

## Minimally Invasive Spine Procedures

Minimally invasive surgery (MIS) uses the smallest possible incisions with the least amount of trauma to patients. Traditionally, surgery is completed through large incisions to expose the area that needs to be repaired. Over the last decade, advances in video technology, instrumentation and technique development have allowed surgeons to perform many procedures with MIS. UK HealthCare offers the latest advancements in minimally invasive spine procedures including vertebroplasty, kyphoplasty and X-STOP® performed by both orthopaedic surgeons and neurosurgeons.

### *Vertebroplasty*

The literal translation of vertebroplasty is to fix the vertebral body. Vertebroplasty is a minimally invasive procedure designed to relieve the pain of compression fractures. In addition to relieving pain, vertebral bodies that are weakened but not yet fractured can be strengthened, thus preventing future problems.

Under general anesthesia, a special bone needle is passed slowly through the soft tissues of the back. Image-guided X-ray, along with a small amount of X-ray dye, allows the position of the needle to be seen at all times. A small amount of orthopedic cement, called polymethylmethacrylate (PMMA), is pushed through the needle into the vertebral body. PMMA is a medical grade substance used in a variety of orthopedic procedures. The cement is mixed with an antibiotic, to reduce the risk of infection, and a powder containing barium or tantalum which allows it to be seen on the X-ray. The cement is injected like a thick

paste but hardens rapidly. Usually each vertebral body is injected on both the right and left sides, just off the midline of the back.

Within a few hours, patients are up and moving around. Most go home the same day.

### *Kyphoplasty*

Kyphoplasty is a newer treatment for patients immobilized by the painful vertebral body compression fractures associated with osteoporosis. Like vertebroplasty, kyphoplasty is a minimally invasive procedure that can alleviate up to 90 percent of the pain caused by compression fractures. In addition to relieving pain, kyphoplasty can also stabilize the fracture, restore height and reduce deformity.

Kyphoplasty is performed under local or general anesthesia. Using image-guided X-rays, two small incisions are made and a probe is placed into the vertebral space where the fracture is located. The bone is drilled and a balloon, called a bone tamp, is inserted on each side. These balloons are then inflated with contrast medium (to be seen using image-guided X-rays) until they expand to the desired height and are removed. The spaces created by the balloons are then filled with PMMA, the same orthopedic cement used in vertebroplasty, binding the fracture. The cement hardens quickly, providing immediate strength and stability to the vertebra, restoring height and relieving pain.

## ***X-STOP***<sup>®</sup>

The X-STOP<sup>®</sup> Interspinous Process Spacer is a spinal implant designed to treat lumbar spinal stenosis, the painful narrowing of the spinal canal, by limiting extension. The X-STOP is a minimally invasive alternative to the current surgical standard of care, laminectomy, in which parts of the spine impinging on the spinal canal are removed.

The X-STOP consists of two pieces of titanium placed between the spinous process through a posterior approach. The implant prevents the spine from moving in directions that cause pain. Because the X-STOP is not fixed to bone or soft tissue, it is easily removable and thus reversible.

Current surgical spinal stenosis therapies may have high morbidity and can require significant recovery time. As a minimally invasive procedure, the X-STOP can be implanted under local anesthesia in an outpatient setting, minimizing morbidity and length of stay. Thus, it creates a surgical option between conservative care and laminectomy.

