

Local Radiological Reporting of Vertebral Fragility Fractures: A Missed Opportunity for Early Osteoporosis Intervention?

Dr Emeka Obasi², Dr Fahad Ali¹, Dr Rebecca Burger², Dr Seema Rodwell-Shah¹
The Hillingdon Hospital¹, Imperial College Healthcare NHS Trust²

The Hillingdon Hospitals **NHS**
NHS Foundation Trust

Introduction:

Vertebral fragility fractures (VFFs) are the most prevalent form of osteoporotic fracture, with an incidence of >20% in women >70 years old¹. While often clinically silent in isolation, VFFs are associated with future osteoporotic fractures, decreased quality of life and an 8-fold increase in age-adjusted mortality². Radiologists may facilitate early diagnosis of VFFs, allowing for more cost-effective intervention, with greater patient outcomes³. However, a national audit in 2019 demonstrated widespread failings in the radiological recognition and reporting of VFFs¹, according to criteria outlined by the Royal Osteoporosis Society⁴. Crucially, only 2% of reports in patients with moderate-severe VFFs, recommended referral to a Fracture Liaison Services (FLS), compared to the national target of 100%. Here, we evaluate local VFF recognition and reporting performance, relative to the Royal College of Radiologists (RCR) targets⁵.

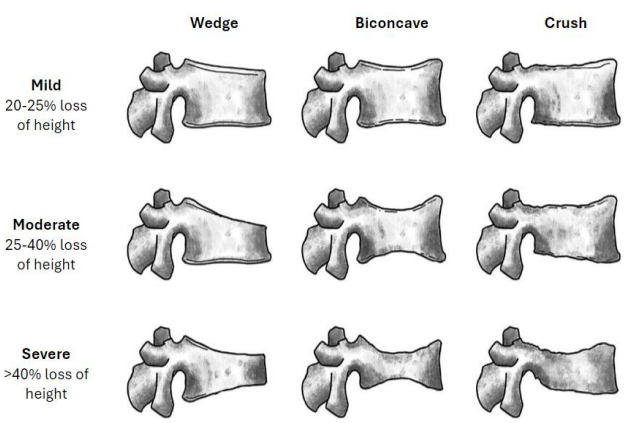


Figure 1: Genant classification of vertebral fragility fractures

Methods:

Single-centre retrospective analysis of all CT thorax, abdomen and pelvis scans in >50-year-old. Two cycles completed between April-June 2023 and March 2024. Implementation of educational posters and a quick-code reporting alert were used as interventions between cycles. The proportion of reports meeting best practice criteria were measured. The criteria were as follows

- Assessment of bony integrity (target 100%)
- Correct identification of moderate-severe VFFs (target 90%)
- Use of correct terminology in reports (ie specifically using the word 'fracture' (target 100%))
- Referral of moderate-severe VFFs to the FLS (target 100%).

Vertebral fragility fractures were identified as >20% loss of vertebral body height, not secondary trauma or underlying cancer (pathological fracture). These included wedge fractures (anterior vertebral body height loss), biconcave fractures (central vertebral body height loss) and crush fractures (posterior vertebral body height loss).

VFF severity was determined according to the Genant classification of vertebral fractures (Figure 1):

- Mild = 20-25% loss of vertebral body height
- Moderate = 25-40% loss of vertebral body height
- Severe = >40% loss of vertebral body height

Results:

Cycle 1: 184 patients included, 27 of whom had moderate-severe VFFs. Mean age 71. Male : Female = 52 : 48%.

Cycle 2: 76 patients included, 14 of whom had moderate-severe VFFs. Mean age 71. Male : Female = 42 : 58%

Bony integrity was assessed in 100% in both cycles. Identification of moderate-severe VFFs improved from 37% to 64% between cycles. (Figure 3). Correct terminology was used in 63% and 56% of reports in the first and second cycles respectively. 0% of patients were recommended for FLS referral in both cycles.

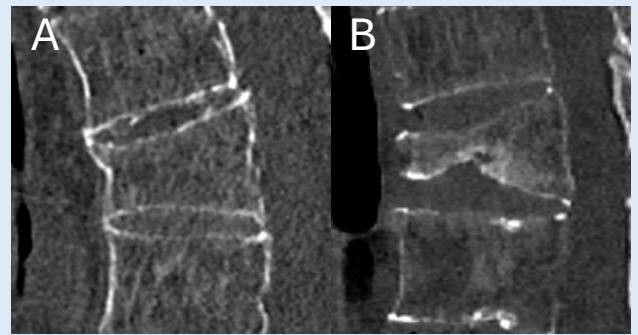


Figure 2: (A) Moderate VFF (25-40% loss of height). (B) Severe VFF (>40% loss of height).

Conclusion:

This audit demonstrates local shortcomings in VFF recognition and reporting. While there was an improvement in identification of VFFs between cycles, RCR targets were still not met post-intervention. This reflects a nation-wide issue in the under-diagnosis of VFFs, signifying a missed opportunity for early osteoporosis intervention.

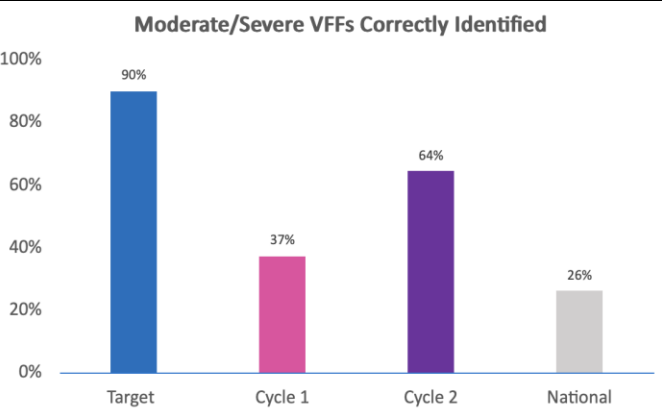


Figure 3: Bar chart of performance in moderate/severe VFF identification

References:

1. Howlett DC, Drinkwater KJ, Mahmood N, Illes J, Griffin J, Javaid K. Radiology reporting of osteoporotic vertebral fragility fractures on computed tomography studies: results of a UK national audit. *Eur Radiol.* 2020 Sep;30(9):4713-4723. doi: 10.1007/s00330-020-06845-2. Epub 2020 May 20. PMID: 32435926.
2. Cauley, J.A., et al. Risk of mortality following clinical fractures. *Osteoporos Int.* 2000. 11(7): p. 556-61.
3. Wu CH, Kao JJ, Hung WC, Lin SC, Liu HC, Hsieh MH, Bagga S, Achra M, Cheng TT, Yang RS. Economic impact and cost-effectiveness of fracture liaison services: a systematic review of the literature. *Osteoporos Int.* 2018 Jun;29(6):1227-1242. doi: 10.1007/s00198-018-4411-2. Epub 2018 Feb 19. PMID: 29460102.
4. Adams J, Clark E, Clunie G et al. Clinical guidance for the effective identification of vertebral fractures. London: National Osteoporosis Society, 2017.
5. The Royal College of Radiologists, Radiological guidance for the recognition and reporting of osteoporotic vertebral fragility fractures (VFFs). May 2021, https://www.rcr.ac.uk/media/afhpmpu/rcr-publications_radiological-guidance-for-the-recognition-and-reporting-of-osteoporotic-vertebral-fragility-fractures-vffs_may-2021.pdf, Date accessed: July 17, 2024