

QCT Case Report No. 2

Clinical utility of QCT versus DXA in a patient with complex history.

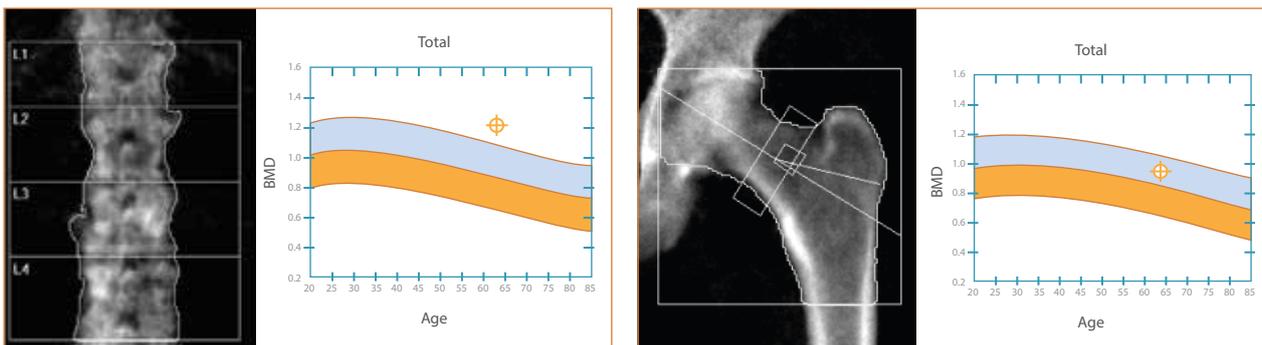


MINDWAYS CT
quantifiably better.

This patient was a 63 year old white female with a BMI of 29 (Height 66 inches, Weight 178 lbs) with a complex history. She was being treated with an aromatase inhibitor following both chemotherapy and radiation therapy for breast cancer. She had been on anti-coagulant treatment for 3 years, required occasional steroids for asthma and had a family history of osteoporosis.

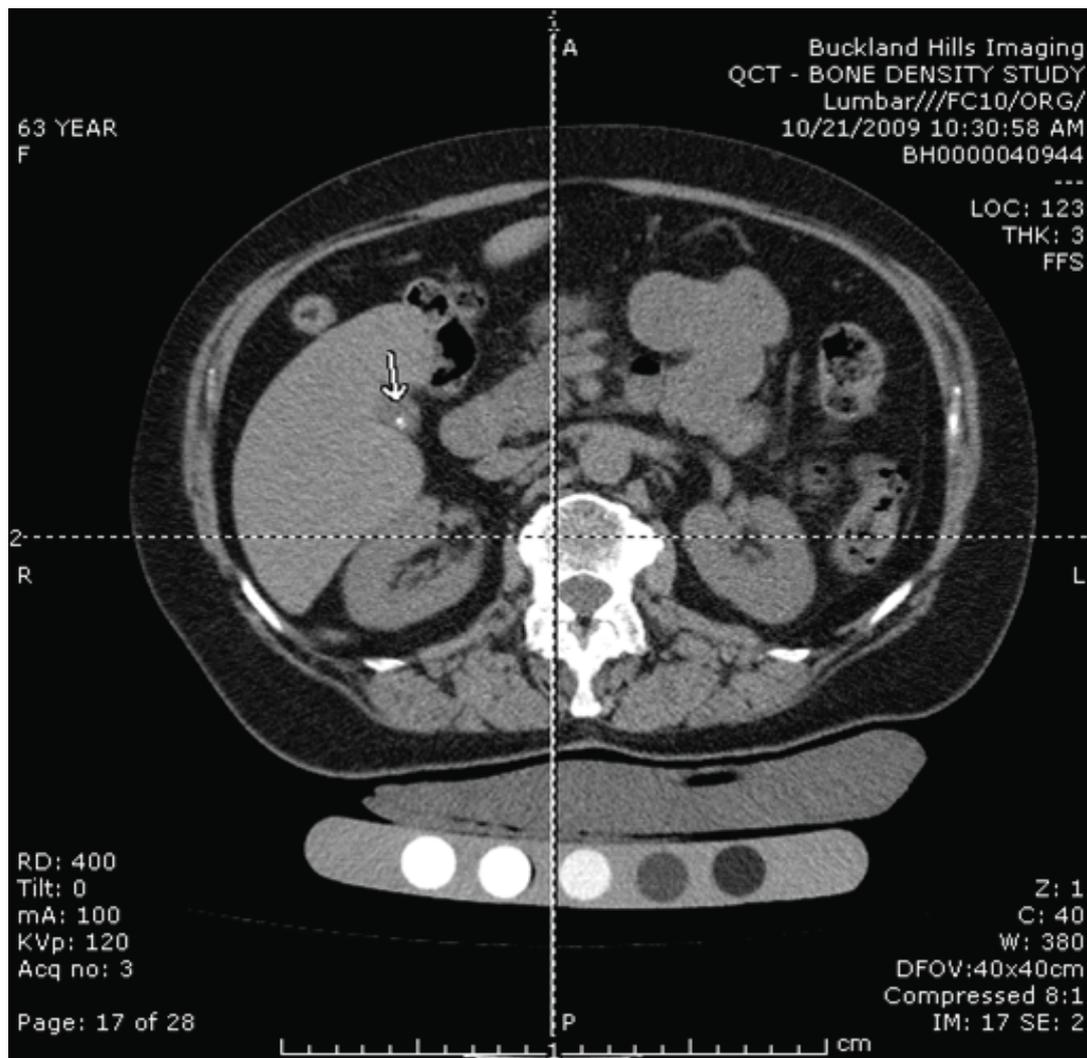
DXA BMD showed equivocal results. DXA of the left hip showed slightly higher than average BMD, with T-scores for femoral neck of -0.5 and total hip of +0.2 and Z-scores at these regions of +0.9 and +1.3. In the spine, however, L1 and L2 both had T-Scores of +0.7, whereas L3 with a T-Score of +2.3 and L4 with +2.0 where considerably higher. Lumbar vertebra BMD ranged from 130 to 148% of age-matched means.

DXA Analysis of Lumbar Spine and Hip



Six months after the DXA exam, a QCT BMD study was performed of the lumbar spine and hip. DXA-equivalent BMD measurement at the hip by QCT using 120KVp and a 3mm slice width showed average BMD for age with T-scores for femoral neck of -1.3 and total hip of -1.0 and Z-scores at these regions of 0 and +0.1. Analysis by QCT using the same protocol of L1 and L2 gave trabecular BMD results of 82 and 101 mg/cm³, respectively, indicating a potential diagnosis of osteopenia using the American College of Radiology (ACR) guidelines. The ACR guidelines specify that a trabecular BMD below 80 mg/cm³ indicates osteoporosis and a trabecular BMD between 80 and 120 mg/cm³ is indicative of osteopenia.

On review of the axial CT images some issues were noted. Osteophytes were present on the lumbar vertebrae and there was some aortic calcification. Gallstones were also seen.



A common recommendation for DXA studies in the older population is to scan both the spine and the hip, and if the spine is high, assume it is in error and disregard the results. More recently, some investigators have recommended that only the hip be scanned in the over-60 population. The QCT results made the classification of low BMD in the spine accurately and allowed the identification of the additional mineralization due to osteophytes and calcification that caused the artificially high BMD seen in the results of the DXA exam.

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