



Vertebroplasty

Vertebroplasty is a relatively new, emerging form of treatment for painful compression fractures of the spine caused by osteoporosis. This is really an enormous public health problem. We know from many studies that one third of the women over age 65 will have a vertebral compression fracture of some degree during their lifetime. There are 1.5 million osteoporotic or, as they are sometimes called, fragility fractures in the United States per year. Seven hundred thousand (700,000) of these occur in the spine. Some of these fractures are mild and only painful for several weeks, but many fractures are more major fractures affecting one or more vertebrae and continue to be very painful and disabling.

The pain:

- **Decreases activity.**
- **Decreased activity leads to more bone loss.**
- **Sleep is disturbed.**
- **Deformed spine compresses abdomen.**
- **Increase abdominal pressure decreases appetite.**
- **Lung function can also be significantly reduced in patients with thoracic compression fractures.**

The technique originated in France in the early 1990's. It was reported in the medical literature in the mid 1990's.

The technique was brought to the United States by Jacques Dion, a French physician who began to introduce the technique at the University of Virginia. At first it was met with some skepticism, but in the last year or two several hundred specialists have been trained in the technique and have begun to use it in many parts of the United States.

The technique is only applied to the dorsal or thoracic spine (mid portion of the back) and the lumbar spine (lower back). Evaluation is extremely important and is done by use of MRI (Magnetic Resonance Imaging) and bone scan. These studies, along with a careful history and thorough examination, allow the physician to decide with the patient whether the technique would be possible in his or her particular case. It would be a mistake to think that this can be applied to everyone who has back pain and osteoporosis or who simply has arthritis of the spine. The technique has a very specific indication.

Procedure

Vertebroplasty is done in the hospital either in the operating room or in a specially prepared room in the x-ray department. It is totally dependent on high quality image intensifier (fluoroscopy) x-ray equipment to demonstrate the particular area involved. General anesthesia is not used, but rather a combination of local anesthesia and the administration of sedation and relaxing medication by the anesthesia personnel.

Through small incisions in the back, needles are introduced under x-ray control into the



affected vertebra (back bone). X-ray images guide the needle into the proper space and away from the spinal cord, spinal nerves and other vital structures.

A small amount of contrast material is then introduced into the bone through the needle that is placed to verify that the position is correct. Then, a substance medically known as polymethylmethacrylate (PMMA) is introduced through the needle into the vertebral body to fill as much of the bone as possible. This substance becomes very hard within about 15 minutes. Polymethylmethacrylate is commonly called bone cement. Orthopaedic surgeons have been using bone cement in patients since the 1960's when professor Charnley in England (see *Online Orthopaedic's* article on total hip replacement) began using bone cement to lock the hip replacement prosthesis in place in the bone.

Therefore, we over the years have had tremendous experience with polymethylmethacrylate and know that it can be accepted by the body. This is not a new substance that is being used for vertebroplasty, but rather one used by orthopaedic surgeons for at least 35 years. Anyone who has been in practice for a number of years has used this bone cement material on hundreds, if not thousands, of patients and we know from our own personal experience that it is safe.

After the bone cement hardens in the vertebra and the surgeon has determined that the x-rays look acceptable, then the needle is withdrawn from the bone and the small wounds are closed.

Some patients can be discharged after a few hours and other patients are kept over night and discharged the following morning. There is some discomfort following the procedure from the muscles, but this can, in most cases, be controlled by oral medication.

Pain Relief

The reason to do the procedure in the first place is to relieve pain in the back. The procedure has been amazingly effective in relieving pain from compression fractures of osteoporosis. Many patients are relieved of their pain within a few hours. Because the bone cement hardens within 15 minutes and makes the spine as stable as it is going to be, pain is usually relieved shortly thereafter. This has been a very gratifying aspect of the procedure. The particular patient does not need to wait several days or weeks to find out whether it helped.

The patient may resume their usual activities within one or two days.

Surveys that have been done at centers where a large number of these procedures have been performed have shown that 90% of patients said they would have the procedure done again if necessary and would recommend it to a friend. There is, therefore, a very high percentage of patient satisfaction with the procedure.

We feel that it is a very important technique that we can offer to our patients with pain that comes from thoracic or lumbar vertebral compression fractures.



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Please consult Dr. Haverbush or a physician for specific treatment recommendations.

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