

Public Lecture by Dr. Steven R. Garfin
New Techniques for Treatment of Painful Osteoporotic Compression Fractures
February 21, 2001 at 6:00 p.m. in the Garren Auditorium, Basic Science Building
Sponsored by the Sam & Rose Stein Institute for Research on Aging, UCSD

Vertebral Body Compression Fractures (VCFs) with collapse of the bones of the spine often occur in persons with osteoporosis. The fracture can develop after a simple fall, or even normal activities like picking up a bag or a child. The result may be debilitating back pain and a stooped posture, term kyphosis, the latter is often seen in the elderly as a dowager's hump.

Osteoporosis causes 700,000 vertebral body compression fractures in America each year – twice as many of them are commonly known hip fractures. VCFs can lead to health problems, such as chronic pain, eating and sleeping disorders, difficult walking or participating in daily activities. Importantly, there is an increased risk of serious or fatal lung disorders related to the deformity. The latter has been shown in studies accessing age and medically matched patients, with the primary difference being one group has vertebral body compression fractures and the other doesn't. The former has a 23-35% increased mortality risk.

The standard medical treatment for painful osteoporotic compression fractures includes alternating rest and activity, pain medication and bracing. Unfortunately, rest leads to more bone deterioration, while activity hurts and may lead to further collapse. The braces are often poorly tolerated. Pain medication, at an appropriate level, can lead to depression, nausea/vomiting, constipation and confusion.

In addition to treating the symptoms of osteoporosis, the disorder itself should be treated. This includes an adequate amount of calcium (1500 mg) and vitamin D (400-800 IU) which helps absorb the calcium. Postmenopausal females may also take estrogen (if medically indicated as safe). Additionally, there are newer drugs available to treat osteoporosis, however, many of them have to be taken for a long time to be effective. Fosomax (a drug in the class of Phosphonates) is one of the better drugs to treat osteoporosis, but its effect may take one year or more. Calcitonin helps control the pain of the fracture better than Fosomax, but does not appear to be as good for treating the osteoporosis. Newer drugs are on the horizon.

There is, however, a new intervention for the treatment of painful osteoporotic compression fractures. Balloon kyphoplasty is a minimally invasive procedure to treat the painful spine fracture caused by osteoporosis (and occasionally by some tumors). This treatment, which involves injecting cement into the fractured vertebra (through the skin and bone, often with local anesthetic), is designed to provide rapid pain relief, stabilize the fracture, and help straighten the spine. The procedure is minimally invasive, requiring just a stab incision and small instruments, including an orthopaedic balloon using Kyphex inflatable bone tamp. This device is placed inside the fractured vertebral body and inflated, raising the collapsed bone and helping to straighten the spine. The balloon is then deflated and withdrawn leaving a cavity, which is filled with cement. To date, over 1500 cases have been treated nationally. There is a 95% success rate. Height of the vertebral body has improved by 50%, as has the angulation (kyphosis). Quality of life has also markedly improved within a week of treatment and pain medication has decreased remarkably within a week or two. Long-term studies are underway to determine if, with vertebral body height re-expansion, the morbidity and mortality associated with this collapse can be avoided. This, however, will take 5 to 10 years to determine.