

# Vertebral Fracture Assessment: Ounce of Prevention

BY KERRI WACHTER  
Senior Writer

NEW ORLEANS — Patients with vertebral fractures have a four- to fivefold higher risk for subsequent fragility fractures and should be targeted for aggressive therapy, Michael McClung, M.D., said at the annual meeting of the International Society for Clinical Densitometry.

“The combination of bone density testing and vertebral fracture assessment is a powerful combination as we attempt to stratify patients into those at very high risk who would clearly benefit from treatment,” added Dr. McClung of the Oregon Osteoporosis Center in Portland.

Both severity and number of existing vertebral fractures are the best predictors of future vertebral fracture risk, regardless of bone density.

Payers are also starting to appreciate the benefit of assessing patients for such fractures. Medicare has agreed to reimburse physicians for vertebral fracture assessment (VFA) based on the new CPT code, 76077. Reimbursement is set at \$43 and a referring physician must order the test. The International Society for Clinical Den-

sitometry is set to take up the subject of VFA criteria at its position development conference later this year in Vancouver, B.C.

VFA is conducted using dual-energy x-ray absorptiometry and has a number of advantages that make it an attractive marker for evaluating an individual's future fracture risk. As an in-office procedure, patients don't have to be sent elsewhere as is the case with radiography. The radiation dose required for VFA is also substantially lower than for conventional radiographs. The whole spine is pictured in one image, not in a series, making it easier to read.

The images are also digitized which allows for magnification and other image manipulation. The images can be archived and reviewed side by side with images from follow-up examinations.

The main drawback is that VFA resolution is lower than for conventional radiographs. In particular, the upper spine is harder to visualize because of artifacts related to the lungs and ribs.

VFA should be considered for:

- ▶ Women aged 65 years or older.
- ▶ Men aged 70 years or older.

▶ Patients who have known height loss of at least 1.5 inches.

▶ Patients with a clinical history or non-radiologic assessment findings suggestive of vertebral fracture.

▶ Patients with bone density evidence of osteoporosis at the hip or spine.

▶ Patients with kyphosis on physical exam.

▶ Patients on long-term glucocorticoid therapy. ■

## Vertebral Fracture Assessment Tips

In performing VFA, the Genant semi-quantitative method provides a visual reference for grading fracture types (wedge, biconcave, or crush) and severity (mild, moderate, and severe). Wedge compression fractures are more likely to occur in the thoracic spine, while biconcave fractures are more likely to occur in the lumbar spine, Dr. McClung said.

It's important to be very cautious in attempting to diagnose mild or grade 1 fractures using VFA alone unless the resolution of the scan is very good, he added. This is particularly true of wedge fractures of the thoracic spine and biconcave fractures of the lumbar spine. But the technique is very good for identifying grades 2 and 3 frac-

tures, which have more clinical significance. There are a number of conditions that make it difficult to interpret VFA findings, including severe scoliosis, motion, rib/scapular shadows, bowel gas, and calcifications. Dr. McClung, therefore, advises against making the diagnosis of an osteoporotic fracture until considering the differential diagnoses and identifying the cause of the fracture.

Follow up with x-ray when there is an equivocal fracture; if vertebrae (T6-L4) are unidentifiable; if there are confounding factors or artifacts; or there are osteosclerotic, lytic, or suspect deformities. Also, get an x-ray if there are unspecified soft tissue or bone abnormalities.

## Kyphoplasty Well Tolerated in Patients With Vertebral Compression Fractures

BY PATRICE WENDLING  
Chicago Bureau

CHICAGO — Kyphoplasty appears associated with a low rate of complications in patients with osteoporotic or osteolytic vertebral compression fractures, according to the results of a prospective study presented at the annual meeting of the North American Spine Society.

Functional disability also improves over the long run. Such findings emerge just as use of the technique for treating vertebral compression fractures is gaining in popularity and questions about its safety and efficacy are being raised.

According to a review of the literature and complications reported to the Food and Drug Administration, the main safety concerns involve reactions to the use of acrylic (polymethylmethacrylate) bone cement, including hypotension and in some cases death, especially when multiple vertebral levels are treated in one setting. The procedure has also been linked with an increased rate of pedicle fracture and cord compression (J. Vasc. Interv. Radiol. 2004;15:1185-92).

In addition, a retrospective chart review involving 38 consecutive patients indicated that the risk of subsequent fracture in adjacent vertebrae was higher after kyphoplasty than in untreated patients, suggesting that kyphoplasty may shift stress to adjacent ver-

tebrae (Spine 2004;29:2270-6).

In this latest prospective study, a total of 329 consecutive patients with osteoporotic or osteolytic vertebral compression fractures underwent 917 kyphoplasty procedures. Surgeries were performed at the Cleveland Clinic, said Isador Lieberman, M.D., director of its minimally invasive surgery center and center for advanced skills training, and the study's lead investigator.

The rate of subsequent compression fractures in the osteoporotic patients was 11.5%, which is almost half the natural history rate, reported Dr. Lieberman, who is one of the developers of kyphoplasty and is a paid consultant to Kyphon Inc., which manufactures the inflatable bone tamp.

Study participants were a mean age of 69.2 years and 209 were female. All patients had painful compression fractures secondary to primary osteoporosis (228 patients), multiple myeloma (80 patients), or other malignancy (21 patients) that was refractory to nonoperative treatment.

The levels treated ranged from T3 to L5, with about half of the procedures at the thoracolumbar junction. Local anesthesia was used in 32 procedures. The average length of hospital stay was 1 day, with a range of 0.5 to 9 days.

Complications included cement leaks, which occurred in 24 pa-

tients, but none were clinically significant. One patient suffered a perioperative myocardial infarction. There were no neurologic complications or cement reactions, said Dr. Lieberman, who called the issue of such reactions as reported in the literature “misleading and erroneous.”

Short Form-36 (SF-36) health survey data pre- and post operative were available on 237 patients, with a mean of 55 weeks' follow-up.

SF-36 scores improved significantly in every category except general health, which was unchanged. Measures of physical functioning improved on a 0-to-100 scale from 22 to 36, bodily pain from 22 to 42, vitality from 31 to 41, social functioning from 38 to 61, emotional well-being from 55 to 66, and mental health from 63 to 68. “We advocate the use of kyphoplasty [as an] early intervention for osteoporotic and osteolytic vertebral compression fractures to prevent pain and progressive kyphosis,” said study investigator A. Jay Khanna, M.D.

Overall, Oswestry Disability Index scores improved from 48 to 34.3 (-13.7) and such improvements were similar for patients with osteoporosis and myeloma, (-15.8 and -14.5, respectively), said Dr. Khanna, who conducted the study at the Cleveland Clinic but is now at Johns Hopkins University in Baltimore. ■

## Bone Scans Appropriate for Some Premenopausal Women

HARROGATE, ENGLAND — Targeted use of bone densitometry in premenopausal women can identify a significant number of patients who would benefit from bone protection, a study has shown.

Of 301 premenopausal women referred to London's Queen Elizabeth Hospital during a 4-year period for dual-energy x-ray absorptiometry (DXA) because of possible increased risk of osteoporosis, 41% had abnormal scans, reported Elizabeth Koshy, M.D., in a presentation at the annual conference of the National Osteoporosis Society.

Premature menopause accounted for 43 (14%) of the patients referred for DXA. Of these, 37% had abnormal scans. Steroid use accounted for 19% of the referrals, of which 47% of the scans were abnormal. Of the approximately 14% of referrals based on family history, 27% resulted in abnormal scans. Osteopenia or previous fracture was the primary or coexisting indication for 37 or 12% of the patients; among these, 54% were abnormal. Amenorrhea was the impetus for 11 (3.7%) of the scans, and 64% of these were abnormal, reported Dr. Koshy of Imperial College London. The medical conditions associated with the high-

est proportion of abnormal scans were anorexia nervosa (57%) and inflammatory bowel disease (52%).

A logistic regression analysis identified low calcium/vitamin D intake, a body mass index of less than 20 kg/m<sup>2</sup>, and amenorrhea as significant risk factors associated with a lower bone mineral density. Such findings, Dr. Koshy said, suggest that “focused use of bone densitometry in women younger than 50 with any of these risk factors can help to identify patients with future fracture risk who may merit osteoporosis prevention.”

In most premenopausal women, it may be that the best treatment option remains supplementation with calcium and vitamin D. However, “selective DXA does seem to identify a significant number who could benefit from additional intervention,” she said.

Much attention in recent years has been focused on the importance of routine bone density testing for postmenopausal women, but the findings of this study add weight to the argument that younger women who have significant risk factors should be tested as well, “ideally at peak bone mass [between ages 21 and 35],” Dr. Koshy said.

—Diana Mahoney