Athos Patsalides

Athos Patsalides, M.D., is an Interventional Neuroradiologist at New York Presbyterian Hospital and Weill Cornell Medical College. His expertise is in the endovascular treatment of diseases of the brain and spine, including stroke, aneurysms, AVM, and carotid and intracranial stenosis. He is also performing minimally invasive procedures for spine compression fractures (kyphoplasty, vertebroplasty). Dr. Patsalides clinical research interests include the development of novel intra-arterial chemotherapy protocols for the treatment of spinal metastasis and neck cancer. He is board certified in Radiology and is a faculty member of Radiology in Neurological Surgery at Weill Cornell Medical College.

212.746.2821
www.cornellneurosurgery.org

Department of Neurological Surgery
Weill Cornell Medical College
525 East 68TH Street, Box 99
New York, N.Y. 10065

VERTEBROPLASTY & KYPHOPLASTY

Weill Cornell Medical College

Millions of people in the United States will experience back pain at some point in their lives. There are various causes that lead to back pain, including vertebral compression fractures. Vertebral compression fractures are a common condition, and with today's minimally invasive surgical procedures, easy to treat.

WHAT IS A VERTEBRAL COMPRESSION FRACTURE?

Vertebrae are the bones that make up the spine. A vertebral compression fracture is the break/collapse of the vertebrae and is most commonly seen in older people who have fragile bones, caused by osteoporosis. Because the bone is weakened, fractures can occur during normal activities or because of minor accidents. Other causes for vertebral compression fractures include hematologic diseases (multiple myeloma and leukemia), bone tumors (metastatic disease from breast, prostate, lung cancer), and a severe injury.

Even though many vertebral compression fractures occur silently, without any significant pain, they can often become painful and disabling. Typically, the main clinical symptoms of vertebral fractures include one or more of the following:

- Sudden onset of back pain
- Limited spinal mobility
- Kyphotic deformity of the spine ("hunchback")
- Height loss

Due to pain and spinal deformity, vertebral compression fractures may lead to breathing problems, prolonged inactivity, muscle weakness and, ultimately, loss of independence.

OVERVIEW OF TREATMENTS

Standard treatments for a vertebral fracture include pain medications, a brief period of bed rest followed by progressive mobilization, and the use of a brace for support. Muscle relaxants and physical therapy can also help.

However, if the patient has any of the following, a minimally invasive procedure, Kyphoplasty or Vertebroplasty, may be the best option:

- Severe pain does not improve over a number of weeks
- Severe pain requiring hospitalization
- The pain prevents return to normal daily activities
- The fracture is getting worse

Both Kyphoplasty and Vertebroplasty are successful about 80% of the time in relieving the pain of fractured vertebrae. Both procedures involve the injection of cement into the fractured vertebra through small incisions in the skin while using x-ray guidance to pin-point the exact spot where needed. This serves to not only provide pain relief, but also stabilizes the bone preventing progression of the fracture and associated kyphosis, an abnormal curvature of the spine.

RECOVERY

Elimination or reduction of pain is reported within a few days and typically within 1 week. Patients can gradually return to their normal daily activities as tolerated, although strenuous activities (i.e. heavy lifting) should be avoided for at least a few weeks. Patients should also see the appropriate physician to begin or review their treatment plan for osteoporosis, including medications to prevent further bone loss.

Patients receive the best in surgical care performed in our new state-of-the-art Interventional Neuroradiology suite, which allows sophisticated real-time image-guidance during procedures.

VERTEBROPLASTY/KYPHOPLASTY PROCEDURES

Both Vertebroplasty and Kyphoplasty are performed in a radiology suite or an operating room with x-ray equipment. The patient is prone and the procedure is done under sedation (patient awake) or general anesthesia. One or two needles are advanced under x-ray guidance into the fractured vertebra through the skin in the back. After good needle placement is confirmed with x-rays, bone cement is injected into the fractured vertebra. The cement hardens in a few minutes, providing immediate stability to the bone and pain relief.

Kyphoplasty, also referred to as "balloon vertebroplasty", is similar to vertebroplasty, but with one main difference. A balloon is guided through the needle into the vertebra and inflated in order to restore the abnormal wedging of the broken vertebra. The balloon is then deflated and removed, and the large cavity created is filled with bone cement. The cement hardens in place, providing immediate stability to the bone, and maintaining any correction of collapse. A variant of this procedure, called structural kyphoplasty, involves the placement of a stack of wafers instead of a balloon in an attempt to restore abnormal wedging. The support provided by the stack of wafers is complemented by subsequent injection of cement. Correcting the abnormal wedging may help restore the spine to a more normal alignment.

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