

(Fig. 2A). CT  
(Fig. 2B, C).

(Fig. 2D).

가

가

(basivertebral vein)

가

(external

vertebral venous plexus)

CT

Jensen (2) 29

2

가

Padovani (6)

1987 Galibert (1)

3 - 12%

(2, 3).

(7).

PMMA가

(2).

가

(paravertebral vein)

가

1 - 10%

(4).

1 - 2%

(2, 3, 5).

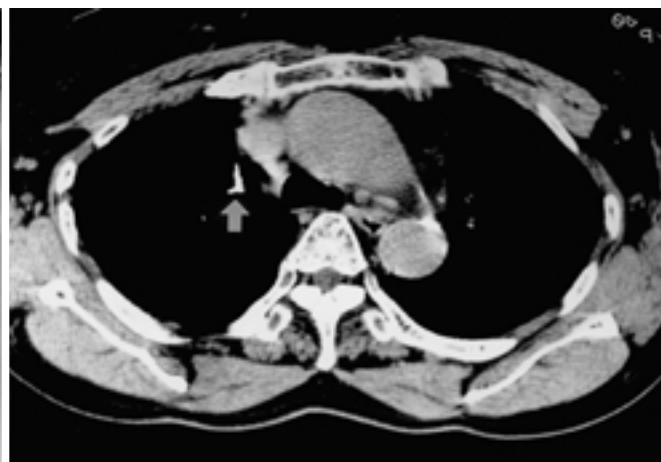
PMMA

가

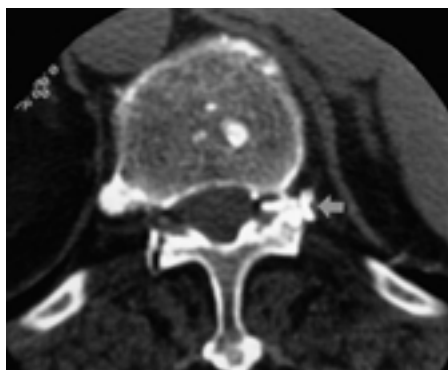
가



A



B



C



D

**Fig. 1.** A 68-year-old woman with benign compression fracture. The vascular leak in this patient was identified during the procedure, and further injection was terminated immediately.

**A.** Chest radiograph shows thread-like increased opacity (arrow) in the right upper lung zone.

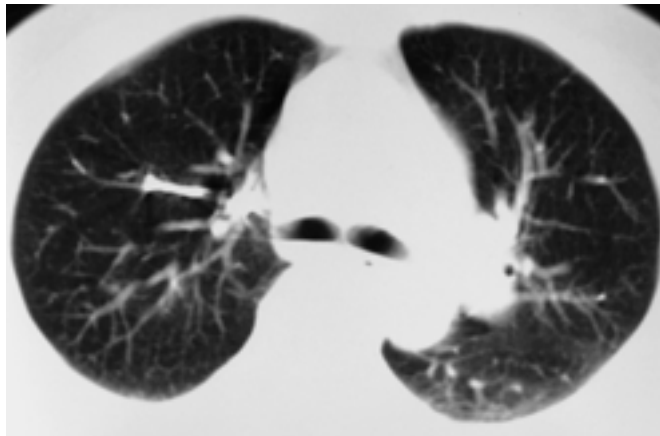
**B.** CT scan obtained at the level of the carina shows high-density intraluminal branching material (white arrow) within the pulmonary artery in the right upper lobe.

**C, D.** CT scan obtained through the level of T12 shows cement within the intervertebral veins (white arrow). Note emboli of cement in left latero-vertebral vein draining in the vena cava (black arrow) and the epidural space leak (arrowhead) is also seen.

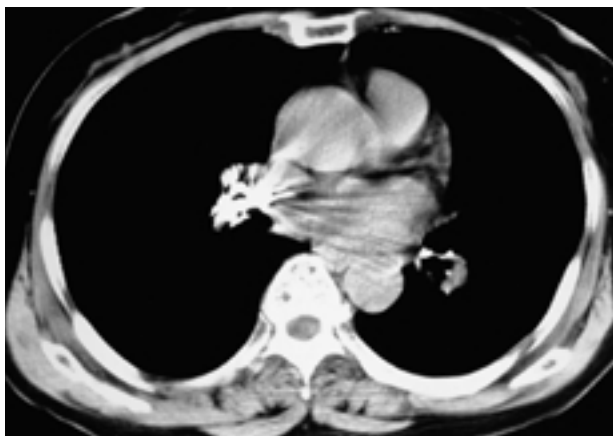
PMMA (polymerization rate) (tantalium)  
(vertebral venography)  
Gaughen (8) 가  
, Jensen (2)  
(trabecular space)  
PMMA PMMA  
가 가 가



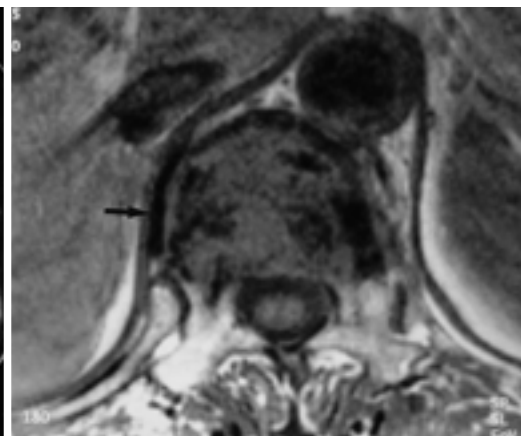
A



B



C



D

**Fig. 2.** A 67-year-old woman with benign compression fracture was treated by percutaneous vertebroplasty 3 weeks ago.  
**A.** Chest radiograph shows multiple high-density thread-like opacities outlining pulmonary vessels.  
**B.** CT scan obtained with lung windows shows intra-luminal emboli of cement in upper-lobe segmental vessels in the right lung.  
**C.** Non-enhanced chest CT scan at the level of bronchus intermedius demonstrates high-density intra-luminal cement in the right interlobar artery and in the left lower lobar artery.  
**D.** T1-weighted axial image obtained at the level of the T12 shows linear low signal (arrow), suggesting emboli of cement in the paravertebral veins.

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J Korean Radiol Soc 2003;48:159 - 162

## Pulmonary Embolism Caused by Acrylic Cement: Report of Two Cases Developed as a Complication of Percutaneous Vertebroplasty<sup>1</sup>

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Percutaneous vertebroplasty is an effective, minimally invasive procedure for the treatment of vertebral compression fractures, and is a technique for treating lower back pain that appears to be increasingly popular throughout the world. We experienced two cases involving a rare complication of percutaneous vertebroplasty, namely pulmonary embolism caused by acrylic cement. One patient showed no subjective symptoms after vertebroplasty, while the other experienced chest pain. In the former, fluoroscopy demonstrated perivertebral venous leakage during vertebroplasty, and at chest radiography, tubular or branching high-density linear structures were observed. In addition, intravascular emboli were identified at CT. In the second patient, symptomatic therapy led to reduced chest pain.

**Index words :** Lung, embolisms  
Spine, interventional procedures

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