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## Case Report

# Vertebral fracture with muscle hematoma mimicking abscess

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## ABSTRACT

Vertebral fracture with muscle hematoma is occasionally seen in practice. However, air-containing hematoma mimicking abscess has not been reported. We present an 87-year-old man with back pain after a fall. Computed tomography scan demonstrated vertebral fracture of L1 and low-density lesions with air bubble in the left crus of the diaphragm and left psoas muscle that were verified to be muscle hematoma. Muscle hematoma due to vertebral fracture can present radiological findings similar to an abscess. A characteristic “vertebral body cleft continuity sign” might be useful for differentiating between hematoma and abscess.

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## Introduction

Vertebral fracture with muscle hematoma is occasionally seen in practice but air-containing lesions like abscess have not been described as an initial presentation of this condition. We describe a case of lumbar compression fracture with muscle hematoma mimicking abscess. The continuity seen on Computed tomography (CT) scan between the vertebral body and muscle hematoma through the cleft of the cortical bone is useful for diagnosing this condition, which we have named “vertebral body cleft continuity sign” (Fig. 1C).

## Case report

A previously healthy 87-year-old man was admitted with back pain. One week prior to presentation, he fell down some stairs and subsequently developed progressive walking difficulty. His initial vital signs and laboratory tests did not suggest any infectious process. CT of the lumbar spine revealed vertebral fracture of L1 and low-density lesions with air bubbles in the left crus of the diaphragm and left psoas muscle (Fig. 1). Abscess was suspected and CT-guided aspiration biopsy was performed with drainage of 5 mL of bloody fluid. Gram and

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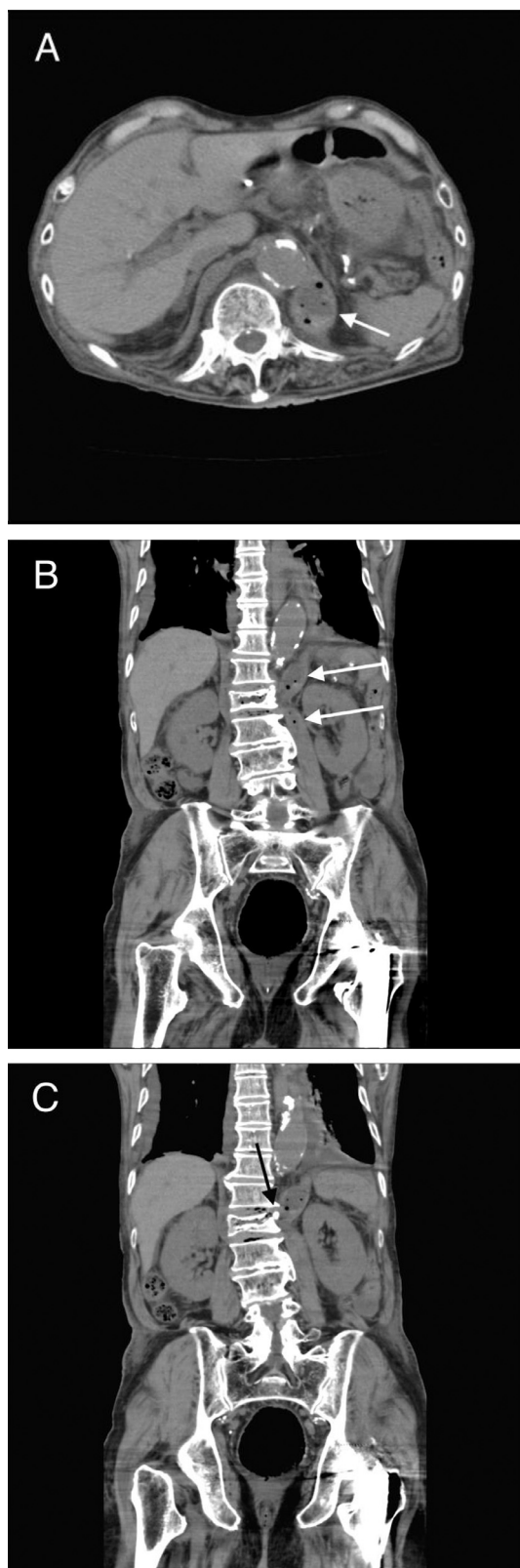
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**Fig. 1 – (A), (B) Axial and coronal CT images demonstrating low-density lesions with air in the left crus of the diaphragm and left psoas muscle (white arrows). (C) Continuity is suspected between lesions and the L1 body (black arrow).**

Ziehl-Neelsen staining of the fluid revealed no organism. Cultures of the fluid for bacteria and acid-fast bacilli were also negative. A diagnosis was made of hematoma of the left crus of the diaphragm and psoas muscle with L1 fracture. He was treated conservatively and discharged after 24 days.

## Discussion

This case highlights 2 important clinical issues. First, muscle hematoma in a case of lumbar compression fracture can present as an air-containing lesion mimicking abscess (Fig. 1). One case report describes myositis ossificans of the psoas muscle after lumbar spine fracture mimicking soft tissue tumor [1], but not an abscess. Two cases of hematoma mimicking an abscess in the peritonsillar region [2] and retropharyngeal space [3] have been reported, with other case reports of disc herniation to the psoas muscle resembling psoas abscess [4–6]. However, to our knowledge, there has been no report on vertebral fracture with hematoma mimicking an abscess, as in the present case.

Second, “vertebral body cleft continuity sign” is useful for differentiating a hematoma from an abscess (Fig. 1C). Psoas abscess is sometimes accompanied by pyogenic spondylitis, but it tends to be in continuity with the disc [7]. In contrast, in vertebral fracture, the hematoma is continuous with the vertebral body as in the present case because the hematoma probably arises from the vertebral body through the cleft. Therefore, we believe this “vertebral body cleft continuity sign” can differentiate hematoma from abscess. The air bubble was a confusing finding in this case and can be explained by gas migration. The intravertebral vacuum cleft sign is a transverse, linear or semilinear shadow of the vertebral body on a radiograph [8]. The pathogenesis is unclear, but 1 proposed mechanism is the migration of gas from the disc to the vertebral body. In our case, the gas in the vertebral body is thought to have migrated into the muscle hematoma.

In conclusion, muscle hematoma with a compression fracture can present as a lesion mimicking abscess and the “vertebral body cleft continuity sign” can be useful for diagnosis. We must be aware that muscle hematoma with air bubble mimicking abscess can result from vertebral compression fracture. It is important to carefully examine coronal views and pay attention to continuity between the vertebral body and the hematoma to avoid unnecessary intervention such as needle aspiration when the clinical course does not suggest abscess, even though the lesion shows typical features of abscess.

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