



## Pelvic fragility fractures—the forgotten osteoporotic fracture!

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Sir,

Pubic rami fragility fractures are common in older people and are a neglected group of osteoporotic fractures. These fractures result in significant morbidity and increased mortality [1]. Co-existing fractures of the acetabulum, ilium and sacrum are frequent, but routinely missed, since these are not easily identifiable on conventional pelvic radiographs [2]. Computerised tomography (CT) is the preferred imaging modality for detecting these fractures, but is not considered a standard investigation. Not knowing the full extent of the injury could be one of the reasons why some patients experience unexplained, prolonged pain and consequent debilitation following these fractures.

We report baseline screening data from an ongoing feasibility study [3], designed to evaluate the clinical effectiveness and cost-effectiveness of key hole spinal surgery (sacroplasty) in the management of sacral insufficiency fractures compared to current practice (non-surgical treatment) in older people (including those with cognitive impairment), presenting acutely to hospital.

Over the 10-month period, from within a catchment population of 680,000, 164 patients presented to the Emergency Department (ED) with a pubic rami fragility fracture,

identified on pelvic radiographs. Five of these patients were identified to have a co-existing acetabular fracture on plain radiograph. The mean (SD) age of these patients was 86.2 (6.8) years and the majority were female (84%). Following assessment in the ED, 84% (138/164) of those assessed required in-patient admission for further pain management. Sixty-one percent (84/138) were admitted to the Geriatric Medicine department, 30% (42/138) to the Trauma and Orthopaedics team and the remaining 9% (12/138) to other specialities within the hospital.

Of the 138 patients admitted to hospital, 64 (46%) underwent further imaging with CT. Ninety-four percent (60/64) had a confirmed pubic rami fragility fracture: 62% (37/60) of these patients had a concurrent sacral fragility fracture, 13% (8/60) concurrent fracture of the acetabulum and 8% (5/60) concurrent fracture of the acetabulum and ilium. Only 17% (10/60) of those imaged with a pubic rami fragility fracture had an isolated pubic rami fragility fracture.

Four patients (6%) who had a pubic rami fragility fracture reported on pelvic radiograph had no evidence of pubic rami fragility fracture on CT. Two of these patients had an isolated sacral insufficiency fracture and in the other 2 patients, no fragility fracture could be identified.

A significant number of older patients present to secondary care with pubic rami fragility fractures, with the majority requiring admission to hospital, due to pain-related immobility. Sacral fractures were not identified from pelvic radiographs in our cohort, which is consistent with the published literature [2, 4]. Pelvic radiographs are a poor imaging modality for the visualisation of pelvic fragility fractures, especially those of the posterior ring. CT is a more sensitive modality for the identification of pelvic fragility fractures (PFF), specifically of the sacrum and acetabulum. Magnetic resonance imaging (MRI) remains the most sensitive imaging modality, with 99% sensitivity [5]. Dual-energy CT (DECT) can identify changes in bone marrow oedema and has been used in the identification of occult fractures of the vertebrae and hip not seen on plain CT [6]. DECT may play a useful role in the future of identification of PFF, with sensitivity comparable to MRI, but with accessibility similar to plain CT.

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## Compliance with ethical standards

**Conflicts of interest** None.

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