigtail catheter and removed a 400 mL of bloody fluid. After the procedure, blood pressure was restored to 90/60 mmHg and the patient was transferred to the nearest available hospital for emergent surgery. Informed consent was obtained from the patient.



**Figure 1.** Chest radiography before (A) and after (B) percutaneous vertebroplasty. Linear radio-opaque materials (arrows) were observed within heart and left hilum.



**Figure 2.** Computed tomography. With pericardial effusion, linear and sharp-edged embolic cements (arrows) were identified in superior vena cava/right atrium (A), pericardial space (B), left main (C)/subsegmental pulmonary arteries (D), and paravertebral vein (E).

**Conflict of Interest**

The authors have no financial conflicts of interest.

**Data Sharing Statement**

The data generated in this study is available from the corresponding author upon reasonable request.

**Author Contributions**

Conceptualization: Lee SY; Data curation: Byoun JT, Lee SY; Funding acquisition: Lee SY; Investigation: Lee SY; Project administration: Lee SY; Resources: Lee SY; Supervision: Lee SY; Validation: Lee SY; Visualization: Lee SY; Writing - original draft: Byoun JT, Lee SY; Writing - review & editing: Lee SY, Cho JY, Yun KH, Oh SK.

Although pulmonary cement embolism by the leakage into paravertebral vein during percutaneous vertebroplasty has been extensively reported,<sup>1,2)</sup> the symptomatic complications related to intracardiac cement embolism were rare.<sup>3)</sup> The present case highlights the suspicion of intracardiac cement embolism among patients with undetermined shock after percutaneous vertebroplasty, based on the characteristic findings of plain radiography.

**REFERENCES**

1. Groen RJ, du Toit DF, Phillips FM, et al. Anatomical and pathological considerations in percutaneous vertebroplasty and kyphoplasty: a reappraisal of the vertebral venous system. *Spine (Phila Pa 1976)* 2004;29:1465-71. [PUBMED](#) | [CROSSREF](#)
2. Schmidt R, Cakir B, Mattes T, Wegener M, Puhl W, Richter M. Cement leakage during vertebroplasty: an underestimated problem? *Eur Spine J* 2005;14:466-73. [PUBMED](#) | [CROSSREF](#)
3. Hassani SF, Cormier E, Shotar E, et al. Intracardiac cement embolism during percutaneous vertebroplasty: incidence, risk factors and clinical management. *Eur Radiol* 2019;29:663-73. [PUBMED](#) | [CROSSREF](#)