Vertebral Fractures: Why Radiologists See Them, But Clinicians Miss Them

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> Vertebral fragility fractures represent a significant public health burden, often preceding more severe osteoporotic events. Despite their clear radiological visibility on routine imaging, a substantial proportion of these fractures are not identified in clinical practice, leaving patients vulnerable to further skeletal deterioration.

KEY TAKEAWAYS

- The Pivot: A significant number of vertebral fragility fractures are missed on imaging reports, despite being clearly visible to radiologists.
- The Data: Missed vertebral fractures are associated with a substantially increased risk of subsequent fractures.
- The Action: Clinicians should actively review imaging reports for incidental findings of vertebral fractures and consider appropriate osteoporosis screening and management.

Osteoporosis is a systemic skeletal disease characterised by low bone mass and microarchitectural deterioration of bone tissue, leading to increased bone fragility and susceptibility to fracture. Vertebral fragility fractures are the most common type of osteoporotic fracture, but they frequently go undiagnosed. These fractures often present asymptomatically or with non-specific back pain, which can be easily attributed to other common musculoskeletal conditions. This diagnostic oversight is particularly concerning given that a prior vertebral fracture is a strong predictor of future fractures, including hip fractures, which carry high morbidity and mortality.

The diagnostic challenge lies not in the imaging itself, but in the interpretation and communication of findings. Many patients undergo imaging for unrelated conditions, such as abdominal pain or lung disease, where incidental vertebral fractures may be present. Radiologists, trained to identify these subtle changes, often document them in their reports. But the information frequently fails to translate into clinical action, creating a significant gap in patient care. This disconnect highlights a systemic issue in how incidental findings are managed across specialties.

The Silent Epidemic of Missed Fractures

Vertebral fragility fractures are defined by a reduction in vertebral body height, typically by 20% or more, or by a wedge or biconcave deformity. They are distinct from traumatic fractures, occurring with minimal or no trauma, such as a fall from standing height or less. The prevalence of these fractures increases with age, affecting a substantial proportion of the elderly population. Many individuals with vertebral fractures experience chronic pain, reduced quality of life, and functional impairment, yet remain undiagnosed and untreated for osteoporosis.

The consequences of missed vertebral fractures are profound. Patients with an unrecognised vertebral fracture have a

significantly elevated risk of experiencing another fracture within a year. This cascade effect can lead to a vicious cycle of increasing fragility, pain, and disability. Early identification allows for timely initiation of anti-osteoporotic therapies, which can reduce the risk of subsequent fractures. But without a diagnosis, patients are left unprotected, progressing towards more debilitating events like hip fractures, which often require hospitalisation and surgical intervention, and carry a high risk of long-term care placement and mortality.

Bridging the Diagnostic Gap

Improving the recognition of vertebral fragility fractures requires a multi-pronged approach involving radiologists, general practitioners, and specialists. Radiologists play a central role in clearly documenting the presence and severity of vertebral fractures in their reports, as this documentation is essential for preventing future fractures. Standardised reporting language and grading systems, such as the Genant semi-quantitative method, can enhance consistency and clarity. But the responsibility extends beyond the radiology department.

Clinicians receiving imaging reports must actively look for and interpret these findings. This requires a heightened awareness of osteoporosis risk factors and the clinical significance of vertebral fractures. Many GPs, for instance, may review a chest X-ray for pulmonary pathology and overlook a subtle vertebral compression fracture mentioned in the report. This oversight is understandable given the volume of information clinicians process daily, but it is a critical point of failure in the diagnostic pathway. A quick reference like the Oxford Handbook of General Practice can help with rapid recall of osteoporosis screening guidelines.

The Role of Screening and Follow-Up

Current guidelines recommend osteoporosis screening for postmenopausal women and men over a certain age, or for individuals with specific risk factors. Dual-energy X-ray absorptiometry (DXA) is the gold standard for measuring bone mineral density (BMD) and diagnosing osteoporosis. But DXA scans primarily assess BMD and may not capture the presence of existing vertebral fractures, especially in patients with normal or osteopenic BMD. This is where incidental findings on other imaging modalities become invaluable.

When a vertebral fracture is identified on any imaging study, it should trigger a comprehensive osteoporosis work-up, regardless of the patient's age or BMD. This includes a thorough clinical assessment, evaluation of secondary causes of osteoporosis, and consideration of pharmacologic therapy. For patients already on bisphosphonates, a missed vertebral fracture might prompt a review of adherence or a switch to a more potent agent. Our previous coverage on bisphosphonate interruption highlights the importance of continuous, effective treatment.

The challenge is not merely about identifying the fracture, but about ensuring appropriate follow-up. A patient with an incidental vertebral fracture on an abdominal CT scan for diverticulitis needs to be referred for a bone health assessment. This often requires robust communication channels between different healthcare providers and specialties. Without a clear protocol for managing these incidental findings, many patients will continue to fall through the cracks, experiencing preventable fractures and their associated morbidity.

The lack of a systematic approach to identifying and acting on incidental vertebral fractures is a significant limitation in current clinical practice. The sheer volume of imaging performed means that opportunities for early diagnosis are abundant, yet routinely squandered. Implementing automated alerts in electronic health records or requiring specific follow-up actions for radiologists when reporting such findings could help. Still, the ultimate responsibility rests with

the treating clinician to connect the dots and ensure patients receive the care they need. The problem is not a lack of diagnostic tools, but a failure to consistently use the information already at hand.

CLINICAL IMPLICATIONS

The persistent failure to act on radiologically visible vertebral fractures is a stark reminder of the disconnect between imaging diagnostics and clinical management. We have the tools to identify these fractures, but the system often fails to translate that identification into meaningful patient care. This is not a subtle finding; it is a clear signal that a patient is at high risk for further, more debilitating fractures.

For general practitioners, this means a more critical review of imaging reports, even those ordered for seemingly unrelated complaints. A vertebral fracture, however incidental, demands a bone health assessment. Ignoring it is akin to ignoring a new onset arrhythmia on an ECG ordered for chest pain. The implications for patient outcomes, particularly the risk of subsequent hip fractures, are too severe to dismiss.

The pharmaceutical industry has developed effective anti-osteoporotic agents, but these treatments are useless if the patients who need them most remain undiagnosed. This diagnostic gap represents a significant unmet need, not in drug development, but in clinical implementation. Better integration of radiology findings into primary care workflows, perhaps through automated alerts or structured reporting, could be a simple yet impactful intervention.

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