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Letters to the Editor to:

Scientific Articles:

Robert A.E. Clayton, Mark S. Gaston, Stuart H. Ralston, Charles M. Court-Brown, and Margaret M. McQueen

Association Between Decreased Bone Mineral Density and Severity of Distal Radial Fractures

J Bone Joint Surg Am 2009; 91: 613-619 [Abstract] [Full text] [PDF]

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▼ **Drs. Clayton and McQueen respond to Dr. Hollevoet**

Robert A. E. Clayton, BSc(Hons), Margaret M. McQueen, MD (13 April 2009)

▼ **Association of Bone Mineral Density and Fracture Displacement of Distal Radius Fractures**

Nadine Hollevoet (7 April 2009)

Drs. Clayton and McQueen respond to Dr. Hollevoet

13 April 2009 ▲ ▲

Robert A. E. Clayton,
BSc(Hons),
Orthopaedic Surgeon
*Royal Infirmary of
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Margaret M. McQueen, MD

Send letter to journal:
Re: Drs. Clayton and
McQueen respond to Dr.
Hollevoet

E-mail Robert A. E.
Clayton, BSc(Hons), et al.

We thank Dr. Hollevoet for her interest and her comments on our paper and for bringing these other interesting articles to our attention. It is unfortunate that we had not identified the first two very good papers to which she refers. The third paper was published after our paper was submitted. All three papers use slightly different methods of analysis and outcomes from our own. However, taking the four studies together provides strong corroborating evidence that loss of bone mineral density leads to an increase in the severity of distal radius fractures. It will be interesting to see whether there is a similar correlation in other osteoporotic fracture types.

Association of Bone Mineral Density and Fracture Displacement of Distal Radius Fractures

7 April
2009 ▼ ▲

Nadine Hollevoet,
Orthopaedic Surgeon
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Send letter to journal:
Re: Association of Bone
Mineral Density and
Fracture Displacement of
Distal Radius Fractures

E-mail Nadine Hollevoet

To the Editor:

I read the paper by Clayton et al. (1) with much interest. I would point out that, although the authors were unable to cite previous clinical studies investigating an association between osteoporosis and fracture severity or an association between bone mineral density and radiographic outcomes after injury, a number of relevant publications on these subjects do exist.

Xie and Bøhrenholdt found that bone mineral density of the cortex of the distal radius was lower in displaced than in undisplaced distal radius fractures (2).

We reported that bone mineral density correlated with an increase in ulnar variance of the fractured wrist (3). Increase in ulnar variance gives an indication of fracture severity and is higher with radial shortening and/or change in palmar tilt.

In a recent Japanese study, an association has been shown between bone mineral density and deformity of the distal radius in low-energy Colles' fractures in women above 50 years of age, before treatment (4).

However, only the study of Clayton et al. demonstrated an association between fracture severity and bone mineral density measured with dual-energy X-ray absorptiometry at the hip (1). Xie and Børenholdt measured bone mineral density with peripheral quantitative tomography at the distal radius. They could not find a difference between displaced and undisplaced distal radius fractures when bone mineral density was measured at the lumbar spine or the femoral neck with Dual-energy X-ray absorptiometry (2). We found that bone mineral density correlated with an increase in ulnar variance when it was measured at the contralateral distal forearm, but not at the hip or lumbar spine (3). Sakai et al. measured bone mineral density of the lumbar spine with dual-energy X-ray absorptiometry (4).

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References

1. Clayton RA, Gaston MS, Ralston SH, Court-Brown CM, McQueen MM. Association between decreased bone mineral density and severity of distal radius fractures. *J Bone and Joint Surg Am.* 2009;91:613-9.
2. Xie X, Børenholdt O. Bone density and geometric properties of the distal radius in displaced and undisplaced Colles' fractures: quantitative CT in 70 women. *Acta Orthop Scand.* 2001;72:62-6.
3. Hollevoet N, Verdonk R. Outcome of distal radius fractures in relation to bone mineral density. *Acta Orthop Belg.* 2003;69:510-4.
4. Sakai A, Oshige T, Zenke Y, Suzuki M, Yamanaka Y, Nakamura T. Association of bone mineral density with deformity of the distal radius in low-energy Colles' fractures in Japanese women above 50 years of age. *J Hand Surg [Am].* 2008;33:820-6.

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