

Rare case of sternal insufficiency fracture unveiled by POCUS: crack in an osteoporotic chest

Himanshu Gul Mirani¹ 

1. Midland Metropolitan University Hospital, Smethwick, UK

Correspondence to: Himanshu Gul Mirani

*Midland Metropolitan University Hospital, Smethwick, UK.

Email: hgmirani@gmail.com

DOI: 10.24911/SJEMed.12-2523

Background: Sternal fractures are most commonly associated with high-energy blunt thoracic trauma and are readily identified on computed tomography (CT). In contrast, sternal insufficiency fractures are rare and may present insidiously, particularly in older adults with severe osteoporosis. Delayed symptom evolution and initially negative imaging can obscure diagnosis and delay appropriate management.

Case: An 84-year-old woman with hypertrophic cardiomyopathy and severe osteoporosis treated with teriparatide presented to the Emergency Department after a low-impact forward fall while gardening. Initial examination revealed facial bruising and bilateral anterior chest wall tenderness. High-resolution CT of the chest, abdomen, and pelvis demonstrated no acute traumatic injury, showing only known vertebral insufficiency fractures. She was discharged with conservative advice. Three days later, she represented with new-onset focal sternal pain and visible anterior chest wall swelling. She denied any further trauma. Examination now demonstrated a clear sternal deformity with marked point tenderness, findings absent during the initial assessment. This interval development raised concern for an evolving injury despite prior negative imaging.

Investigations: Laboratory testing revealed mildly elevated troponin levels, prompting consideration of cardiac injury, though this was interpreted in the context of known hypertrophic cardiomyopathy. Electrocardiography showed sinus rhythm with left axis deviation and left ventricular hypertrophy without ischemic changes. Point-of-care ultrasound demonstrated cortical disruption and buckling of the sternal body. Cardiac views showed preserved systolic function with no pericardial effusion. Sternal radiography confirmed a buckled fracture pattern consistent with insufficiency. Repeat CT imaging revealed a comminuted, displaced fracture of the sternal body with associated retrosternal haematoma.

Management: The patient was diagnosed with a sternal insufficiency fracture with delayed radiological evolution following minor trauma. She was managed conservatively with analgesia, thoracic surgical consultation, and close monitoring. She was referred to specialist osteoporosis services for transition to bisphosphonate therapy.

Conclusion: This case highlights the potential for delayed presentation of sternal insufficiency fractures in osteoporotic patients despite initially normal CT imaging. It underscores the value of point-of-care ultrasound in identifying sternal fractures.

Sternal insufficiency fractures are rare and occur in osteoporotic bone under minimal stress. Fragility fractures may show delayed radiological evolution, causing diagnostic delay, as osteoporosis markedly reduces fracture thresholds. Point-of-care ultrasound is highly sensitive for detecting sternal cortical disruption and may outperform plain radiography. Most cases are managed conservatively, though complications such as retrosternal haematoma may require monitoring. This report describes a CT-negative, later-positive sternal insufficiency fracture and highlights the value of ultrasound and reassessment in older patients with new focal chest pain without further trauma.

Keywords: Silver trauma, trauma, major trauma, insufficiency, fracture, sternal, fracture.