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After vertebroplasty, patients remain at bed rest for two hours. Beyond that time, activity is essentially limited only by the patient’s pain response. Often, patients report improvement immediately. Most will report complete pain relief or significant improvement over the next 48 hours. Typical success rates for osteoporotic compression fracture pain relief are >80%. Success rate for treatment of neoplastic fractures is less, reportedly 50-60%.

Vertebroplasty has been shown to be a safe procedure when performed in the appropriate setting by a well-trained physician. The incidence of complications should be <1% in the osteoporotic population and <5% in the neoplastic population. Complications can include transient neurologic deficit, permanent neurologic deficit, infection, aberrant passage of cement outside of the intended treatment site, fracture of a rib or vertebra related to needle manipulation, and hemorrhage.

Vertebroplasty is a procedure developed by interventional radiologists for the treatment of compression fractures. First performed in France in the 1980s, it has rapidly become an accepted procedure worldwide based on extraordinarily good results. An injection of radioopaque bone cement (polymethyl methacrylate) is injected into the painful osteoporotic compression fracture or pathologic vertebral fracture with the purpose of stabilizing the fracture.

Radiologic imaging plays a critical role in identifying potential candidates for the procedure, and in the procedure itself. Most patients will undergo an MRI during their work-up to determine if the fracture is “active” (edematous). This finding is important in determining who will most likely benefit from vertebroplasty (those with active lesions do best). MRI also provides information regarding the fracture itself, such as the severity of the compression and the presence of bone fragments. If the patient is unable to have an MRI, bone scintigraphy is able to provide the necessary information regarding the fracture’s potential response to vertebroplasty. However, a bone scan does not provide adequate anatomic detail.

Completed vertebroplasty

After vertebroplasty

Post-op CT

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Vertebroplasty: New Hope for Osteoporosis Sufferers
By Carroll Overton, M.D.

Summary:
• Fractures due to osteoporosis or neoplastic infiltration are prevalent, typically heal slowly, and, many times, fail conservative therapy resulting in chronic debilitating pain.
• Vertebroplasty, a fluoroscopically-guided injection of bone cement into the fractured vertebra, stabilizes the fracture and relieves pain.
• The outpatient procedure is safe; minimally invasive, well-tolerated, and often results in immediate complete pain relief.

Osteoporosis is a progressive disease in which the bones become extremely porous and are subject to fracture. Patients with this disease are at increased risk for spinal compression fractures. In fact, approximately 700,000 vertebral fractures occur in the United States per year due to osteoporosis. These fractures commonly cause chronic pain and debilitation resulting in a reduced quality of life.

Vertebroplasty, an interventional radiological procedure that can ease the pain of fractures in many sufferers, is now performed by Wake Radiology physicians.

There are an estimated 10 million Americans with osteoporosis, and another 28 million with osteopenia (reduced bone mass) that also carries an increased risk of fractures. All ethnic groups are subject to osteoporosis: Risk factors include a post-menopausal status, increased age, a family history of osteoporosis, anorexia, tobacco abuse, sedentary lifestyle, certain medications (e.g., steroids), and excessive alcohol intake. The typical patient is a female over the age of 60.

Studies show that the lifetime risk for compression fractures due to osteoporosis is 16% for women and 3% for men. Younger people are not immune. Osteoporosis can present earlier in life in patients on long-term steroids, which are often needed in the setting of lupus, asthma, and rheumatoid arthritis. In addition to osteoporosis, compression fractures occur secondary to neoplasms, especially metastases, myeloma and lymphoma.

Compression fractures are caused by the weakened vertebral body's collapse (Figure 1). This typically occurs in the thoracic or lumbar spine after a fall, but can be due to minor trauma. If severe enough, osteoporosis can lead to compression fractures in the absence of trauma. Cervical spine compression fractures are uncommon, and usually indicate neoplastic disease. Regardless of the level, patients often experience localized pain at the fracture site, sometimes accompanied by radiating pain. For most patients, the fracture will heal slowly and the pain will resolve with conservative medical management. However, many patients will fail conservative management and suffer persistent severe pain. Some theorize that the unhealed fracture continues to move and shift, contributing to the pain. In addition, some will suffer progressive collapse of the fracture, which can result in continued or worsened pain and/or displacement of bone fragments that may impinge upon adjacent nerves or the spinal cord.

Traditionally, osteoporotic compression fractures of the spine have been more difficult to manage than fractures of the hip, wrist, etc. Reparative spine surgery is difficult and carries significant risk; hence, it has rarely been employed in this setting. Patients, therefore, resort to conservative management, including pain medication, immobilization, and back bracing. In the elderly especially, pain medication can affect the patient’s state of consciousness thereby increasing risk of serious injury.

Immobilization carries an increased risk of deep venous thrombosis (with associated pulmonary emboli), pneumonia, and decubitus ulcer.

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