Title
Polymethylmethacrylate Pulmonary Embolism Following Kyphoplasty

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We report a case of polymethylmethacrylate cement pulmonary embolism (PE) that occurred two days following a minimally invasive kyphoplasty procedure. Our patient developed non-specific rib pain postoperatively followed by dyspnea, prompting presentation to the emergency department. The polymethylmethacrylate cement was visualized on initial chest radiograph and further characterized using computed tomography. The patient was admitted and anticoagulation started, later having an uncomplicated hospital course. The polymethylmethacrylate cement has a well-documented history of leakage and other postoperative complications. Cement PE, while rare, can present similarly to a thrombotic PE and requires adequate long-term anticoagulation with close follow-up. [Clin Pract Cases Emerg Med. 2019;3(3):X–X]
Polymethylmethacrylate PE Following Kyphoplasty

Morris et al.

Image 1. Chest radiograph of a 43-year-old male depicting multiple hyperdense opacities (arrows) with vascular crowding and atelectasis at lung bases.

ground-glass opacity worrisome for infiltrate (Image 2). The patient was immediately treated with heparin and admitted to the hospital for continued management. While there, he was treated according to guidelines for thrombotic PEs and started on six-month warfarin therapy. He was discharged home two days later.

DISCUSSION

Kyphoplasty and vertebroplasty are two common surgical techniques used in stabilization and repair of vertebral compression fractures. The procedures are similar in that they use a cement, such as PMMA, which is injected into the vertebral body and allowed to harden. Kyphoplasty differs by first employing a balloon that is inflated in the vertebral body prior to the cement injection. This allows for height restoration of the affected vertebrae. The procedures themselves are minimally invasive, but the efficacy of kyphoplasty and vertebroplasty in osteoporotic vertebral fractures continues to be controversial. Two randomized, placebo-controlled trials found no significant benefit over conservative management. In 2010, as part of its clinical practice guidelines, the American Academy of Orthopaedic Surgeons strongly recommended against vertebroplasty for patients who present with an osteoporotic spinal compression. Since taking that stance, there have been several newer, unblinded trials and meta-analyses published that contradict the initial findings.

Cement extravasation is the most common and well-known complication of both vertebroplasty and kyphoplasty.

CPC-EM Capsule

What do we already know about this clinical entity?
Polymethylmethacrylate pulmonary embolism is a rare but known complication of kyphoplasty. It has been reported in orthopaedic literature but rarely in emergency medicine.

What makes this presentation of disease reportable?
There have been very few reports of this disease entity in emergency medicine literature so increasing awareness of post-kyphoplasty complications is essential.

What is the major learning point?
The novelty of this disease, along with the morbidity and mortality if left untreated, makes early recognition important.

How might this improve emergency medicine practice?
Early recognition of polymethylmethacrylate pulmonary embolism can lead to better patient outcomes.

Image 2. Computed tomographic angiogram of the chest of a 43-year-old male depicting hyperdense material in distal pulmonary arteries (arrows) consistent with cement emboli.
REFERENCES


